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ATMOSPHERIC-ELECTRIC RESULTS AT TUCSON MAGNETIC OBSERVATORY, 1931-1934

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PREFACE

As a result of co-operation between the United States Coast and Geodetic Survey and the Department of Terrestrial Magnetism, arrangements were made during 1928 for continuous recording of the atmospheric potential gradient and air conductivities at the Magnetic Observatory, Tucson, Arizona, with apparatus installed by the Department. Until this time no continuous records of atmospheric electricity had been obtained in the mid-continental area of the United States.

The instrumental equipment was installed near the end of 1929 by G. R. Wait. Meteorological equipment for correlative studies was installed at the same time. Owing to instrumental difficulties, the records of the three atmospheric-electric elements, potential gradient, positive and negative air conductivity, were not complete for a sufficient period during 1930 to warrant reduction and publication for that year. The present volume, therefore, covers the four years 1931 to 1934. The equipment used at Tucson was identical with that installed earlier at the Huancayo and Watheroo Observatories of the Department of Terrestrial Magnetism. The building in which the apparatus was installed was also similar in design and construction to those at the two stations mentioned.

This volume contains the observations of potential gradient and air conductivities at Tucson in hourly tabulations, month by month, for the four years 1931 to 1934 as well as summaries of meteorological data for the same period. Discussions of the general results, of the diurnal variations of the atmospheric-electric elements, and of the variations in columnar resistance are also included.

The preliminary scaling of the traces was undertaken by the Tucson observatory staff but reduction and analysis of the data were carried out in Washington by G. R. Wait, and he and O. W. Torreson were responsible for the final arrangement of the material for publication.

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ATMOSPHERIC-ELECTRIC RESULTS AT TUCSON MAGNETIC OBSERVATORY, 1931-1934

INTRODUCTION

Prior to 1929, only scant information was available concerning the magnitude and behavior of the various atmospheric elements in the midcontinental area of the United States. The only data at one's disposal were those taken by the Department of Terrestrial Magnetism in 1918 at Lakin, Kansas, in connection with solar eclipse observations [1]. These data provide some knowledge concerning the absolute values of the potential gradient and the positive and negative conductivities. Since, however, observations of these elements were made only over one 24-hour period, the character of diurnal variation could not be regarded as well known. During 1929, observations on the atmospheric potential gradient were carried out by Wait [2] in central Kansas. The results provided information concerning the absolute value and the character of diurnal variation for that particular region and season of the year. Steps were taken in 1929 to supplement existing atmospheric-electric data by continuous observation at the Tucson Magnetic Observatory. Apparatus was installed at the observatory for the recording of the two signs of conductivity and the atmospheric potential gradient. This work was undertaken as a co-operative project between the United States Coast and Geodetic Survey and the Department of Terrestrial Magnetism of the Carnegie Institution of Washington.

DESCRIPTION OF SITE AND ATMOSPHERIC-ELECTRIC BUILDING

The site of the Tucson Magnetic Observatory is some ten miles east of the center of the city of Tucson, near the northeastern side of the broad valley of the Santa Cruz River, at an elevation of 770 meters above sea level in latitude 32° 15′ north and at longitude 110° 51′ west. The observatory is situated on a level plane which rises gently to foot hills several miles to the north and to the northeast. The observatory is well situated for atmospheric-electric observations, for in its immediate vicinity the valley is rather sparsely inhabited, the nearest residence being about a half mile distant. Apparatus for recording the atmospheric-electric potential gradient and the positive and negative conductivity of the air is installed in the atmospheric-electric building.

The atmospheric-electric building is a flat-roofed concrete building ten feet (three meters) high, with double walls, floor, and ceiling. The walls are protected from the rays of the Sun by a wooden louvered enclosure, and the floor is raised above ground level so that air may circulate beneath it. The diurnal variation in temperature within the building is small, and investigation has shown that the resulting temperature-effects on the instruments may be neglected. The atmospheric-electric building is shown in Figure 1.

ATMOSPHERIC-ELECTRIC INSTRUMENTS AND OBSERVATIONS

The Potential-Gradient Apparatus

For continuous recording of potential gradient, apparatus consisting of a radioactive "collector" connected to a measuring system was installed in the atmospheric-electric building. An ionium-coated disc, about two cm in diameter, was used as the collector and was mounted at the outer end of a brass rod which projected through the wall, the rod itself being supported in amber insulators held in brass tubes. The inner end of the rod was connected to the needle of a Dolezalek Quadrant Electrometer which was used as the measuring system. Figure 2 shows the arrangement schematically. The double concrete walls and the outer louvered wall of the atmospheric-electric building which supports the large brass tube through the center of which run the collector rod and the connecting wire are shown. At the outer end of the brass tube is attached a hooded cylinder of large diameter which protects the supporting insulator of the collector rod from rain, dust, and other contamination. At the inner end of the brass tube, within the building, a dustproof aluminum box houses the quadrant electrometer. Four glass containers, two attached to the hooded tube, and two attached to the tube supported in the walls are shown in the diagram. Phosphoric pentoxide, which was replenished at about weekly intervals, was placed in these containers to assist in keeping the insulating surfaces as dry as possible.

The quadrant electrometer was equipped with special amber insulators, one supporting the needle-suspension and the other supporting the quadrants. During use, a constant potential-difference from a battery was applied across the two pairs of quadrants, the battery having its midpoint connected to the case of the electrometer and to earth. Potential applied to the needle through the collecting system thus caused deflection of the needle, and the deflection was recorded by means of a spot of light, reflected from a mirror attached to the electrometer suspension to a sheet of photographic paper about one meter distant from the electrometer. The photographic paper, 20 cm wide and 52 cm long, was mounted on a cylinder which was rotated once every 24 hours by a clock mechanism.

Figure 3 is a view of the installation of potential-gradient apparatus and shows the electrometer and its housing at the extreme right. At the left is the recorder box which houses the rotating cylinder holding the photographic paper. The lamp attached to the recorder box provides the recording spot. The relays seen on the wall of the room are actuated by a control clock. One relay functions every hour at the hour to earth the electrometer needle for a period of one minute to provide a base

line from which to measure electrometer deflections. Another relay functions to provide a ten-minute test of insulation every four hours. These two relays operate contact-fingers, shown in Figure 2, one of which is located above the electrometer and the other above the insulator supporting the collector rod in the hooded cylinder. The third relay on the wall operates the lamp shown in front of the electrometer housing, turning it on for a few seconds exactly on the hour to make a time-mark on the photographic paper. A fourth relay, shown below the others in Figure 3, may be put into service as required to operate the recording lamp for a few seconds at regular intervals (every minute or two) to make the photographic record a dotted rather than a continuous line. This is used during "standardizing observations" when eye readings made at a station located nearby on an open, level area are to be compared with simultaneous readings from the recording apparatus in order to get the factor required to reduce observatory values to values in volts per meter representative of an open area undistorted by the building.

Reduction factor observations.--During the years 1931 to 1934, the collector rod projected 1.00 meter from the wall of the atmospheric-electric building at a height of 2.45 meters above ground level. To reduce or "standardize" the potentials measured at this point in the air to volts per meter representative of an open, level area, frequent determinations of reduction factor were made. The reduction factor adopted for each of the four years is: 1.23 for 1931, 1.24 for 1932, 1.19 for 1933, and 1.24 for 1934.

Tables of data.--Monthly tabulations of potential gradient, expressed in volts per meter, are given in Tables 6 to 149 for the years 1931 to 1934 in a later section of this volume.

The Conductivity Apparatus

The instruments for recording the conductivity of the air consisted of two similar units of modified Gerdien apparatus [3], one for each sign of conductivity. The apparatus is shown in Figure 4 as it was set up for testing; the rough wooden structure simulates one end of the atmospheric-electric building, through the roof of which two vertical cone-capped tubes protrude. Each vertical tube, 16 cm in diameter for the upper half of its length, has installed concentrically a short inner cylinder 1.4 cm in diameter and 35 cm long mounted at a height approximately midway between the floor and ceiling. The outer tube extends through the roof and down through the floor of the building so that air can be drawn in from above the building and exhausted below the raised floor. The apparatus is used in a darkened room so that a sheet of photographic paper may be exposed to recording spots of light. The movements or deflections of the two spots of light, reflected from mirrors attached to the needle of quadrant electrometers which are used as measuring instruments, produce the records upon the photographic paper. The photographic paper is placed on a recording drum mounted on a concrete pier midway between the two units of the apparatus. The drum is rotated once in 24 hours by a clock mechanism so that each sheet of photographic paper provides one complete day's record of both positive and negative conductivities. The rotations may be changed by a simple gearshift to once in three hours.

A schematic diagram of a single unit is shown in Figure 5. Air is drawn through the outer cylinder, designated the air-flow tube, by a motor-driven fan, F, placed in the tube at the floor level of the building. The inner or central cylinder, C, insulated from the air-flow tube by an insulator of amber, is connected to one pair of quadrants of the electrometer; the other pair of quadrants is connected to the case of the electrometer which is insulated and maintained at a constant potential of 100 volts or less by battery O. Across the two pairs of quadrants is permanently connected a high-resistance radioactive cell, R (10^{12} ohms), of the type modified by W. F. G. Swann and S. J. Mauchly [4]. With proper potential applied to the electrometer-needle from battery N (seldom more than 100 volts) and with the arrangements as outlined, when air is drawn with sufficient velocity through the air-flow tube, the electrometer experiences a continued deflection, the magnitude of which is determined by the conductivity of the air, the potential applied to the central cylinder, C, the resistance of the radioactive cell, and the sensitivity of the electrometer. The apparatus measures either positive or negative conductivity, according to the sign of the potential applied to the central cylinder. To a guard-ring, G, is applied nearly the same potential as is applied to the central cylinder, any leak across the amber supporting the central cylinder thus being minimized.

In order to determine the base line from which the electrometer deflection produced by the conductivity shall be measured, a set of concentric cylinders is mounted in the upper portion of the air-flow tube thus forming a cylindrical condenser, A, of electrical capacity much greater than that of the condenser-unit formed by the central cylinder and air-flow tube. Once every hour, for a period of three to five minutes, a potential of about 300 volts is applied across A, from a battery, H, through the operation of the relay T. At such times, all the ions of mobility greater than 0.1 cm per sec per volt per cm are drawn out of the air stream, so that no ions arrive at the central cylinder from the outside, and the electrometer deflections fall to a position representing zero-conductivity of the outside air.

This zero will not coincide with that obtained during calibration, for the central cylinder will still collect those ions that are produced by radioactive material deposited on the surfaces of the air-flow tube and central cylinder. Since, however, ions from the deposited radioactive material are produced during recording as well as during the hourly-zero determination, the latter represents the zero from which the deflections representing the conductivity of the air should be measured.

According to the theory of Gerdien, the ions which are drawn to the central cylinder when the apparatus is operating come from a region bounded by a cylindrical surface. This cross-sectional area of this region is inversely proportional to the velocity, U, of the air and is directly proportional to the potential-difference, V, between the outer and central cylinders, to the measured capacity, C, of that part of the central cylinder system which is exposed to the air current, and to the mobility, k, of the ions in question. So long as the calculated radius of this cross-sectional area is less than the radius of the outer cylinder of the apparatus, the apparatus measures the true conductivity.

To calculate the radius, use is made of the formula

$$r^2 = 4CkV/U \qquad (1)$$

and, for the apparatus here described, C is about 6 cm, V is usually less than 100 volts, and U is not less than 200 cm per sec. As v is known to be close to 1.5 cm per sec per volt per cm at sea level, r is found to be less than 5 cm whereas the radius of the air-flow tube is 8 cm.

Swann has shown [5] that the measured and not the computed value of C, the capacity of that part of the central-cylinder system including the supporting rod which is exposed to the air-current, must be used. This applies not only in the case of the calculations made above, but also for the computations of the true conductivity from the formula developed by Riecke [6].

According to Riecke, a charged sphere placed in a stream of air of sufficiently high velocity so that effects of diffusion, re-formation, and recombination of ions may be neglected loses its charge at a rate given by

$$-dQ/dt = 4\pi Q\lambda \qquad (2)$$

where Q is the charge of the sphere and λ is the unipolar conductivity. Swann [5] showed that this formula applies not only to a charged sphere but also to a charged body of any shape and consequently applies to the central cylinder of a Gerdien conductivity apparatus.

For the conductivity apparatus, Q = VC, V and C defined as previously. Formula (2) may then be rewritten as

$$-dQ/dt = 4\pi CV\lambda \qquad (3)$$

the quantity dQ/dt being the current or the rate of passage of electricity through the high-resistance radioactive cell. Any desired value of dQ/dt may be obtained by means of calibration equipment attached to the conductivity apparatus.

As shown in the schematic diagram in Figure 5, the inner member of a small cylindrical condenser, B, is connected to that part of the circuit which includes the central cylinder. During regular recording, the outer member of this condenser is connected to the base of the radioactive cell and the operating battery, O. For calibration, battery O is disconnected, the base of the radioactive cell and associated pair of quadrants are earthed, and the outer member of condenser B is connected to a rolling contact which runs on a wire spirally wound on a drum, D, that is rotated when in use [7]. The spiral-wound wire is connected across a calibrating battery, one side of which is earthed.

With a constant potential difference, V', maintained across the ends of the spiral wire and the latter revolved so that the rolling contact moves along it, the electrometer will deflect because of current flow through the radioactive cell; eventually, if the rotation of the drum is uniform, a steady deflection will be attained which is determined by the electrometer sensitivity, the resistance of the radioactive cell, the rate of variation in potential of the moving contact, and a quantity, k, representing the capacity of the condenser, B. If dV'/dt is the rate of variation in potential of the moving contact, then the current through the radioactive cell is given by kdV'/dt. The current during measurement of conductivity is $4\pi CV\lambda$ and when the two currents are equal

$$-kdV'/dt = 4\pi CV\lambda \qquad (4)$$

from which equation a value of conductivity corresponding to a particular current is readily obtained. A value for the current, as given by the calibration apparatus, may be computed from the constants of the apparatus. The capacity, k, is about 16 cm; there are 70 turns of wire on the calibration drum; the speed of rotation of the drum is about 12 r.p.m. and is always kept as precisely as possible at a given value by adjustment of the speed of the driving motor to give a constant tachometer reading. The value of V' may be anything up to 30 volts; usually it is applied in steps of three or four volts so that six or seven calibration points are obtained at each calibration. If, for example, V' is taken as ten volts, then the current kdV'/dt becomes 15.3×10^{-4} esu. The conductivity, λ, then is $15.3 \times 10^{-4}/4\pi CV$, where V must be in esu. Now, the value of C is 6 cm and when V, the voltage applied across the central cylinder and air-flow tube during regular conductivity measurements is, for example, 20 volts, λ becomes $15.3 \times 10^{-4}/5.03$ or 3.04×10^{-4} esu. For this value of conductivity, one can compute the electrometer deflection corresponding to a given electrometer sensitivity and given resistance of the radioactive cell. If the cell resistance is 10^{12} ohms, or 1.1 esu and the current is 15.3×10^{-4} esu, then the voltage drop across the cell will be 16.8×10^{-4} esu or about one-half volt. If the sensitivity of the electrometer, as measured on the photographic sheet at a distance of one meter from the electrometer, is 60 mm per volt, the deflection obviously will be 30 mm. Other voltages across the drum give other values of current with other deflections, from which a suitable calibration curve may be drawn.

From the foregoing it will be seen that the major items of equipment in the apparatus are: (a) the air-flow tube, containing the auxiliary condenser and the air-flow fan; (b) the central cylinder; (c) the electrometer; (d) the radioactive cell; (e) the calibration apparatus, including calibrating condenser and revolving drum; and (f) batteries required to supply potentials to various parts of the apparatus.

Automatic devices to make time-marks on the photographic sheet and to apply potential to the auxiliary condenser once each hour so that a zero-conductivity deflection may be recorded are operated by the programmachine which was mentioned in connection with the potential-gradient recorder.

The high-resistance cell used with the conductivity apparatus is a modified form of the cell developed by Bronson [8]. A cylindrical chamber about 20 cm in diameter and 20 cm high is silver-coated inside. In a depression in the base of the cell is a circular area coated with thorium ionium nitrate salt, containing 8 to 10 per cent ionium, the salt being mixed with bakelite varnish and the mixture baked on as is done in preparing radioactive collectors for potential-gradient work. The ionium surface is sealed over by a very thin disk of mica which in turn is covered by a disk of silver foil. Into the cell, through the top, project two concentric rods (set in an insulator of amber) terminating in small disks mounted with faces parallel to the base of the cell. These two electrodes, silver-coated like the chamber, may be independently adjusted for height with respect to the cell base. Alpha particles from the ionium render the air within the cell slightly conducting and by varying the heights of the electrodes one may vary the resistance of the cell over a considerable range. The positions of the two upper electrodes may also be adjusted to obtain approximate linearity between current through the cell and voltage across the cell, or between the value

of conductivity and deflection of the electrometer. The resistance of the radioactive cell is affected by changes in temperature and pressure of the air. Any pressure effect is small and can usually be neglected, but the temperature effect is sufficiently large so that the cell should be used in a temperature-controlled location whenever possible. At Tucson, with the conductivity apparatus installed in a specially constructed building, the temperature variations were found to be sufficiently small to permit effects of temperature to be neglected. Frequent calibrations allows for adjustment of scale value to a change in temperature with season.

Calibrations.--Calibrations of the conductivity instruments were, in general, made weekly through the years 1931 to 1934. Scale values for both conductivity units were maintained between 10×10^{-6} and 25×10^{-6} esu per mm deflection on the photographic record.

SUMMARY OF RESULTS

Four-year means for each hour of the day in each month of the years 1931 to 1934 are tabulated in Table 1 for each of the three elements, potential gradient, positive conductivity, and negative conductivity. Diurnal-variation curves for each month of the year have been drawn from these means and are shown in Figure 6 for the potential gradient and in Figure 7 for the two conductivities. Values of air-earth current density computed from corresponding mean hourly values of potential gradient and the sum of the two conductivities have been derived for January and July, and the results are summarized in Table 2. The results are also given in the form of curves in Figure 8. The mean monthly value of the gradient for the four years varies through rather narrow limits, a maximum of 51 volts per meter being found in December, and a minimum of 43 volts per meter in the three months of May, September, and October. The type of diurnal variation changes somewhat through the year. The chief difference between the summer and winter diurnal-variation curves lies in the fact that the gradient decreases from the midday maximum to the minimum much more rapidly during the winter than it does during the summer. The positive conductivity varies from a maximum of 279 in September to a minimum of 219 in January. The negative conductivity varies from a maximum of 266 in September to a minimum of 208 in February and December, when expressed in 10^{-6} esu. The type of diurnal variation changes only slightly through the year. In summer, the early morning maximum, which occurs about the same time of day throughout the year, is considerably sharper than it is during the winter. The amplitude of the diurnal-variation curve is also considerably greater during the summer than during the winter.

Discussion

The potential gradient at Tucson, in common with that found at many land stations reasonably free from atmospheric pollution, is considerably lower than the gradient observed over the ocean. Over land, there appears to be a definite tendency for the potential gradient to diminish more or less regularly with an increase in altitude of the observing station. To ascertain how the value at Tucson compares with those at other mid-continent stations, values of the gradient at a number of stations where the Department of Terrestrial Magnetism has carried out measurements have been collected in Table 3 and have been plotted against altitude of the station in Figure 9. The value for August 1931 to 1934, which is fairly representative of all the months at Tucson, lies some 15 volts per meter below the smoothed curve drawn among the plotted points. One may conclude from this that the value of the gradient at Tucson is unexpectedly low by about this amount.

The conductivity of the atmosphere at Tucson is considerably greater than that found over the ocean and that observed at low altitude stations relatively free from atmospheric pollution. To compare the value of conductivity at Tucson with what one might expect at a station having the same altitude, the average values from a number of stations where observations have been made by the Department of Terrestrial Magnetism, which are assembled in Table 3, have been plotted against altitude of the observing station in Figure 10, and a smooth curve drawn among the points. The values of potential gradient and of total conductivity of the lower air employed in constructing Figures 6 and 7 are given in Table 4. According to the curve in Figure 10, the value of the conductivity at a low altitude land station differs little from that found over the ocean. The values, however, rise rapidly with altitude until at Huancayo the conductivity is more than four times as large as that found over the ocean or at a low altitude land station. The value of the conductivity encountered at Tucson thus appears to be only slightly lower than what one might expect for a station with that altitude.

The value of the air-earth current density at Tucson is found to be much lower than that encountered over the ocean, whereas one might expect to find a somewhat higher current based entirely upon the altitude of the station. A high altitude at a land station results in short-circuiting a portion of path through which the current between the ground and the upper conducting layer must pass. It is of interest to compare the value of the current at Tucson with that generally encountered over land. To make this comparison, an estimate of the variation with altitude of the air-earth current has been made, and the current at Tucson has been compared with that expected for a station of similar altitude. Values of air-earth current density for various altitudes have been computed from corresponding values of potential gradient and conductivity as scaled from the respective curves previously discussed and shown in Figures 9 and 10. The resulting values of air-earth current are plotted against altitude in Figure 11. For altitudes above one km, the air-earth current density increases linearly with altitude, and when extrapolated back to zero altitude, passes through the value observed for the ocean. The land values for altitudes below one km, however, diminish rapidly with decreasing altitude. From this curve, one would expect for the current at an altitude similar to Tucson a value of about 11.5×10^{-7} esu, whereas the value deduced for August 1931 to 1934 is only 6.5×10^{-7} esu, a value less than 60 per cent of that expected.

An increase in air-earth current density with altitude of the observing station could be expected on the basis of

the short-circuiting of a portion of the path between ground and upper conducting layer. As observed from Figure 11, the current in general over land does increase with altitude. It is of interest to compare this increase with that expected on the basis of shortcircuiting of the lower portion of the atmosphere. Taking a value of 4.12×10^{-16} amperes as the value of the current density at the altitude of Rapid City, South Dakota (1.2 km), and assuming a value of 7.0×10^{20} ohms as the columnar resistance as estimated by Gish and Sherman [9] from the Explorer II data, one derives a value of 288 kv as the potential difference between ground and the upper conducting layer. With this value of potential and the values of columnar resistance down to various altitudes, as deduced by Gish and Sherman and listed under heading R in Table 4, one arrives at the values of current given in the second column of Table 4 under heading i_c. In the third column of this table under heading i_o are listed observed values of current density, the values being scaled from the curve of Figure 11. The values of i_c, as may be seen, are much greater than the values of i_o at altitudes above 1.2 km.

Thus, on this basis, the columnar resistance down to ground from outer space is greater than that down to the same altitude in the free atmosphere. A comparison of the value of the two resistances becomes possible after one computes the resistance down to ground. This computation has been made employing observed values (i_o) of current densities and the value 288 kv previously derived for the potential difference between the ground and the upper conducting layer. These values together with those for the free atmosphere are plotted against altitude in Figure 12. From these curves it is seen that the differences in resistance increase with altitude. On this basis, the presence of the ground not only acts to increase the total columnar resistance of the atmosphere, but the effect increases with altitude of the observing station. There may be some simple way to explain this apparent increase in columnar resistance. The effect of condensation nuclei immediately suggests itself as the possible cause for the increase in columnar resistance. If this is the explanation, then either the number of nuclei must increase with altitude or their effectiveness in reducing the conductivity of the air must increase with altitude. It is possible that the combination coefficient between small and large ions may increase with a decrease in pressure. This, however, is a question which still remains unanswered.

In computing the values of i_c listed in Table 4, the corresponding values of R listed in this table were assumed to hold. There is some reason for believing that the values of resistance are too small. For example, the conductivity of the atmosphere, as measured aboard Explorer II showed a decided decrease above 19 km altitude. Thus one might suspect that a relatively high-resistance layer exists in this region, and that consequently the total columnar resistance would be greater than that estimated (10.5×10^{20} ohms) from the Explorer II data. It is possible to calculate the total columnar resistance of the atmosphere down to the various altitudes indicated in Table 4, making use of the Explorer II data. It is also possible to compute the total potential difference between the ground and the upper conducting layer on this same basis. The difference in resistance between the 1.2 and the 3.0 km level, as shown in Table 4, is 3.0×10^{20} ohms. Assuming Ohm's law to hold, one finds $E_{1.2} = i_{1.2}R_{1.2}$ and $E_3 = i_3R_3$, where the subscripts refer to the altitude of the station. From Table 4, it is seen that $R_3 = R_{1.2} - 3.0$, and that $i_{1.2} = 4.12 \times 10^{-16}$ amperes and $i_3 = 4.83 \times 10^{-16}$ amperes. Consequently, if $E_{1.2} = E_3$, then the value of $R_{1.2}$ comes out 20.7×10^{20} ohms and $E_{1.2} = 855$ kv. If it is assumed, as indicated by the values given in Table 4 that the differences between $R_{1.2}$ and R_o, R_2, and R_4 are -3.5, 1.7, and 4.0, respectively, all expressed in 10^{20} ohms, then the following values are obtained for the columnar resistance of the atmosphere down to ground at the respective altitudes when expressed in the same units as indicated above: $R_o = 24.2$, $R_2 = 19.0$, $R_3 = 17.7$, $R_4 = 16.7$. Taking these values for the resistances and assuming that the potential difference between ground and the upper conducting layer is 855 kv, we find that the values of the air-earth current density at ground stations at the indicated altitudes given in Table 4 may be computed. The values of the air-earth current density thus computed are given under heading i'_c in the table. A comparison of these values with those observed shows excellent agreement. It may be concluded then that if a layer of air with a resistance amounting to about 13.7×10^{20} ohms exists above 19 km, or thereabouts, the total resistance from outer space to ground is the same as that of the free atmosphere down to the same altitudes. It is not easy to admit a resistance of 13.7×10^{20} ohms between, say, 20 and 80 km. This would require an average resistivity of about 2.2×10^{14} ohms cm or an average conductivity of about 40×10^{-4} esu. This value of conductivity is only about half that observed at the greatest altitude reached by the Explorer II. While it is extremely unlikely that such a low conductivity occurs at such altitudes, the possibility cannot be entirely ruled out.

DIURNAL VARIATION OF ATMOSPHERIC-ELECTRIC ELEMENTS

As previously pointed out, the electrical conductivity of the air at Tucson is, on the average, somewhat greater than that at Watheroo, Western Australia, but it is not so large as that encountered at Huancayo, Peru. The variation through the day is large and quite typical of that found at many land stations. The values rise to a maximum during the early morning hours and drop to a minimum during the late evening hours. Diurnal-variation curves are shown for positive and negative conductivity for the month of January, 1931, in Figure 13. The corresponding hourly values for the two conductivities are almost identical throughout the entire day. The ratio of positive to negative conductivity, amounting to about 1.10, is greatest during the daylight hours, when the potential gradient is greatest, and is lowest during the night hours, when the potential gradient is lowest. These results suggest an electrode effect wherein the negative conductivity is reduced at the point of observation through the action of the earth's electric field.

The average value of the potential gradient is very similar to that found at Huancayo, but it is considerably less than that at Watheroo or that over the ocean. The amplitude of the diurnal-variation curve is unusually large at Tucson. In general, the night values are low as compared with the daylight values, the former averaging less than half the latter. The diurnal-variation curve

for this element for January, 1931, is also shown in Figure 13.

The air-earth current at Tucson is, on the average, considerably smaller than that found at Watheroo, Huancayo, or over the ocean. This element shows a particularly large daily variation at Tucson. Extremely low values are encountered at night, averaging only about half those found over the ocean. During the day the current rises to a maximum, the value of which is somewhat less than the daily maximum found over the ocean. A very rapid rise in the values, amounting almost to a sudden increase, occurs around 07h to 08h. This is illustrated by the diurnal-variation curve for January, 1931, shown in Figure 13. For comparison, the ocean diurnal-variation curve for this element for January, 1929, is also included in the figure. If the ocean curve is typical of the way in which the total potential between earth and the upper conducting layer varies, then to account fully for the variation in the air-earth density at Tucson, it appears necessary to assume that the columnar resistance at this station also varies greatly through the day.

Variation in columnar resistance.--It would seem of interest to attempt an analysis of the Tucson atmospheric-electric data in an effort to get a better understanding of how, and perhaps why, the columnar resistance varies so markedly at Tucson. An analysis has been made of the atmospheric-electric elements at Tucson in conjunction with the Carnegie data. If it is assumed that at any instant the total potential between the earth and the upper conducting layer is the same at Tucson and an ocean station, it follows from Ohm's law that

$$i_o/i_T = R_T/R_o$$

where i refers to the air-earth current density and R is the total resistance in the vertical column of the atmosphere between the earth and the upper conducting layer. Subscripts o and T refer to the values over the ocean and at Tucson, respectively.

If it is assumed that the resistance R_T is made of two parts, r' and r, where r refers to the columnar resistance between ground and height h and r' to the columnar resistance from height h up to the conducting layer, it therefore follows that

$$i_o/i_T = 1/R_o\,[r' + r]$$

If ρ represents the resistivity of the air in the lower layer, then

$$i_o/i_T = 1/R_o\,[r' + \rho h]$$

From a plot of the ratio i_o/i_T against ρ, one can obtain values for r'/R_o and h/R_o. Such a plot has been constructed and is shown in Figure 14, employing the January, 1931, data for Tucson, and January, 1929, ocean data. To utilize simultaneous ocean and Tucson data would be desirable, but is impossible inasmuch as reliable data at Tucson are not available during the year 1929 and no ocean data are available for 1931. From Figure 14 one can see that the values during the daylight hours agree rather closely with a line which corresponds to a height h of 3.2 km (assuming $R_o = 10^{21}$ ohms). During the night hours, on the other hand, the values fall more closely on a line which corresponds to value h = 5.8 km. The value thus derived for r' is approximately 40 per cent of R_o for both daylight and night values. The diurnal-variation curve for the air-earth current as well as the absolute value of this element thus appear to be explainable on the assumption that during the daylight hours the conductivity of the lower layer of air, characteristic of that found near the ground, extends to an effective height of 3.2 km. During the night hours, on the other hand, the lower layer of air extends to about twice this height. The resistance of the layer of air lying above this is assumed to be constant with time, and to be about 40 per cent of the average total resistance of the air over the ocean. One cannot consider this as proof that there is actually a change in height of the lower layer. Another explanation for these results might be considered if the conductivity of the air is not constant with height but is a function of height. The results on this basis would require that the conductivity decrease with height, particularly during the night hours. It is not possible to distinguish between these two possible explanations.

SUMMARIES OF METEOROLOGICAL DATA

Table 5 presents yearly summaries of monthly means or monthly sums of meteorological data collected at Davis Monthan Airfield, which is about five miles south of the Tucson Magnetic Observatory. The data are believed adequately to represent the meteorological conditions over a wide region surrounding the airfield, including the observatory site.

It will be noted that the relative humidity is generally low from March to June, that highest temperatures occur in June, July, and August, and that the days on which rain falls are most numerous in July, August, and September.

HOURLY VALUES OF ATMOSPHERIC-ELECTRIC DATA

Hourly values.--Tables 6 to 149 present monthly tabulations of potential gradient, positive conductivity, and negative conductivity at Tucson Magnetic Observatory. On each sheet the tabulated hourly values are means for successive periods of one hour, the first for each day being that commencing at midnight, 105th west meridian mean time. The sheets are arranged in sequence of potential gradient, positive conductivity, and negative conductivity in each month and the monthly groups are arranged consecutively for the four years from 1931 to 1934.

Mean daily and monthly values.--On the tabulations of potential gradient and conductivity, daily mean values have been provided for all complete days in the column headed "mean" at the right-hand side of each table. The three lines at the bottom of each table contain monthly means for certain groups of values in each of the hourly columns. In the first bottom line, the means are based

on data for all complete days; in the second line, on data for all days complete in potential gradient and both conductivities; and in the third line, on those days selected as being undisturbed or very little disturbed, the selection being based largely on the appearance of the potential gradient record. To identify the days included in each of the above groupings, check-marks appear in the three columns beside the day of month.

Character-figures.--Electric character-figures have been tabulated for all days for which these figures can be determined. The character-figure is intended to indicate the degree of disturbance on any day, but actually it indicates only the duration of negative potential. Three figures are used as follows:

0 = a day with no negative potential gradient

1 = a day with an aggregate of two hours of negative potential or less

2 = a day with an aggregate of more than two hours of negative potential

Because negative potentials are encountered in disturbed weather, and disturbed weather generally causes large and rapid fluctuations in potential gradient which often make the record illegible, on some disturbed days there is uncertainty as to whether the character-figure should be 1 or 2, and in some cases no figure at all can be given. It must be emphasized that very disturbed days are encountered which show high and variable positive values and no negative potential gradient; these are "zero" days as well as the very quiet days on which only average variations are seen, and the system of characterization therefore does not cover the entire range of disturbed conditions. Notably, smoke, fog, mist, and haze may cause very high positive values of potential gradient. Although classified as "zero" days, the days on which smoke and other disturbing factors are present belong in the category of disturbed days.

Interpolated and approximate values.--Interpolated hourly values have been placed in parentheses. Values have been interpolated for periods of not more than three hours only on days regarded as particularly quiet and undisturbed. No interpolating has been done over periods of bad weather. Approximate values have been placed in brackets; values found incomplete or made uncertain because of bad instrumentation or values obtained over periods of great disturbance have been indicated as approximate if recorded at all.

Explanatory symbols.--Where values are missing on the tabulations and in cases where information on certain hourly values would be useful in a study of the data, symbols and letters have been given which are defined as follows:

The half bracket ⌈ ⌋ is used to enclose one or more hourly values which weather notes have indicated as having been obtained during periods when high winds, smoke, fog, mist, haze, and other effects likely to be associated with pollution particles in the atmosphere have been present as disturbing factors in the vicinity of the observatory. These effects have been taken as being something other than "bad weather," the latter term being reserved for effects outlined in the paragraph describing the serrated bracket.

Typical of the disturbed periods in potential gradient for which the half bracket is used is the period from 10h to 17h on November 4, 1933, which is shown in Figure 15. This figure shows records of potential gradient, positive and negative conductivity, and a curve of wind velocity drawn up from anemograph readings. It will be noted that during the period when wind velocity exceeded ten miles per hour on November 4, there were frequent excursions to negative values, no one excursion, however, being of more than a few minutes' duration. Probably swirls of dust particles, stirred up by the winds, caused the effect noted.

Many of the Tucson records show these brief excursions, sometimes repeated several times each hour for several hours in succession as in Figure 15, but frequently occurring only as single, isolated departures from normal positive values.

The serrated bracket ⦃ ⦄ is used to enclose values obtained during rains, hailstorms, and thunderstorms, and when heavy storm clouds were noted in the vicinity. These effects have been grouped under the general classification of "bad weather."

The letter N has been placed before hourly values of potential gradient which on the average are positive but which include some recording of negative gradient. It has not been possible to indicate the duration or magnitude of the negative value, but in many cases such values exist for only a minute or two in the hour, and appear as very sudden excursions from the prevailing positive value on the photographic record.

The letter Z appears in place of a numerical value of potential gradient when rapid variation in that element prevents satisfactory photographic recording. When the record indicates with reasonable certainty that positive potential gradient has existed throughout the disturbed interval, Z+ is used, and Z- is used when negative gradient has been recorded throughout.

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Fig. 1. Atmospheric-electric building. Wooden louvers surround an inner concrete structure, with 50 cm air space between. Insert shows potential gradient collector-rod with ionium collector-disk at tip and tubular hood to protect insulators and automatic relay

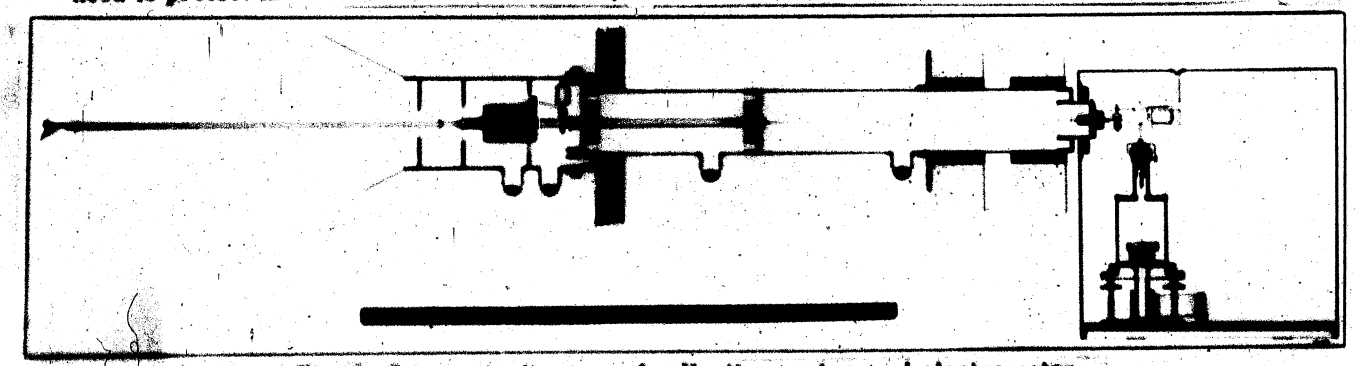

Fig. 2. Schematic diagram of collecting system and electrometer

Fig. 3. Recording potential gradient apparatus

Fig. 4. Recording conductivity apparatus with calibrating potentiometer

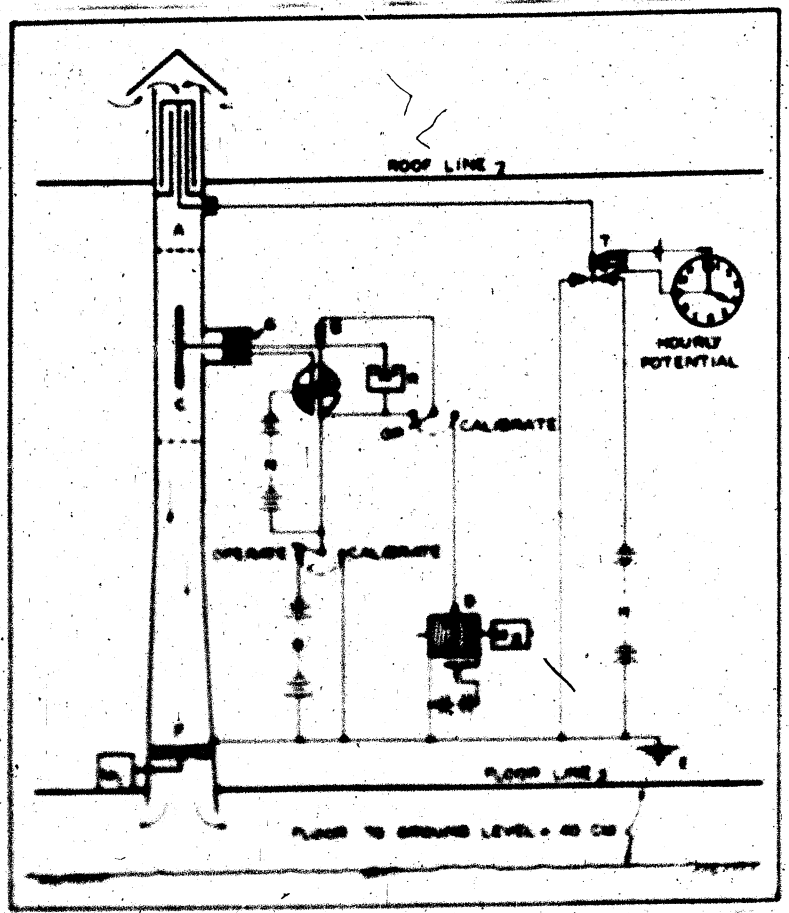

Fig. 5. Schematic diagram of recording conductivity apparatus with calibrating potentiometer

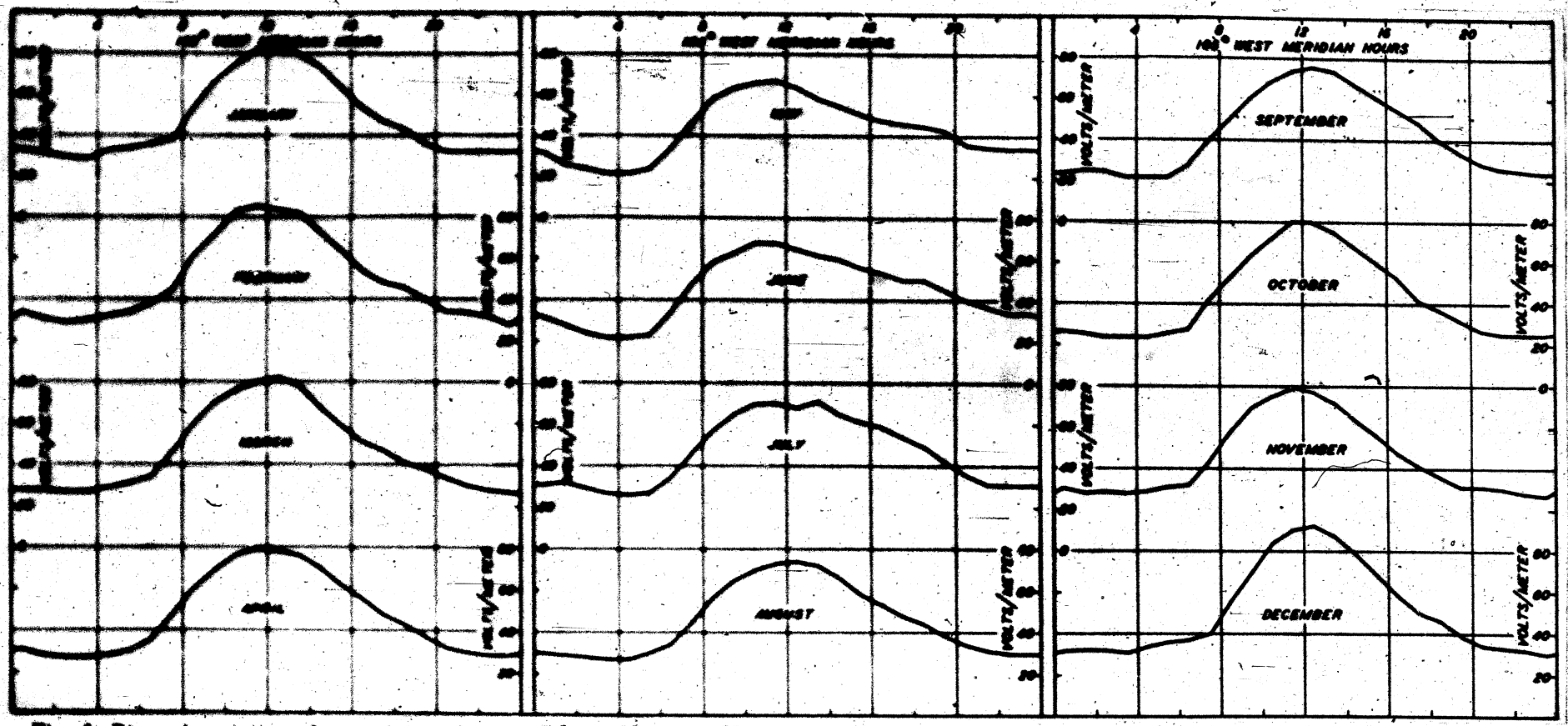

Fig. 8. Diurnal variation of potential gradient at Tucson Magnetic Observatory, for all months of the year, each the mean of four years, 1931-1934

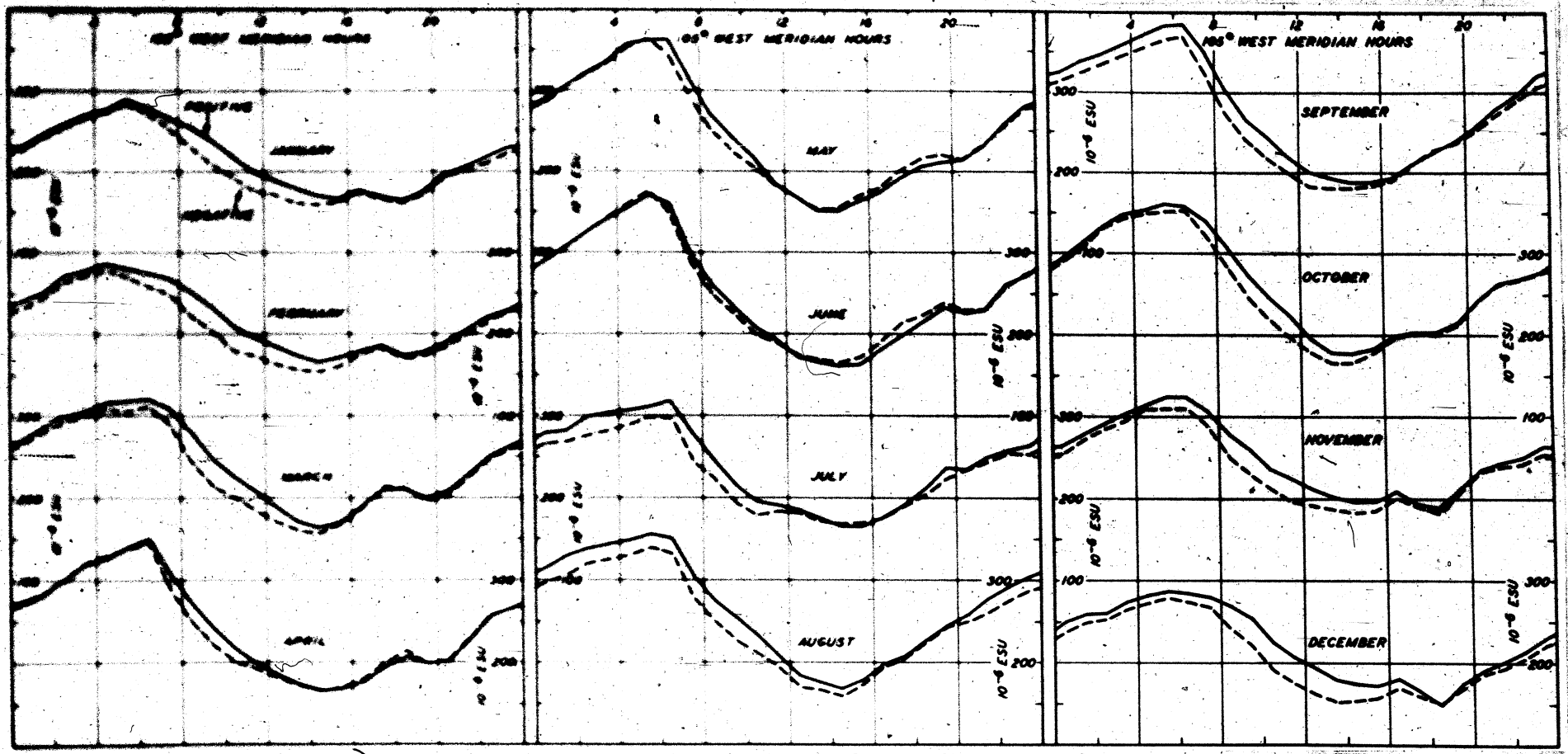

Fig. 7. Diurnal variation of positive and negative conductivity at Tucson Magnetic Observatory, for all months of the year, each the mean of four years, 1931-1934

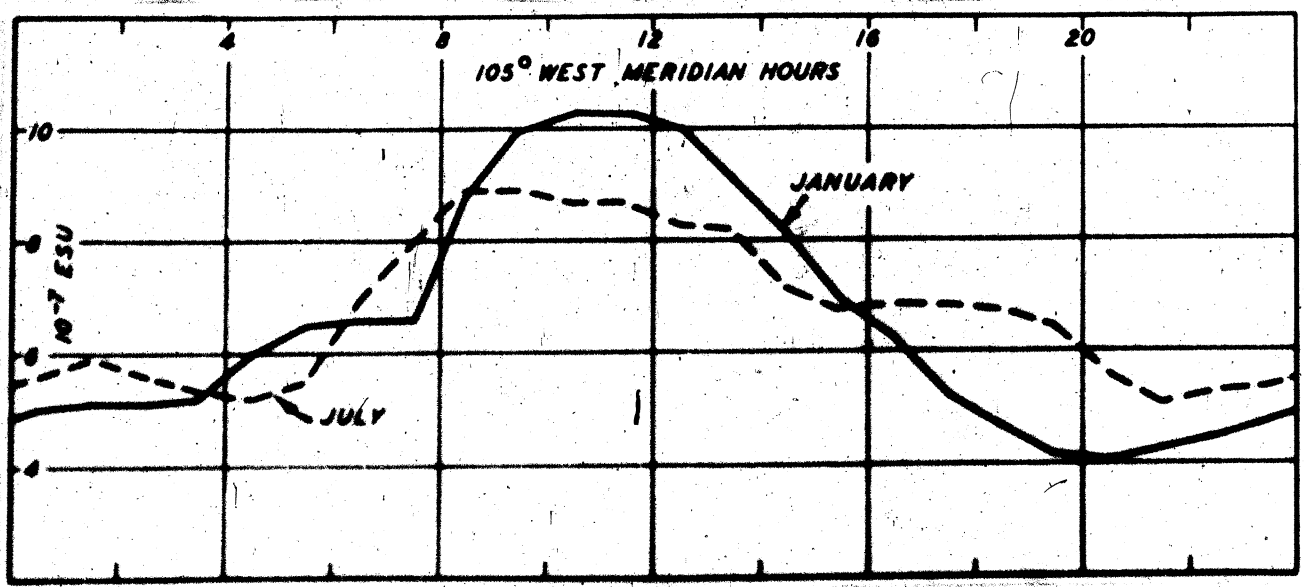

Fig. 8. Diurnal variation of computed air-earth current at Tucson Magnetic Observatory, for a winter (January) and a summer (July) month, each the mean of four years, 1931-1934

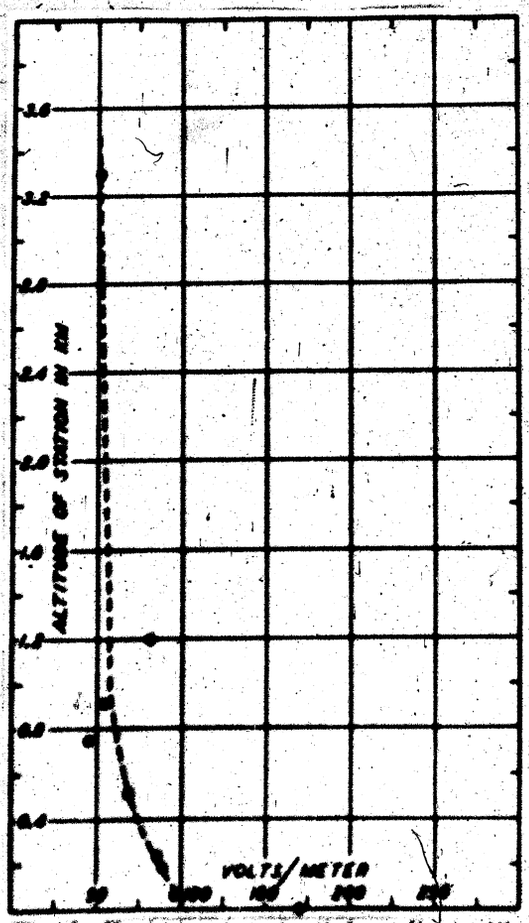

Fig. 9. Variation in potential gradient with altitude of station

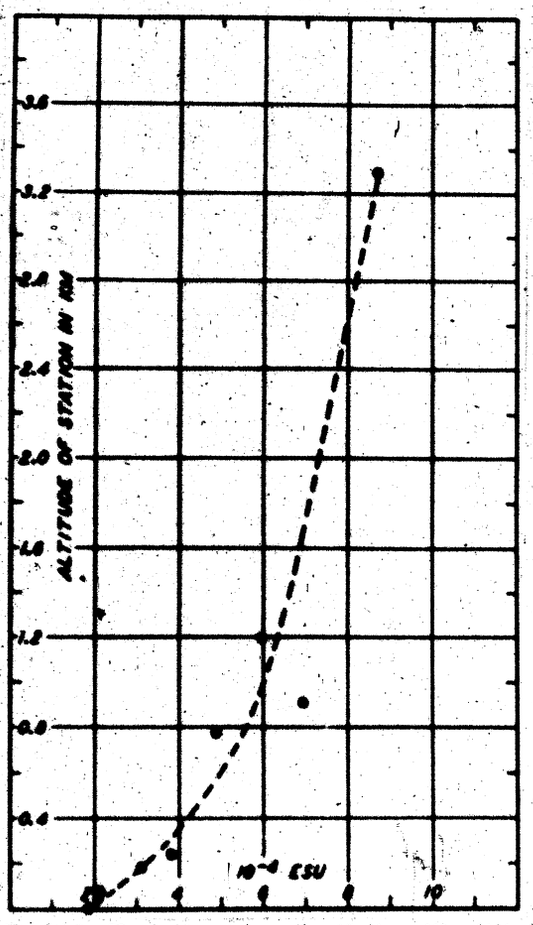

Fig. 10. Variation in conductivity with altitude of station

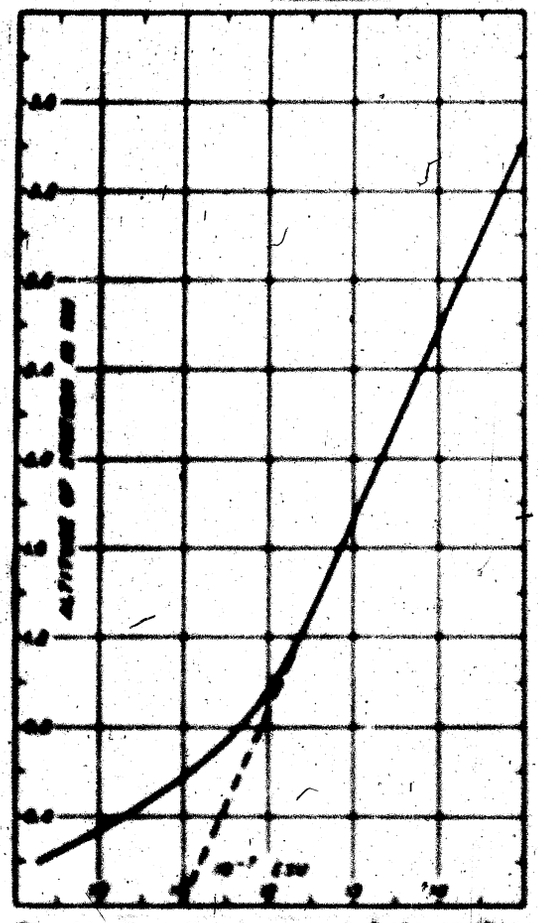

Fig. 11. Variation in computed air-earth current with altitude of station

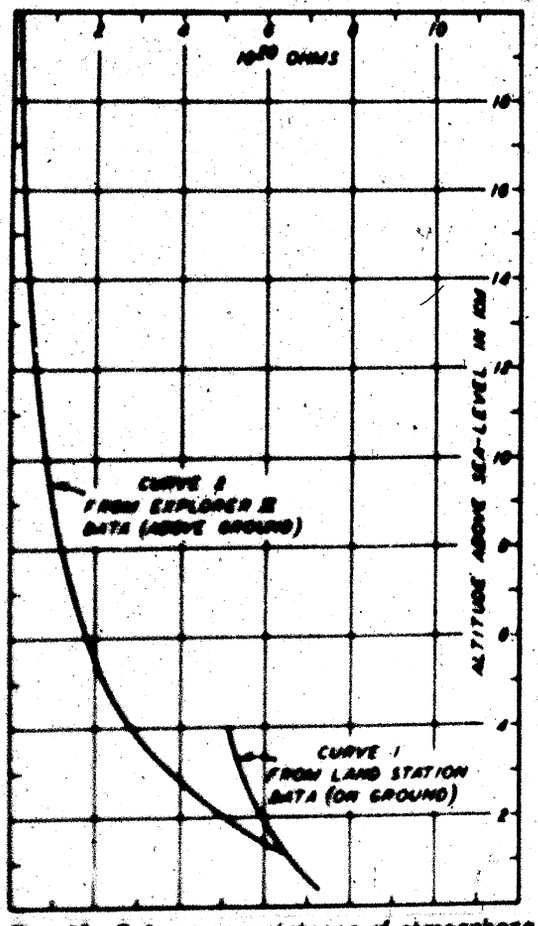

Fig. 12. Columnar resistance of atmosphere from outer space down to indicated altitudes above ground

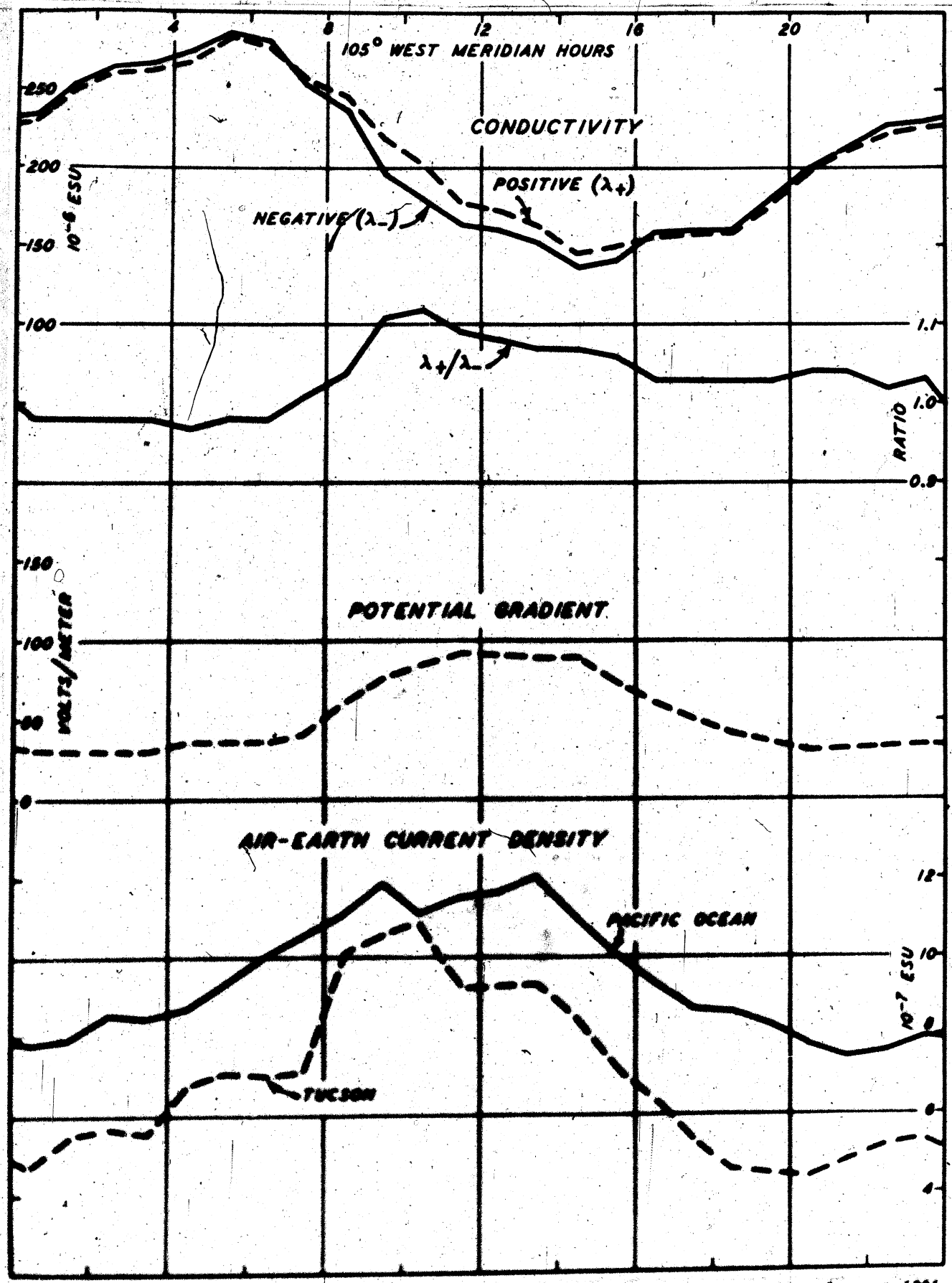

Fig. 13. Diurnal variation of atmospheric-electric elements at Tucson Magnetic Observatory, January, 1931, and of air-earth current density over the Pacific Ocean, January, 1929

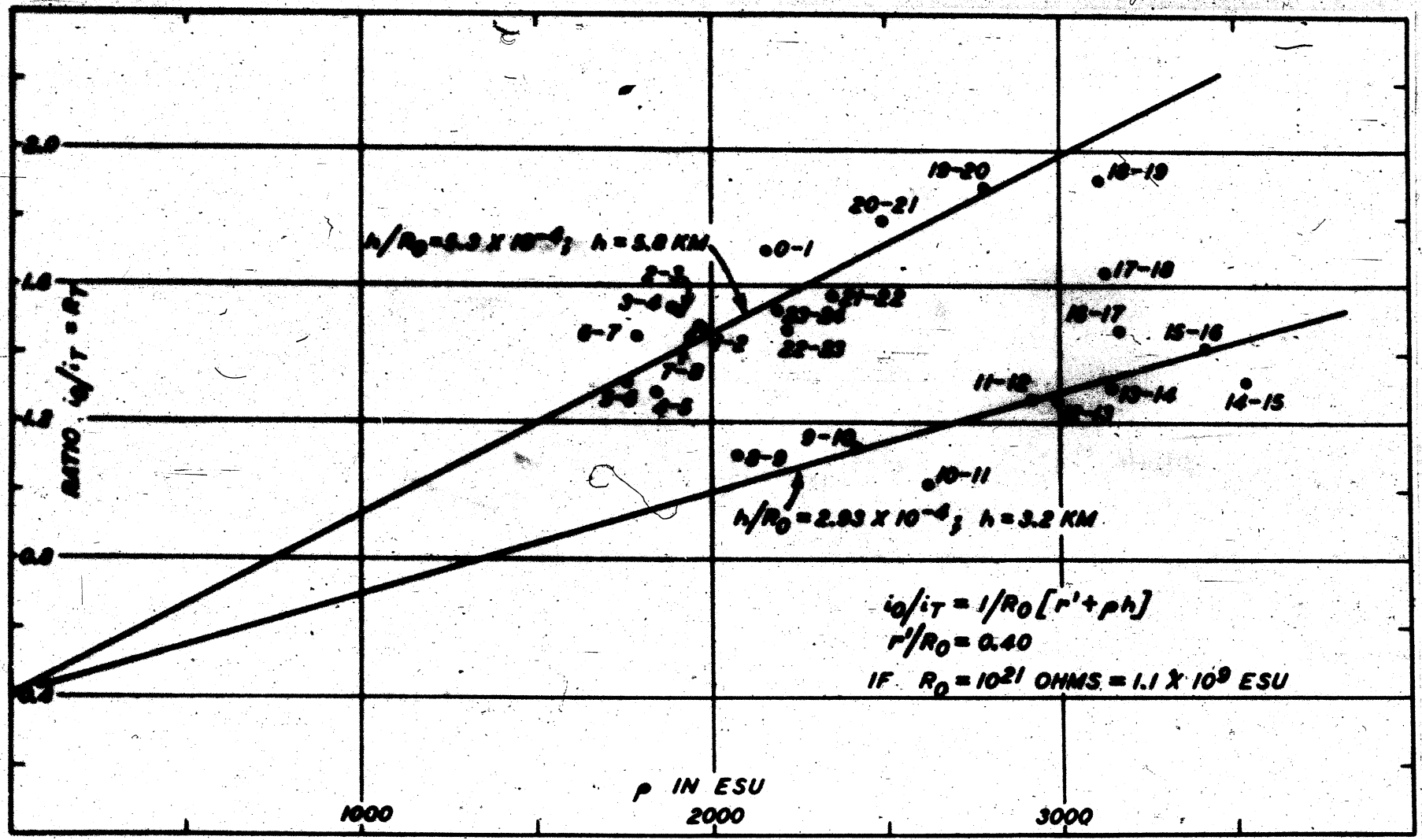

Fig. 14. Variation in columnar resistance (R_T) at Tucson Magnetic Observatory with resistivity (ρ) of the lower atmosphere

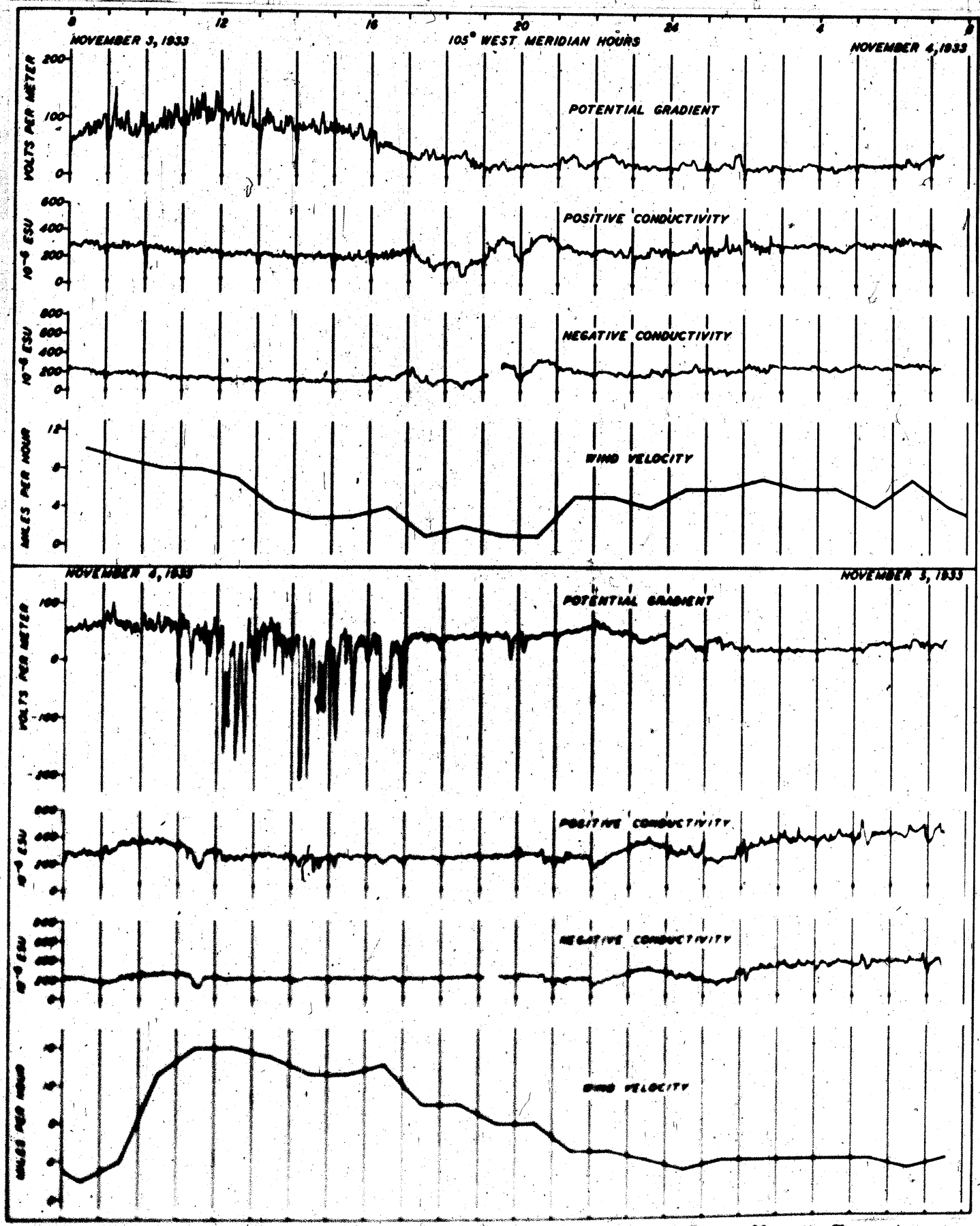

Fig. 13. Diurnal variation in atmospheric electric elements and wind velocity, Tucson Magnetic Observatory, November 3-4, quiet day. November 4-5, disturbed day

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Table 1. Four-year means for each hour of the day in each month for potential gradient (P.G.), positive conductivity (λ+), and negative conductivity (λ-), 1931 to 1934

105 west meridian hour	January			February			March			April			May			June		
	P.G.	λ+	λ-	P.G.	λ+	λ-	P.G.	λ+	λ-	P.G.	λ+	λ-	P.G.	λ+	λ-	P.G.	λ+	λ-
0- 1	33	230	225	34	240	230	28	270	266	29	274	272	32	289	283	32	292	290
1- 2	31	246	243	31	251	243	28	286	281	26	284	284	26	306	306	28	308	306
2- 3	30	258	253	29	271	264	27	298	292	24	302	302	24	323	322	24	326	326
3- 4	29	270	267	30	278	272	27	306	301	24	321	322	22	336	334	22	342	343
4- 5	33	276	274	32	286	278	29	316	308	26	327	329	22	358	354	22	356	361
5- 6	34	288	284	34	281	270	31	318	305	28	338	339	24	364	365	23	372	376
6- 7	36	278	272	38	275	258	34	320	311	33	351	346	34	364	346	34	362	349
7- 8	38	267	255	45	268	248	46	309	289	50	306	288	47	316	295	48	298	286
8- 9	54	255	232	62	252	220	60	280	246	61	272	248	59	270	250	59	260	249
9-10	67	238	210	72	233	203	70	247	213	69	240	220	64	242	225	63	234	224
10-11	75	219	193	83	210	180	76	226	200	73	216	200	66	218	205	68	209	199
11-12	82	199	177	86	197	173	80	209	185	72	199	191	67	186	184	68	193	189
12-13	83	189	172	84	185	163	82	188	171	72	185	181	64	170	168	65	172	173
13-14	80	178	162	82	174	156	78	171	160	66	173	173	58	152	154	62	166	169
14-15	74	170	158	73	166	154	68	164	157	61	166	166	55	151	154	60	162	166
15-16	64	167	161	64	172	162	59	172	169	54	169	172	51	163	172	56	163	172
16-17	54	177	174	54	180	175	51	190	190	50	177	181	48	173	180	54	182	191
17-18	47	170	166	48	186	184	47	210	214	46	194	200	46	192	202	50	198	214
18-19	43	164	161	46	174	170	41	212	212	42	207	215	45	206	216	50	215	224
19-20	36	174	172	40	179	174	38	200	196	39	199	199	43	212	221	45	232	238
20-21	32	197	192	34	190	184	34	208	203	35	203	203	36	214	214	40	226	230
21-22	32	205	202	34	205	198	30	230	226	29	228	230	35	230	231	37	229	231
22-23	32	216	208	32	222	215	28	251	249	29	257	259	34	259	255	34	261	259
23-24	32	228	222	28	229	228	27	264	260	29	267	268	34	280	278	34	272	273
Mean	48	219	210	50	221	208	47	244	234	44	244	241	43	249	246	45	251	252

105 west meridian hour	July			August			September			October			November			December		
	P.G.	λ+	λ-	P.G.	λ+	λ-	P.G.	λ+	λ-	P.G.	λ+	λ-	P.G.	λ+	λ-	P.G.	λ+	λ-
0- 1	31	279	266	29	316	296	24	327	314	27	293	288	31	264	254	32	248	236
1- 2	32	282	269	32	330	307	25	340	324	26	313	306	28	278	271	32	258	248
2- 3	29	299	276	26	338	322	25	348	336	24	334	330	29	292	284	32	269	252
3- 4	27	304	282	26	344	325	22	360	347	24	349	344	28	304	294	31	274	265
4- 5	26	306	289	25	348	330	22	374	357	24	354	348	29	314	308	34	282	272
5- 6	27	312	296	26	356	339	22	384	366	26	362	352	31	324	310	36	287	278
6- 7	34	318	296	32	361	331	28	386	370	28	359	354	32	324	310	37	284	273
7- 8	46	280	244	44	304	279	40	352	326	42	341	323	43	306	288	40	279	266
8- 9	57	246	224	61	273	249	51	306	277	53	309	284	58	279	260	56	268	240
9-10	65	216	194	69	254	227	61	267	242	64	274	246	69	260	228	70	253	220
10-11	70	196	179	67	233	211	69	246	219	72	247	220	75	236	211	84	224	190
11-12	70	191	183	74	208	194	74	221	200	80	224	197	79	224	196	90	206	174
12-13	68	186	181	81	194	171	76	202	184	80	196	179	77	212	192	92	193	161
13-14	71	175	172	77	178	167	74	194	181	78	178	166	72	202	186	87	179	152
14-15	65	166	168	74	168	160	67	188	181	67	177	167	63	196	182	78	173	153
15-16	61	168	170	66	170	174	61	189	184	66	183	178	56	197	186	68	172	157
16-17	59	178	178	57	186	186	56	193	190	53	196	196	47	206	200	58	180	169
17-18	54	191	190	53	200	200	49	212	210	43	204	203	41	198	190	50	185	158
18-19	49	211	204	47	220	220	49	226	226	37	204	206	36	189	182	46	159	151
19-20	42	227	224	36	240	244	34	226	226	32	216	212	31	212	206	38	175	168
20-21	36	234	238	33	258	260	29	237	252	27	244	244	31	236	234	34	192	186
21-22	31	250	244	29	270	262	26	250	272	26	263	263	30	244	238	33	202	194
22-23	31	258	256	30	284	276	25	267	280	25	280	280	28	250	242	32	214	206
23-24	31	264	264	30	306	288	24	320	306	25	277	276	27	264	254	30	231	222
Mean	46	230	226	46	266	251	43	270	256	43	261	256	45	250	237	51	223	208

Table 2. Four-year means of computed air-earth current density, 1931 to 1934

105° west meridian hour	January in 10^{-7} esu	July in 10^{-7} esu	105° west meridian hour	January in 10^{-7} esu	July in 10^{-7} esu
0- 1	5.0	5.6	13-14	9.1	8.2
1- 2	5.1	5.9	14-15	8.1	7.2
2- 3	5.1	5.6	15-16	7.0	6.8
3- 4	5.2	5.3	16-17	6.3	6.9
4- 5	6.0	5.2	17-18	5.3	6.9
5- 6	6.5	5.5	18-19	4.7	6.8
6- 7	6.6	7.0	19-20	4.2	6.5
7- 8	6.6	8.0	20-21	4.1	5.6
8- 9	8.8	8.9	21-22	4.3	5.1
9-10	10.0	8.9	22-23	4.5	5.3
10-11	10.3	8.7	23-24	4.8	5.4
11-12	10.3	8.7			
12-13	10.0	8.3	Mean	6.6	6.8

Table 3. Mean values of atmospheric-electric elements at certain land stations

Point	Station	P.G. V/m	$\lambda+ + \lambda-$ in 10^{-4} esu	Altitude km	Date
1	Pacific Ocean	171	1.92	0.00	Sep., 1929
2	Vicinity of Washington, D. C.	96	2.16	.07	Oct.-Nov., 1930
3	College, Alaska	89	3.10	.180	Aug., 1935
4	Watheroo Magnetic Observatory	86	3.85	.244	Jan.-Dec., 1929
5	Penalosa, Kansas	70	.....	.519	Aug., 1929
6	Tucson, Arizona	46	4.90	.770	Aug., 1931-1934
7	Lakin, Kansas	56	7.0	.910	June, 1918
8	Rapid City, South Dakota	83	6.0	1.200	June-July, 1935
9	Huancayo Magnetic Observatory	81	8.7	3.300	Aug.-Sep., 1929

Table 4. Air-earth current density for stations at various altitudes

Altitude in kilometers	Air-earth current density in 10^{-16} amperes			Columnar resistance of free atmosphere from Explorer II in 10^{20} ohms
	Calculated	Observed	Calculated	
	i_e	i_o	i'_e	R
0.0	2.75	3.87	3.53	10.5
1.2	4.12	4.12	4.13	7.0
2.0	5.44	4.43	4.80	5.2
3.0	7.21	4.83	4.83	4.0
4.0	9.61	5.20	5.13	3.0

Table 5. Monthly mean values[a] of meteorological elements at Davis-Monthan Field, Tucson, Arizona, 1931 to 1934

Month	Air temperature Maximum	Air temperature Minimum	Relative Humidity[b]	Average Wind Velocity	Precipitation	No. of days of Precipitation
1931	°C	°C	%	miles/hr		
Jan	64.6	35.5	47.0	6.3	0.52	4
Feb	65.0	41.6	63.8	5.6	3.12	12
Mar	75.3	41.1	35.2	6.8	0.02	1
Apr	84.2	51.4	34.0	6.7	0.37	8
May	93.9	56.6	23.0	5.4	2.16	3
Jun	100.2	65.9	25.2	6.6	0.41	8
Jul	103.3	73.5	39.6	5.4	1.08	14
Aug	95.3	69.1	55.0	6.2	4.22	23
Sep	96.6	65.9	49.4	5.2	0.85	14
Oct	88.7	52.9	34.4	4.7	0.10	3
Nov	67.4	41.1	57.0	4.4	4.13	10
Dec	62.5	33.5	51.7	5.1	0.49	3
1932						
Jan	57.6	28.6	57.0	5.0	0.81	4
Feb	67.7	46.1	55.0	5.3	1.25	8
Mar	72.5	42.4	38.6	6.1	0.42	3
Apr	82.8	46.5	26.2	5.7	0.23	3
May	90.7	54.5	17.7	6.2	T	4
Jun	97.4	62.8	18.0	4.9	0.06	3
Jul	94.5	72.4	42.6	4.8	2.41	15
Aug	96.3	71.6	42.5	4.4	1.83	13
Sep	96.1	67.0	28.6	6.0	0.21	5
Oct	83.1	54.6	40.4	5.0	1.11	6
Nov	73.6	45.6	24.2	4.9	0.00	0
Dec	59.1	36.0	57.8	4.1	1.90	9
1933						
Jan	62.1	35.3	50.8	3.9	1.00	8
Feb	63.3	33.5	48.8	4.8	0.15	4
Mar	70.6	42.3	23.4	5.1	0.00	0
Apr	77.7	48.0	25.3	6.8	0.14	6
May	86.0	53.1	18.8	6.3	0.00	0
Jun	99.0	68.5	22.3	6.3	T	5
Jul	101.0	73.8	35.0	6.2	2.38	20
Aug	96.5	70.7	41.4	5.8	1.74	15
Sep	95.4	69.4	46.4	3.9	1.52	12
Oct	87.1	59.6	40.0	5.0	1.40	9
Nov	70.6	44.0	30.1	5.5	0.94	5
Dec	60.3	38.5	43.3	3.9	0.20	2
1934						
Jan	64.0	36.0	48.4	5.2	0.28	4
Feb	71.0	44.3	42.4	5.1	0.32	6
Mar	81.3	50.3	30.3	5.6	0.46	4
Apr	85.0	56.5	------	5.9	0.08	6
May	96.4	63.4	------	6.1	0.10	4
Jun	98.0	64.3	------	6.0	0.16	2
Jul	103.3	75.3	------	6.3	1.20	10
Aug	97.1	72.0	------	5.9	1.30	10
Sep	97.4	66.5	------	5.7	1.10	1
Oct	91.7	56.0	------	5.8	T	1
Nov	73.0	44.0	------	5.0	0.31	4
Dec	67.6	41.8	------	5.1	2.04	6

[a] Except for precipitation which is given as monthly total
[b] Mean of 5:30 A.M. and 4:30 P.M. observations

TABLE 6

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

JANUARY 1931

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED. 105° WEST MERIDIAN MEAN TIME)

JANUARY 1931

DAY	*	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X	X	229	272	291	291	277	255	268	267	232	162	203	192	184	157	143	141	155	111	125	205	224	180	179	196	206	0
2	X	X		228	240	261	275	253	272	267	250	254	210	165	187	188	223	186	205	255	210	234	160	93	122	147	174	211	1
3				209	266	299	332	...	...	...	...	57	...	...	192	306	140	127	118	200	177	122	46	69	219	206	211	...	2
4				118	112	167	211	206	219	182	185	180	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0
5				...	...	...	...	...	...	...	...	...	...	224	242	239	223	220	241	261	260	236	247	285	260	273	260	...	0
6	X			273	279	242	268	265	266	254	148	186	223	229	136	168	186	197	210	249	180	228	218	150	204	142	154	211	1
7	X	X	X	181	232	309	317	283	327	322	263	285	258	254	236	222	206	187	177	138	136	112	166	180	291	271	250	233	0
8	X	X		297	268	294	284	315	303	314	236	172	191	249	145	130	185	218	229	246	260	234	197	149	265	242	236	236	0
9	X	X	X	297	209	268	244	261	261	268	252	240	193	179	156	141	100	118	132	143	131	111	129	137	118	126	149	180	0
10	X	X		154	166	174	192	179	192	174	186	193	197	199	166	144	126	104	[120]	181	168	173	161	198	185	180	167	170	0
11	X	X	X	193	198	181	162	181	183	211	176	212	167	159	157	112	92	100	125	163	172	124	121	193	179	216	229	163	0
12	X	X	X	205	247	228	204	235	248	232	219	202	184	180	149	180	157	81	112	117	120	130	155	151	166	192	200	179	0
13	X	X		199	215	249	262	260	270	241	229	162	188	216	278	264	244	236	260	157	192	261	197	174	241	323	311	235	0
14				354	347	...	...	...	316	262	348	337	268	284	312	265	192	140	142	156	162	167	161	183	219	200	198	...	0
15	X	X	X	187	218	233	245	257	303	251	206	235	179	12	118	111	112	85	92	110	136	143	132	165	161	156	188	173	0
16	X	X	X	198	215	198	229	223	255	242	226	255	239	198	158	136	123	108	119	156	156	90	165	193	214	239	229	190	0
17	X	X		258	270	266	284	290	296	304	294	267	278	225	171	148	78	139	164	183	182	151	112	136	95	149	216	206	0
18				205	241	271	271	286	274	283	309	246	221	191	193	143	128	156	149	173	...	...	...	...	...	...	...	...	0
19				...	...	...	...	...	...	...	...	...	...	...	...	160	120	136	144	184	181	127	134	172	205	249	228	...	0
20	X	X		259	251	236	287	262	270	300	247	122	138	180	185	217	239	242	244	241	271	277	282	329	316	320	336	252	0
21				337	307	320	368	368	374	377	360	385	309	214	189	190	158	121	100	91	124	136	146	193	...	...	...	...	0
22				...	...	...	...	...	...	...	...	...	...	...	151	201	...	138	142	144	215	149	155	253	238	260	254	...	0
23	X	X	X	274	306	295	310	321	355	342	343	282	270	264	212	216	234	207	186	182	192	225	203	250	286	277	261	262	0
24	X	X	X	269	270	271	306	323	318	310	283	300	212	152	122	153	167	149	172	153	148	215	216	223	229	228	212	224	0
25	X	X		259	299	318	296	311	278	306	245	295	249	192	153	158	156	171	207	191	172	193	250	306	312	285	285	244	1
26	X			279	231	192	267	269	259	274	274	260	275	176	172	182	132	129	223	239	239	246	261	277	278	283	298	238	1
27	X	X	X	298	314	326	311	320	319	317	323	321	319	310	294	286	296	285	245	242	276	316	274	275	282	331	345	301	1
28				359	345	345	329	304	300	309	317	316	320	...	...	181	157	175	205	207	234	252	259	249	251	270	276	...	0
29	X	X		266	263	286	283	288	278	266	255	224	219	215	194	179	183	202	223	241	237	218	238	260	243	267	241	240	1
30	X			272	310	323	328	332	352	363	351	332	304	261	252	216	180	190	155	177	191	214	260	233	206	261	210	261	1
31				202	239	229	276	251	255	252	239	262	180	124	143	168	221	254	271	264	236	206	284	288	283	230	243	...	0
MEANS *				240	251	259	269	272	279	277	251	235	222	206	183	178	170	166	178	187	185	191	195	205	218	229	233	220	
MEANS †				234	247	260	266	269	277	274	250	231	214	204	182	176	171	164	175	181	182	185	187	202	216	229	235	217	
MEANS ‡				229	248	260	262	268	282	276	256	246	218	202	179	174	164	146	150	156	158	159	177	199	211	222	226	211	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 1

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY				0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	DAYS OMIT
1				268	318	324	338	315	287	300	282	235	138	183	180	162	147	135	130	166	122	125	219	240	189	214	209	217	0
2				252	265	300	317	278	284	287	271	268	206	155	168	191	282	202	222	298	231	282	168	91	120	153	183	228	0
3				288	281	329	364	421	375	393	382	162	231	281	300	315	329	268	150	217	117	122	50	19	184	199	186	...	2
4				101	91	152	181	199	202	158	143	138	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0
5				...	...	...	...	...	...	...	...	...	...	[212	235	236	233	222	249]	274	278	249	263	292	271	282	276	...	0
6	X			271	281	251	281	273	271	265	155	189	231	204	132	186	211	222	246	284	271	228	233	189	202	123	137	222	1
7	X	X	X	166	219	281	300	270	318	314	220	265	243	202	209	189	186	162	138	130	113	84	153	166	287	265	263	214	0
8	X	X		301	244	271	282	312	289	312	251	170	215	201	113	90	145	186	191	209	255	248	188	142	287	233	236	224	0
9	X	X	X	255	194	268	268	267	236	254	233	217	140	142	122	130	98	115	125	152	122	101	118	128	105	120	138	168	0
10	X	X		140	155	170	175	148	173	166	171	157	160	142	122	106	101	69	[83]	168	163	170	155	202	178	171	153	150	0
11	X	X	X	184	188	168	138	165	162	188	148	73	120	132	128	91	69	76	118	157	173	122	117	191	176	202	222	146	0
12	X	X	X	204	248	219	202	223	238	233	214	170	150	140	112	135	128	69	98	110	125	128	153	153	153	202	188	166	0
13	X	X		181	194	225	265	251	255	217	222	186	178	202	296	263	240	223	246	166	196	284	204	166	265	346	331	233	0
14				360	350	382	370	352	323	267	360	350	265	287	329	263	193	143	138	168	183	184	175	202	228	215	215	...	0
15	X	X	X	191	223	231	254	262	314	255	208	219	155	105	115	106	110	86	86	118	152	143	138	168	157	153	201	173	0
16	X	X	X	201	219	207	233	235	265	268	231	257	219	170	122	117	95	91	105	150	138	95	163	189	212	240	235	186	0
17	X	X		260	270	270	284	289	292	300	268	235	231	189	135	120	71	125	157	181	173	150	103	118	71	125	215	193	0
18				191	241	262	252	281	271	282	296	204	206	152	160	123	118	150	152	186	198	155	115	175	170	222	246	...	0
19				212	230	300	314	287	300	312	285	296	219	188	196	148	123	137	148	188	189	132	123	173	204	263	235	...	0
20	X	X		262	233	233	282	251	262	287	223	112	127	157	138	202	246	263	252	249	284	298	300	344	332	344	355	251	0
21				349	320	340	390	360	393	402	373	384	295	198	166	163	138	110	91	88	118	127	135	201	207	186	251	...	0
22				274	260	306	346	324	387	357	360	343	215	166	137	171	168	123	138	143	209	152	152	252	215	267	259	...	0
23	X	X	X	279	324	312	315	346	372	355	375	284	241	240	212	231	241	219	201	188	217	249	223	270	318	303	279	275	0
24	X	X	X	295	292	295	318	334	349	341	293	317	219	140	110	138	147	123	165	163	150	235	241	223	241	233	215	232	0
25	X	X		263	303	323	301	329	282	312	235	296	231	180	148	138	150	188	225	202	170	204	265	332	334	309	312	251	1
26	X			[312	265	259	279	282	282	284	284	282	304	241	241	255	198	202	265	267	259	279	284	303	300	306]	314	273	2
27	X	X	X	307	326	331	317	329	326	321	327	329	338	[344	327	310	310]	298	252	255	300	343	287	289	300	347	353	315	1
28				370	350	346	332	315	310	310	318	332	340	303	265	193	157	186	215	222	249	265	268	267	267	282	285	...	0
29	X	X		279	270	298	287	298	282	276	265	[240	236	222	204	191	201	217	252	259	248	235	252]	279	249	278	251	253	1
30	X			284	314	343	332	326	357	363	361	337	293	262	248	217	171	171	166 }	153 }	189	217	268	252	220	225	189	261	1
31				191	233	268	254	252	...	...	...	220	158	113	133	155	206	254	278	267	248	220	314	309	282	220	230	...	0
MEANS *				245	254	266	274	275	281	231	249	230	208	188	171	170	169	164	177	192	193	201	202	211	224	233	237	221	
MEANS †				237	249	263	270	272	277	277	246	224	197	180	164	162	165	158	169	184	185	194	192	205	221	235	241	215	
MEANS ‡				233	254	264	266	275	287	283	253	237	196	180	164	161	153	137	142	159	161	162	181	202	214	228	230	209	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 8

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

JANUARY 1931

EXPRESSED IN VOLTS PER METER

JANUARY 1931

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY				0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	DISTURB. CODE
1	X	X	X	28	26	29	27	31	27	36	41	42	77	77	81	87	74	78	68	48	42	34	24	17	36	23	23	44	0
2	X	X		16	17	15	20	17	18	25	25	37	57	68	66	66	55	61	52	34	18	23	47	44	M23	34	26	36	1
3				M10	17	M 8	18	18	24	23	Z-	Z	Z	Z-	Z-	Z	Z	Z	Z	35	Z+	Z+	Z+	Z+	Z+	Z	79	..	2
4	X			112	100	64	79	68	62	75	66	86	84	124	163	213	190	141	110	82	55	137	120	100	119	123	116	107	0
5	X			117	106	81	87	68	65	59	69	79	[87	79	78	69	65	67	50]	38	31	35	30	32	24	22	28	61	0
6				25	44	35	28	28	28	41	{ M21	Z }	49	63	110	{ Z+	Z+	39 }	49	38	{ Z-	M15	M17	Z- }	34	58	51	..	1
7	X	X	X	45	41	30	32	44	48	42	48	62	80	87	82	84	89	79	79	76	57	39	50	41	35	31	38	56	0
8	X	X		44	61	37	44	44	41	43	54	73	85	76	105	134	93	85	63	45	22	31	37	51	32	34	31	57	0
9	X	X	X	38	34	34	41	48	40	43	42	72	98	114	99	92	95	109	90	78	87	88	73	51	62	68	52	69	0
10	X	X		48	50	44	40	55	54	45	55	75	88	100	116	106	109	150	[113]	63	28	22	23	27	38	57	34	64	0
11	X	X	X	53	44	55	45	44	50	47	64	123	107	109	120	143	162	131	93	70	57	52	38	34	25	38	38	73	0
12	X	X	X	42	38	40	39	48	44	45	50	79	102	109	129	113	119	127	103	86	69	35	32	38	34	44	62	68	0
13	X	X		45	46	38	44	42	43	47	46	65	105	106	78	78	73	69	62	62	34	37	48	35	37	41	44	55	0
14	X			38	40	34	38	47	55	71	49	52	73	76	58	63	68	80	64	44	28	42	50	36	31	51	52	52	0
15	X	X	X	31	32	30	30	39	38	41	51	89	106	120	120	113	90	89	77	64	43	52	30	34	30	30	28	59	0
16	X	X	X	27	28	27	24	30	34	24	26	41	50	70	103	106	110	108	87	80	66	42	33	27	23	32	33	51	0
17	X	X		30	38	27	30	31	27	35	38	54	60	76	103	116	130	78	79	74	69	79	84	91	70	62	30	63	0
18	X			42	31	35	38	28	25	30	29	42	69	90	86	103	101	71	62	53	49	47	28	25	22	29	27	50	0
19	X			35	24	24	28	25	28	27	31	47	75	86	89	116	113	104	79	63	58	59	39	38	30	31	31	53	0
20	X	X		37	27	34	37	43	42	44	57	146	124	104	105	83	56	58	58	48	35	34	34	30	34	28	30	55	0
21	X			34	38	38	29	28	30	27	24	30	49	71	82	88	89	81	92	72	61	41	28	33	34	26	23	48	0
22				26	34	24	21	21	21	22	27	..	..	95	96	76	83	80	81	73	54	44	30	23	27	27	28	..	0
23	X	X	X	24	28	24	26	25	24	24	27	48	54	58	67	57	53	62	45	23	17	23	23	21	21	15	15	33	0
24	X	X	X	17	17	17	17	18	22	25	21	23	39	63	85	71	57	58	41	41	31	21	24	27	27	34	26	34	0
25	X	X		24	25	23	24	25	28	31	32	37	53	76	86	81	62	37	44	42	48	28	23	28	30	28	30	39	1
26				[Z-	Z-	Z-	M16	M16	Z-	M22	M24	Z-	Z	Z	Z-	Z	Z	Z	Z-	Z	Z	Z	M18	32	32	M14]	30	..	2
27	X	X	X	28	34	34	M30	40	41	43	45	44	43	[M40	43	57	M31]	47	48	42	28	31	41	35	37	28	31	38	1
28	X			29	34	36	36	38	40	44	45	50	51	51	55	64	59	48	47	38	34	34	34	31	31	28	28	41	0
29	X	X		31	34	27	34	29	38	41	46	[M34	M37	M36	41	M13	21	M25	M 3	18	21	M10	24]	24	27	19	28	28	1
30				23	23	25	27	28	30	31	27	45	53	55	59	65	72	69	{ Z	Z }	27	24	25	23	31	Z+	Z+	..	1
31	X			37	30	24	28	38	38	27	34	52	83	113	92	69	63	55	49	44	45	52	38	35	35	35	36	48	0
MEANS #				40	39	35	36	38	38	40	43	61	74	84	90	92	86	81	68	55	44	43	41	38	36	38	36	53	16
MEANS †				33	34	31	32	36	37	38	43	64	76	83	90	89	82	81	67	55	43	38	38	36	34	36	33	51	
MEANS ‡				32	32	32	31	37	37	37	42	62	76	85	93	92	88	89	73	61	50	42	37	32	33	34	35	53	

DESIGNATIONS AND REMARKS:

#=ALL COMPLETE DAYS †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER }=DISTURBED BY BAD WEATHER

M=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT Z=INDETERMINATE IN MAGNITUDE AND SIGN Z+=INDETERMINATE POSITIVE VALUE Z-=INDETERMINATE NEGATIVE VALUE

TABLE 9

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN VOLTS PER METER

FEBRUARY 1931

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY	●	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	DAILY RANGE
1	N	N	N	38	36	24	25	25	40	48	31	52	62	66	66	78	80	62	N48	46	47	52	49	24	26	22	25	45	1
2	N	N	N	26	17	17	17	15	22	31	34	48	59	58	68	65	65	54	49	42	43	42	38	40	N32	N39	N34	40	1
3	N	N	N	43	40	42	36	38	35	44	47	49	48	48	51	57	55	64	65	42	25	18	21	24	22	28	32	41	0
4				31	34	29	28	Z-	Z-	Z	Z	Z-	Z	Z	Z	Z	Z+	65	132	Z+	Z	Z	55	51	55	40	41	..	2
5				38	32	32	Z-	27	Z	N26	75	86	79	96	75	84	80	67	38	46	51	41	38	25	25	27	25	..	1
6	X	X	X	24	22	18	18	21	30	35	30	47	66	92	113	90	79	76	70	56	45	37	33	21	36	24	27	46	0
7	X	X		25	30	38	33	34	42	49	40	53	55	(N32)	44	N36	41	53	N30	N18	25	33	47	39	18	24	23	36	1
8				24	17	21	N 4	Z	26	23	24	Z	48	59	62	67	58	48	48	50	38	31	25	20	18	23	27	..	1
9				24	27	25	27	26	27	31	33	53	84	148	126	72	56	48	..	..	..	..	..	..	..	..	..	..	.
10				..	..	..	..	..	..	..	34	63	53	65	89	70	63	53	49	44	39	30	31	27	24	21	24	..	.
11				21	19	25	21	34	28	30	29	49	54	51	61	51	44	47	38	21	16	N 6	-64	-31	Z-	Z-	Z-	..	2
12				Z	Z	-98	-94	-62	-96	Z-	N30	N26	Z-	Z	Z-	Z	Z	Z	41	41	Z	Z	46	66	44	30	Z	..	2
13				N18	N31	35	44	48	31	N35	53	N44	61	63	Z-	Z	42	55	Z	Z	Z	39	Z	Z	Z	Z	40	..	2
14				N83	Z-	38	40	44	49	52	60	81	75	77	73	63	99	Z+	Z	Z	Z-	Z-	Z	Z	Z-	Z	29	..	2
15				25	24	Z	N51	Z	Z	Z	Z	N 7	34	38	Z	Z-	Z-	Z+	Z	Z	Z	Z	41	48	Z	Z	Z-	..	2
16				N31	Z-	Z-	Z-	Z-	N34	46	62	70	71	79	[108	110	77	68]	64	58	59	54	44	66	89	100	68	..	2
17	X	X		76	51	52	54	50	55	64	83	78	80	93	96	118	120	108	110	76	62	103	107	103	91	119	87	85	0
18	X			97	79	71	60	85	84	79	86	106	116	147	207	169	122	99	86	76	74	62	55	N35	58	57	39	90	1
19	X			45	41	38	51	49	68	41	47	70	74	89	89	87	80	69	64	55	53	42	47	60	50	55	45	59	0
20	X			44	92	83	48	24	28	38	50	104	129	84	71	75	86	67	67	64	61	46	45	75	61	77	N86	67	1
21	X	X		82	40	31	26	39	28	36	47	55	72	84	96	89	92	70	56	54	51	31	30	44	76	25	34	54	0
22				41	28	34	31	21	25	28	26	44	49	65	76	86	93	(N62	Z-	Z	62	52	49	170	86	27	31	..	1
23	X	X	X	32	30	25	35	34	34	38	47	65	80	111	109	109	115	102	81	64	54	48	34	23	23	23	30	56	0
24	X	X	X	32	20	29	25	24	31	37	63	71	72	69	75	70	74	63	55	45	29	23	20	24	31	31	27	43	0
25				27	27	33	34	37	38	40	41	60	68	68	N51	N51	54	43	Z	Z	Z	Z	Z	Z	Z	Z	Z	..	2
26				Z	Z	20	29	28	31	53	N 7	N 2	N15	N14	-50	-82	N 1	-12	N 6	15	19	21	23	44	45	56	47	..	2
27				48	45	52	42	38	41	46	61	62	48	52	39	41	62	96	74	N16	49	N24	41	69	Z	Z	105	..	1
28	X	X		93	93	62	65	40	49	38	48	65	106	84	77	76	72	N58	45	55	57	43	32	38	43	50	45	60	1
29																													
30																													
31																													
MEANS ●				50	45	41	38	37	42	44	50	66	78	82	89	86	83	73	64	53	48	45	43	42	44	44	41	55	
MEANS †				46	38	34	33	32	36	42	47	58	70	74	80	79	79	71	61	50	43	43	41	38	40	38	36	50	
MEANS ‡				32	27	26	26	26	32	39	42	55	64	74	80	78	78	70	61	49	40	37	32	26	28	28	29	45	

DESIGNATIONS AND REMARKS:

●=ALL COMPLETE DAYS †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER ≷=DISTURBED BY BAD WEATHER

N=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT Z=INDETERMINATE IN MAGNITUDE AND SIGN Z+=INDETERMINATE POSITIVE VALUE Z-=INDETERMINATE NEGATIVE VALUE

TABLE 16

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

FEBRUARY 1931 — FEBRUARY 1931

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY	*	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X	X	212	223	295	341	369	268	267	316	256	268	266	258	171	115	172	220	246	244	197	193	172	219	216	170	236	1
2	X	X	X	319	370	347	348	346	327	326	266	273	256	239	220	216	210	208	193	189	186	210	220	232	232	244	242	260	1
3	X	X	X	255	255	273	310	325	349	302	270	267	267	251	193	229	184	183	181	166	197	256	249	258	230	226	264	248	0
4	X			269	290	303	313	169	90	170	115	151	196	124	138	94	131	143	115	104	96	80	115	132	138	162	158	157	2
5				186	217	218	176	249	175	229	117	150	168	137	175	115	...	117	170	196	188	209	256	311	295	335	362	...	1
6	X	X	X	377	383	397	371	393	368	270	290	234	248	141	131	151	138	117	126	118	137	126	136	138	126	130	170	217	0
7	X	X		197	203	211	220	232	234	255	268	244	240	290	267	277	268	238	229	287	284	266	198	108	186	266	365	243	1
8	X			380	377	364	396	371	371	360	347	276	325	302	245	278	246	255	275	208	270	290	205	220	230	277	360	301	1
9	X			335	289	282	238	256	255	242	253	230	150	79	79	90	101	104	104	121	123	99	115	133	137	138	132	170	.
10				196	174	180	186	195	244	215	217	209	...	115	80	107	118	174	238	270	198	312	281	273	253	321	268	...	.
11	X			312	338	415	425	401	406	437	438	329	319	282	244	292	322	290	293	321	319	354	302	321	238	137	267	325	2
12	X			166	156	171	151	196	220	227	262	246	177	156	166	102	133	234	240	256	147	153	191	232	258	271	247	198	2
13				266	282	278	277	278	271	232	223	209	244	215	126	186	245	...	...	189	186	235	138	234	99	161	242	...	2
14	X			234	148	244	246	237	247	220	201	191	197	186	177	174	144	154	147	132	224	232	230	238	140	244	284	203	2
15	X			302	313	244	267	168	97	183	138	233	255	244	213	115	136	197	125	170	90	97	206	186	115	89	209	183	2
16	X			255	230	71	15	138	244	258	245	220	203	177	73	101	166	161	184	174	177	201	204	121	77	101	133	164	2
17	X	X		190	176	191	197	246	258	268	240	249	252	188	188	141	102	80	91	154	171	79	79	90	89	80	87	159	0
18				95	111	120	121	128	144	141	140	140	143	102	69	88	102	...	...	97	95	93	81	93	99	77	99	...	1
19				115	115	130	125	174	216	197	216	164	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0
20				...	...	...	...	...	...	...	...	...	148	191	197	226	220	212	238	252	256	171	187	158	129	90	81	...	1
21	X	X		123	193	258	260	290	290	289	288	290	270	217	203	186	148	201	220	234	260	291	256	197	138	238	326	236	0
22	X			197	275	216	278	369	384	380	342	325	310	273	246	209	138	167	138	129	220	189	161	70	101	222	174	230	1
23	X	X	X	195	200	242	232	234	224	242	229	215	215	174	161	152	150	140	90	130	140	150	180	180	175	219	220	187	0
24	X	X	X	235	232	232	255	232	227	242	208	216	217	225	196	174	186	175	164	183	201	209	234	254	276	290	296	223	0
25	X			288	304	302	300	296	307	311	312	262	255	255	246	240	217	174	126	71	174	204	75	129	160	118	126	219	2
26	X			70	290	398	325	336	333	186	226	230	258	296	278	288	325	326	334	298	293	304	293	216	180	187	217	270	2
27				209	198	203	244	255	287	234	188	166	180	204	252	231	163	117	...	126	131	196	217	101	98	79	89	...	1
28	X	X		103	144	115	135	174	187	196	187	213	153	169	186	188	186	197	200	197	174	118	92	88	82	104	115	154	1
29																													
30																													
31																													
MEANS *				237	255	265	268	275	271	268	259	245	240	216	196	184	178	186	181	185	197	195	187	177	168	189	217	218	
MEANS †				217	238	256	267	284	273	266	256	246	239	216	200	188	169	171	171	190	199	190	184	172	175	201	226	216	
MEANS ‡				269	277	298	310	316	294	275	263	244	245	216	193	182	164	166	162	172	184	191	202	206	210	221	227	229	.

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE II

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

FEBRUARY 1931

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

FEBRUARY 1931

DAY	‡	†	#	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X	X	207	225	290	349	397	269	258	300	225	243	230	227	158	98	166	222	251	241	183	183	170	215	222	290	232	1
2	X	X	X	356	393	382	432	378	349	321	290	269	246	225	203	203	205	212	197	200	192	220	235	241	241	251	253	270	1
3	X	X	X	263	266	277	316	330	356	306	282	276	281	258	246	210	225	175	175	158	210	284	271	276	245	245	277	259	0
4	X			290	282	322	332	287	245	217	192	248	171	98	149	120	106	132	103	93	89	93	106	122	130	149	146	176	2
5				175	208	228	295	215	248	228	89	120	127	106	142	106	101	91	188	205	192	215	266	324	314	338	371	...	1
6	X	X	X	385	393	418	370	358	360	241	274	200	207	123	105	123	115	106	122	123	139	123	129	140	132	140	175	210	0
7	X	X		192	195	208	215	222	228	243	258	240	208	305	235	282	258	225	233	310	294	274	176	98	159	269	375	238	1
8	X			384	373	360	416	311	370	356	269	322	294	264	210	258	241	258	261	217	292	302	203	218	235	279	367	294	1
9	X			338	281	298	241	258	250	233	253	208	123	72	63	81	94	106	106	118	135	98	118	123	137	135	129	166	.
10				123	171	175	180	176	225	178	188	192	175	106	76	106	115	175	236	274	195	348	300	281	241	338	393	...	.
11	X			332	340	416	432	412	401	432	421	313	311	261	212	297	302	284	302	311	338	393	378	384	338	340	290	343	2
12	X			298	220	210	213	236	279	277	271	241	195	158	198	230	166	208	233	241	205	171	166	205	233	258	258	222	2
13				264	240	245	251	250	251	225	203	198	225	202	159	110	230	188	207	245	217	225	146	217	213	228	227	...	2
14	X			235	225	228	230	225	208	195	180	161	164	158	163	163	125	57	166	135	227	271	250	238	294	264	266	201	2
15	X			274	289	282	236	161	255	276	266	250	243	225	207	248	217	125	215	178	195	156	228	146	161	207	273	221	2
16	X			248	263	256	149	217	227	227	146	149	159	144	[68	88	158	159]	181	175	185	210	215	98	59	71	111	165	2
17	X	X		108	149	173	175	225	215	222	152	158	192	130	139	111	80	62	77	142	175	68	66	75	75	61	62	129	0
18				69	84	89	71	86	106	101	94	106	106	80	[58]	71	89	90	91	93	93	82	66	80	89	64	88	...	1
19				103	106	110	113	158	178	180	198	144	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0
20				...	...	...	...	...	...	...	...	...	110	166	195	230	215	225	253	263	271	193	152	137	120	71	71	...	1
21	X	X		98	176	250	295	274	274	273	274	268	212	175	175	171	140	192	217	240	274	306	245	210	120	230	322	224	0
22	X			200	261	207	258	342	367	365	329	314	279	228	212	180	122	170	205	175	218	193	144	59	88	220	166	221	1
23	X	X	X	183	190	233	228	223	197	220	203	180	156	127	123	122	115	127	86	122	139	142	175	181	175	213	217	170	0
24	X	X	X	222	213	233	258	218	222	228	197	176	205	208	195	175	180	170	158	180	208	220	256	268	286	306	316	221	0
25	X			303	322	316	310	306	322	324	329	273	258	271	266	253	227	183	127	122	233	241	164	125	255	241	71	239	2
26	X			105	310	399	314	316	294	164	243	248	269	294	327	360	353	359	349	308	290	298	269	200	144	166	188	274	2
27				195	180	183	210	218	273	210	170	132	159	171	236	215	149	94	108	137	111	195	203	89	101	71	77	...	1
28	X	X		80	106	91	106	156	146	142	144	171	122	158	180	185	188	208	210	207	176	122	80	88	79	96	106	139	1
29																													
30																													
31																													
MEANS #				241	261	278	278	279	278	263	251	233	216	196	186	191	177	175	188	191	212	208	188	175	181	208	222	220	
MEANS †				209	231	256	270	278	262	245	237	216	207	194	183	174	160	164	170	193	205	194	182	175	173	203	239	209	
MEANS ‡				269	280	306	326	317	292	262	258	221	223	195	183	165	156	158	160	172	188	195	208	213	216	230	255	227	

DESIGNATIONS AND REMARKS:

#=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 12

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

MARCH 1931 — EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT — MARCH 1931

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY	*	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X	X	136	139	127	127	131	138	121	121	142	155	210	183	123	151	165	175	209	256	234	216	209	250	258	281	177	0
2	X	X		287	306	304	359	345	222	281	310	222	95	157	289	292	281	281	284	277	299	300	293	296	290	293	317	278	0
3	X	X	X	329	320	315	284	359	376	378	360	293	245	175	259	268	256	256	255	195	237	220	220	267	316	372	378	289	0
4	X	X	X	346	329	395	367	396	376	328	289	287	256	220	155	115	108	106	171	160	166	183	148	233	268	278	285	249	1
5	X			290	255	277	277	268	260	243	271	231	232	[211	150	172	184	205	215	229	207]	145	145	255	270	284	284	232	1
6	X	X		261	220	256	248	244	256	222	167	180	167	109	73	79	76	81	79	95	115	109	93	126	108	123	146	151	1
7	X	X	X	149	172	166	179	189	205	201	217	211	163	157	161	146	113	99	118	127	145	149	132	144	121	99	121	154	0
8	X	X		178	215	228	285	281	244	211	240	195	214	[270	210	193	217	220	212	207	217]	244	256	246	261	278	295	232	1
9	X	X	X	311	290	296	246	259	259	268	285	305	288	287	287	271	257	251	249	210	231	148	184	223	214	244	254	253	1
10	X	X	X	274	301	307	282	281	307	295	326	292	256	240	226	216	160	113	154	198	254	232	138	195	187	232	232	237	0
11	X	X	X	271	285	320	342	360	342	318	327	322	254	209	211	232	232	227	156	157	203	238	168	195	299	293	310	261	0
12	X	X		312	378	364	373	390	257	378	387	288	292	268	267	256	246	198	146	272	281	253	198	195	232	272	294	283	0
13	X	X	X	394	359	366	351	378	392	348	373	326	314	290	248	150	136	242	255	260	267	293	259	256	195	244	326	290	1
14	X	X		303	329	381	404	400	403	401	373	342	305	238	183	175	193	175	151	157	146	133	155	136	152	180	95	246	1
15	X			171	180	175	167	154	161	171	183	[189	206	215	211	209	196	211	195	214	209	190	206]	216	246	234	238	198	1
16	X			211	220	223	215	210	209	203	188	189	[179	184	207]	207	205	220	232	244	257	282	276	277	284	309	332	232	1
17	X	X	X	328	354	311	311	321	340	361	311	274	185	151	101	76	75	73	108	136	157	205	169	184	216	189	220	215	0
18	X	X		232	234	303	290	279	268	289	311	256	227	217	204	194	121	121	183	220	231	259	212	244	121	220	238	228	0
19	X	X		267	329	306	378	333	378	368	357	344	256	192	133	211	[209	187	169	122	172]	234	224	256	293	272	311	263	1
20	X	X		320	336	356	350	342	320	304	257	220	244	240	195	175	161	[228	228	223	106]	125	169	169	195	192	195	235	1
21	X	X	X	238	246	268	289	326	292	305	303	239	157	189	183	139	133	114	146	188	214	189	139	168	179	172	215	210	0
22	X	X	X	242	245	282	303	221	292	321	301	220	179	157	169	134	100	[104	154	168	171]	183	137	108	177	278	283	205	1
23	X	X	X	251	281	303	321	305	312	314	307	262	190	207	163	163	169	169	157	156	184	226	242	272	180	240	248	234	1
24	X	X	X	292	332	314	317	327	305	323	314	290	262	240	223	210	163	117	145	201	226	238	220	295	294	354	366	265	1
25	X			317	327	317	204	221	171	212	253	220	209	≷185	157	149	122	133	184	264≷	268	189	104	148	238	287	299	216	2
26	X			314	295	305	303	290	273	257	[171	133	133	62	51	62	83	36	121	174	220	259]	277	232	171	107	133	186	2
27	X	X	X	178	248	287	326	342	366	381	381	305	270	267	205	159	133	136	156	187	205	233	207	157	198	260	307	246	0
28	X	X	X	318	329	334	342	361	370	342	268	251	229	229	232	229	161	107	137	188	244	256	206	194	295	305	315	260	0
29	X			389	390	349	366	427	401	412	389	293	264	238	[221	183	184	162	172	174	207	201]	209	210	248	273	294	277	2
30	X	X	X	337	354	351	378	376	382	383	373	282	246	207	163	131	155	[169	121	89]	106	131	143	187	195	161	183	233	1
31	X	X	X	209	234	253	256	283	288	305	293	235	203	171	152	109	109	107	113	113	128	123	149	185	185	192	201	192	0
MEANS *				271	285	294	298	303	296	298	291	252	222	206	189	175	164	162	172	188	204	207	190	209	222	242	258	233	
MEANS †				268	287	298	308	313	308	310	302	262	226	212	195	178	165	162	169	181	198	206	187	206	217	240	257	236	
MEANS ‡				267	283	291	295	307	314	311	303	267	227	212	195	169	154	150	163	173	200	205	181	204	222	245	266	234	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION ≷=DISTURBED BY BAD WEATHER

TABLE 18

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

MARCH 1931

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

MARCH 1931

DAY	*	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X	X	117	124	111	106	100	108	97	73	82	97	151	151	109	138	154	165	191	232	221	210	200	232	253	273	154	0
2	X	X		265	286	294	350	326	212	278	293	196	75	126	288	289	286	288	296	288	306	298	298	303	301	299	317	273	0
3	X	X	X	330	319	317	276	353	372	381	356	266	221	145	251	[illegible]	[illegible]	265	250	205	254	246	236	270	332	387	394	290	0
4	X	X	X	365	334	409	386	403	381	330	274	253	219	191	126	106	102	111	189	181	182	207	152	248	283	288	299	251	1
5	X			306	268	278	285	285	270	251	265	234	238	⌈ 217	158	217	222	238	238	251	219 ⌋	142	168	268	303	316	306	248	1
6	X	X		266	221	254	266	261	263	226	172	182	172	111	75	77	77	77	84	97	111	111	89	126	108	122	133	153	1
7	X	X	X	129	168	167	168	175	172	182	205	182	128	129	129	124	93	93	113	128	147	144	126	142	113	84	113	140	0
8	X	X		175	208	227	304	273	241	172	219	129	205	⌈ 286	234	212	232	238	231	224	234 ⌋	265	265	268	281	291	314	239	1
9	X	X	X	327	309	271	268	266	271	285	303	324	303	314	306	306	294	276	268	226	258	147	210	234	227	270	276	272	1
10	X	X	X	301	322	338	299	301	343	301	326	271	239	219	217	217	149	108	149	200	283	268	124	191	182	241	246	243	0
11	X	X	X	301	308	338	356	389	369	334	340	304	217	186	188	232	236	226	165	168	219	261	179	208	316	317	337	271	0
12	X	X		314	403	378	403	424	260	391	397	263	281	234	246	258	268	217	159	316	319	260	193	202	236	273	304	292	0
13	X	X	X	365	376	383	367	397	403	372	386	299	281	285	253	147	133	253	285	301	308	322	266	285	196	258	246	299	1
14	X	X		326	338	411	420	412	423	415	373	330	280	234	182	168	191	181	154	174	158	136	165	147	156	186	129	254	1
15	X			195	198	184	168	156	156	165	184	⌈ 202	222	221	217	222	212	219	217	229	222	200	217 ⌋	226	254	243	246	207	1
16	X			219	232	234	219	219	217	208	196	189	⌈ 188	198	215 ⌋	217	214	222	234	243	261	289	299	289	299	334	350	241	1
17	X	X	X	337	365	334	324	251	358	386	321	251	165	138	93	78	75	67	102	133	159	219	186	182	217	184	212	214	0
18	X	X		234	222	314	301	280	276	303	317	238	186	168	179	195	115	122	195	243	261	289	224	261	115	212	231	228	0
19	X	X		260	343	309	381	337	380	383	364	330	236	188	128	229	⌈ 234	217	219	149	186 ⌋	231	224	281	317	291	335	273	1
20	X	X		345	365	378	356	364	329	301	234	184	221	232	174	177	161	⌈ 270	268	253	115 ⌋	129	177	174	212	200	205	243	1
21	X	X	X	241	258	281	306	345	294	304	311	215	147	179	181	136	138	117	152	217	248	203	151	149	179	181	232	215	0
22	X	X	X	260	263	301	327	224	311	343	314	202	161	145	163	140	109	⌈ 115	184	202	208 ⌋	208	142	111	186	303	309	218	1
23	X	X	X	285	312	334	356	335	329	342	314	243	170	195	158	172	198	203	188	184	217	265	261	319	182	253	265	253	1
24	X	X	X	312	358	337	337	356	334	351	314	281	253	246	229	231	182	124	149	222	238	241	208	317	316	381	404	280	1
25	X			342	350	342	251	254	274	248	263	223	212	⌈ 212	172	128	167	198	182	278 ⌋	271	181	99	135	226	288	288	233	2
26	X			303	286	303	308	285	261	243	⌈ 151	135	177	126	84	100	196	191	239	258	268	303 ⌋	291	250	182	102	129	215	2
27	X	X	X	186	263	299	338	351	378	392	358	274	226	244	188	138	117	129	158	182	203	232	193	147	188	270	317	240	0
28	X	X	X	329	338	343	361	384	369	346	258	229	191	195	219	234	159	100	140	189	276	276	222	186	319	330	340	264	0
29	X			412	414	365	389	450	411	420	373	314	281	263	⌈ 241	195	214	215	219	236	260	253 ⌋	246	217	274	301	309	303	2
30	X	X	X	361	380	375	387	394	398	376	369	268	231	181	156	122	147	⌈ 182	144	106 ⌋	120	144	147	191	214	168	182	239	1
31	X	X	X	214	244	263	271	298	312	317	285	217	167	142	135	93	99	102	120	131	135	124	142	191	193	186	217	192	0
MEANS *				282	296	306	311	311	306	305	287	236	206	197	185	179	175	178	189	207	222	220	197	217	230	252	266	240	
MEANS †				279	297	311	321	320	315	316	299	241	203	195	186	179	168	169	181	196	215	218	192	213	224	249	265	240	
MEANS ‡				280	297	306	308	313	324	320	300	245	201	193	185	169	155	154	172	186	217	219	186	210	228	256	274	237	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 14

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

MARCH 1931

EXPRESSED IN VOLTS PER METER

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

MARCH 1931

DAY	*	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	DISTURB. FACTOR
1	X	X	X	71	64	66	58	64	93	94	118	123	123	94	96	117	99	80	72	64	48	31	27	38	33	32	27	[illegible]	0
2	X	X		29	31	27	26	30	45	41	43	79	169	122	67	68	63	57	53	48	42	39	44	41	38	38	38	53	0
3	X	X	X	31	33	34	34	31	29	27	35	56	82	93	71	61	60	54	55	45	42	27	21	23	26	22	24	42	0
4	X	X	X	19	19	24	19	18	20	36	39	55	62	72	97	104	93	N56	51	43	45	30	27	23	20	21	21	42	0
5				26	21	18	22	22	27	24	34	45	54	⌈ 52	N38	z	z	z	[illegible]	[illegible]	N35 ⌋	42	47	33	33	33	36	..	[illegible]
6	X	X		37	44	44	50	38	48	55	73	N60	50	93	111	106	99	77	55	61	64	56	58	58	38	48	50	61	1
7	X	X	X	44	48	41	36	47	41	43	65	77	109	95	104	104	110	112	112	86	73	72	72	60	54	51	43	71	0
8	X	X		48	37	40	41	42	44	N49	58	127	106	⌈ N49	N29	N54	N55	N41	N41	N31	38 ⌋	43	42	48	48	45	38	50	1
9	X	X	X	40	48	50	58	63	60	61	60	55	58	54	53	N36	54	48	47	41	31	30	29	30	18	20	22	44	1
10	X	X	X	19	28	32	27	21	21	32	32	44	55	64	75	70	82	83	68	55	47	32	41	34	26	19	21	42	0
11	X	X	X	18	21	19	22	27	27	35	43	48	68	79	76	65	67	73	72	62	51	31	31	28	17	19	21	42	0
12	X	X		21	26	29	25	29	63	27	34	48	57	65	73	68	62	53	52	46	41	44	47	43	29	24	30	43	0
13	X	X	X	22	21	20	21	18	28	24	33	47	56	65	69	82	72	57	N45	48	45	41	30	47	44	34	25	41	1
14	X	X		21	21	21	18	23	23	21	33	44	56	77	86	82	69	62	62	N45	51	52	38	30	N19	30	Z22	42	1
15				N13	41	49	48	N30	51	62	52	⌈ N27	z	N34	N40	N25	z	z	z-	N22	N28	26	43 ⌋	48	52	55	51	..	1
16				N37	41	44	45	53	69	80	79	75	⌈ z	z	67 ⌋	74	65	66	60	58	52	44	27	40	34	20	27	..	1
17	X	X	X	24	22	17	18	20	30	27	38	53	68	94	11±	104	109	106	91	90	74	54	41	31	33	39	27	55	0
18	X	X		33	25	36	28	35	28	28	35	62	82	92	84	78	80	70	64	55	50	36	31	31	72	40	35	50	0
19	X	X		28	27	31	28	23	26	26	32	44	72	84	93	69	⌈ N55	N40	-9	N23	N34 ⌋	46	52	24	26	19	21	38	1
20	X	X		23	22	24	24	30	31	38	63	77	78	69	82	82	79	⌈ N34	51	49	N50 ⌋	60	48	31	27	23	23	47	1
21	X	X	X	24	26	22	22	27	34	30	44	62	84	83	69	77	66	62	50	42	42	42	34	25	32	22	19	43	0
22	X	X	X	24	20	17	17	42	28	28	36	58	69	70	61	58	59	⌈ 43	N30	N23	32 ⌋	37	39	36	26	23	17	37	1
23	X	X	X	18	18	19	18	18	23	28	36	58	73	76	76	76	54	42	44	44	45	32	24	24	N31	32	19	39	1
24	X	X	X	16	21	17	17	19	21	26	39	45	51	50	52	51	48	N46	41	N22	34	31	34	24	21	17	17	32	1
25				34	21	21	Z-	Z-	Z-	Z-	43	46	43	≷ z	z	z	z	z	z	z ≶	48	72	107	82	...	..	..	..	2
26				..	..	..	..	..	..	..	⌈ 81	Z-	z	z	z	z	z	z	z	z	41 ⌋	38	39	38	60	39	..	2
27	X	X	X	39	28	27	26	25	27	29	43	68	75	72	92	102	82	77	67	67	62	56	56	47	34	27	34	53	0
28	X	X	X	39	31	24	26	24	26	27	41	62	76	81	92	69	74	65	50	43	35	38	34	35	35	31	25	45	0
29				24	18	21	19	16	22	30	47	60	65	53	⌈ N42	N31	z	z	z	z-	z-	z ⌋	38	29	31	30	31	..	2
30	X	X	X	31	26	20	29	25	29	31	41	56	56	80	82	86	68	⌈ N42	N33	42 ⌋	50	41	41	39	18	27	31	43	1
31	X	X	X	28	27	26	23	25	25	26	41	62	76	81	92	106	91	80	60	46	58	72	53	44	24	28	29	51	0
MEANS *				30	29	29	28	31	35	36	46	63	76	78	80	79	74	62	54	49	47	43	40	36	32	29	27	47	-
MEANS †				30	29	29	28	31	35	36	46	63	76	78	80	79	74	62	54	49	47	43	40	36	32	29	27	47	
MEANS ‡				30	29	27	28	30	33	36	46	61	73	77	81	80	76	66	58	51	48	41	37	34	29	27	25	47	

DESIGNATIONS AND REMARKS:

*=ALL COMPLETE DAYS †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER ≷=DISTURBED BY BAD WEATHER

N=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT Z=INDETERMINATE IN MAGNITUDE AND SIGN Z+=INDETERMINATE POSITIVE VALUE Z-=INDETERMINATE NEGATIVE VALUE

TABLE 18

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN VOLTS PER METER

APRIL 1931 — APRIL 1931

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY				0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	DISTURB. CODE
1	X	X	X	27	27	25	23	35	32	38	62	75	82	96	93	92	91	73	52	43	42	43	40	34	25	22	20	50	0
2				17	20	19	20	23	19	25	27	35	⌈N44	N35	N27	N22	Z	Z	Z	Z	N21⌋	38	35	31	23	19	36	..	2
3	X	X		17	14	14	15	17	17	21	31	38	44	43	40	⌈N36	N30	N20	N26⌋	31	31	30	28	27	27	29	29	27	1
4	X	X		22	19	16	18	25	25	27	46	52	70	81	N56	47	52	47	51	49	39	35	31	N 3	N11	N14	38	36	2
5	X	X		37	35	33	35	N24	-8	N31	35	⌈N22	N26	N28	N16	N26	N21⌋	31	35	34	34	38	31	30	32	31	24	28	1
6	X	X	X	21	26	21	24	28	22	38	45	47	50	46	46	53	50	58	48	38	21	16	19	17	17	18	21	33	0
7	X	X		21	26	18	19	22	24	28	43	55	63	64	N45	N35	N27	N15	N23	N16	N31	34	38	29	29	26	27	32	1
8				24	21	20	18	23	21	22	27	51	67	66	⌈N36	Z	Z	Z	Z	Z-	Z-	N24⌋	42	36	32	34	36	..	2
9	X	X	X	32	27	22	23	24	24	30	48	67	67	81	70	80	78	65	55	44	45	38	29	30	24	23	22	14	0
10	X	X	X	23	17	18	17	17	21	27	46	54	58	70	58	62	64	72	58	51	41	27	24	23	20	26	25	38	0
11	X	X		36	40	37	36	27	44	55	50	56	⌈N42	-7	-1	N43⌋	83	73	66	57	N41	39	22	22	31	35	28	40	1
12				32	18	8-	2	Z	Z+	Z+	57	57	51	66	≷N31	47	Z-	Z	Z+	41≷	46	34	40	63	48	30	38	..	1
13	X	X		29	24	32	37	28	29	34	51	79	86	68	74	80	N21	48	42	51	47	45	42	41	37	31	32	45	1
14	X	X	X	37	27	18	25	25	25	34	56	57	69	63	62	65	60	N51	N50	52	45	41	51	40	40	34	47	45	1
15	X	X	X	42	32	26	25	29	22	34	54	67	71	81	80	69	N68	N58	51	52	51	48	44	39	51	85	31	50	1
16				31	26	24	27	26	27	32	48	68	120	≷Z	Z	Z	Z	Z	Z≷	44	40	38	41	46	48	28	27	..	1
17	X	X		23	28	36	34	30	28	43	33	N34	68	86	≷N59	N63	N98	N70≷	40	42	51	37	24	27	23	27	23	43	1
18	X	X	X	23	22	26	28	31	22	32	55	71	77	82	79	69	57	51	52	51	51	53	39	32	27	23	26	45	0
19	X	X	X	26	21	21	22	23	-29	32	49	64	67	68	84	84	74	77	N62	53	48	43	40	23	21	23	20	45	1
20	X	X		20	21	18	16	19	18	29	45	53	62	58	73	60	N48	N39	N34	N41	43	44	35	27	17	17	19	36	1
21				18	17	15	19	⌈27	N14	Z-	Z-	Z-	Z	Z	Z	Z	Z-	Z-	Z-	Z	Z	Z	N19⌋	23	27	24	25	..	2
22				28	25	23	26	⌈N15	N26	..	N22	N28	N46	55	64	Z	Z	Z	N13	N 5⌋	36	43	63	81	≷Z	Z	Z≷	..	2
23				Z	Z	55	43	60	..	..	45	55	65	69	94	98	90	71	56	N46	44	35	34	38	27	26	36	..	1
24				34	22	25	24	23	25	35	62	76	78	72	N62	⌈N51	N11	Z	N38⌋	38	40	47	45	46	34	38	31	..	1
25	X	X	X	22	21	22	22	22	25	35	60	79	76	79	79	74	70	63	N52	62	49	39	53	41	26	22	29	47	1
26	X	X		25	25	18	21	19	22	34	51	68	70	75	75	⌈51	58	N41	N34⌋	42	35	48	≷N27≷	48	38	42	29	42	1
27				25	25	25	24	24	..	..	88	≷N35	Z≷	117	101	N84	67	N40	N44	62	58	58	54	49	48	51	51	..	1
28				44	45	34	33	..	..	..	N26	55	61	62	74	≷77	Z	Z	N44	62≷	N21	-39	N30	29	17	21	31	..	1
29	X	X	X	27	27	27	28	25	34	47	64	57	71	75	91	82	75	65	N61	64	60	55	52	57	29	28	23	51	1
30				26	28	25	26	22	21	33	45	56	56	63	70	Z-	Z+	64	70	60	≷97	153	N37≷	56	48	27	27	..	1
31																													
MEANS ❋				27	25	24	25	25	24	34	49	58	64	65	62	62	59	54	47	46	41	40	35	31	28	29	27	41	
MEANS †				27	25	24	25	25	24	34	49	58	64	65	62	62	59	54	47	46	41	40	35	31	28	29	27	41	
MEANS ‡				28	25	23	24	26	27	35	54	64	69	74	74	73	69	63	54	51	45	40	39	34	28	30	26	45	

DESIGNATIONS AND REMARKS:

❋=ALL COMPLETE DAYS †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER ≷=DISTURBED BY BAD WEATHER

N=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT Z=INDETERMINATE IN MAGNITUDE AND SIGN Z+=INDETERMINATE POSITIVE VALUE Z-=INDETERMINATE NEGATIVE VALUE

TABLE 16

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

APRIL 1931

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

APRIL 1931

DAY	✱	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X	X	226	259	262	275	288	287	341	270	234	211	195	161	147	119	148	196	234	254	256	226	179	179	295	386	234	0
2	X			342	371	406	405	417	411	417	401	329	[293	247	224	211	205	183	202	199	224]	212	226	246	247	305	321	294	2
3	X	X		293	328	393	397	419	390	383	358	314	275	235	230	[191	122	165	183]	207	216	252	256	218	220	224	229	271	1
4	X	X		263	284	325	331	360	367	343	282	222	157	127	134	156	142	134	143	150	173	209	221	200	195	157	169	218	1
5	X	X		182	188	222	205	202	191	209	216	[221	231	226	222	221	221]	221	226	233	234	243	279	279	274	275	312	231	1
6	X	X	X	341	359	372	389	343	346	342	304	283	274	247	239	196	202	183	195	218	221	274	218	269	295	345	326	283	0
7	X	X		310	329	341	345	312	329	316	316	272	230	212	231	221	207	202	211	196	187	186	194	240	248	276	266	257	1
8	X			275	292	300	293	314	318	341	312	251	237	183	[135	169	124	117	134	128	148	183]	240	233	221	192	173	221	2
9	X	X	X	237	313	329	345	337	375	372	321	248	230	182	196	156	143	152	157	182	195	190	160	164	179	247	267	237	0
10	X	X	X	318	303	304	295	290	291	312	259	229	208	176	174	179	142	155	156	157	182	208	200	188	243	290	296	231	0
11	X	X		295	303	293	322	347	305	313	322	286	[247	183	133	153]	87	78	117	173	170	211	257	278	282	266	274	237	1
12	X			299	308	} 313	297	159	265	235 }	233	233	224	212	{ 128	114	96	67	169	195 }	182	218	199	123	187	224	254	204	1
13	X	X		282	251	224	214	254	314	295	280	190	214	230	174	91	79	117	156	170	233	222	221	182	214	288	339	218	1
14	X	X	X	330	338	355	375	364	394	397	288	287	266	240	225	222	221	} 213	211	231	255	221	178	252	300	266	269	279	1
15	X	X	X	274	290	330	369	410	405	396	335	275	255	246	238	237	234	209	208	220	229	247	216	221	221	156	207	268	1
16	X			305	324	380	400	414	401	393	337	316	288	{ 155	166	58	123	228	179 }	283	293	314	310	295	305	318	346	289	1
17	X	X		367	377	350	328	338	321	350	312	262	212	100	{ 119	115	102	90 }	125	143	148	196	216	225	230	246	221	229	1
18	X	X	X	248	259	274	266	276	265	304	270	221	209	172	143	147	143	156	164	169	179	195	221	195	256	300	334	224	0
19	X	X	X	269	312	314	341	341	342	364	309	282	255	212	195	183	162	122	178	191	196	205	147	221	301	330	303	253	1
20	X	X		339	341	343	368	362	358	363	300	279	246	208	181	170	169	165	170	173	179	195	205	221	226	271	279	255	1
21	X			301	310	324	342	[342	301	178	164	156	[61	52	91	128	166	177	186	198	196	208	221]	234	248	243	255	212	2
22	X			283	308	303	288	[310	301	246	278	276	262	230	209	169	190	106	208	208]	209	222	257	172	156	47	182	226	2
23	X			90	169	213	196	172	165	195	231	207	187	179	97	64	87	96	83	133	179	192	233	266	194	262	324	176	1
24	X			330	314	350	341	341	341	325	239	182	169	170	196	[199	156	169	218]	218	217	211	226	269	303	254	208	248	1
25	X	X	X	301	337	355	354	354	328	355	287	230	238	238	188	182	187	182	150	131	209	195	168	183	229	354	343	253	1
26	X	X		324	328	369	380	369	337	362	320	275	173	178	176	[169	181	177	176]	182	195	224	{ 242 }	266	283	269	290	260	1
27	X			330	342	390	455	500	451	367	230	{ 208	204 }	174	152	172	225	211	202	196	195	220	251	287	284	276	288	275	1
28				313	333	358	358	348	341	300	287	279	228	136	114	{ 148	84	144	238	195 }	259	218	230	256	275	328	276	...	1
29	X	X	X	233	218	176	267	198	230	237	224	225	195	156	151	174	178	196	199	200	212	228	234	192	235	263	270	212	1
30	X			330	321	314	329	341	367	375	286	275	240	225	202	147	188	186	182	188	{ 204	234	221 }	203	240	251	288	256	1
31																													
MEANS ✱				287	303	318	327	327	327	325	286	251	224	193	176	163	159	159	175	190	204	220	222	224	241	258	277	243	
MEANS †				286	301	312	325	324	325	334	293	254	228	198	185	174	160	161	175	187	204	219	214	220	243	269	283	245	
MEANS ‡				278	299	307	328	320	326	342	287	251	234	206	191	182	173	172	181	193	213	222	197	206	244	285	300	247	

DESIGNATIONS AND REMARKS:

✱=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 11

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

APRIL 1931. EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT APRIL 1931.

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY	‡	†	#	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CYCLONIC ACTIVITY
1	X	X	X	288	275	259	268	292	285	316	244	205	175	151	138	131	109	158	223	265	292	284	225	171	167	306	417	233	0
2	X			350	398	436	418	426	426	425	417	334	292	272	252	240	249	246	259	256	258	221	242	259	261	331	342	317	2
3	X	X		312	337	425	431	456	418	391	344	300	263	240	240	205	127	187	210	230	244	280	249	216	219	225	223	282	1
4	X	X		288	287	327	336	364	354	327	258	210	153	116	136	164	144	136	136	147	184	223	221	205	205	166	175	218	1
5	X	X		187	189	232	207	209	207	217	226	239	240	240	240	240	240	237	246	240	240	240	294	290	280	280	326	241	1
6	X	X	X	364	375	385	404	342	349	341	311	292	273	249	246	187	193	166	187	196	202	289	205	265	309	360	331	284	0
7	X	X		316	334	359	380	316	341	326	311	258	191	205	242	235	225	223	226	223	214	194	200	270	259	287	275	266	1
8	X			284	306	294	304	322	236	344	314	232	223	171	136	203	202	187	187	175	182	205	259	235	209	178	166	231	2
9	X	X	X	226	311	317	337	347	375	365	299	223	210	158	187	144	131	142	151	187	191	196	162	166	175	256	277	231	0
10	X	X	X	328	302	314	300	297	292	314	266	225	194	169	178	184	146	149	156	162	184	226	205	191	273	309	312	236	0
11	X	X		309	311	306	321	364	321	321	342	311	278	228	158	178	101	92	131	176	185	226	295	300	290	273	295	255	1
12	X			304	326	365	280	176	266	187	233	240	242	217	138	116	144	92	133	207	193	228	228	129	180	223	258	213	1
13	X	X		280	299	221	207	239	312	287	242	173	184	223	169	88	94	120	162	169	230	223	210	191	219	304	356	215	1
14	X	X	X	342	347	364	383	370	396	398	272	275	240	233	232	228	226	223	223	233	249	223	169	278	316	270	263	281	1
15	X	X	X	285	295	326	367	401	407	393	326	273	239	223	228	242	237	219	226	216	230	242	187	210	221	133	209	264	1
16	X			309	321	388	407	402	409	401	349	290	242	149	73	178	88	233	232	277	290	312	309	297	295	311	342	288	1
17	X	X		352	365	346	312	326	331	326	307	266	189	88	114	114	96	96	118	146	142	187	223	223	228	251	210	223	1
18	X	X	X	242	256	265	266	275	265	292	233	187	167	156	133	149	147	169	173	173	187	196	226	189	259	302	337	218	0
19	X	X	X	275	311	312	344	339	344	367	306	240	223	187	171	167	162	120	187	207	223	221	151	228	307	342	317	252	1
20	X	X		354	354	359	391	375	373	360	290	258	223	212	169	175	173	171	184	187	193	207	210	225	235	285	297	261	1
21	X			321	324	329	347	346	314	219	210	207	169	156	191	205	216	221	225	223	223	225	240	254	265	258	273	248	2
22	X			302	324	324	311	327	321	278	311	295	256	246	239	209	217	217	240	246	233	240	256	175	133	164	60	247	2
23	X			151	207	202	178	144	147	171	214	187	164	166	86	56	73	96	80	127	173	200	226	246	169	261	309	168	1
24	X			314	297	327	326	327	321	322	205	149	142	158	187	207	175	212	240	240	232	225	244	280	309	265	200	246	1
25	X	X	X	292	341	337	354	356	321	287	251	200	210	221	178	169	176	171	138	127	210	202	162	173	228	369	351	243	1
26	X	X		307	302	362	367	360	342	339	307	247	151	158	164	164	169	180	187	187	203	232	251	259	299	263	307	254	1
27	X			327	322	359	447	479	457	346	205	214	210	146	133	136	221	223	205	196	193	214	258	304	275	272	278	268	1
28				297	297	...	...	...	...	...	309	278	240	133	107	146	123	185	242	251	273	258	240	258	270	309	270	...	1
29	X	X	X	216	207	153	263	187	223	223	198	203	202	160	144	171	184	205	209	205	209	225	226	189	237	261	261	207	1
30	X			319	319	309	316	334	334	349	261	239	219	207	189	189	151	171	167	187	200	193	202	196	233	246	297	243	1
31																													
MEANS #				291	307	321	329	328	327	318	278	240	213	190	176	175	166	175	188	200	213	227	225	228	243	267	278	246	
MEANS †				288	303	314	327	327	329	326	281	241	211	190	182	175	162	167	183	193	211	227	214	223	249	276	292	245	
MEANS ‡				279	302	303	329	321	326	330	271	232	213	191	184	177	171	172	187	197	218	230	192	206	249	291	308	245	

DESIGNATIONS AND REMARKS:

#=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 19

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

MAY 1931

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

MAY 1931

DAY	*	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X			307	332	315	322	383	400	400	337	286	246	216	189	155	99	97	139	{ 183	157	139	227	243 }	300	270	359	254	1
2	X			333	358	329	325	316	327	315	278	213	196	173	171	145	111	155	186	197	213	222	234	214	270	280	240	243	.
3	X			209	281	302	300	302	340	372	283	286	254	236	213	188	133	139	144	186	220	227	231	240	247	267	290	245	.
4	X	X	X	287	315	356	345	369	388	403	335	277	227	202	204	197	161	175	199	188	219	244	274	241	302	343	295	273	1
5	X	X	X	312	309	340	356	378	406	378	343	329	300	263	229	197	154	154	171	183	203	229	239	268	277	257	220	271	1
6	X	X	X	280	306	342	350	379	376	415	349	300	270	231	213	193	176	171	183	199	226	248	257	240	286	247	261	271	1
7	X			263	329	327	350	380	376	409	352	299	247	224	185	[111	175	186	203	199]	209	213	229	230	275	300	325	266	1
8	X	X		330	386	400	406	429	409	382	360	289	325	250	[148	165	214	203	207	213	213]	203	223	222	171	230	270	277	1
9	X	X		260	290	322	326	347	343	379	307	293	274	241	[136	171	179	157	159	148	144]	169	172	188	210	151	196	232	1
10	X	X	X	243	256	271	278	302	325	333	300	280	256	231	[178	183	207	197	200	192	210	229]	204	214	251	251	372	248	1
11	X	X	X	355	359	336	380	376	372	372	335	281	230	220	196	183	142	169	164	175	190	192	227	226	226	257	309	261	1
12	X	X	X	296	315	305	339	388	366	383	342	266	229	214	197	192	139	107	128	169	183	200	197	199	229	300	296	249	1
13	X	X		266	289	292	309	349	360	256	274	256	241	224	190	154	128	152	165	162	183	182	182	243	233	281	286	236	1
14	X			315	305	315	356	358	343	199	303	258	227	197	171	166	114	113	95	21	7	209	207	53	162	176	173	202	.
15	X			214	268	299	264	300	300	250	251	227	183	169	155	{ 139	33	32	17	14	89	129 }	125	227	206	190	189	178	2
16	X	X	X	214	216	217	223	227	257	248	188	157	125	85	70	74	86	93	108	111	164	192	207	214	213	290	263	177	0
17	X	X		270	317	302	329	303	313	342	261	253	214	125	108	111	124	164	180	185	199	203	247	243	216	246	278	231	1
18	X	X		315	340	343	355	365	378	419	286	256	226	159	144	155	158	197	199	204	213	214	217	216	229	286	280	256	1
19	X			315	346	353	353	329	363	360	263	183	166	120	124	111	139	132	155	162	161	162	176	169	151	188	213	216	2
20	X			229	280	316	266	322	310	368	295	256	237	214	[193	158	148	162	209]	226	239	261	244	274	343	370	358	262	1
21	X	X	X	372	415	409	413	432	425	313	313	315	281	251	216	202	195	183	171	144	183	227	207	209	229	258	316	278	1
22	X	X		368	415	382	379	372	230	336	309	297	263	239	214	207	173	162	128	139	183	213	223	229	277	189	260	258	1
23	X			258	295	316	333	343	343	352	293	258	240	224	213	197	186	197	186	189	213	222	227	125	179	310	299	250	.
24	X			349	400	438	448	449	470	345	310	268	256	241	216	185	155	166	169	183	178	183	185	175	270	270	343	277	.
25	X			386	385	416	446	388	315	297	253	256	220	159	173	200	196	185	179	166	180	195	183	233	226	300	323	261	1
26	X	X	X	335	337	359	390	383	362	343	268	151	258	239	200	149	121	142	157	169	190	213	241	261	260	230	166	247	1
27	X	X		250	293	342	403	373	373	350	319	257	171	183	129	148	125	88	108	128	139	159	209	256	254	278	289	234	1
28				286	220	236	256	317	345	355	297	222	196	179	162	155	145	145	128	148	115	103	129	169	193	217	256	...	1
29	X			227	231	250	300	310	325	335	289	246	204	214	182	162	115	135	144	155	158	178	180	179	226	169	188	213	.
30	X			247	250	268	325	325	360	358	320	250	214	193	189	166	155	126	124	131	139	159	175	189	197	237	229	222	.
31	X			227	230	231	271	268	286	290	250	190	95	70	74	78	{ 104 }	111	57	83	136	155	179	178	183	195	195	172	1
MEANS *				288	315	326	241	352	351	343	299	258	229	200	174	161	145	148	154	160	178	199	211	213	237	254	269	242	
MEANS †				297	322	332	349	361	355	353	306	266	243	210	173	168	155	157	164	169	190	207	220	229	241	256	272	250	
MEANS ‡				299	314	326	342	359	364	354	308	262	242	215	189	174	153	155	165	170	196	219	228	230	253	270	278	253	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 19

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

JUNE 1931

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

MAY 1931

Date				0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	Quality Factor
1	X			285	316	309	298	355	367	346	289	247	214	197	165	147	89	89	140	{ 178	180	116	199	236 }	289	254	[288]	236	1
2	X			308	344	332	332	325	318	293	243	180	170	149	153	140	118	172	189	197	216	232	245	202	258	269	232	233	.
3	X			281	273	289	298	296	337	348	256	251	234	219	197	180	136	140	147	189	216	242	234	240	254	276	280	239	.
4	X	X	X	273	307	355	348	362	386	374	319	230	201	184	180	187	151	165	212	195	232	267	311	232	309	335	380	267	1
5	X	X	X	380	305	327	358	370	398	363	327	325	285	271	221	193	151	140	172	197	216	240	254	271	271	247	193	266	1
6	X	X	X	262	296	342	342	377	378	398	319	267	253	230	199	195	=191	180	195	214	232	264	298	251	300	247	267	270	1
7	X			293	319	319	346	377	377	382	335	249	223	202	182	[120	174	221	217	210]	219	225	227	234	269	291	334	263	1
8	X	X		318	379	396	406	413	399	365	305	291	307	247	[140	157	234	227	232	234	238]	229	232	234	145	217	253	275	1
9	X	X		253	298	323	316	346	337	369	291	262	245	234	[136	182	214	187	176	159	159]	178	174	174	210	138	197	232	1
10	X	X	X	238	358	269	273	303	325	325	262	223	234	216	[172	191	230	221	216	212	225	245]	229	197	253	236	384	252	1
11	X	X	X	360	358	337	382	377	377	342	298	249	219	214	195	178	134	163	172	182	202	199	208	232	216	236	300	255	1
12	X	X	X	293	309	314	328	377	369	367	328	249	201	199	191	187	140	106	136	178	191	216	216	197	217	303	298	246	1
13	X	X		253	286	293	307	346	372	229	243	230	216	204	184	151	140	168	176	166	180	180	176	254	243	291	291	232	1
14	X			316	311	325	372	363	360	212	293	242	229	182	178	161	120	108	120	141	185	138	280	165	214	178	174	224	.
15	X			187	256	291	264	296	302	230	247	210	165	159	145	116	161	140	178	165	120	159	98	212	214	176	193	195	2
16	X	X	X	199	216	216	214	225	260	216	157	130	118	81	67	{ 73	81	81	102	98	163	180 }	193	201	204	280	264	167	0
17	X	X		265	314	325	342	311	327	328	254	253	212	114	93	102	130	180	197	199	216	221	258	258	216	247	291	236	1
18	X	X		337	349	356	356	363	387	394	265	238	225	159	145	157	172	216	217	230	234	225	240	221	236	311	289	263	1
19	X			321	358	356	356	327	370	369	269	180	166	140	159	174	201	178	178	176	166	163	197	182	140	180	217	230	2
20	X			234	275	319	262	342	325	344	275	234	210	201	[197	149	145	166	219]	249	269	289	260	293	356	377	363	265	1
21	X	X	X	377	430	423	428	445	428	278	316	296	275	238	216	195	191	180	163	132	172	225	182	206	245	271	319	276	1
22	X	X		377	428	386	394	381	227	334	305	294	254	234	210	216	201	161	130	138	161	197	221	234	287	180	253	258	1
23	X			251	296	325	342	367	351	353	285	260	229	219	221	216	199	217	202	206	217	219	208	124	182	307	302	254	.
24	X			360	411	440	448	450	463	346	318	243	247	230	217	210	193	214	197	197	206	202	197	172	278	285	358	287	.
25	X			398	377	426	455	396	305	273	240	264	201	134	168	202	219	199	197	197	197	195	180	230	217	276	298	260	1
26	X	X	X	311	342	360	401	375	367	335	232	134	253	230	197	140	122	151	168	185	197	230	262	267	254	216	149	245	1
27	X	X		243	282	337	394	370	367	335	282	225	140	172	136	145	120	91	120	141	147	174	219	269	256	294	291	231	1
28				294	219	230	212	...	...	...	256	189	172	159	149	141	138	132	128	149	132	120	140	163	191	229	264	...	1
29	X			232	249	258	309	318	339	339	280	230	180	201	182	168	132	143	155	176	174	208	210	189	253	163	195	220	.
30	X			260	273	289	356	353	387	367	312	232	193	184	174	176	151	141	138	130	157	147	182	197	210	253	245	229	.
31	X			236	243	249	289	300	309	296	243	187	100	75	79	87	{ 110 }	114	138	47	130	155	201	189	197	216	201	183	1
MEANS *				284	319	329	343	353	354	328	280	237	213	191	170	163	158	162	173	177	194	205	220	219	240	252	270	243	
MEANS †				291	328	335	349	359	356	334	281	243	227	202	168	166	163	164	174	179	198	217	230	231	241	253	271	248	
MEANS ‡				290	325	327	341	357	365	333	284	234	227	207	182	171	155	154	171	177	203	230	239	228	252	263	275	250	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 20

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

MAY 1931 — EXPRESSED IN VOLTS PER METER — MAY 1931

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY	✱	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	DISTURB. FACTOR
1				27	27	23	18	19	18	30	42	50	61	61	81	65	62	N49	65	} N55	Z	Z	66	N 7 }	22	14	12	..	1
2				14	17	11	17	19	18	27	40	52	68	76	83	N51	N70	N21	57	53	53	53	..	..	..	..	..	..	.
3				..	..	..	..	..	..	..	44	49	54	58	60	57	N45	N43	N45	49	44	41	38	38	38	42	42	..	.
4	X	X	X	41	31	26	20	19	23	34	43	60	65	70	68	65	N68	70	N49	47	N54	56	44	28	27	24	31	44	1
5	X	X	X	36	29	23	22	19	21	31	43	51	56	58	68	64	N61	74	69	64	64	56	39	29	33	42	54	46	1
6	X	X	X	31	26	26	25	24	22	34	49	55	58	64	71	57	N40	54	48	59	56	48	34	28	24	25	43	42	1
7				40	40	29	21	21	21	41	52	69	80	86	66	[N45	60	Z	N40	N40]	56	60	57	50	54	50	43	..	1
8	X	X		41	30	20	24	28	29	41	54	64	73	85	[N82	84	N52	N38	N43	N45	43]	53	52	36	43	50	43	48	1
9	X	X		27	31	29	28	26	23	31	48	59	72	79	[74	N40	N 0	N18	N41	N37	N42]	47	40	25	44	41	31	39	1
10	X	X	X	31	32	28	27	28	27	37	55	73	73	81	[N78	N63	N59	N47	45	N32	N37	N41]	39	25	27	30	28	43	1
11	X	X	X	29	30	24	22	24	32	42	52	59	65	76	69	72	77	58	N37	N46	N43	N49	46	28	32	30	36	45	1
12	X	X	X	35	25	22	20	22	25	30	38	53	63	70	N71	58	N49	N49	N51	48	N49	49	38	33	25	24	34	41	1
13	X	X		30	26	23	20	24	28	38	54	58	60	55	58	N46	N32	N35	N38	N39	N48	43	50	36	46	37	38	41	1
14				34	28	18	19	20	26	42	47	55	52	67	49	58	44	64	..	..	..	..	..	..	..	..	..	..	.
15				..	..	..	..	..	..	..	54	64	66	67	N56	{N132	Z-	Z-	Z-	Z-	Z	Z }	122	41	N21	48	N17	..	2
16	X	X	X	46	30	41	39	25	26	54	84	92	70	65	46	52	71	62	62	62	43	60	52	47	32	34	30	51	0
17	X	X		31	24	25	19	21	18	31	41	44	52	82	97	68	N32	N27	N35	N29	N35	36	37	38	48	46	38	40	1
18	X	X		31	26	25	23	15	18	29	41	55	58	68	58	42	N28	N32	N31	N33	N33	31	33	34	33	23	18	34	1
19				16	20	19	18	22	23	25	37	57	N46	Z	Z	Z	Z	Z	Z	N24	31	42	45	40	34	33	26	..	2
20				24	24	27	27	..	..	..	47	54	64	65	[71	71	66	N55	59]	55	48	49	34	22	22	34	23	..	1
21	X	X	X	21	17	21	22	23	21	45	44	52	56	68	N55	64	58	N46	52	50	47	46	35	28	24	36	27	40	1
22	X	X		26	20	20	21	23	51	37	42	49	57	61	63	N55	N34	N46	N40	43	72	49	31	18	24	39	39	40	1
23				49	43	28	22	19	21	33	44	50	58	65	..	..	..	..	..	..	..	..	..	..	..	..	..	..	.
24				..	..	..	..	..	..	..	47	65	61	82	80	N36	Z	Z	Z	N41	N 2	N31	46	42	30	35	28	..	.
25				36	28	21	24	37	39	54	70	76	97	107	56	N79	N48	Z	Z+	Z	Z	N50	52	48	55	43	37	..	1
26	X	X	X	43	37	34	33	37	35	42	56	80	77	76	68	79	N57	N48	N46	53	59	58	52	39	41	55	50	52	1
27	X	X		46	40	24	21	21	22	42	56	71	91	74	N41	65	73	58	N38	63	54	59	49	40	28	31	28	47	1
28	X			37	39	31	27	25	25	35	50	66	70	69	67	62	67	66	50	60	N31	27	36	38	34	21	17	44	1
29				24	22	21	21	20	25	34	48	58	67	66	64	61	48	..	..	..	..	..	..	..	..	..	..	..	.
30				..	..	..	..	..	..	..	40	50	75	64	67	55	60	N37	N42	77	N47	64	55	31	23	27	37	..	.
31				38	31	19	24	16	19	29	39	54	88	99	64	N28	{N99 }	N65	Z-	Z+	52	26	26	19	25	23	23	..	1
MEANS ✱				34	29	26	24	24	26	38	50	61	66	71	67	61	50	49	46	48	48	48	42	32	33	35	34	43	
MEANS †				34	28	26	24	24	26	39	50	61	65	71	67	61	49	48	45	47	49	49	42	32	33	35	36	43	
MEANS ‡				35	29	27	26	25	26	39	52	64	65	70	66	64	60	56	51	51	50	51	42	32	29	33	37	45	

DESIGNATIONS AND REMARKS:

✱=ALL COMPLETE DAYS †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE [ ]=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER } =DISTURBED BY BAD WEATHER

N=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT Z=INDETERMINATE IN MAGNITUDE AND SIGN Z+=INDETERMINATE POSITIVE VALUE Z-=INDETERMINATE NEGATIVE VALUE

TABLE 21

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

JUNE 1931

EXPRESSED IN VOLTS PER METER

JUNE 1931

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY	✱	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	NUMBER OF READINGS
1	X	X		21	21	21	43	31	24	60	55	62	55	57	69	69	N57	N48	N47	N56	⟨ N38	-52	-27	-34	-28 ⟩	39	49	32	1
2	X	X	X	30	27	16	13	15	17	20	33	41	50	53	⌈N52	43	N36	48	N35	N35 ⌋	40	46	45	40	40	45	46	36	1
3				52	37	24	22	21	35	32	45	55	68	63	N52	N50	⟨ Z	Z	Z	Z	Z+ ⟩	116	38	25	- 2	24	31	..	1
4	X	X		40	27	32	29	25	38	50	60	73	83	80	70	⌈N47	N41	N37	N62	N35	N46	N15 ⌋	52	58	32	30	35	46	1
5	X	X		52	49	32	33	34	47	66	69	73	86	83	103	97	⌈N45	N81	N72 ⌋	62	57	N52	52	49	45	44	33	59	1
6	X	X		25	24	21	26	30	26	35	60	72	68	64	⌈ 60	N38	N26	N46	N54	N40	N32 ⌋	60	58	80	50	43	39	45	1
7				28	22	21	Z-	18	21	32	63	93	119	⌈ 80	N61	N59	Z	N40	N24	Z	N32	52 ⌋	70	70	52	30	28	..	1
8				24	24	24	21	21	28	50	54	76	84	86	67	⌈ Z	Z	Z	Z	Z	41	54 ⌋	65	78	58	48	38	..	1
9	X	X		36	29	32	34	31	21	34	71	73	64	⌈ 55	N53	N56	N48	N43	N40	N44	N42 ⌋	47	46	34	29	22	23	42	1
10	X	X	X	29	19	20	21	15	15	26	38	48	57	74	61	54	⌈ N49	58	N48 ⌋	61	50	52	41	31	18	23	31	39	1
11	X	X	X	27	28	18	17	15	19	28	37	55	58	66	61	⌈N52	N44	59	N55	67	51	N51 ⌋	41	35	48	40	32	42	1
12	X	X		27	18	17	17	18	21	33	33	46	50	51	⌈N39	N40	N24	N38	N37	N70	N125	N60 ⌋	56	47	43	36	33	41	1
13	X	X	X	34	21	22	17	21	22	32	47	60	64	⌈ N68	67	N57	N67	N62	N83	N61 ⌋	56	55	54	49	50	37	35	48	1
14	X	X		24	21	21	18	18	24	55	63	61	61	66	65	⌈N55	N41	N54	N58	N58	N58	61 ⌋	62	50	44	38	39	46	1
15				28	28	21	22	18	21	50	43	47	54	⌈ N49	N28	51	Z	N52	Z	N15	N34	N33	50	69	46	24 ⌋	23	..	1
16	X	X		20	19	17	12	17	18	27	35	45	52	54	⌈N54	58	N29	N48	N47	N37	N76	58	56 ⌋	62	40	42	43	40	1
17	X	X		29	22	19	24	20	19	39	58	55	60	⌈N60	N40	N38	N32	N11	-12	N37	N 9	N35	44 ⌋	37	33	23	28	32	1
18				18	19	18	19	19	27	42	43	52	70	68	65	⌈N38	Z	N 4	N43	N49	55	47	42 ⌋	40	27	24	24	..	1
19	X			23	21	18	17	21	18	31	41	63	64	68	64	⌈N58	N40	N40	N21	N40 ⌋	50	43	46	43	33	32	28	38	1
20	X			19	17	15	18	17	18	29	53	56	58	62	61	⌈N52	N28	N60	N49	38	N29	N44	N39 ⌋	43	42	36	38	38	1
21	X	X	X	47	32	28	26	22	28	39	55	73	65	64	65	⌈N56	N43	55	49	43	29	N28	N29	N28 ⌋	30	27	24	41	1
22				13	⟨ Z-	28	15	N 9	Z ⟩	28	31	29	33	⌈ - 3	-18	Z-	Z	Z	Z	Z-	Z-	-36	38 ⌋	35	36	42	28	..	2
23	X	X		34	24	21	19	16	18	29	36	50	64	55	63	⌈N53	N55	N29	N29	N28	N25	N11	31 ⌋	21	21	15	12	32	1
24				15	28	26	18	21	38	25	46	47	49	N58	N51	⟨ N40	Z-	Z	Z	Z	Z	Z+	Z	Z ⟩	28	24	35	..	1
25				33	40	⟨ 73	N41	Z	Z-	66	Z	Z+	Z-	N41	77	70	121	99	88	99	Z+	Z	Z- ⟩	41	48	22	24	..	1
26				21	21	21	21	24	28	47	67	88	86	91	101	116	96	⌈N52	59	N55	54	N50	Z	N24 ⌋	37	31	39	..	1
27				31	21	24	N25	24	21	36	47	58	64	73	86	⟨ N55	N73	Z-	Z	Z	Z	Z ⟩	38	45	36	33	25	..	1
28				30	32	38	44	33	31	46	58	60	44	53	⌈N51	50	54	N66	N62	N67 ⌋	64	⟨ Z	N110	63	61	Z	Z ⟩	..	1
29				N39	73	60	69	67	52	78	68	107	159	167	158	⟨ Z-	Z	Z-	Z	Z	Z	54	49 ⟩	47	50	78	77	..	2
30				88	Z-	Z-	44	99	129	118	73	80	92	⟨ Z-	Z	Z	Z+	Z	Z	Z	83 ⟩	59	65	53	59	50	40	..	2
31																													
MEANS ✱				30	25	22	23	22	23	37	50	59	62	64	62	54	42	47	46	48	48	39	43	40	34	34	33	41	.
MEANS †				32	25	22	23	22	24	38	50	59	62	63	61	54	42	48	47	49	49	39	43	39	33	34	33	41	
MEANS ‡				33	25	21	19	18	20	29	42	55	59	65	61	52	48	56	54	53	45	46	42	37	37	34	34	41	

DESIGNATIONS AND REMARKS:

✱=ALL COMPLETE DAYS †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER ⟨ ⟩=DISTURBED BY BAD WEATHER

N=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT. Z=INDETERMINATE IN MAGNITUDE AND SIGN Z+=INDETERMINATE POSITIVE VALUE Z-=INDETERMINATE NEGATIVE VALUE

TABLE 22

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

JUNE 1931

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

JUNE 1931

DAY	✱	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X		213	232	279	174	165	260	146	172	158	175	180	175	161	130	121	122	159	175	162	172	180	172	190	213	179	1
2	X	X	X	243	268	263	275	281	339	302	254	235	203	177	175	131	127	134	146	162	166	174	199	216	204	190	206	211	1
3	X			220	253	251	269	306	257	279	260	244	235	206	194	181	158	118	115	127	184	218	238	220	213	141	270	215	1
4	X	X		253	237	257	270	265	251	243	218	180	128	128	140	181	181	169	180	203	216	218	250	260	288	250	268	218	1
5	X	X		293	298	324	318	327	321	279	253	232	146	99	99	112	130	112	161	201	218	220	238	247	223	220	251	221	1
6	X	X		290	340	400	407	391	431	444	329	245	206	193	149	177	193	194	175	185	209	235	248	166	231	265	305	267	1
7	X			297	340	385	300	379	404	414	276	172	130	165	213	201	166	184	184	181	190	177	162	188	203	276	327	246	1
8	X			363	385	414	441	459	463	366	343	303	247	190	204	204	185	197	161	168	200	193	190	159	162	247	262	271	1
9	X	X		296	279	284	279	317	332	327	213	175	188	127	98	114	190	201	201	196	201	220	237	229	268	309	367	235	1
10	X	X	X	287	281	265	321	326	340	355	288	238	204	141	182	188	190	194	204	204	210	220	250	187	265	317	197	244	1
11	X	X	X	229	296	290	302	340	358	354	320	276	237	220	216	190	177	175	115	143	190	220	263	235	171	238	279	243	1
12	X	X		311	340	320	355	367	373	355	314	278	238	231	220	204	197	196	201	201	190	204	212	229	265	309	320	268	1
13	X	X	X	354	355	417	429	459	488	459	367	265	254	247	235	222	229	218	206	209	223	250	234	251	185	279	351	299	1
14	X	X		326	444	451	456	474	472	355	279	276	275	253	235	220	178	146	180	188	190	204	190	201	263	263	279	283	1
15	X			248	296	340	401	401	400	231	269	263	250	222	220	218	190	204	190	188	191	191	196	141	190	251	332	251	1
16	X	X		371	400	441	474	448	459	450	367	300	259	234	220	161	172	188	187	188	199	200	201	181	279	254	302	289	1
17	X	X		326	355	400	444	444	443	376	269	259	250	165	135	166	166	168	171	181	149	128	140	220	220	276	311	257	1
18	X			296	342	369	382	422	425	352	346	296	251	235	216	150	146	152	181	180	190	191	204	212	204	250	279	261	1
19				295	315	333	355	373	382	340	293	245	210	191	190	162	190	178	180	182	196	212	223	220	204	265	340	...	1
20				371	414	...	...	...	...	...	...	275	235	187	193	187	174	158	152	201	194	238	216	234	262	263	265	...	1
21	X	X	X	250	243	279	293	340	376	385	296	234	220	204	161	159	159	131	130	162	203	190	190	204	265	235	190	229	1
22	X			260	232	235	270	290	257	276	257	241	212	190	178	168	146	141	158	131	161	161	193	213	234	235	278	213	2
23	X	X		220	275	314	360	382	428	354	314	250	184	171	159	158	156	159	159	161	161	162	190	220	191	251	268	235	1
24	X			245	216	220	250	259	200	235	210	206	200	172	158	130	60	46	81	55	122	101	131	141	245	210	213	171	1
25	X			190	201	200	177	101	147	247	156	276	190	188	132	181	92	86	112	140	190	125	174	197	174	251	279	175	1
26	X			262	279	296	265	311	298	262	200	175	161	155	101	98	115	115	120	128	134	146	107	169	204	206	181	183	1
27	X			218	204	235	232	235	245	220	200	190	196	169	115	109	115	45	130	42	108	190	203	199	245	247	275	182	1
28	X			243	298	281	250	228	262	250	185	177	191	178	190	191	200	188	194	190	190	141	127	161	190	135	159	199	1
29	X			187	161	171	220	216	248	166	112	86	43	46	62	56	20	22	101	43	98	76	75	72	72	85	94	106	2
30	X			73	59	75	130	88	92	91	101	114	112	72	32	111	138	72	104	81	185	141	117	130	101	124	153	104	2
31																													
MEANS ✱				263	281	302	312	322	331	306	256	227	199	177	165	162	154	146	156	157	180	181	190	194	212	232	257	223	
MEANS †				284	308	332	344	355	378	346	284	240	211	185	173	170	172	167	169	183	193	200	214	215	233	256	274	245	
MEANS ‡				273	289	303	324	349	380	371	305	250	224	198	194	178	176	170	160	176	198	211	227	219	218	252	245	245	

DESIGNATIONS AND REMARKS:

✱=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 23

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

MAY 1931 — JUNE 1931

DAY	*	†	‡	0-	1-	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X		236	248	301	164	158	280	140	152	144	166	166	162	162	134	126	128	166	{ 200	222	218	222	212}	202	234	189	1
2	X	X	X	263	297	296	296	305	357	311	275	232	198	182	[184	142	134	144	160	187]	188	196	226	228	210	188	206	225	1
3	X			288	252	299	280	316	265	271	240	240	210	198	192	184	{ 188	101	142	132	83}	192	246	224	244	234	265	215	1
4	X	X		246	228	246	271	263	240	206	182	162	122	122	144	[187	187	182	182	214	226	230]	242	232	290	246	251	213	1
5	X	X		286	295	305	322	311	303	259	228	196	126	99	97	105	[130	105	166]	210	228	242	257	234	226	206	246	214	1
6	X	X	X	297	341	408	417	405	445	431	322	228	194	187	[144	190	218	208	187	200	226]	236	240	148	226	244	303	269	1
7	X			303	341	396	383	392	419	414	278	134	105	[146	226	210	198	202	202	206	202	176]	162	166	194	284	335	253	1
8	X			372	399	412	449	479	466	348	322	303	222	184	208	[246	226	228	228	206	204	187]	170	130	146	238	278	277	1
9	X			286	278	284	273	311	341	322	178	160	172	[122	87	112	212	222	220	214	216]	234	265	253	299	322	365	240	1
10	X	X	X	290	282	265	337	335	354	359	286	240	202	126	182	188	[206	206	210]	212	226	236	273	187	265	333	187	249	1
11	X	X	X	246	297	303	318	354	374	361	322	259	228	220	216	[204	190	174	122	140	184	228]	282	224	154	246	299	248	1
12	X	X		337	345	341	372	377	392	341	320	278	246	244	[246	236	232	218	224	206	188	206]	208	253	303	326	341	283	1
13	X	X	X	345	378	440	449	463	489	466	374	282	265	[257	265	263	246	238	246	236]	246	257	226	248	198	309	366	315	1
14	X	X		344	484	479	466	494	489	324	267	246	261	265	255	[249	216	146	204	206	224	224]	187	232	296	288	303	298	1
15	X			265	303	359	431	431	419	222	282	261	246	[240	249	238	230	208	226	218	226	228	208	126	187	265]	344	267	1
16	X	X		401	426	460	501	484	489	466	390	309	280	261	[253	168	190	208	212	222	212	216	196]	166	303	265	326	308	1
17	X	X		348	387	440	465	468	460	363	248	253	271	[182	156	190	187	210	214	210	158	138	150]	230	226	299	337	275	1
18	X			316	359	381	397	449	451	350	361	313	249	248	246	[166	170	166	196	188	202	206	224]	222	204	269	284	276	1
19				296	341	359	377	396	405	337	296	218	204	206	192	[166	210	220	...	...]	...	...	242	214	208	286	377	...	1
20				408	445	433	447	440	466	479	301	265	232	187	194	[198	200	164	164	222	218	232	242]	265	292	269	271	...	1
21	X	X	X	265	259	303	303	359	383	392	309	200	206	206	176	[168	172	140	134	187	238	202	222	246]	303	265	206	244	1
22	X			288	{ 303	246	299	322	303}	296	303	282	246	[226	226	218	206	206	206	202	208	206	214]	238	253	234	292	251	2
23	X	X		232	294	324	359	394	430	355	329	259	168	166	148	[166	162	184	182	187	180	187	208]	240	226	265	301	248	1
24	X			269	230	224	249	265	202	234	198	216	202	160	160	{ 140	105	57	87	101	110	91	91	184}	248	212	208	177	1
25	X			187	192	{ 174	168	142	206	226	99	218	210	182	122	152	83	80	105	142	107	64	198}	202	176	248	280	165	1
26	X			265	301	303	265	314	290	228	166	142	126	128	85	78	110	[126	126	134	146	154	170	187]	226	212	182	186	1
27	X			218	208	232	228	226	251	210	178	166	168	146	95	{ 105	120	166	152	122	66	184}	206	196	238	230	259	182	1
28	X			236	267	271	226	210	249	224	174	164	187	188	[204	206	200	190	187	166]	166	{ 176	103	144	180	144	136}	192	1
29	X			192	148	154	214	210	234	156	110	83	34	32	43	{ 49	57	91	187	83	66	97	72}	66	64	64	78	108	2
30	X			62	66	85	118	64	60	64	83	93	87	{ 91	78	126	91	118	76	174	170}	126	103	118	85	103	124	99	2
31																													
MEANS *				272	292	310	322	332	344	298	249	217	193	178	173	173	171	166	175	181	186	191	199	198	221	241	262	231	
MEANS †				296	321	346	354	366	388	340	279	230	207	187	181	182	188	181	186	200	209	217	227	223	249	267	285	255	
MEANS ‡				286	301	321	341	363	391	378	313	243	219	198	205	193	190	180	174	192	216	224	246	227	226	268	253	256	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE [ ]=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 24

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

JULY 1931 — JULY 1931

DAY	*	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X	X	168	168	200	177	191	200	214	206	200	194	166	166	162	122	122	123	129	122	131	162	144	176	226	298	174	0
2	X	X		310	298	296	288	254	240	274	223	199	138	106	102	84	70	88	162	134	186	208	248	249	232	137	169	195	1
3	X			191	197	213	226	277	268	225	196	168	122	129	106	97	103	106	106	108	116	135	114	150	166	169	143	160	1
4	X	X	X	149	169	185	171	177	192	168	163	149	150	149	149	149	152	157	159	185	205	226	239	260	290	271	251	188	1
5	X	X		202	217	232	246	213	219	222	141	125	157	129	120	91	76	78	81	96	99	137	196	197	169	228	277	164	1
6	X			281	262	232	242	234	264	274	226	216	200	186	166	156	159	182	186	183	200	186	205	209	267	253	282	219	1
7	X	X		285	234	271	279	302	326	251	242	243	216	211	200	185	168	163	166	180	188	200	232	208	248	251	277	230	1
8	X	X		290	265	288	268	293	328	273	245	242	208	200	191	185	157	182	182	182	202	209	213	199	217	242	259	230	1
9	X			287	294	323	304	323	340	264	257	232	197	172	169	177	171	165	122	163	176	27	140	315	196	208	239	219	1
10	X	X	X	246	279	310	308	169	166	248	179	99	85	85	93	103	123	137	129	134	125	137	144	176	171	172	157	166	1
11	X			194	213	185	166	171	203	203	185	169	147	138	146	137	138	123	111	182	200	144	105	228	226	205	219	172	1
12				216	200	189	200	199	199	220	188	156	137	159	157	102	116	125	134	105	14	111	200	239	256	...	...	...	1
13				...	...	...	...	...	...	...	...	264	225	203	180	168	168	156	154	154	47	30	26	112	185	213	111	...	1
14	X			262	248	259	265	296	331	281	236	194	176	174	141	141	143	147	154	169	179	197	228	216	229	200	211	212	.
15	X			188	211	144	234	317	296	270	254	232	213	200	180	185	171	171	183	188	192	203	220	232	268	282	301	222	.
16				253	291	305	202	222	234	299	200	197	172	211	200	185	154	150	165	183	197	202	216	205	226	...	...	...	1
17				...	...	...	...	...	...	...	248	232	202	194	188	165	...	169	...	...	...	...	...	...	...	...	...	...	1
18				...	...	...	...	...	...	...	220	208	...	172	180	171	169	122	24	157	169	176	197	202	213	199	245	...	1
19	X			259	276	290	294	291	259	222	219	213	185	183	172	156	108	109	132	131	120	166	185	213	232	250	205	203	1
20	X			171	216	248	216	234	209	237	202	200	211	194	180	169	122	122	125	91	40	189	234	188	232	240	223	187	1
21	X			220	259	279	304	321	345	312	262	229	232	228	213	197	147	112	132	46	62	106	120	102	106	108	116	190	1
22	X			122	108	103	120	96	87	114	138	140	122	106	87	108	119	120	47	65	102	159	242	229	234	250	260	137	1
23	X	X	X	260	270	264	328	302	277	279	216	186	163	147	143	141	78	85	102	109	132	149	168	205	194	202	208	192	1
24	X			199	232	253	216	226	245	260	239	205	196	185	169	141	81	102	56	82	21	97	12	35	226	220	196	162	2
25	X			222	234	248	271	302	294	271	237	216	197	171	137	138	144	138	122	106	61	156	209	229	219	199	256	199	1
26	X	X	X	279	226	245	254	264	237	268	239	222	219	205	205	185	180	185	189	209	217	234	265	279	305	279	281	236	1
27	X	X		279	339	342	290	335	359	367	306	268	254	253	228	214	196	200	202	203	217	279	114	182	192	183	208	250	1
28	X			206	225	226	240	270	301	307	242	217	196	106	137	171	174	171	163	174	192	216	120	157	217	219	228	203	1
29	X			240	232	236	232	257	257	240	236	216	209	182	74	87	125	192	222	185	194	191	220	251	256	259	302	212	1
30	X			299	299	140	222	246	246	220	223	232	236	202	105	90	55	71	135	196	172	156	169	174	188	176	186	185	1
31	X			217	211	154	144	182	245	254	185	165	174	169	183	169	171	122	36	132	183	185	166	209	213	182	217	178	1
MEANS *				232	238	237	242	252	259	251	219	199	184	168	152	147	133	137	136	145	150	170	180	201	218	216	230	196	
MEANS †				247	246	263	261	250	254	256	216	192	178	165	160	150	132	140	150	156	169	191	198	210	219	219	238	202	
MEANS ‡				220	222	241	248	221	214	235	201	171	162	150	151	148	131	137	140	153	160	175	196	213	227	230	239	191	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 25

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

JULY 1931

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

JULY 1931

Day	*	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X	X	121	138	168	151	176	168	170	178	159	155	147	140	149	110	108	108	117	110	125	155	145	174	216	291	153	0
2	X	X		297	291	287	285	255	239	271	214	178	134	97	95	89	67	{ 84 }	138	132	191	212	243	255	247	153	180	193	1
3	X			210	214	309	235	283	293	224	191	166	121	117	93	89	95	110	89	84	[99	127	80	123	153	138]	136	158	1
4	X	X	X	142	162	170	159	172	130	157	145	132	132	134	136	134	136	145	157	176	195	212	216	243	291	281	257	178	1
5	X	X		212	216	226	249	216	220	210	130	106	155	[136	130	99	80]	78	78	91	93	138	208	206	170	230	289	165	1
6	X			297	267	239	241	239	265	245	195	191	174	180	159	149	{ 164 }	172	174	174	193	180	210	214	259	257	287	213	1
7	X	X		287	237	267	275	311	337	257	237	237	204	204	197	[197	159	170	176	191	201]	206	230	216	235	241	261	231	1
8	X	X		285	263	285	277	287	315	257	243	220	208	189	191	189	162	{ 180	193	178	185	212	226	204	206 }	253	259	228	1
9	X			285	297	329	305	321	356	273	243	222	187	170	172	174	{ 172	174	174	157	155	189	132	345 }	199	204	220	227	1
10	X	X	X	269	277	307	289	155	147	241	136	73	67	67	84	99	117	[132	132	147	121	142]	145	[191	197	199	178]	162	1
11	X			[239	247	214	199	212	241	218	185	170	140	132	136	130	{ 130]	151	104	110	132	153	142	257 }	[273	235	257]	184	1
12				[259	235	226	224	237	237	235	164	134	117	132	136	[86	112	140	153]	159	170	42	[230	267]	275	222	235]	...	1
13				[263	333	305	323	311	313]	297	224	245	216	193	168	{ 149	170	172	159	121	174	187	183	108	206	220	232 }	...	1
14	X			273	239	245	249	291	317	273	220	174	153	172	136	134	136	134	149	172	180	214	247	208	216	197	199	205	.
15	X			185	132	71	251	299	277	255	216	199	183	189	[176	199	189	178	195]	197	208	220	226	220	259	277	297	212	.
16				257	281	299	155	183	218	297	195	176	168	208	[206	185	134	149	149]	191	214	218	216	201	216	193	293	...	1
17				297	271	353	313	297	335	265	193	178	174	168	[168	140	153	151	172	176	195	193	199	224	204	176	174]	...	1
18				195	208	201	168	249	230	237	218	155	136	142	155	149	{ 132	145	132	108 }	149	142	174	191	195	178	216	...	1
19	X			232	243	247	277	265	237	197	180	176	151	153	145	{ 132	91	102	112	117	134 }	132	168	195	195	230	195	179	1
20	X			166	189	197	197	201	174	199	164	145	168	153	138	132	102	104	{ 112	142	155	174 }	206	180	195	201	174	165	1
21	X			193	218	237	269	283	305	257	212	187	218	208	193	{ 164	132	127	121	104	123	71 }	117	86	80	69	67	168	1
22	X			82	69	73	89	67	58	78	89	93	75	75	58	{ 89	115	147	138	132	102	168 }	216	208	206	226	226	120	1
23	X	X	X	235	239	237	293	271	255	255	178	136	125	110	106	110	67	67	84	89	117	147	[164	201	174	195	195]	169	1
24	X			180	206	220	185	208	220	235	212	183	157	153	138	132	{ 138	130	132	89	132	64	136	157	208 }	201	174	166	2
25	X			195	216	220	249	275	273	249	204	176	159	149	112	112	121	{ 132	132	130	89	153 }	185	216	212 }	174	232	182	1
26	X	X	X	265	212	224	237	239	228	239	212	195	178	174	168	159	159	176	189	199	214	226	257	283	303	281	259	220	1
27	X	X		261	337	327	275	299	337	337	293	243	212	232	235	220	195	193	191	195	201	[267	130	153	176]	164	189	236	1
28	X			189	204	216	222	251	289	279	208	185	168	91	123	{ 157	176	174	168	187	195	193	247	191 }	187	195	187	195	1
29	X			195	193	195	164	208	237	306	216	183	170	145	{ 49	99	132	174	191	216	132	201 }	212	222	226	232	277	191	1
30	X			259	271	176	199	214	197	183	183	191	201	{ 195	67	73	115	110	176	189 }	159	127	138	123	164	145	155	167	1
31	X			164	189	123	121	168	201	220	164	147	134	{ 108	121	117	132	106	134	89	95 }	147	130	170	168	151	193	146	1
MEANS *				219	222	223	229	237	245	234	194	172	159	149	135	136	130	137	144	146	150	169	183	200	207	206	217	185	
MEANS †				235	237	250	249	238	243	239	197	168	157	149	148	144	125	133	145	152	163	189	197	210	217	221	236	193	
MEANS ‡				202	206	221	226	203	196	212	170	139	131	126	127	130	118	126	134	146	151	170	187	213	228	234	236	176	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE [ ]=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 26

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

JULY 1931

EXPRESSED IN VOLTS PER METER

JULY 1931

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY	✱	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X	X	12	19	33	16	33	31	51	58	77	77	86	91	76	98	96	88	78	66	52	52	42	50	25	26	56	0
2	X	X		24	34	33	29	29	40	42	50	57	73	84	86	88	100	≷ N58 ≶	95	58	62	64	45	37	38	55	120	58	1
3				72	44	44	35	22	24	41	55	67	77	100	94	92	101	101	114	78	⌈ 60	N70	Z	54	26	N47 ⌋	65	..	1
4	X	X	X	54	35	42	58	39	38	44	59	62	62	65	64	67	79	75	N51	51	53	42	36	28	21	22	28	49	1
5	X	X		39	32	22	26	34	29	33	60	71	N50	⌈ N35	N38	N14	N34 ⌋	51	52	51	44	33	22	25	32	15	21	36	1
6				23	16	16	18	16	19	31	52	58	62	59	65	70	≷ Z ≶	66	65	59	57	52	46	N35	35	39	32	..	1
7	X	X		25	29	21	21	18	19	40	41	47	53	57	58	⌈ N61	57	N38	N18	N33	N46 ⌋	50	52	48	38	45	32	39	1
8	X	X		27	35	26	15	15	16	28	39	47	48	57	58	N55	55	≷ N70	N48	54	55	60	N35	N46	N67 ≶	27	36	42	1
9				N14	21	15	16	18	19	33	41	37	53	57	53	52	≷ N44	N57	Z-	84	139	Z-	Z	23 ≶	30	34	25	..	1
10	X	X	X	30	37	30	27	33	28	41	68	126	139	125	106	85	82	⌈ N70	N64	55	53	N43 ⌋	52	[41	37	17	16]	58	1
11			[	21	29	33	23	25	24	39	49	60	70	N75	75	N72	≷ N79]	Z	Z	Z+	Z+	Z	Z	Z+ ≶	[35	36	27]	..	1
12			[	32	39	38	37	25	26	32	51	61	64	60	68	⌈ N71	72	N53	N55]	Z-	Z-	Z	[33	25 ⌋	22	22	22]	..	1
13			[	18	21	22	19	22	25]	34	51	52	60	70	71	≷ N75	N60	N47	N62	Z+	Z-	Z-	Z-	Z	Z	43	Z- ≶	..	1
14				N29	32	32	34	23	25	34	45	58	64	68	71	70	N69	..	..	..	..	..	..	..	..	..	..	..	..	1
15				..	..	..	..	24	32	39	N38	57	66	75	⌈ 71	N58	N48	N61	N66 ⌋	67	62	57	52	51	42	38	34	..	.
16	X			43	39	35	50	32	31	34	56	66	71	63	⌈ N62	N64	N99	N70	124 ⌋	66	N51	53	51	52	56	52	34	56	1
17	X			33	25	22	37	26	26	41	58	67	63	66	⌈ N74	N88	109	106	80	N72	N76	N35	116	N38	-67	-6	53 ⌋	52	1
18				60	50	46	31	28	38	35	46	66	67	62	67	66	≷ N86	Z-	Z-	Z+ ≶	44	38	32	44	45	44	28	..	1
19				25	23	26	22	27	25	39	55	61	73	77	82	≷ N98	N66	77	81	Z-	Z- ≶	51	49	36	60	25	52	..	1
20				57	50	47	45	49	56	50	61	64	52	70	103	104	N92	104	≷ N18	Z	Z	N81 ≶	64	56	46	61	47	..	1
21				58	47	24	26	25	25	35	52	61	51	58	N63	≷ 112	67	Z-	71	Z-	Z-	Z ≶	57	70	71	75	79	..	1
22				76	98	84	104	92	101	116	93	115	137	147	166	≷ 129	N60	Z-	Z	Z	Z	Z ≶	41	34	38	37	40	..	1
23	X	X	X	35	29	27	27	26	19	26	47	64	73	84	91	N103	107	82	64	65	52	48	⌈ 52	N48	32	36	29 ⌋	53	1
24				38	22	22	38	19	21	37	55	59	67	65	76	72	≷ Z-	Z-	Z-	Z-	Z-	Z	Z-	Z-	51 ≶	37	42	..	2
25				34	28	22	27	19	28	32	39	50	60	66	83	80	76	≷ N67	-12	N66	Z	N42 ≶	45	33	42	35	29	..	1
26	X	X	X	30	56	44	36	29	26	38	48	55	62	64	73	67	59	50	N52	59	53	52	42	30	32	28	35	47	1
27	X	X		33	25	21	29	25	22	33	46	56	63	66	65	63	64	64	68	66	59	⌈ 33	N13	50	38 ⌋	53	52	46	1
28				56	32	25	26	21	26	34	51	61	73	82	90	≷ N67	N51	N57	N64	N92	N89	86	Z-	Z ≶	78	50	44	..	1
29				41	44	46	45	37	45	51	59	67	70	73	≷ 143	Z	Z	145	111	Z-	Z+	N21 ≶	51	53	45	53	35	..	1
30				30	61	..	54	39	41	44	41	51	40	≷ N 1	206	Z	Z-	Z	Z	20 ≶	25	28	32	37	32	28	29	..	1
31				40	42	55	85	48	32	26	40	54	71	≷ 154	127	118	Z	Z	Z-	Z	Z+ ≶	70	48	35	42	45	39	..	1
MEANS ✱				32	33	30	31	28	27	38	52	66	70	71	72	69	79	69	67	59	56	47	47	40	31	31	40	49	
MEANS †				31	33	30	28	28	27	38	52	66	70	72	73	68	74	65	60	57	54	48	40	40	38	32	40	48	
MEANS ‡				32	35	35	33	32	28	40	56	77	83	85	85	80	85	75	64	62	55	47	47	38	34	26	27	53	

DESIGNATIONS AND REMARKS:

✱=ALL COMPLETE DAYS †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER ≷=DISTURBED BY BAD WEATHER

N=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT Z=INDETERMINATE IN MAGNITUDE AND SIGN Z+=INDETERMINATE POSITIVE VALUE Z-=INDETERMINATE NEGATIVE VALUE

TABLE 27

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

AUGUST 1938

EXPRESSED IN VOLTS PER METER

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

Day				0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1				28	32	36	22	29	32	36	54	74	89	78	82	95	121	115	99	90	74	70	61	47	Z-	Z	41	..	1
2				41	40	41	43	N32	Z	Z	Z	63	65	79	84	90	97	87	87	66	59	59	56	46	67	..	..	..	.
3				..	..	..	..	..	..	..	33	46	80	Z	Z	Z	Z+	Z	Z	96	90	77	73	50	57	48	69	..	.
4				44	46	44	41	19	19	52	76	83	102	112	120	Z-	Z	Z-	Z	Z+	43	35	21	22	36	42	Z	..	1
5				Z	Z	-4	44	50	52	56	56	58	78	76	80	90	99	79	53	N58	93	Z+	Z	Z	46	41	44	..	1
6				51	53	47	49	N56	91	110	89	89	106	121	140	129	142	N89	Z	Z	Z-	Z+	N10	50	62	53	68	..	1
7	X	X		72	74	86	77	92	87	73	65	59	65	113	149	136	111	147	169	106	87	76	71	58	40	39	33	87	0
8				40	54	44	37	34	38	43	45	64	81	95	112	N47	Z	Z+	120	Z	Z	Z	Z	Z+	Z	-26	53	..	1
9				74	69	80	65	66	81	47	43	63	60	57	64	86	113	83	79	Z	Z-	116	53	99	Z	Z	Z	..	2
10				-13	39	46	38	54	90	56	52	43	30	31	45	49	55	59	56	Z	46	32	33	32	28	27	30	..	1
11	X	X	X	27	24	33	31	44	47	48	48	44	50	N43	44	N43	50	N55	59	56	66	59	32	33	37	34	33	43	1
12				30	29	33	35	33	33	37	44	51	60	55	64	58	56	54	50	37	Z	Z-	Z	Z+	N29	38	35	..	1
13				37	42	36	37	44	41	44	47	56	67	80	80	90	103	79	N73	Z-	40	43	46	86	Z	Z	Z+	..	1
14	X	X		92	90	77	89	81	115	103	90	66	71	74	75	74	73	91	N37	-14	46	37	40	52	37	30	42	65	1
15				34	40	46	43	40	42	45	65	87	93	101	99	89	57	N89	Z-	Z-	Z-	Z	Z+	Z+	43	44	54	..	1
16				60	..	..	..	..	..	..	..	57	73	80	68	58	60	54	Z-	Z	Z	Z-	Z	19	21	24	32	..	.
17				23	30	29	21	30	23	37	42	42	43	44	53	63	66	57	67	60	53	56	60	Z-	56	Z-	Z-	..	1
18				32	30	30	31	33	34	46	46	52	56	63	69	74	91	71	78	Z-	57	41	34	32	27	23	24	..	1
19				28	31	29	24	26	24	30	37	46	53	..	..	62	-10	Z-	Z-	N17	42	32	173	Z+	Z	Z	Z	..	2
20				40	30	28	23	23	26	32	44	47	47	52	48	53	60	66	66	Z	Z-	Z	Z	Z	Z	Z	39	..	2
21	X	X	X	37	37	27	44	17	27	35	50	41	58	74	83	92	87	82	74	60	58	43	30	17	17	23	31	48	0
22	X	X		19	25	N34	31	24	24	24	31	50	60	77	89	90	89	80	72	66	52	43	20	17	20	29	143	50	1
23				N106	37	43	Z-	Z	79	27	35	50	63	59	56	50	57	55	56	45	43	34	31	23	19	28	Z	..	1
24				Z	Z	30	40	41	42	..	49	53	53	57	56	57	N56	N53	50	46	50	33	28	27	27	32	30	..	1
25	X	X	X	23	30	24	25	23	32	42	49	57	63	60	60	64	63	66	58	53	50	35	17	17	20	20	26	41	0
26	X	X	X	20	19	17	20	17	20	23	39	46	53	57	61	64	62	59	55	51	43	42	34	26	17	16	29	37	0
27				27	23	24	24	24	19	26	35	49	50	56	61	66	52	N43	N43	66	106	222	Z	Z	Z	Z+	N35	..	1
28	X	X		50	47	50	37	N 4	31	42	42	49	50	56	65	91	80	76	62	71	55	49	45	36	20	27	29	48	1
29				Z	Z-	Z	Z	22	52	61	56	63	70	78	85	79	85	76	67	65	59	58	N48	98	Z+	124	53	..	2
30				38	50	53	40	47	42	45	68	83	90	86	90	90	88	N22	Z	N63	103	46	43	40	51	42	27	..	1
31				27	29	27	29	26	27	30	45	56	63	64	76	78	80	77	76	77	66	54	44	N33	Z-	Z-	Z-	..	1
MEANS *				42	43	44	44	38	48	49	52	52	59	69	78	82	77	82	73	56	57	48	36	32	26	27	46	52	
MEANS †				42	43	44	44	38	48	49	52	52	59	69	78	82	77	82	73	56	57	48	36	32	26	27	46	52	
MEANS ‡				27	28	25	30	25	32	37	46	47	56	58	62	66	66	66	62	55	54	45	28	23	23	23	30	42	

DESIGNATIONS AND REMARKS:

*=ALL COMPLETE DAYS †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER X=DISTURBED BY BAD WEATHER

N=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT Z=INDETERMINATE IN MAGNITUDE AND SIGN Z+=INDETERMINATE POSITIVE VALUE Z-=INDETERMINATE NEGATIVE VALUE

TABLE 26

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

AUGUST 1931 — AUGUST 1931

DAY	✱	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X			265	282	274	285	302	283	315	249	195	148	185	194	142	104	118	131	123	123	117	118	127	86	140	188	187	1
2	X			185	215	219	219	229	69	51	181	145	160	163	149	131	123	127	136	167	197	181	185	219	157	172	161	164	.
3	X			185	189	199	226	235	267	270	240	164	111	83	61	102	99	48	95	130	128	130	118	98	102	105	102	145	.
4	X			172	158	128	143	170	179	169	142	142	118	93	74	67	57	54	88	207	218	268	314	333	345	322	218	174	1
5	X			99	90	221	201	181	231	225	232	219	179	207	221	219	188	240	234	167	238	270	172	241	261	297	298	212	1
6	X			285	310	294	298	265	189	151	136	154	131	102	131	146	191	182	85	224	133	207	218	241	238	228	231	199	1
7	X	X		226	213	175	178	166	137	175	224	206	175	178	105	163	194	169	161	151	221	234	238	283	295	277	330	203	0
8	X			289	225	259	265	283	255	280	274	244	207	167	134	181	176	212	210	157	131	79	210	238	197	237	204	213	1
9	X			120	148	170	207	173	124	139	128	151	179	179	175	143	92	127	145	151	29	192	207	225	54	20	118	142	2
10	X			251	221	203	185	167	185	191	218	213	212	224	219	219	221	228	234	86	288	297	282	276	283	270	289	228	1
11	X	X	X	314	298	294	315	276	252	265	271	270	269	253	228	231	226	237	228	213	136	117	176	213	268	304	318	249	1
12	X			312	330	314	314	315	315	312	277	256	252	234	241	225	217	224	224	246	131	16	73	127	117	143	151	224	1
13	X			167	149	163	176	178	175	195	206	203	179	143	117	101	92	101	76	89	163	226	308	340	158	32	149	162	1
14	X	X		149	142	142	119	163	131	139	157	163	176	198	170	166	127	108	77	70	145	131	130	102	102	126	117	136	1
15	X			117	123	128	127	145	163	164	161	143	133	120	117	91	76	73	57	7	32	127	120	108	117	115	118	112	1
16				118	117	111	104	102	123	126	149	139	142	140	166	179	185	184	152	179	143	1	73	261	258	273	249	...	.
17	X			285	273	270	289	264	279	268	271	253	232	209	194	176	154	163	175	198	216	179	252	152	273	178	226	226	1
18	X			256	253	261	268	271	280	270	265	256	224	210	209	191	188	178	178	137	192	228	163	221	252	300	303	231	1
19	X			316	330	283	315	314	321	283	303	262	234	192	173	143	121	79	143	166	178	210	200	15	96	126	117	205	2
20	X			228	221	241	285	282	252	256	256	255	225	192	194	181	143	114	137	139	102	102	77	117	110	115	185	184	2
21	X	X	X	195	219	237	194	232	231	207	206	192	172	124	104	98	102	98	99	96	96	123	164	175	191	189	163	163	0
22	X	X		178	169	175	218	297	302	300	255	210	173	114	93	95	88	133	136	133	136	166	240	200	277	280	232	192	1
23	X			265	207	188	36	114	318	283	285	232	204	184	194	197	201	140	120	181	192	189	194	219	253	298	194	204	1
24	X			105	142	286	277	265	282	273	271	261	243	234	224	229	210	207	209	212	225	246	225	267	267	282	291	239	1
25	X	X	X	298	327	318	330	303	304	253	250	224	209	218	207	210	194	189	189	189	209	262	268	250	302	327	315	256	0
26	X	X	X	124	151	174	148	174	362	363	295	268	225	204	188	178	176	176	173	178	192	218	244	253	273	315	295	264	0
27	X			308	330	330	330	328	330	344	297	265	252	207	207	173	163	158	160	169	178	194	50	38	88	224	200	222	1
28	X	X		207	235	238	235	225	267	252	238	229	164	189	169	154	178	149	131	101	131	178	206	231	258	253	277	204	1
29	X			126	50	114	221	241	203	228	207	198	209	215	207	197	192	185	178	164	192	201	204	274	240	268	286	200	2
30	X			342	300	303	295	315	300	315	306	273	250	224	231	224	178	210	186	224	246	280	283	255	235	304	344	268	1
31	X			346	345	322	315	333	340	333	306	274	225	207	185	158	143	161	167	175	206	238	241	219	163	253	29	237	1
MEANS ✱				230	228	237	241	247	244	242	237	217	196	182	170	164	154	153	152	155	167	187	196	202	202	217	215	201	
MEANS †				236	244	244	245	254	248	244	237	220	195	185	158	162	161	157	149	141	158	179	208	213	246	259	256	208	
MEANS ‡				283	299	306	297	296	287	272	256	238	218	200	182	179	174	175	172	169	158	180	213	223	258	284	273	233	.

DESIGNATIONS AND REMARKS:

✱=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 29

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

AUGUST 1931

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

AUGUST 1931

Day				0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER FIGURE
1	X			251	255	249	247	253	243	291	221	152	125	148	162	110	76	91	108	110	110	110	110	125	101	108	172	164	1
2	X			181	203	209	211	221	162	164	89	125	125	131	129	114	97	125	129	152	174	170	183	197	146	148	137	155	.
3	X			178	179	187	207	215	207	251	211	129	80	76	112	69	91	114	80	108	104	97	89	80	69	72	84	130	.
4	X			131	219	97	99	108	152	129	101	97	89	84	65	80	46	84	84	197	207	251	289	310	299	273	277	157	1
5	X			191	146	217	172	133	203	191	203	174	131	156	170	174	148	207	211	170	211	131	125	217	231	251	233	183	1
6	X			195	209	189	245	231	150	127	87	104	91	69	84	108	150	148	185	197	227	150	197	211	160	152	146	159	1
7	X	X		156	141	101	120	91	59	122	156	148	129	129	84	120	166	133	125	131	195	209	197	241	215	211	267	152	0
8	X			247	191	225	221	255	225	249	251	191	158	129	106	158	91	191	172	172	154	129	22	87	168	251	185	176	1
9	X			95	112	125	148	139	72	67	95	110	150	152	148	129	67	120	139	150	166	168	185	170	185	148	72	130	2
10	X			225	195	164	152	137	148	150	179	179	191	197	193	193	187	185	191	215	251	263	251	241	247	239	253	201	1
11	X	X	X	271	261	261	287	241	225	243	251	251	241	233	207	211	207	217	211	191	129	108	158	193	233	269	287	224	1
12	X			300	293	277	275	279	279	277	253	235	217	213	213	207	203	197	201	221	168	104	84	104	106	122	118	206	1
13	X			131	125	139	150	154	143	156	160	164	135	114	101	87	82	84	82	91	146	193	283	271	205	129	63	141	1
14	X	X		125	87	87	67	80	46	82	99	116	116	141	125	131	104	87	89	65	133	118	129	93	91	108	99	101	1
15	X			95	106	108	104	118	129	127	120	87	87	82	80	67	74	65	80	95	146	116	78	114	108	160	78	101	1
16				...	...	...	...	...	108	97	108	104	89	89	129	156	162	164	170	162	110	158	112	225	241	235	215	...	.
17	X			259	247	247	265	231	251	233	245	223	193	183	164	146	133	133	129	170	213	168	217	221	243	191	231	206	1
18	X			241	225	213	227	239	247	225	223	221	185	164	168	152	135	152	141	177	152	193	148	191	215	271	255	198	1
19	X			285	287	239	287	283	291	237	249	209	174	152	139	118	129	150	143	150	139	179	129	191	146	133	152	191	2
20	X			207	203	221	249	241	231	229	205	219	201	168	170	156	129	104	120	152	131	41	63	39	133	166	172	165	2
21	X	X	X	177	193	213	170	203	207	179	168	172	129	91	80	80	84	82	76	78	87	110	143	146	170	168	135	139	0
22	X	X		152	140	154	207	273	255	273	207	172	139	99	76	69	63	106	118	108	114	143	207	152	253	237	146	161	1
23	X			221	189	156	170	137	291	269	251	191	160	148	154	191	189	131	108	170	189	185	177	193	227	269	199	190	1
24	X			133	231	253	249	241	253	251	247	231	221	211	201	199	191	191	193	203	209	227	189	241	243	251	265	222	1
25	X	X	X	273	302	306	310	293	293	233	221	193	183	195	193	191	170	170	170	162	179	247	265	219	267	291	293	234	0
26	X	X	X	295	324	333	320	347	349	329	259	217	189	166	168	152	150	154	164	170	191	211	243	233	255	285	271	241	0
27	X			271	302	293	293	299	295	291	265	213	203	177	179	143	139	148	152	154	154	131	118	170	99	172	185	202	1
28	X	X		172	191	195	201	213	231	213	199	191	150	154	129	108	139	114	108	89	122	152	170	199	227	215	251	172	1
29	X			129	177	91	233	231	183	193	185	181	181	170	156	148	143	150	148	137	166	172	172	217	203	185	235	174	2
30	X			269	231	231	251	269	247	253	211	189	172	162	172	174	135	195	129	197	191	231	241	205	191	227	291	211	1
31	X			306	297	277	267	279	287	263	243	227	179	160	148	129	112	129	148	152	181	207	203	179	207	265	231	212	1
MEANS *				205	209	202	213	215	213	210	195	177	157	148	143	137	128	139	138	151	165	164	169	182	188	199	193	177	
MEANS †				202	206	206	210	218	208	209	195	182	160	151	133	133	135	133	133	124	144	162	189	184	214	223	219	178	
MEANS ‡				254	270	278	272	271	268	246	225	208	186	171	172	158	153	156	155	150	146	169	202	198	231	253	246	210	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 30

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

SEPTEMBER 1931

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

SEPTEMBER 1931

DAY	*	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X			212	260	268	290	296	319	334	288	256	242	236	224	218	153	87	231	170	286	173	274	319	350	324	362	256	.
2	X			154	151	165	204	216	215	177	331	255	135	104	103	118	144	185	190	209	236	270	322	278	378	388	357	279	.
3	X			154	180	195	163	182	192	175	319	285	267	228	221	219	174	164	[121	121	156	236	161	179	298	284	297]	265	.
4	X	X	X	[142	145	194	223	207	182	171	360	304]	[264]	240	164	144	165	164	168	177	176	171	194	237	240	250	242	264	0
5	X			270	285	294	310	348	351	334	310	234	168	149	128	118	} 101	121	91	131	153	191 }	207	192	179	180	221	211	1
6	X			262	285	270	322	312	348	359	322	207	174	177	170	164	161	} 143	90	19	32	104 }	179	221	243	210	272	210	1
7	X			270	279	280	304	307	312	322	290	222	194	119	131	} 149	135	31	57	167	209	164	128	15	164	209 }	249	196	2
8	X			240	238	209	242	256	276	261	255	232	222	189	141	143	132	104	112	144	173	207	218	218	285	285	282	211	.
9	X			270	273	307	315	312	336	328	279	242	238	226	209	189	} 162	164	183	152	228	141	267 }	321	273	297	285	250	.
10	X	X	X	288	304	319	325	347	350	371	310	266	238	225	195	194	201	200	204	185	192	195	284	334	357	347	365	275	1
11	X	X		409	410	423	426	451	464	456	392	334	290	254	240	225	204	197	} 191	212	221 }	234	255	250	268	255	256	305	1
12	X			306	294	304	306	291	310	313	296	284	268	260	252	237	153	} 118	91	240	194	224	224 }	252	231	226	249	247	1
13	X	X	X	250	264	270	278	282	288	258	255	240	209	215	222	212	192	152	113	118	164	212	244	243	255	255	278	228	0
14	X	X		179	179	238	191	} 173	179	167	189	155	216	230	194 }	164	152	106	131	194	224	280	321	252	306	330	319	211	1
15	X	X	X	365	380	397	333	362	380	395	347	296	240	240	225	197	207	194	191	179	224	197	268	270	365	322	350	288	0
16	X	X	X	345	365	410	412	406	359	366	429	336	294	237	209	210	192	149	132	134	132	177	179	224	258	255	261	270	1
17	X			284	255	255	246	254	249	255	258	174	101	91	103	103	129	144	} 75	118	194	194 }	206	207	192	254	272	192	1
18	X			266	252	255	248	244	268	243	249	194	116	90	140	189	} 185	74	149	171	180	224	240	210 }	230	254	268	206	1
19	X	X		285	321	362	395	350	322	322	310	279	243	216	[194	194	206	207	206	209]	222	240	274	292	284	270	285	270	1
20	X	X	X	304	278	296	304	249	296	316	274	207	192	164	140	137	179	185	197	201	209	225	254	270	286	310	319	241	1
21	X	X	X	321	339	362	378	395	410	416	368	321	285	255	238	218	209	194	194	225	238	244	161	194	246	254	312	282	0
22	X	X	X	317	318	321	351	375	366	360	306	285	255	237	221	222	215	207	207	212	216	226	262	285	327	319	357	283	0
23	X	X	X	410	426	430	439	439	441	410	359	284	234	244	240	215	197	212	213	206	222	225	195	285	285	270	315	300	0
24	X			318	344	380	410	397	412	362	342	282	238	194	188	} 185	179 }	210	225	225	237	209	242	225	194	285	297	274	1
25	X			319	354	350	380	372	380	397	330	255	221	194	149	93	96	96	} 128	93	100	177	91 }	209	254	237	250	230	1
26	X	X	X	255	297	279	319	286	288	321	256	237	210	185	164	132	121	119	129	129	143	174	171	161	188	226	252	210	0
27				258	266	228	225	222	228	225	236	188	167	161	149	132	126	} 116	60	103	85	159	194	167	91	194	225 }	...	1
28	X			266	237	238	269	261	284	240	258	222	134	113	132	141	} 118	90	74	125	57	132	134	180	219 }	226	207	181	2
29				197	212	237	212	201	231	252	256	164	76	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0
30				...	...	...	...	...	...	...	219	180	164	159	165	164	152	174	185	201	225	226	231	244	254	252	272	...	0
31																													
MEANS *				299	308	321	333	332	340	333	307	255	218	197	183	175	165	149	152	165	186	202	221	234	265	271	288	246	
MEANS †				315	325	346	352	348	348	348	320	273	244	226	204	190	188	176	175	183	199	215	236	254	282	282	301	264	
MEANS ‡				322	332	348	356	355	356	358	326	278	242	224	202	188	188	178	175	177	192	205	221	250	281	281	305	264	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 31

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

SEPTEMBER 1932

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

SEPTEMBER 1932

DAY	*	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	DAYS ACTIVE
1	X			185	220	193	232	249	241	253	235	218	195	176	174	174	112	67	89	108	281	239	247	277	313	277	317	211	.
2	X			319	317	319	358	376	364	319	273	201	104	69	84	91	112	151	159	174	199	241	279	239	349	358	317	240	.
3	X			309	335	356	317	345	341	307	267	237	195	174	174	170	151	142	[93	104	134	210	132	153	267	259	257]	226	.
4	X	X	X	[317	323	347	376	372	339	331	315	251]	[230]	197	149	110	130	145	153	170	172	157	178	210	216	218	216	234	0
5	X			239	255	259	271	319	319	293	265	195	142	121	106	91	82	115	112	112	147	168	187	174	155	166	195	187	1
6	X			232	257	232	293	259	301	297	253	174	130	127	132	136	129	112	102	110	132	136	164	187	216	187	239	189	1
7	X			247	251	257	275	277	275	285	239	176	136	89	91	106	134	115	89	95	187	151	149	180	130	132	216	178	2
8	X			201	208	178	214	232	239	228	216	195	185	142	106	108	95	78	89	117	134	174	199	197	249	255	253	179	.
9	X			237	239	251	273	277	295	279	230	195	174	157	157	151	132	132	153	67	214	216	247	297	257	275	259	215	.
10	X	X	X	255	267	295	299	317	319	325	257	214	193	170	153	155	172	176	174	164	174	172	247	311	337	319	337	242	1
11	X	X		376	374	376	376	410	414	414	349	279	228	206	195	183	174	170	174	172	208	216	235	226	239	239	245	270	1
12	X			277	263	277	291	273	283	291	265	237	232	230	216	214	138	93	132	235	178	195	220	222	199	187	195	223	1
13	X	X	X	216	237	237	239	239	237	216	206	206	174	168	180	201	174	136	102	102	151	193	216	216	226	216	247	197	0
14	X	X		151	151	220	189	153	159	153	157	132	195	206	149	123	110	84	93	153	174	247	289	222	277	287	289	182	1
15	X	X	X	337	339	370	295	325	339	356	307	228	174	170	168	151	153	153	153	140	183	164	241	239	337	283	317	247	0
16	X	X	X	317	327	376	376	372	327	329	374	277	237	195	174	185	153	112	110	123	127	166	172	214	237	237	237	240	1
17	X			257	220	237	228	220	216	216	222	140	67	67	73	78	110	132	123	110	174	166	176	189	174	235	255	170	1
18	X			237	222	237	228	220	237	216	214	153	84	67	108	136	130	115	112	155	153	176	178	155	189	216	220	173	1
19	X	X		243	283	315	356	319	297	293	261	237	224	208	[176	183	185	189	178	191]	197	208	239	257	249	247	257	241	1
20	X	X	X	259	237	257	253	210	239	277	226	174	174	136	112	121	172	189	195	195	208	216	243	253	261	285	293	216	1
21	X	X	X	297	303	333	341	356	376	374	313	277	237	214	174	174	174	172	153	191	199	235	138	166	224	232	279	247	0
22	X	X	X	321	295	297	323	347	337	337	247	237	195	178	176	174	193	176	174	191	189	193	222	259	305	299	337	250	0
23	X	X	X	385	395	404	404	410	399	368	301	232	197	199	206	176	168	178	174	180	195	197	178	257	261	241	291	266	0
24	X			289	299	347	368	358	395	333	299	243	195	155	153	174	170	191	214	220	228	191	216	197	172	255	267	247	1
25	X			293	327	315	337	333	353	362	285	210	176	164	130	67	69	80	99	134	132	155	166	195	226	216	228	210	1
26		X	X	218	267	245	295	267	271	277	222	193	174	153	136	112	99	89	102	106	132	155	147	136	174	212	230	184	0
27				237	241	195	195	199	199	204	197	170	142	132	115	112	106	89	78	86	89	142	...	102	93	115	212	...	1
28	A			237	214	206	237	218	257	214	204	170	99	78	102	102	104	149	130	82	197	89	95	82	149	210	176	158	2
29				174	180	193	185	174	193	212	214	127	62	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2
30				...	...	...	...	...	...	...	187	138	110	110	132	142	123	142	153	164	193	214	197	230	232	220	239	...	0
31																													
MEANS *				269	275	287	298	298	303	294	259	210	176	156	146	142	138	135	134	144	178	186	200	211	237	242	258	216	
MEANS †				284	292	313	317	315	312	312	272	226	202	185	165	158	158	151	149	160	178	194	211	228	257	255	275	232	
MEANS ‡				292	299	316	320	322	318	319	277	229	198	178	163	156	159	153	149	156	173	185	198	226	258	254	278	232	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 32

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

SEPTEMBER 1931

EXPRESSED IN VOLTS PER METER

SEPTEMBER 1931

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY	✱	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1				8	43	66	37	35	34	42	47	56	71	77	73	77	79	8	z	..	..	..	..	..	..	..	..	..	.
2				..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	.
3				..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	[72	53	45	40	52	42	31	14	27]	..	.
4	X	X	X	[16	14	12	12	13	16	21	31	47	[46]	62	79	93	86	76	64	53	51	49	49	34	20	21	23	43	●
5				18	23	24	21	14	17	19	30	38	48	62	82	65	N14	N 9	z-	20	N24	N58	38	40	49	31	34	..	✱
6				35	35	26	27	21	24	23	45	71	77	78	79	82	83	N82	z	z-	z-	z-	40	25	26	26	28	..	1
7				28	36	28	24	22	21	31	45	60	75	93	90	124	N24	z-	z	z+	59	48	z-	z-	z	z+	49	..	2
8				49	50	55	42	37	33	45	54	61	68	92	99	94	88	82	88	76	72	51	23	26	..	..	..	..	.
9				..	..	..	..	..	..	..	20	61	72	83	73	75	90	78	87	z+	z	z-	34	19	27	21	30	..	.
10	X	X	X	35	21	22	24	24	21	22	47	55	62	76	76	79	74	N60	69	59	49	45	26	21	20	17	20	43	1
11	X	X		27	22	21	18	17	16	23	36	48	67	68	81	82	71	65	N54	N127	N44	31	21	21	16	17	22	42	1
12				22	20	21	16	22	21	27	31	31	41	46	45	56	73	124	z-	N 14	38	82	N29	36	37	41	43	..	1
13	X	X	X	48	42	28	31	34	38	52	58	66	80	85	81	79	86	76	79	77	74	47	42	45	44	42	38	55	0
14	X	X		65	62	24	41	53	N25	N17	22	N35	N38	42	92	101	105	93	79	69	62	45	26	31	26	23	25	50	1
15	X	X	X	21	22	31	34	20	25	27	49	65	82	96	92	105	113	96	80	66	67	67	47	27	24	26	24	54	0
16	X	X	X	22	21	20	24	31	28	34	28	45	63	72	72	72	75	68	48	41	43	24	N25	27	29	24	27	40	1
17				28	20	23	24	26	31	24	41	62	106	105	89	87	63	62	z-	z	N42	N69	27	21	25	24	23	..	1
18				29	21	17	17	17	28	27	37	64	93	108	90	99	107	z	z+	N89	65	58	103	79	45	38	31	..	1
19	X	X		24	N26	20	16	23	27	28	36	44	47	51	[N48	48	51	51	N51	41]	42	45	41	27	41	42	34	38	1
20	X	X	X	27	45	41	25	36	23	26	55	75	72	78	72	64	61	46	55	55	48	40	46	34	23	23	26	46	1
21	X	X	X	19	19	17	15	15	14	24	43	54	62	75	85	78	78	72	71	69	55	38	44	45	29	24	17	44	0
22	X	X	X	27	30	25	21	24	22	34	49	61	75	93	85	108	93	82	73	67	63	51	34	24	23	21	18	50	0
23	X	X	X	17	17	20	19	21	20	27	37	52	75	59	63	66	69	62	81	49	48	41	44	34	35	36	28	42	0
24				21	17	20	21	16	27	29	35	47	66	72	68	z	52	51	40	42	41	41	35	36	34	27	20	..	1
25				22	23	21	15	15	17	20	30	44	56	59	71	97	79	65	N62	z-	z-	41	z-	20	18	23	116	..	1
26	X	X	X	15	14	20	17	14	12	20	34	45	50	53	61	69	85	86	80	56	52	36	33	27	21	23	28	39	0
27				19	19	30	36	35	34	26	40	51	55	60	76	85	93	N92	z-	z	z	N52	N48	z+	z	z+	N43	..	1
28				43	48	51	31	27	39	48	39	62	101	120	102	99	90	z	z	z	z-	z	z	z+	z+	38	44	..	2
29	X			39	49	41	51	62	51	47	57	93	164	144	110	103	99	79	68	70	51	21	25	27	24	24	32	64	0
30	X			29	21	17	17	17	20	20	29	44	69	77	75	71	69	61	52	49	33	21	17	16	29	33	30	38	0
31																													
MEANS ✱				29	29	24	24	27	24	28	41	55	70	75	78	81	81	72	67	63	52	40	35	29	27	26	25	46	
MEANS †				28	27	23	23	25	22	27	40	53	63	70	76	80	81	72	68	64	54	43	37	31	27	26	25	45	
MEANS ‡				25	24	24	22	23	22	29	43	56	67	75	77	81	82	72	70	59	55	44	39	32	27	26	24	46	

DESIGNATIONS AND REMARKS:

✱=ALL COMPLETE DAYS †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER ≷=DISTURBED BY BAD WEATHER

N=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT. Z=INDETERMINATE IN MAGNITUDE AND SIGN Z+=INDETERMINATE POSITIVE VALUE Z-=INDETERMINATE NEGATIVE VALUE

TABLE 38

OCTOBER 1931 — POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY — OCTOBER 1931

EXPRESSED IN VOLTS PER METER

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY	*	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	OBSERVATIONS
1				26	33	38	36	46	36	33	36	46	77	103	113	97	66	≷ N28	N84	241	Z	Z	Z ≶	38	35	32	44	..	1
2				43	46	42	38	36	34	46	61	64	99	124	106	103	85	≷ 67	Z-	Z- ≶	50	47	42	42	34	23	25	..	1
3	X	X	X	25	28	28	25	25	27	28	45	69	86	93	98	89	81	71	67	53	44	33	32	17	17	21	20	47	0
4	X	X	X	18	15	15	21	19	21	21	37	50	64	71	81	76	72	75	69	60	44	29	31	32	28	28	24	42	0
5	X	X	X	24	22	21	21	18	20	28	48	57	78	98	85	97	91	84	75	60	53	39	27	32	28	23	26	47	0
6	X	X	X	27	24	31	29	24	27	32	53	63	67	75	82	88	79	72	64	55	45	29	39	28	22	20	20	46	0
7	X	X		18	25	23	23	24	23	25	36	57	64	73	78	69	64	⌈ 53	N38 ⌋	54	53	39	31	23	20	14	15	39	1
8	X	X	X	18	19	19	17	28	23	27	48	85	102	92	84	83	72	61	50	50	44	36	29	24	18	19	18	44	0
9	X	X		18	28	22	21	21	25	26	35	39	48	86	85	67	⌈ N36	N53 ⌋	38	39	45	29	32	36	21	22	17	37	1
10	X	X	X	17	17	14	18	37	43	48	59	75	78	78	82	100	97	74	64	56	54	54	59	53	55	30	36	54	0
11	X			32	24	21	21	19	19	35	46	58	67	85	92	120	92	64	54	53	49	50	53	32	25	21	25	50	0
12	X			18	15	21	21	25	25	28	34	39	55	64	78	74	75	67	60	53	45	37	21	19	18	18	21	39	0
13	X	X	X	23	26	16	14	14	21	17	34	47	53	61	67	69	68	71	60	50	31	25	21	21	18	18	23	36	0
14	X	X	X	24	22	23	18	26	18	18	29	44	53	59	64	61	60	48	47	44	31	31	22	18	21	20	15	34	0
15				18	15	16	14	14	18	21	23	29	35	33	46	54	65	⌈ 56	N32	Z-	N 4 ⌋	35	36	33	31	25	18	..	1
16	X	X	X	18	16	20	17	22	25	25	37	53	62	67	62	57	57	48	46	37	31	24	28	N11	18	18	18	34	1
17	X	X	X	24	18	17	16	18	18	22	31	42	50	56	64	72	70	66	62	52	36	25	25	28	25	23	22	37	0
18				22	24	26	18	20	19	26	32	48	65	⌈ 60	N32	51	51	43	N23	Z-	N17 ⌋	45	42	40	25	43	31	..	1
19	X	X		25	27	36	18	16	14	24	45	55	61	71	71	⌈ 53	61	48	N40	-18	32 ⌋	34	31	45	40	25	25	37	1
20	X	X		29	27	28	42	32	25	65	108	99	104	75	≷ -39	N14	35 ≶	38	34	43	40	32	24	30	28	39	26	41	1
21	X	X	X	21	25	29	21	23	18	21	34	49	59	64	64	64	73	65	54	50	45	39	50	31	26	28	28	41	0
22	X	X	X	28	24	21	21	21	30	29	51	61	71	93	102	100	110	88	77	69	51	39	31	25	21	29	21	50	0
23	X	X	X	20	29	28	25	36	28	33	47	53	68	91	94	94	103	103	84	61	36	31	30	28	32	27	21	50	0
24	X	X	X	20	25	20	24	18	23	24	37	56	62	73	82	81	86	89	71	64	44	42	32	21	24	21	17	44	0
25	X	X		18	18	21	21	18	18	18	33	42	58	70	76	78	64	53	49	N32	N21	39	43	40	26	28	29	38	1
26	X	X	X	22	22	23	27	25	35	23	30	49	58	67	78	74	71	64	56	48	45	29	32	43	28	32	N21	42	0
27	X	X	X	21	18	22	21	25	32	23	37	46	55	67	74	73	81	75	56	53	50	59	45	31	33	33	27	44	0
28	X	X	X	23	25	17	18	17	20	21	30	43	58	69	89	107	106	83	51	57	N42	49	39	32	28	28	26	45	1
29	X	X	X	37	31	24	22	28	30	31	41	53	61	72	85	88	77	71	67	59	36	31	34	28	27	28	33	46	0
30	X	X	X	21	24	21	25	N22	38	50	55	57	57	64	60	59	63	64	54	46	N25	22	22	18	24	21	16	39	1
31	X	X	X	17	16	17	18	22	20	21	30	39	53	60	75	77	60	59	65	47	N27	36	29	20	28	21	18	36	1
MEANS *				22	23	22	22	24	25	28	43	55	65	73	75	77	74	67	58	47	41	36	33	28	26	24	22	42	
MEANS †				22	23	22	22	23	25	28	43	55	65	73	74	76	73	67	58	49	40	35	33	29	26	25	22	42	
MEANS ‡				22	22	21	21	23	26	27	41	55	65	72	79	81	79	72	62	54	41	35	33	27	26	24	22	43	

DESIGNATIONS AND REMARKS:

*=ALL COMPLETE DAYS †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER ≷=DISTURBED BY BAD WEATHER

N=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT Z=INDETERMINATE IN MAGNITUDE AND SIGN Z+=INDETERMINATE POSITIVE VALUE Z-=INDETERMINATE NEGATIVE VALUE

TABLE 24

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

OCTOBER 1931

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

OCTOBER 1931

DAY	‡	†	#	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X			252	272	241	227	226	252	271	240	158	128	84	93	93	88	93	85	93	93	81	122	140	142	139	137	156	1
2	X			133	15.	195	200	192	199	194	202	160	111	82	119	102	116	118	72	70	140	159	187	200	218	216	224	156	1
3	X	X	X	445	275	254	251	288	294	286	295	229	217	211	210	192	131	122	190	215	240	254	209	252	295	301	287	239	0
4	X	X	X	319	325	371	382	360	370	360	331	278	240	235	224	216	203	193	180	180	165	133	160	236	276	347	338	267	0
5	X	X	X	324	324	336	336	336	373	372	326	305	254	228	224	193	155	139	136	129	128	128	200	304	347	312	310	259	0
6	X	X	X	300	312	346	371	384	386	396	314	312	272	248	227	200	125	171	192	191	216	236	288	295	312	312	346	282	0
7	X	X		383	380	396	420	406	394	408	377	316	274	245	232	223	210	[215	204]	211	241	272	304	248	302	352	373	308	1
8	X	X	X	384	400	421	396	376	419	394	313	174	145	146	139	138	128	150	173	209	229	288	193	247	277	310	349	267	0
9	X	X		361	349	344	388	401	397	360	336	311	240	180	167	218	[214	217]	217	227	251	276	204	217	252	264	294	279	1
10	X	X	X	324	358	370	379	347	274	238	214	200	203	210	203	148	118	152	172	211	238	232	216	229	212	250	288	241	0
11				275	275	300	318	332	322	334	326	299	270	234	215	139	116	185	212	214	216	205	193	199	216	266	286	...	0
12				286	307	346	364	348	326	347	367	353	290	257	199	180	192	205	192	204	212	220	205	205	270	276	295	...	0
13	X	X	X	326	323	372	383	372	397	360	332	277	252	227	214	191	151	151	139	129	131	138	187	262	275	253	295	256	0
14	X	X	X	289	314	335	348	338	355	372	353	319	277	233	199	196	197	162	205	192	162	210	209	238	302	268	301	266	0
15	X			384	398	396	366	370	358	326	370	353	324	299	252	215	165	[164	147	107	108]	132	139	151	184	236	240	258	1
16	X	X	X	246	239	287	278	292	275	314	284	226	194	192	180	140	104	87	90	113	148	180	211	228	238	229	233	209	1
17	X	X	X	276	289	312	314	311	334	340	335	286	246	204	132	126	153	130	128	151	140	135	180	204	252	260	288	230	0
18	X			322	318	337	370	374	373	372	360	316	288	[236	208	214	204	204	202	160	190]	246	234	216	241	242	265	270	1
19	X	X		288	276	260	270	288	301	322	253	226	215	193	204	[206	143	162	151	162	202]	226	204	144	122	276	252	223	1
20	X	X		246	269	252	233	262	275	198	89	101	132	139	(139	192	157)	203	203	203	212	244	240	253	228	214	224	204	1
21	X	X	X	235	277	289	325	330	330	359	342	310	250	206	217	212	151	107	172	187	199	222	148	151	155	139	162	228	0
22	X	X	X	162	210	251	251	254	284	271	282	234	192	162	153	151	86	103	129	143	145	173	140	235	228	270	276	199	0
23	X	X	X	276	305	306	323	307	328	353	311	292	256	212	198	191	136	114	131	168	220	172	197	239	313	305	290	248	0
24	X	X	X	336	350	350	356	359	382	397	396	326	283	240	229	216	162	137	128	161	193	184	160	224	282	277	264	266	0
25	X	X		289	332	340	335	325	320	340	310	246	205	192	190	162	152	151	151	151	146	172	147	115	172	173	221	222	1
26	X	X	X	233	247	274	284	296	301	324	332	274	252	224	192	192	152	153	138	228	232	239	240	244	252	276	318	246	0
27	X	X	X	343	360	376	385	367	366	367	340	343	302	270	241	215	157	158	209	204	192	167	216	191	204	209	268	269	0
28	X	X	X	289	324	326	337	356	366	371	298	300	296	300	268	252	245	228	217	192	155	168	151	133	118	144	192	251	1
29	X	X	X	125	116	148	194	241	300	336	329	300	288	216	209	157	152	148	145	159	184	160	232	252	230	244	301	215	0
30	X	X	X	331	325	318	336	295	256	252	236	266	256	248	228	216	209	212	192	180	151	165	252	262	238	192	252	244	1
31	X	X	X	289	301	286	313	311	310	316	338	302	228	190	139	130	129	128	104	118	100	143	137	159	191	203	198	211	1
MEANS #				286	301	313	322	323	330	330	305	267	235	209	194	183	155	154	159	167	178	191	197	216	236	249	268	240	
MEANS †				288	303	317	328	328	335	336	307	270	239	214	198	187	157	156	164	177	185	197	201	222	243	255	277	245	
MEANS ‡				282	299	316	327	326	335	339	316	278	245	220	201	184	152	147	158	173	178	186	196	229	250	255	278	245	

DESIGNATIONS AND REMARKS:

#=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 25

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

OCTOBER 1931

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

OCTOBER 1931

DAY				0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	
1	X			241	246	281	217	208	234	251	232	149	111	67	60	66	78	{ 84	78	58	86	75	104 }	144	133	126	111	141	1
2	X			169	129	159	174	177	182	165	151	129	84	56	78	75	100	{ 113	128	126 }	136	151	172	181	200	200	193	140	1
3	X	X	X	237	250	236	234	271	285	268	261	186	179	158	159	152	120	115	179	217	243	250	186	250	289	293	285	220	0
4	X	X	X	288	309	341	376	353	358	350	324	251	198	202	184	182	179	175	154	161	170	109	165	232	268	350	330	251	0
5	X	X	X	326	319	343	334	334	365	350	317	268	202	195	181	158	135	122	118	126	117	109	196	289	330	309	308	244	0
6	X	X	X	285	289	316	335	364	375	381	314	286	238	219	208	188	111	154	182	182	202	236	281	293	316	306	335	266	0
7	X	X		381	378	397	409	395	384	397	338	271	251	231	222	234	208	[217	210]	202	231	253	294	236	299	356	375	299	1
8	X	X	X	381	401	413	400	378	411	391	288	149	111	111	118	115	113	144	168	200	217	283	179	243	278	319	353	257	0
9	X	X		365	379	353	392	411	397	351	335	303	239	147	140	222	[221	217]	219	219	238	274	182	217	253	260	293	275	1
10	X	X	X	327	369	383	397	326	251	232	181	161	182	200	189	136	111	144	165	217	234	205	203	207	195	243	278	231	0
11				260	268	285	314	...	...	...	293	271	244	195	170	111	104	179	221	219	217	182	159	182	208	268	283	...	0
12				268	298	342	365	...	...	...	338	321	263	243	182	156	165	191	179	189	205	217	203	202	280	288	301	...	0
13	X	X	X	350	327	373	375	378	408	350	306	251	229	200	184	168	129	129	129	128	144	140	191	276	285	266	301	251	0
14	X	X	X	303	317	338	358	348	361	381	356	314	263	208	170	182	184	165	198	200	179	217	196	226	303	270	303	264	0
15	X			395	414	406	380	398	381	365	372	334	301	298	254	207	156	[165	154	129	120]	129	135	147	182	236	248	263	1
16	X	X	X	250	221	276	253	268	254	306	268	202	165	154	161	138	108	78	78	111	161	195	232	236	250	227	231	201	1
17	X	X	X	285	299	324	316	386	327	335	332	268	214	182	124	111	147	126	122	147	147	138	158	198	253	266	288	226	0
18	X			326	321	350	376	389	375	381	348	285	251	[251	234	221	214	207	203	200	200]	244	232	217	244	232	256	273	1
19	X	X		270	268	248	266	278	280	308	241	208	200	170	184	[200	144	161	182	198	214]	219	200	124	108	253	236	215	1
20	X	X		234	253	234	232	243	265	165	62	75	93	115	{ 135	217	156 }	203	212	208	219	253	261	254	215	193	215	196	1
21	X	X	X	219	268	285	322	334	317	343	324	276	212	182	189	184	144	108	168	182	191	212	131	147	145	128	149	215	0
22	X	X	X	147	196	224	234	232	268	265	238	196	159	120	120	124	69	80	117	126	135	163	133	222	219	265	268	180	0
23	X	X	X	281	301	296	321	294	321	346	286	246	210	149	156	159	111	93	111	154	212	154	184	231	314	298	293	230	0
24	X	X	X	322	338	346	354	354	373	395	372	288	251	198	182	182	145	111	111	147	186	179	147	214	281	285	260	251	0
25	X	X		285	334	335	350	334	329	348	317	254	191	159	149	133	145	145	144	161	167	182	145	97	165	168	221	219	1
26	X	X	X	239	251	283	285	299	301	326	314	268	215	217	168	167	142	147	147	250	253	243	246	236	251	285	329	244	0
27	X	X	X	350	367	383	397	365	375	384	343	324	283	254	221	200	147	158	215	217	200	165	208	177	208	208	260	267	0
28	X	X	X	301	332	345	353	372	395	389	306	306	285	296	266	251	248	219	221	191	163	168	129	129	120	147	186	255	1
29	X	X	X	111	106	115	167	212	273	326	321	280	253	212	182	151	145	147	147	154	179	165	227	254	243	263	317	206	0
30	X	X	X	334	335	330	351	314	268	251	239	268	266	253	248	234	219	195	184	175	144	181	265	299	243	200	280	253	1
31	X	X	X	309	316	298	334	330	317	322	350	285	217	172	129	115	128	129	95	118	84	147	138	156	189	207	200	212	1
MEANS *				284	297	309	320	319	325	325	291	244	209	185	172	168	147	147	157	169	178	188	190	211	234	247	266	233	
MEANS †				286	300	313	326	324	330	330	293	247	212	188	175	172	148	147	159	176	185	194	195	218	241	255	276	237	
MEANS ‡				281	296	314	325	322	330	335	302	254	217	194	177	165	142	137	150	170	178	183	190	226	249	257	278	236	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE [ ]=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 36

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

NOVEMBER 1931

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

NOVEMBER 1931

DAY	*	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X	X	206	232	251	248	263	264	253	274	207	196	144	134	119	124	121	120	124	122	132	124	130	157	119	160	176	1
2	X	X	X	196	218	230	244	253	242	244	222	196	193	150	144	145	166	155	140	135	101	105	170	185	200	218	215	186	1
3	X	X		210	238	233	238	199	240	254	255	230	158	140	134	141	158	174	162	184	132	160	216	201	220	232	253	198	1
4	X	X	X	264	300	289	313	312	324	300	282	253	230	228	218	201	197	170	187	210	196	182	236	264	264	289	288	250	1
5	X	X	X	309	301	302	345	370	351	334	313	291	251	207	180	144	141	152	143	122	139	137	184	236	142	110	122	224	0
6	X	X	X	135	173	216	218	218	251	251	264	230	224	221	220	218	209	207	207	218	244	244	244	254	271	240	242	226	0
7	X			243	250	276	282	289	281	253	247	258	236	233	209	208	170	122	111	92	133	98	180	194	196	228	267	211	2
8	X			259	242	271	256	263	[243]	150	102	170	115	191	141	112	166	155	133	122	155	90	197	207	182	120	144	174	2
9	X	X	X	179	171	168	182	175	180	173	161	155	143	153	133	157	122	115	80	103	155	205	122	156	188	179	170	155	0
10	X			217	197	213	237	244	259	220	244	240	205	193	193	201	200	202	207	198	200	172	253	286	274	275	322	227	1
11	X	X	X	343	315	334	336	310	278	288	209	233	188	196	207	209	217	214	221	215	188	157	196	184	196	242	268	239	1
12	X			277	286	264	[237]	89	184	232	140	182	134	181	161	91	43	92	180	84	59	171	149	134	133	93	78	153	2
13	X			101	77	81	54	46	44	44	52	89	111	89	95	119	131	128	158	197	170	179	216	144	210	236	220	125	0
14	X	X		201	225	254	262	264	248	231	253	233	231	202	145	102	90	94	100	104	117	109	122	182	196	150	153	178	1
15	X			144	167	170	196	199	199	207	225	207	123	97	122	142	170	213	210	207	182	175	174	[246]	242	152	206	182	1
16	X			[147]	171	254	231	237	214	181	185	150	207	171	114	159	122	162	144	141	125	83	89	93	100	89	72	152	2
17	X	X		75	84	105	109	127	121	133	150	170	157	174	181	173	160	117	97	127	105	60	90	125	119	157	131	127	0
18	X	X		138	182	197	194	196	218	204	161	145	156	105	90	98	100	165	150	140	133	155	147	98	85	153	202	150	1
19	X	X	X	238	229	218	187	224	230	223	243	166	157	117	85	69	68	77	89	94	74	78	72	84	121	101	122	140	0
20				117	133	142	140	158	156	155	167	184	171	147	118	130	140	175	144	197	156	110	145	150	162	198	207	...	0
21				215	250	267	334	346	335	298	276	268	250	[173]	215	243	246	198	191	220	240	244	215	38	51	100	112	...	2
22				[22]	100	155	168	135	157	111	144	50	65	137	46	22	11	68	192	182	167	142	88	130	89	47	62	...	2
23				65	64	83	111	133	148	181	179	143	127	155	158	178	140	133	101	117	137	89	112	68	134	89	89	...	0
24	X	X	X	101	129	130	144	153	155	150	142	132	104	109	74	78	153	173	180	180	185	184	184	196	208	218	213	153	0
25	X			209	218	212	185	199	217	221	230	230	91	101	[131]	166	155	101	94	101	115	81	62	46	54	78	65	140	2
26	X	X	X	67	109	124	167	197	205	213	196	230	235	221	221	217	196	182	170	180	119	88	133	181	168	172	133	172	1
27	X	X	X	157	158	173	181	170	171	181	171	157	117	78	90	79	133	141	168	191	134	111	121	204	184	207	252	155	0
28	X			244	266	264	262	230	209	215	[242	240	113	94	170	182	197	207	207	206	168	111	101	97	68	85	120	179	1
29	X	X	X	182	131	171	220	209	230	236	196	209	179	182	182	95	121	134	166	153	124	105	93	70	92	111	118	155	0
30	X			124	153	133	158	133	143	[121	113	122	156	182	239	240	230	230	237	242	250	254	262	256	260	269	275	199	1
31																													
MEANS *				191	201	214	219	214	219	212	203	197	170	160	154	149	152	154	156	157	147	139	159	171	174	174	185	178	
MEANS †				187	200	215	224	228	232	229	218	202	182	164	152	140	147	149	149	155	142	138	153	172	176	181	190	180	
MEANS ‡				197	205	220	232	238	240	237	223	205	185	167	157	144	154	153	156	160	148	144	157	179	183	184	192	186	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 37

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

NOVEMBER 1931

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY	*	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X	X	210	242	258	246	258	274	257	269	204	186	130	125	109	128	128	125	139	125	139	122	127	161	113	162	179	1
2	X	X	X	192	226	241	257	272	254	254	225	176	164	135	128	142	172	171	145	144	108	109	176	194	210	226	222	189	1
3	X	X		222	254	258	241	212	254	258	242	209	151	125	123	139	164	187	167	187	145	177	215	217	241	241	266	203	1
4	X	X	X	282	323	317	327	318	333	292	286	258	242	241	226	217	197	186	184	209	196	179	250	272	260	303	303	258	1
5	X	X	X	318	311	358	342	391	362	334	312	274	226	194	162	139	137	147	154	125	154	149	199	249	159	111	120	227	0
6	X	X	X	142	176	210	218	222	242	226	275	202	225	218	209	209	222	223	226	226	266	258	272	272	288	254	257	231	0
7	X			255	263	295	295	306	289	263	249	257	241	241	218	214	176	184	176	164	181	162	207	209	214	242	274	232	2
8	X			258	258	274	271	280	271	212	194	205	241	210	145	113	161	156	134	125	151	142	192	186	157	90	125	189	2
9	X	X	X	156	142	142	159	157	142	127	130	125	115	109	92	122	94	92	72	90	142	194	127	144	187	166	144	132	0
10	X			209	191	208	225	233	258	210	223	212	176	161	169	194	191	191	196	204	189	161	226	268	257	258	320	214	1
11	X	X	X	330	315	330	348	306	272	266	197	225	176	177	207	209	212	217	225	220	189	159	217	177	192	241	264	236	1
12	X			289	305	258	257	269	295	255	214	210	242	205	176	159	109	189	159	125	167	197	159	140	127	65	58	192	2
13	X			72	55	56	33	18	24	22	29	46	78	72	72	95	123	118	151	187	156	151	194	125	176	214	210	103	0
14	X	X		176	204	225	231	247	209	194	218	164	176	159	122	72	71	71	76	85	106	106	120	167	179	147	135	152	1
15	X			137	144	157	181	177	176	189	204	177	106	72	102	130	139	192	204	202	176	172	192	252	294	241	210	176	1
16	X			205	210	257	194	225	233	241	230	263	179	161	106	186	200	192	156	140	120	65	65	71	74	62	37	161	2
17	X	X		44	55	74	88	99	90	108	102	116	111	134	144	142	123	83	71	90	90	44	69	99	99	135	108	97	0
18	X	X		122	159	169	176	149	200	176	134	109	109	78	58	67	90	159	156	140	137	156	144	87	69	135	179	132	1
19	X	X	X	210	210	209	157	192	209	192	207	135	125	92	64	51	55	69	80	87	67	67	62	72	106	90	108	122	0
20				102	109	113	109	134	113	122	149	152	135	109	90	90	101	125	122	159	142	108	147	139	...	...	...	...	0
21				...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2
22				...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2
23				...	...	...	...	...	...	...	...	...	...	...	113	123	104	97	83	101	123	72	95	47	111	69	55	...	0
24	X	X	X	67	92	101	108	115	108	83	102	87	62	76	55	69	125	161	162	167	176	176	179	187	194	202	204	127	0
25	X			207	207	200	177	189	202	202	209	225	85	85	127	174	167	122	99	122	108	72	42	37	37	56	38	133	2
26	X	X	X	51	94	92	134	162	154	144	159	177	184	192	179	174	147	145	140	142	99	71	139	161	142	149	125	140	1
27	X	X	X	142	140	152	147	142	125	140	130	108	76	55	69	56	102	120	144	167	128	99	127	186	176	192	233	132	0
28	X			223	241	254	242	220	182	200	226	207	115	189	200	194	192	202	204	209	171	99	94	74	55	64	102	173	1
29	X	X	X	162	113	147	194	187	194	214	152	161	120	127	127	74	101	118	149	142	111	95	90	53	74	104	108	130	0
30	X			104	134	108	140	108	111	90	101	104	127	212	242	233	223	223	225	223	233	239	242	244	241	244	242	183	1
31																													
MEANS *				184	194	205	208	209	210	198	193	178	155	148	140	142	147	156	153	156	150	140	158	164	168	167	175	171	
MEANS †				177	191	204	212	214	214	204	196	171	153	140	131	124	134	142	142	148	140	136	157	166	171	176	184	168	
MEANS ‡				188	199	213	221	227	222	211	204	178	158	146	137	131	141	148	150	155	147	141	163	174	179	179	188	175	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 38

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

NOVEMBER 1931

EXPRESSED IN VOLTS PER METER

NOVEMBER 1931

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY	●	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X	X	17	15	14	15	16	16	19	23	39	47	62	62	66	53	N47	49	43	43	37	22	25	33	28	20	34	1
2	X	X	X	17	16	15	13	14	16	21	27	41	45	55	58	49	49	38	N37	N33	25	22	25	N22	18	22	19	29	1
3	X	X		22	22	17	32	25	19	23	30	40	64	62	68	58	N46	45	40	28	21	17	17	18	15	11	11	31	1
4	X	X	X	12	11	10	14	13	19	28	33	N29	42	45	47	49	58	55	47	40	37	20	17	21	20	18	20	29	1
5	X	X	X	18	13	15	13	13	22	25	35	50	56	58	69	70	62	49	50	36	21	19	18	18	29	29	26	34	0
6	X	X	X	32	28	31	38	28	29	30	40	70	65	57	62	62	54	50	48	41	29	22	18	18	22	27	27	39	0
7				17	18	12	11	18	18	29	29	36	41	49	48	47	≷N49	Z-	Z-	Z-	Z-	Z-	N18	N16	N19	N24 ≶	28	..	2
8				26	33	32	27	18 ≷	Z-	Z-	Z	Z+	Z-	Z-	47	54	48	N29	N37	N11	N25	N31 ≶	37	46	62	67	65	..	2
9	X	X	X	56	51	67	62	69	63	58	73	98	110	118	117	120	111	105	87	74	45	29	40	27	33	33	32	70	0
10				33	33	29	29	34	36	37	38	57	71	81	73	69	62	52	Z-	Z	38	36	37	36	17	17	21	..	1
11	X	X	X	15	18	23	17	25	29	33	43	47	62	57	N49	N50	45	38	33	28	36	37	22	27	25	22	24	34	1
12				25	21	13 ≷	Z-	Z-	Z-	Z-	Z	Z-	Z-	Z-	Z	Z-	Z-	Z-	Z+	Z	Z-	Z-	N27	Z-	Z- ≶	84	82	..	2
13				69	85	95	120	135	120	156	141	108	..	87	102	101	71	73	64	54	58	45	30	61	46	50	28	..	0
14	X	X		53	41	36	40	46	50	49	51	80	83	81	90	119	125	119	91	54	26	40	37	N23	30	42	44	60	1
15				41	45	47	45	44	54	47	45	64	95	110	94	76	77	55	45	43	44	44	31	≷Z+	Z-	Z-	Z ≶	..	1
16			≷	Z-	Z	Z+	Z+	40	Z-	Z-	Z-	Z	N69	50	Z	Z	Z-	Z- ≶	66	65	62	74	91	91	83	86	99	..	2
17	X	X		77	98	68	68	69	76	71	85	83	89	86	83	80	87	91	95	73	61	64	51	62	54	51	23	73	0
18	X	X		36	26	25	22	14	18	21	52	100	98	143	171	138	111	69	58	58	N45	54	51	58	87	58	35	64	1
19	X	X	X	22	27	38	33	33	36	51	53	66	86	111	134	134	101	86	74	73	73	77	55	48	43	46	47	64	0
20	X			47	48	48	41	58	64	58	76	84	84	109	142	131	102	91	76	49	49	54	43	33	44	32	29	66	0
21				29	31	29	20	15	11	21	20	16	18	≷Z-	7	25	Z	Z	Z	Z-	N25	19	Z-	Z-	Z-	Z	Z ≶	..	2
22			≷	Z-	Z	Z	Z	Z	Z	Z-	Z	Z-	Z-	Z	Z	Z-	Z-	Z-	-8 ≶	25	44	73	66	55	98	172	146	..	2
23	X			109	114	103	78	77	74	71	81	142	138	123	113	106	93	90	95	87	69	78	76	98	65	82	74	93	0
24	X	X	X	66	64	63	56	69	66	65	76	96	120	115	123	105	72	49	41	33	37	36	24	40	44	48	36	64	0
25				23	36	40	50	51	42	47	45	47	85	72	≷N37	N 1	Z-	Z	Z	Z ≶	48	93	96	109	122	93	94	..	2
26	X	X	X	103	73	66	62	65	75	57	82	78	76	82	84	77	85	73	60	53	47	N62	40	45	41	49	34	65	1
27	X	X	X	46	25	33	22	46	35	22	71	103	124	156	151	134	109	74	67	62	62	76	48	33	36	37	32	67	0
28				45	41	32	43	37	36	42	≷N17	N32	N70	Z-	Z-	Z ≶	75	69	64	58	58	71	76	76	73	80	45	..	1
29	X	X	X	38	33	24	25	29	26	29	50	82	112	117	137	167	125	98	79	69	80	92	73	69	55	54	43	71	0
30				39	42	29	36	57	102	≷N85	N25	N50	77	Z-	N14 ≶	43	51	53	45	48	44	35	44	33	41	50	51	..	1
31																													
MEANS ●				44	40	39	36	40	41	41	54	74	83	85	98	95	83	70	63	52	45	46	38	38	39	38	32	55	.
MEANS †				39	35	34	33	36	37	38	52	69	80	88	94	92	81	68	60	50	43	44	35	35	37	36	30	52	
MEANS ‡				37	31	33	31	35	36	36	50	67	79	86	91	90	77	64	56	49	45	44	34	33	33	34	30	50	

DESIGNATIONS AND REMARKS:

●=ALL COMPLETE DAYS †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER ≷=DISTURBED BY BAD WEATHER

N=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT Z=INDETERMINATE IN MAGNITUDE AND SIGN Z+=INDETERMINATE POSITIVE VALUE Z-=INDETERMINATE NEGATIVE VALUE

TABLE 30

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

[illegible] 1931 — DECEMBER 1931

EXPRESSED IN VOLTS PER METER

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY	✱	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X		49	52	56	61	48	63	62	55	62	68	N23	N10	N15	N43	N35	N45	48	49	49	49	56	64	63	54	50	1
2	X	X		52	57	51	59	59	60	59	52	N34	N18	53	58	71	70	64	55	56	53	49	45	45	45	43	44	52	1
3	X	X		61	69	50	51	44	64	57	71	77	82	69	71	68	70	63	52	30	48	64	57	56	41	33	34	54	0
4	X	X	X	47	54	50	50	35	50	37	46	45	83	89	98	120	125	110	102	91	57	40	38	30	34	26	40	59	0
5	X	X		59	54	44	44	40	41	49	48	79	97	108	122	90	75	64	49	45	60	49	67	43	27	41	27	58	0
6	X	X		44	51	50	57	44	80	79	75	N56	N58	82	N68	58	N39	N30	N11	N 8	N24	N11	N23	38	49	50	53	45	1
7	X	X	X	53	52	51	48	48	52	54	51	53	55	59	76	93	90	80	67	62	31	27	27	21	21	24	25	51	0
8	X	X	X	26	23	24	34	30	39	41	46	54	59	58	65	60	67	58	55	51	34	26	33	24	28	21	15	40	0
9				14	14	12	7	17	15	14	19	24	30	N26	Z-	Z-	Z-	Z-	Z-	Z-	Z-	Z-	Z	N 3	Z-	Z	N32	..	2
10				26	14	Z-	Z-	Z	Z	Z	Z-	60	94	109	137	112	119	85	78	77	54	58	45	..	..	..	..	..	2
11				..	..	..	..	..	..	..	68	94	108	116	124	90	85	66	79	75	38	53	71	68	71	105	104	..	.
12	X	X		55	58	64	52	49	59	62	67	90	104	88	83	82	82	59	59	56	52	47	102	113	109	110	85	74	0
13	X	X		102	64	69	71	56	53	53	49	76	97	90	101	93	80	75	64	64	58	56	48	41	41	38	42	66	0
14	X	X	X	44	38	37	30	35	46	47	59	56	61	70	74	71	82	73	53	30	21	21	15	27	27	33	38	45	0
15	X	X		38	46	45	41	45	40	37	50	79	136	153	154	177	N119	N67	N17	76	72	68	48	52	39	42	49	70	1
16	X	X	X	40	34	38	34	44	45	64	65	89	90	108	119	120	112	101	90	85	68	41	38	48	49	45	42	67	0
17	X	X		48	52	37	43	49	41	45	57	67	67	85	112	130	124	122	132	89	82	N85	N52	45	46	34	42	70	1
18	X	X	X	33	35	39	38	44	45	40	42	61	91	113	147	108	85	105	82	62	44	26	31	26	26	20	N13	56	1
19	X	X		30	28	29	26	32	34	32	43	72	135	177	214	216	169	105	74	43	67	49	49	58	42	39	39	75	0
20	X	X	X	41	41	45	49	46	40	41	47	64	103	135	133	135	122	90	83	64	57	56	44	30	31	31	38	65	0
21	X			32	39	41	33	41	33	38	53	67	65	67	N17	N50	89	26	30	32	38	31	37	39	35	30	32	41	1
22	X			31	29	23	23	23	30	26	34	43	79	91	74	65	56	49	48	34	44	36	27	30	52	49	39	43	1
23	X	X		34	31	29	N17	39	53	64	75	97	104	96	88	90	94	88	82	75	38	38	36	24	21	22	25	57	1
24	X	X	X	26	21	21	22	22	22	27	30	53	68	79	86	83	85	80	79	63	42	34	29	30	37	36	32	46	0
25	X	X	X	30	27	24	27	36	30	31	26	41	48	67	70	98	92	70	42	50	43	37	33	30	31	30	28	43	0
26	X	X	X	30	25	32	26	25	34	29	25	50	56	85	116	138	121	104	86	70	39	42	30	27	30	25	22	53	0
27	X	X	X	28	33	31	30	28	30	26	33	46	64	79	89	86	84	82	76	67	67	54	37	27	22	24	25	49	0
28	X	X		27	28	28	24	25	N30	41	40	42	40	38	49	67	56	86	47	34	23	27	25	17	10	N 6	10	34	1
29				10	15	N16	29	15	12	-1	N 3	18	27	56	N30	Z-	Z	Z	Z-	Z-	48	104	74	75	133	153	127	..	2
30	X	X		97	85	58	49	60	45	48	69	79	103	109	138	131	141	123	95	78	59	56	49	29	34	22	30	74	0
31	X	X	X	37	35	34	39	45	49	51	66	64	87	126	119	127	105	95	86	79	56	65	38	40	30	33	31	64	0
MEANS ✱				41	40	39	38	42	44	46	51	64	78	89	95	98	92	78	65	57	49	44	42	39	38	36	35	56	
MEANS †				42	41	39	38	42	45	46	52	64	79	90	99	101	93	81	67	59	50	45	42	39	39	36	35	57	
MEANS ‡				34	33	34	34	36	38	41	45	58	72	89	99	103	98	87	75	64	47	39	33	30	30	29	29	53	

DESIGNATIONS AND REMARKS:

✱=ALL COMPLETE DAYS †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER ≷=DISTURBED BY BAD WEATHER

N=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT Z=INDETERMINATE IN MAGNITUDE AND SIGN Z+=INDETERMINATE POSITIVE VALUE Z-=INDETERMINATE NEGATIVE VALUE

TABLE 40

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

DECEMBER 1931

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DECEMBER 1931

DAY	*	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X		251	248	246	245	247	257	257	260	257	235	⌈ 219	215	200	204	198	205⌋	214	205	233	235	233	220	225	224	231	1
2	X	X		231	212	203	213	214	225	214	229	⌈ 225	216⌋	225	210	213	200	203	200	198	188	198	225	239	245	239	247	217	1
3	X	X		247	240	243	240	251	204	203	196	202	214	227	241	242	224	234	243	255	135	113	142	171	144	232	183	209	0
4	X	X	X	207	195	240	259	236	257	279	265	233	188	214	193	134	118	123	114	107	149	114	131	181	171	194	223	189	0
5	X	X		168	232	180	184	219	187	⌈ 195	189	204	209	182	131	166	171	160	182	182	131	132	91	108	162	215	230	175	0
6	X	X		232	234	225	202	132	114	146	183	⌈ 209	203	193	174	172	179	166	160	160	144	134	134⌋	168	181	193	199	177	1
7	X	X	X	203	201	204	224	225	236	239	244	250	245	246	184	123	121	119	118	108	94	195	212	216	225	193	201	193	0
8	X	X	X	188	192	195	175	169	173	170	173	183	190	196	201	202	194	171	180	207	180	131	124	198	193	225	258	186	0
9	X			259	250	263	249	259	255	246	250	257	244	⌈ 253	171	21	21	32	112	144	162	182	173	182	171	188	201 ≥	189	2
10	X			⌈ 193	215	142	96	185	112	105	193 ≥	193	182	109	113	113	113	103	99	118	118	106	127	122	162	184	181	141	2
11	X			195	200	194	183	195	182	178	174	145	182	128	142	160	171	162	124	95	142	124	96	128	123	93	83	150	.
12	X	X		107	121	133	171	194	171	160	195	182	128	143	162	133	113	143	132	142	151	118	60	52	45	76	93	130	0
13	X	X		93	101	103	124	124	139	150	174	188	190	193	149	146	166	153	131	143	147	167	182	195	210	220	217	159	0
14	X	X	X	225	240	242	247	247	244	235	210	227	221	227	197	169	134	124	124	124	129	182	173	124	144	137	145	186	0
15	X	X		149	135	123	141	143	180	177	171	162	76	70	83	70	73	83	73	91	101	99	119	114	103	83	113	114	1
16	X	X	X	136	134	125	134	122	134	142	108	134	151	133	112	113	102	104	93	94	98	82	103	133	125	129	132	120	0
17	X	X		146	171	160	174	182	196	225	212	235	235	219	178	141	137	126	103	88	60	57	94	123	130	200	215	159	1
18	X	X	X	210	219	209	229	229	256	290	282	268	202	162	113	146	174	102	111	132	141	193	144	193	200	201	207	192	1
19	X	X		212	203	232	235	247	234	232	226	202	124	80	61	52	67	77	91	85	70	62	93	113	114	103	103	138	0
20	X	X	X	121	127	114	115	134	144	146	162	169	131	101	92	90	93	102	109	100	69	72	97	151	145	153	203	122	0
21				201	193	203	212	256	244	232	228	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
22				...	...	...	...	...	...	...	223	257	203	182	199	165	169	193	203	198	193	235	198	257	204	177	134	...	1
23	X	X		153	173	141	⌈ 202 ≥	194	142	139	137	132	129	193	193	187	162	181	144	102	100	103	124	172	240	234	248	164	1
24	X	X	X	268	265	236	256	298	290	272	271	244	216	207	195	166	139	125	97	151	160	101	150	187	193	187	202	203	0
25	X	X	X	229	198	202	186	193	195	190	205	208	234	188	167	113	100	108	125	113	95	99	103	139	137	170	170	161	0
26	X	X	X	174	214	243	214	218	223	217	225	186	228	192	134 ⌋	113	113	114	125	147	150	92	112	141	182	172	181	171	0
27	X	X	X	204	220	229	247	245	244	251	264	273	233	198	196	182	160	149	142	132	118	126	143	152	170	203	236	197	0
28	X	X		243	229	247	269	287	292	236	240	257	264	284	279	214	226	109	193	187	216	214	273	282	257	292	281	245	1
29	X			282	279	⌈ 261	287	300	307	296	287	290	214	128	187	189	190	93	133	144	125 ≥	77	113	113	83	72	80	189	2
30	X	X		88	80	152	171	195	185	178	144	149	120	98	72	61	55	61	74	84	72	84	82	93	111	104	116	110	0
31	X	X	X	133	142	143	147	142	136	140	160	166	152	97	113	126	129	116	118	98	93	82	87	101	106	113	136	124	0
MEANS *				191	196	194	201	208	204	204	208	208	192	176	161	143	140	129	133	136	129	127	136	156	162	173	183	170	
MEANS †				185	189	191	200	203	202	203	205	206	189	179	162	147	142	134	135	138	128	127	137	159	166	180	191	171	
MEANS ‡				192	196	198	203	205	211	214	214	212	199	180	158	140	131	121	121	126	123	122	132	160	166	173	191	170	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION ≥=DISTURBED BY BAD WEATHER

TABLE 41

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

DECEMBER 1931

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

DECEMBER 1931

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY				0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X		247	241	238	238	236	241	241	251	241	228	⌈ 222	220	204	206	204	206 ⌋	217	207	230	233	230	220	222	214	227	1
2	X	X		223	209	200	210	209	217	204	230	⌈ 223	222 ⌋	227	207	214	204	206	206	204	193	206	238	244	249	239	249	218	1
3	X	X		249	236	225	243	252	201	191	199	197	196	222	222	209	189	210	217	238	122	119	150	156	139	235	163	199	0
4	X	X	X	210	191	239	254	228	254	279	281	215	153	169	143	114	105	105	117	90	141	117	124	173	158	186	210	177	0
5	X	X		160	222	164	176	206	173	163	160	158	164	156	119	141	144	139	161	193	122	133	90	93	156	222	238	160	0
6	X	X		236	231	223	201	121	100	139	174	⌈ 220	219	199	181	173	189	173	173	171	161	155	151 ⌋	173	189	206	209	182	1
7	X	X	X	219	212	222	231	236	239	244	252	255	247	238	179	121	111	104	105	105	88	206	214	230	236	189	206	195	0
8	X	X	X	186	188	196	173	160	169	161	173	183	173	173	179	184	169	166	168	193	164	129	133	207	194	236	270	180	0
9	X			271	271	290	271	282	268	251	260	270	254	⌈ 270	273	189	174	202	214	199	238	230	184	204	215	209	206 ⌋	237	2
10	X			189	220	228	249	238	273	206	209 ⌋	168	156	90	86	90	90	90	88	102	105	93	116	105	148	168	173	153	2
11	X			189	189	174	169	173	173	158	163	114	124	102	100	134	139	131	116	73	143	117	93	122	112	73	57	131	.
12	X	X		81	93	97	139	156	144	138	164	128	111	150	168	139	119	156	150	160	173	129	50	37	37	62	73	119	0
13	X	X		71	85	88	111	105	121	133	134	155	146	161	139	139	155	150	131	139	156	169	183	191	207	223	230	147	0
14	X	X	X	231	254	249	250	250	241	236	206	223	209	212	178	151	122	105	114	117	136	201	173	124	153	139	144	184	0
15	X	X		156	129	116	138	122	155	166	166	143	64	53	67	57	74	88	83	88	104	90	119	109	90	71	105	106	1
16	X	X	X	124	122	112	122	107	117	124	99	116	114	105	90	90	86	86	88	99	92	71	97	128	121	114	112	106	0
17	X	X		122	139	139	148	164	168	204	181	210	207	173	124	105	107	97	83	69	53	52	88	122	124	191	191	136	1
18	X	X	X	189	217	206	212	220	251	282	262	239	169	136	90	116	136	95	107	119	136	197	139	197	184	194	219	160	1
19	X	X		210	196	236	238	254	222	225	230	186	105	64	45	36	41	59	81	86	67	55	93	116	105	90	100	131	0
20	X	X	X	117	122	107	117	124	136	128	151	156	126	76	64	60	64	80	102	93	60	66	81	155	155	158	206	113	0
21				201	193	196	214	274	225	214	227	173	186	158	217	176	174	252	207	204	122	139	139	155	220	236	255	...	1
22				254	270	284	308	327	355	314	233	262	189	153	173	156	181	214	233	223	199	276	227	276	207	173	122	...	1
23	X	X		153	173	139	⌈ 207 ⌋	186	129	109	105	88	88	148	156	148	139	150	141	88	88	99	122	178	247	251	259	150	1
24	X	X	X	268	266	244	251	299	293	239	279	220	174	186	169	134	126	124	105	156	160	95	161	191	189	189	206	197	0
25	X	X	X	238	206	207	179	191	201	193	225	206	214	164	144	90	81	102	128	124	99	104	97	146	143	169	169	159	0
26	X	X	X	150	212	252	220	225	225	225	222	161	196	156	116	99	102	109	122	144	164	86	105	139	186	174	189	166	0
27	X	X	X	207	223	238	254	252	239	262	271	247	206	169	160	144	126	136	122	126	111	122	148	153	173	212	239	169	0
28	X	X		244	223	255	282	285	304	254	247	260	257	285	254	194	207	107	222	223	247	231	290	311	288	324	308	254	1
29	X			311	301	⌈ 284	293	324	324	333	318	302	214	122	206	252	189	236	268	241	173 ⌋	86	105	122	71	53	53	216	2
30	X	X		59	62	139	160	186	164	156	124	122	85	83	53	50	45	53	67	80	71	86	90	95	105	100	116	98	0
31	X	X	X	134	141	138	134	126	128	139	144	139	117	74	88	93	97	88	100	74	73	73	83	93	99	109	134	109	0
MEANS *				188	192	195	202	204	202	199	203	191	170	158	146	133	129	129	137	138	133	129	136	157	162	173	181	166	
MEANS †				179	184	187	195	196	193	193	197	188	168	160	142	128	126	124	132	136	128	129	138	160	166	180	190	163	
MEANS ‡				189	196	201	200	202	208	209	214	197	175	155	133	116	110	108	115	120	119	122	130	161	166	172	192	163	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER.

TABLE 42

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

JANUARY 1932

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

JANUARY 1932

DAY		0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
		193	156	189	181	170	170	170	170	180	192	174	162	162	148	116	85	116	102	80	92	141	163	134	162	...	0
2	X X X	214	150	227	240	259	284	244	261	257	222	204	176	201	189	181	143	193	133	121	163	126	126	91	118	188	0
3	X	206	143	225	269	279	238	212	253	259	214	206	194	194	127	147	184	128	77	144	151	194	205	238	240	197	2
4		226	176	42	48	82	79	76	43	91	202	205	136	91	105	116	87	130	138	113	106	112	111	126	74	...	1
5	X X	182	143	194	204	201	198	163	171	170	126	85	106	75	111	116	117	127	97	74	85	52	74	99	125	126	1
6	X X X	140	156	155	168	167	173	186	173	162	145	122	118	105	74	70	84	101	105	78	83	114	153	155	152	131	0
7	X	179	184	202	206	215	201	186	189	170	184	136	127	84	63	77	76	99	107	165	136	139	134	111	155	147	1
8	X	144	156	184	205	190	194	162	164	122	126	114	109	118	94	96	111	147	149	174	152	206	222	206	211	156	0
9	X X X	211	199	221	195	205	229	218	203	257	227	205	202	139	105	96	117	131	97	121	134	177	168	181	168	175	0
10		186	193	202	190	204	189	186	189	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
11		...	...	...	...	...	...	...	...	...	...	...	174	164	105	121	147	185	200	143	173	256	240	204	239	...	1
12	X X	218	212	248	215	234	246	221	211	197	233	229	259	200	173	247	171	172	203	216	194	218	228	224	228	218	1
13	X	224	227	217	195	181	197	219	191	184	145	197	190	184	198	210	205	180	149	146	92	96	28	30	22	163	2
14		16	41	128	190	201	212	202	189	109	117	68	105	103	...	...	...	...	...	...	...	...	...	...	...	...	2
15		...	...	...	...	...	...	....	164	122	116	117	134	89	107	134	173	112	103	103	97	82	105	102	104	...	0
16	X X X	118	180	214	155	149	162	197	203	192	178	131	127	79	55	74	79	112	140	97	114	127	136	128	128	136	0
17	X X X	175	145	136	203	194	222	184	185	153	148	107	65	66	74	63	68	72	97	86	85	70	92	110	116	122	0
18	X X X	124	175	162	181	193	210	226	191	211	216	218	217	215	195	183	178	186	183	184	202	216	235	238	242	199	0
19	X X X	240	229	244	237	231	228	245	219	248	205	189	164	136	128	146	171	180	195	186	105	118	175	183	174	191	0
20	X X	184	207	229	229	259	249	207	222	238	211	206	153	166	173	163	168	192	168	145	138	93	93	84	181	182	1
21	X X	214	184	172	205	213	193	194	206	216	203	185	189	183	91	119	171	183	185	147	136	124	83	65	132	166	0
22	X X	148	181	125	195	231	238	239	174	239	229	187	211	180	117	116	138	146	136	111	46	52	80	93	145	157	1
23	X	161	186	214	225	163	185	204	214	186	148	155	127	118	86	104	94	105	122	163	106	82	96	181	181	151	.
24	X	194	192	228	227	235	246	238	239	270	231	227	213	188	168	126	136	145	154	184	154	177	192	186	149	196	.
25		155	194	218	218	215	214	227	180	203	173	149	136	138	104	...	...	...	...	...	...	...	...	...	...	...	0
26		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
27		....	...	...	...	...	...	...	...	...	...	179	195	151	184	148	102	148	224	123	124	149	192	252	276	...	0
28	X X X	271	286	302	292	302	321	310	280	270	248	104	116	144	142	154	150	124	125	84	67	136	91	127	80	189	1
29	X X X	123	138	192	185	184	212	194	206	173	162	114	116	132	117	116	77	104	106	78	71	109	135	195	192	143	0
30	X X X	205	213	202	229	218	220	155	204	228	211	171	168	153	139	113	116	124	121	113	134	139	187	203	185	173	0
31	X X X	199	225	225	279	258	251	248	246	227	175	147	125	152	181	131	170	156	164	147	200	199	235	211	243	200	1
MEANS *		181	183	206	216	216	223	211	209	210	190	165	158	146	127	129	133	141	137	135	125	135	144	152	162	168	
MEANS †		180	190	203	214	219	227	214	210	215	196	163	157	145	129	130	132	144	141	124	122	129	143	149	163	168	
MEANS ‡		183	190	207	215	215	228	219	216	216	194	156	145	138	127	121	123	135	133	118	123	139	158	166	163	168	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 43

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

JANUARY 1932

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

JANUARY 1932

DAY	*	†	‡	0-	1-	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1				149	158	184	198	...	...	...	140	152	158	134	119	121	121	104	55	99	97	69	87	134	153	124	152	...	0
2	X	X	X	213	165	217	238	248	276	244	248	232	195	170	152	173	168	165	140	198	134	116	132	104	121	77	101	175	0
3	X			213	177	216	261	266	230	198	247	230	189	168	165	171	116	150	194	144	99	241	238	197	208	248	236	198	2
4				...	...	...	...	...	...	...	...	...	...	...	149	119	102	144	102	122	132	104	101	111	116	124	66	...	1
5	X	X		86	137	181	194	187	179	140	122	137	101	69	82	51	104	114	119	132	87	69	69	40	52	89	116	111	1
6	X	X	X	129	139	136	132	150	149	165	142	124	112	99	104	87	59	55	71	86	86	69	81	101	149	152	142	113	0
7	X			155	168	184	186	200	168	157	153	132	145	106	92	69	51	62	69	77	101	160	132	136	129	94	144	128	1
8	X			134	139	168	197	173	168	139	152	102	97	102	86	91	82	82	106	144	144	168	155	200	214	198	200	143	0
9	X	X	X	201	186	211	187	189	217	200	181	244	198	186	165	132	86	81	101	119	96	119	126	179	158	178	155	162	0
10				176	182	189	182	198	168	168	171	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
11				...	...	...	...	...	...	...	...	...	...	...	139	152	82	119	147	187	214	145	168	254	292	209	242	...	1
12	X	X		216	234	247	236	231	248	224	206	173	217	201	282	236	214	233	179	178	205	219	194	216	234	228	231	220	1
13	X			222	216	213	187	184	197	208	189	198	184	184	176	184	198	205	198	165	140	142	117	139	102	67	66	170	2
14				173	200	208	187	186	163	163	149	91	69	81	102	77	...	...	...	...	...	...	...	...	...	...	...	...	2
15				...	...	...	...	...	...	...	145	102	87	99	114	77	106	134	137	104	87	89	86	67	94	92	97	...	0
16	X	X	X	104	170	201	136	136	129	171	179	155	152	104	102	71	48	55	60	106	147	89	99	119	134	121	114	121	0
17	X	X	X	160	134	117	184	170	200	152	155	111	104	87	48	48	54	54	59	66	86	77	71	64	86	87	92	103	0
18	X	X	X	101	152	136	152	170	184	197	173	178	192	217	216	213	189	171	170	181	174	176	192	208	234	234	247	186	0
19	X	X	X	244	233	247	241	234	222	233	208	225	168	165	139	117	119	137	168	173	186	184	86	116	176	171	179	182	0
20	X	X		186	216	233	234	264	247	201	213	220	190	179	165	198	187	170	153	184	170	150	114	87	87	69	176	179	1
21	X	X		213	170	152	195	200	181	165	201	187	158	149	150	152	79	119	170	182	184	134	119	111	69	52	117	150	0
22	X	X		139	168	104	184	216	217	217	171	209	181	142	160	150	99	106	119	136	121	93	40	35	54	79	132	136	1
23	X			144	168	216	198	132	158	181	182	132	119	136	109	99	79	102	97	112	132	158	92	69	82	165	157	134	.
24	X			182	184	219	219	220	230	222	222	234	200	198	184	155	137	121	131	139	152	181	137	167	184	170	136	180	.
25				139	181	200	201	200	198	213	157	186	145	119	117	104	86	...	...	...	...	...	...	...	...	...	...	...	0
26				...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
27				...	...	...	...	...	...	...	...	...	...	136	152	124	144	117	86	149	233	119	119	149	168	247	276	...	0
28	X	X	X	277	292	312	301	312	334	306	286	233	219	102	116	149	145	168	170	147	119	77	71	124	87	119	69	189	1
29	X	X	X	116	132	184	174	181	205	184	194	137	134	106	102	104	104	96	52	86	89	62	66	99	122	186	181	129	0
30	X	X	X	187	211	197	231	214	219	149	190	203	184	150	142	132	119	96	94	112	107	102	147	136	182	194	174	161	0
31	X	X	X	184	228	225	283	267	267	258	247	217	168	144	116	147	170	134	149	155	168	152	194	198	239	217	251	199	1
MEANS *				173	180	196	207	206	210	196	194	182	164	144	139	133	118	122	126	137	133	134	121	129	141	145	155	158	
MEANS †				172	184	194	206	211	217	200	195	186	167	142	140	135	122	122	123	140	135	118	113	121	136	140	155	157	
MEANS ‡				174	184	198	205	206	248	205	200	187	166	139	127	125	115	110	112	130	127	111	115	132	153	157	155	156	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌉=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION ≷=DISTURBED BY BAD WEATHER

TABLE 44

JANUARY 1932

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN VOLTS PER METER

JANUARY 1932

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY	●	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X			27	30	35	38	48	41	32	34	56	68	90	101	94	94	104	108	68	53	45	38	25	26	36	30	55	0
2	X	X	X	30	44	22	23	34	38	37	43	48	71	49	91	78	71	31	58	50	49	53	36	46	21	37	41	46	0
3				21	30	22	25	40	36	32	37	52	71	74	83	77	82	56	≷ 29	Z	Z	Z	Z	Z-	Z-	Z- ≷	26	..	2
4				35	99	≷ 127	157	86	124	115	Z	Z+	Z+	N39	Z	Z	N24	- 4	N 9	24	27	44	N36	- 3	Z-	N19 ≷	92	..	1
5	X	X		55	37	37	44	N33	44	54	59	74	104	120	107	130	85	74	63	62	64	51	46	79	95	40	45	67	1
6	X	X	X	45	45	40	40	43	40	41	60	63	71	71	78	83	89	80	67	56	45	44	38	30	18	16	24	51	0
7				..	..	..	..	..	..	..	..	..	..	..	100	124	147	108	85	61	37	37	34	37	..	..	..	..	1
8				..	..	..	..	..	..	..	..	..	..	..	91	82	76	71	61	37	27	25	27	26	30	33	38	..	0
9	X	X	X	37	24	25	27	25	25	26	24	29	44	54	64	70	86	84	62	51	39	37	26	26	20	29	23	40	0
10	X			28	34	30	27	26	22	26	34	42	49	53	85	N75	N19	N14	N27	N40	N25	25	19	34	30	30	35	35	1
11	X			33	36	49	30	30	36	30	36	50	49	71	99	76	90	79	56	45	33	26	22	18	N 9	26	27	44	1
12	X	X		24	30	32	30	35	36	40	42	49	55	61	43	≷ - 3	-39	- 7	N15 ≷	20	N11	19	23	16	21	24	20	25	1
13				25	42	33	52	≷ N40	N53	N36	N20	N28	-25	N37	N60	N 4	N14	34	N37	57	41	34	..	..	..	..	.. ≷	..	2
14			≷	..	..	..	..	..	..	..	..	≷ 93	108	125	96	92	93	87	74	64	49	59	66	..	..	..	..	..	2
15				..	..	..	..	..	..	..	..	..	..	..	..	67	54	37	49	32	42	44	45	44	47	41	27	..	0
16	X	X	X	34	26	20	22	22	21	27	38	57	61	90	86	109	108	98	79	56	41	50	31	34	21	31	23	49	0
17	X	X	X	30	27	29	29	31	43	42	39	76	89	142	199	195	156	131	120	107	70	55	60	41	52	59	52	78	0
18	X	X	X	68	45	45	41	45	63	58	49	65	71	58	58	64	67	70	59	59	56	50	46	37	34	33	31	53	0
19	X	X	X	27	26	25	29	27	25	25	25	36	52	56	60	67	65	56	45	39	39	28	34	33	27	23	24	37	0
20	X	X		24	26	24	19	26	30	45	33	44	53	64	N19	-29	N19	59	56	52	33	37	54	56	58	60	46	38	1
21	X	X		37	28	33	33	36	42	37	43	59	59	87	80	79	101	77	63	55	49	55	55	51	85	60	45	56	0
22	X	X		30	28	31	27	30	36	30	37	50	65	80	82	92	104	76	67	62	59	78	111	N81	56	58	32	60	1
23				33	33	37	33	52	52	35	48	79	82	83	101	..	..	..	..	..	..	..	..	..	..	..	..	..	.
24				..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	26	24	21	30	..	.
25	X			30	27	26	36	37	34	40	45	63	79	80	89	94	93	105	91	72	56	32	26	41	24	22	26	53	0
26	X			21	21	22	29	29	34	30	40	79	59	71	71	65	64	58	54	56	60	60	61	N45	34	26	22	46	1
27	X			23	27	25	26	30	33	34	35	58	76	79	87	103	90	81	71	61	37	38	38	45	27	29	24	49	0
28	X	X	X	19	22	20	20	22	22	26	34	52	64	92	61	53	52	N30	N30	N26	47	58	63	47	68	52	49	43	1
29	X	X	X	39	42	34	34	40	41	42	39	65	75	85	88	85	79	76	69	48	49	37	45	37	38	34	30	52	0
30	X	X	X	36	34	29	34	49	44	71	57	49	63	80	78	73	79	78	71	55	60	56	33	34	28	37	33	53	0
31	X	X	X	27	26	28	26	32	27	27	25	41	67	74	79	65	47	56	38	32	34	31	22	N24	19	23	18	37	1
MEANS ●				33	31	31	30	33	35	37	40	55	66	78	82	78	74	69	62	53	46	44	42	40	37	36	32	..	.
MEANS †				35	32	32	30	33	36	39	40	54	66	79	80	76	73	67	60	52	47	46	45	42	41	38	34	49	
MEANS ‡				36	33	29	30	34	35	38	39	53	66	77	86	86	82	72	63	53	48	45	39	35	31	34	32	49	

DESIGNATIONS AND REMARKS:

●=ALL COMPLETE DAYS †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER ≷=DISTURBED BY BAD WEATHER

N=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT Z=INDETERMINATE IN MAGNITUDE AND SIGN Z+=INDETERMINATE POSITIVE VALUE Z-=INDETERMINATE NEGATIVE VALUE

TABLE 45

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN VOLTS PER METER

FEBRUARY 1932

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY	✱	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	A		19	26	19	22	19	20	25	26	30	61	63	72	[68]	62	N51	N27	45	37	27	18	23	21	30	36	35	1
2				36	27	21	24	24	27	24	29	39	51	⌈93	109	90	Z	Z-	Z-	N14	N33	N33⌋	42	33	≷ Z-	Z-	Z- ≷	..	2
3	X	A		77	71	68	77	38	39	42	23	75	134	79	82	80	74	77	72	63	49	33	24	43	53	52	53	60	0
4	X			36	34	31	38	35	39	31	37	62	60	63	66	72	68	60	57	43	37	30	48	55	50	27	32	46	0
5	A			30	30	32	27	24	27	25	32	62	70	113	97	75	70	62	66	66	67	66	33	26	30	24	22	49	0
6	A	A	A	18	21	22	18	24	30	31	32	43	57	66	69	60	65	61	32	41	48	51	36	47	46	45	24	41	0
7	A	A	A	N17	21	24	24	32	31	32	36	41	49	68	74	77	76	77	60	51	36	35	20	22	21	19	23	40	1
8	A	A	A	18	21	21	20	21	22	21	25	27	42	45	38	42	48	52	46	22	26	19	13	23	20	15	21	28	0
9				19	17	18	17	16	14	15	6	11	15	21	≷ -5	18	Z	Z	Z	Z-	Z	-1	Z-	Z	Z-	N 6 ≷	24	..	2
10				[18]	15	35	38	-15	36	39	48	56	≷ Z	65	63	45	N11	N32	Z	Z	Z	28	Z	Z ≷	26	30	30	..	2
11	X	A		26	26	30	30	32	39	38	121	131	117	101	87	76	74	74	60	53	47	42	38	22	30	39	30	57	0
12	A	A	A	32	32	31	36	33	32	33	55	60	59	54	60	65	57	58	51	48	33	34	42	38	25	30	27	43	0
13				25	8	38	27	N21	N24	40	42	58	64	65	60	60	52	51	N30	41	36	33	N28	36	35	36	42	..	1
14	A	A		36	30	21	35	21	34	35	38	43	51	57	66	30	34	27	8	33	44	40	24	29	36	38	18	34	1
15				18	21	18	23	24	30	24	34	44	45	66	72	66	≷ Z+	Z+	Z-	Z	N 3	Z-	Z-	Z-	Z-	Z- ≷	27	..	2
16	X	A	A	34	36	36	33	35	42	45	59	69	64	65	78	72	84	71	59	53	48	53	35	35	27	32	29	50	0
17	X	A	X	38	45	35	30	39	56	51	55	74	97	77	88	84	81	87	69	57	55	57	42	42	30	24	24	56	0
18				N27	25	36	48	55	54	39	52	52	54	≷ Z	65	90	114	54	57	40	48	Z-	Z-	Z- ≷	45	48	47	..	1
19			X	Z	Z	95	95	46	Z	Z	Z	Z	59	76	Z-	Z- ≷	111	137	77	83	68	65	57	45	63	66	113	..	1
20				80	84	73	60	59	67	70	80	105	122	209	133	175	190	175	Z+	Z	60	66	59	91	77	92	79	..	1
21	X	X		72	63	50	63	54	60	58	72	102	132	175	218	214	182	147	137	111	107	101	112	61	71	78	47	104	0
22	X	X	X	56	64	56	58	69	77	60	73	107	116	125	139	131	105	87	80	50	71	83	76	51	56	42	38	78	0
23	X	X		54	52	51	41	43	55	47	61	88	116	167	190	191	152	126	91	76	63	66	62	39	54	48	50	83	0
24	X	X	X	39	30	35	33	41	39	37	64	92	87	120	130	98	84	75	64	62	68	65	51	46	33	34	31	61	0
25	X	X	X	27	24	26	32	35	33	30	39	57	60	71	68	62	57	60	60	53	50	44	30	26	24	39	23	43	0
26	X	X	X	24	N24	20	18	21	24	35	39	61	72	77	79	82	70	64	57	54	45	24	27	21	23	33	30	43	1
27	X	X	X	37	30	24	41	63	64	63	68	74	68	63	61	65	68	69	64	57	36	35	42	40	50	39	27	52	0
28				29	30	38	35	36	30	33	40	59	70	87	87	104	[25]	114	92	84	83	61	49	35	43	32	≷ Z ≷	..	1
29			X	Z+	Z-	Z	N10	41	45	25	38	72	48	59	N56	Z-	Z+	Z+ ≷	74	70	54	48	39	N27	N 3	30	23	..	1
30																													
31																													
MEANS ✱				35	36	33	35	36	40	39	50	68	80	87	93	86	80	73	61	55	51	48	41	36	37	36	31	53	
MEANS †				30	30	33	35	36	41	40	52	69	81	87	94	88	81	74	61	55	51	48	41	36	36	37	31	53	
MEANS ‡				31	32	30	31	38	41	40	50	64	70	76	80	76	72	69	58	50	47	45	38	36	32	32	27	49	

DESIGNATIONS AND REMARKS:

✱=ALL COMPLETE DAYS †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER ≷=DISTURBED BY BAD WEATHER

N=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT Z=INDETERMINATE IN MAGNITUDE AND SIGN Z+=INDETERMINATE POSITIVE VALUE Z-=INDETERMINATE NEGATIVE VALUE

TABLE 46

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

FEBRUARY 1932 — EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT — FEBRUARY 1932

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY	*	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X		251	267	304	288	264	288	277	270	310	261	246	218	216	184	197	193	221	250	247	209	218	252	254	265	248	1
2	X			270	266	264	266	298	345	334	293	185	157	⌈ 122	89	78	134	153	139	164	162	155 ⌋	176	230	{ 225	91	128 }	197	2
3	X	X		192	172	183	207	222	236	232	228	143	67	144	138	179	163	123	132	119	122	111	142	117	117	137	144	157	0
4				142	152	145	157	153	186	208	208	218	239	232	228	194	196	193	201	218	242	221	161	89	160	207	179	...	0
5				207	212	218	236	266	264	253	273	236	251	155	194	220	217	209	186	142	123	137	153	192	184	212	243	...	0
6	X	X	X	253	268	233	263	277	210	254	304	294	264	217	215	221	210	143	161	207	152	153	143	148	128	155	208	212	0
7	X	X	X	207	207	254	253	237	235	231	256	286	244	208	208	189	117	124	192	220	184	139	288	213	218	259	256	218	1
8	X	X	X	300	284	323	304	319	325	337	332	310	221	238	236	232	205	208	213	220	262	285	253	220	307	296	301	268	0
9	X			265	279	277	291	283	266	286	290	266	253	216	{ 198	192	218	227	172	115	110	164	148	117	152	223 }	228	218	2
10	X			227	228	196	205	194	210	196	201	194	{ 131	111	147	144	134	132	112	119	144	145	134	128 }	111	202	238	166	2
11	X	X		242	242	216	228	230	230	230	104	93	111	111	111	111	114	120	94	111	132	154	132	154	140	144	122	153	0
12	X	X	X	135	144	149	178	165	184	194	105	139	172	198	192	183	172	151	139	147	122	101	115	135	144	128	142	151	0
13	X			161	181	191	215	218	223	228	221	228	206	207	204	192	182	208	197	209	212	218	217	232	228	224	228	210	1
14	X	X		233	242	238	224	240	218	220	235	233	207	208	217	196	184	185	172	196	197	192	218	218	231	233	216	215	1
15	X			242	230	260	255	275	231	242	253	253	244	154	141	120	{ 145	161	184	120	159	100	83	114	58	109 }	230	182	2
16	X	X	X	230	233	218	224	221	230	196	158	198	218	207	190	182	181	155	157	165	176	93	84	122	175	155	197	182	0
17	X	X	X	207	218	231	222	243	252	251	245	231	207	218	217	207	214	215	220	230	213	123	158	197	198	243	254	217	0
18	X			279	285	270	261	245	247	288	223	253	193	{ 185	191	184	112	155	190	181	183	148	100	119 }	155	194	194	201	1
19	X			{ 89	44	79	98	101	46	53	88	122	228	214	103	152 }	139	85	123	155	143	114	165	110	54	186	128	117	1
20	X			137	117	128	143	157	155	194	186	178	143	64	111	71	72	67	95	120	144	117	123	100	120	127	132	125	1
21	X	X		152	164	136	191	193	213	218	210	205	155	103	85	79	78	97	98	110	114	111	90	102	103	111	123	137	0
22	X	X	X	133	120	132	139	159	155	150	160	160	140	160	145	133	144	172	144	152	139	111	95	97	129	111	134	138	0
23	X	X		134	153	158	264	263	209	215	206	213	155	122	100	100	100	111	124	135	155	145	124	111	151	123	138	155	0
24	X	X	X	145	154	154	165	197	136	206	187	172	191	141	120	141	145	148	158	150	137	133	138	117	165	175	139	[redacted]	0
25	X	X	X	184	245	242	273	231	243	243	235	242	232	220	217	214	214	196	162	154	179	175	142	178	200	182	185	208	0
26	X	X	X	209	215	207	216	224	216	215	207	215	190	175	130	139	144	130	132	139	172	184	186	218	242	239	228	190	1
27	X	X	X	247	259	252	263	244	229	236	252	214	209	218	209	197	186	144	90	90	103	113	155	172	163	183	182	192	0
28	X			192	215	252	253	252	259	242	237	253	242	216	207	189	145	154	157	153	161	183	194	212	208	208	{ 198 }	208	1
29	X			{ 192	178	176	193	190	175	176	181	183	189	172	153	159	95	101 }	142	174	190	175	193	204	228	242	192	177	1
30																													
31																													
MEANS *				204	208	214	225	228	223	228	217	214	194	178	166	163	153	150	152	158	164	148	156	159	170	183	190	185	
MEANS †				203	211	216	230	231	228	230	217	215	191	184	173	172	162	154	152	163	165	145	157	161	180	184	190	188	
MEANS ‡				205	213	218	227	229	225	228	222	224	208	200	189	185	176	162	161	170	167	137	160	165	188	193	202	194	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 47

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

FEBRUARY 1932

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

FEBRUARY 1932

DAY	✱	†	‡	0-	1-	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X		239	268	311	301	270	287	270	299	298	220	214	206	199	173	202	206	228	249	254	210	214	246	238	259	243	1
2	X			298	282	255	254	310	352	327	290	196	163	⌈114	71	69	156	186	183	176	173	160⌋	193	223	{238	184	189}	210	2
3	X	X		174	155	198	173	201	223	223	210	133	52	126	119	148	139	104	105	104	105	99	139	109	107	122	131	140	0
4				138	139	138	150	161	161	188	193	196	222	204	214	173	175	164	161	207	239	235	...	...	...	...	...	...	0
5				...	...	...	...	...	...	...	273	215	209	144	153	176	181	186	168	136	116	122	164	179	169	193	239	...	0
6	X		X	254	277	231	262	291	206	254	316	274	238	184	{174	193	184	138	173	222	153	139	156	136	109	153	193	205	0
7	X	X	X	199	197	257	255	230	210	214	241	257	207	169	158	174	114	122	193	235	199	136	301	207	206	260	254	208	1
8	X	X	X	304	285	331	308	318	328	340	330	298	214	219	219	206	176	178	199	202	265	191	249	210	313	293	301	262	0
9	X			244	282	285	296	271	273	266	293	268	246	206	{207	202	246	251	215	206	141	173	228	230	243	210}	204	237	2
10	X			207	209	173	178	206	206	189	199	179	{139	102	131	141	138	126	112	128	122	139	139	124}	105	179	215	158	2
11	X	X		217	220	189	202	209	204	201	83	62	74	88	88	90	92	97	85	107	131	150	128	144	136	139	99	135	0
12	X	X	X	119	119	134	160	146	164	160	78	102	143	156	150	141	146	126	119	119	111	90	102	119	128	116	121	128	0
13	X			146	169	173	186	191	196	196	191	184	156	171	173	173	169	202	194	207	222	222	209	212	209	209	206	190	1
14	X	X		206	215	219	202	222	194	206	220	204	188	194	181	202	181	189	189	194	189	173	209	207	217	210	207	201	1
15	X			225	220	252	247	274	214	222	230	227	222	139	126	111	{155	155	194	105	173	191	184	210	219	223}	197	196	2
16	X	X	X	189	197	181	191	188	189	153	136	153	193	191	173	156	139	124	139	143	155	88	80	109	153	139	184	156	0
17	X	X	X	189	186	189	186	189	189	207	204	176	139	173	169	166	166	164	164	191	186	102	156	163	178	215	223	178	0
18	X			265	270	246	231	219	206	251	196	199	181	{189	179	156	97	156	186	178	168	173	156	146}	131	160	146	187	1
19	X			{85	41	57	71	71	48	88	88	102	158	146	164	155}	105	71	114	139	126	104	121	88	34	138	80	100	1
20	X			90	85	88	104	109	105	131	116	122	88	32	71	53	52	53	71	93	122	105	105	73	102	105	95	90	1
21	X	X		122	129	155	139	136	153	156	169	155	104	71	52	53	55	73	85	95	92	88	62	74	78	88	90	103	0
22	X	X	X	95	88	105	105	124	128	107	124	104	97	105	90	90	107	146	128	138	119	90	76	69	105	88	109	106	0
23	X	X		109	129	134	223	228	176	173	131	153	114	88	73	69	69	86	107	124	143	124	126	88	124	112	121	126	0
24	X	X	X	124	134	136	144	173	173	171	160	119	143	97	83	105	109	109	122	136	131	124	119	100	160	156	122	131	0
25	X	X	X	164	235	238	254	217	220	235	212	204	189	169	169	184	179	171	148	153	173	156	136	158	194	160	173	187	0
26	X	X	X	204	207	196	204	217	201	188	183	173	148	131	105	117	126	114	116	129	160	176	186	207	235	231	217	174	1
27	X	X	X	236	251	231	249	223	214	219	231	204	201	204	197	196	184	148	88	86	102	105	160	156	153	169	161	182	0
28	X			174	206	228	238	238	231	215	189	222	184	156	139	151	122	134	146	139	139	156	168	202	210	197	{236}	184	1
29	X			{202	238	214	184	155	129	105	151	138	138	124	122	169	85	78}	105	136	156	156	171	188	222	207	173	156	1
30																													
31																													
MEANS ✱				188	196	199	205	208	201	202	194	182	161	147	140	143	136	137	144	152	156	143	158	154	169	174	174	169	
MEANS †				185	194	200	209	211	203	205	193	181	157	152	142	146	138	135	139	153	157	134	153	145	167	170	174	168	
MEANS ‡				189	198	203	211	211	202	204	201	188	174	163	153	157	148	140	144	159	159	127	156	149	176	180	187	174	

DESIGNATIONS AND REMARKS:

✱=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 48

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

MARCH 1932

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

MARCH 1932

DAY	*	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X	X	176	220	212	220	223	232	226	220	197	209	204	183	122	152	155	157	180	174	118	129	122	162	194	219	184	0
2	X			253	278	252	238	238	255	235	235	209	220	186	157	131	100	120	157	158	148	151	139	182	220	157	166	191	1
3	X			220	244	244	249	232	245	247	241	244	232	219	197	184	175	174	} 186	146	133	78	187	203	198	} 200	205	203	1
4	X			} 144	115	145	213	} 160	174	151	176	112	90	71	63	58	75	84	90	90	110	133	189	215	215	232	242	141	1
5	X	X		232	241	240	255	255	258	253	235	241	227	197	174	181	261	253	113	142	164	141	138	106	114	129	125	195	0
6	X	X		146	166	177	167	167	203	186	155	197	142	121	104	100	84	72	104	146	133	158	128	101	146	180	187	145	1
7	X			196	208	232	235	217	232	206	241	222	186	187	220	191	90	128	202	208	232	202	166	158	121	136	146	190	.
8	X			176	180	209	233	248	211	227	251	277	242	232	223	165	123	159	203	222	231	174	264	237	268	245	281	220	.
9	X	X	X	288	233	290	318	324	341	342	313	287	246	255	218	210	176	146	161	211	225	194	232	254	255	254	254	251	0
10	X	X	X	253	244	261	255	253	239	254	266	258	242	220	186	164	110	118	174	202	210	237	224	230	149	128	167	210	0
11	X	X	X	195	175	182	226	252	253	256	231	209	208	218	209	113	153	197	210	216	203	244	136	132	174	134	158	195	0
12	X	X		180	196	217	231	248	276	251	275	245	229	146	90	92	90	82	82	83	94	96	110	159	223	254	212	173	1
13	X	X	X	200	198	186	187	188	191	190	209	209	209	203	197	206	203	208	213	220	220	227	232	231	229	232	231	209	0
14	X	X	X	263	279	241	244	262	269	261	277	270	266	256	184	166	165	174	198	209	209	166	216	275	268	313	313	239	0
15				...	...	...	...	...	...	...	324	288	251	220	196	} 197	190	188	184	186	186	190	183	174	181	187	239	} ...	1
16	X			} 258	140	220	222	176	174	134	} 216	201	179	174	119	82	134	174	174	174	188	216	205	122	129	274	183	178	1
17	X	X		151	184	196	196	217	244	146	194	220	205	188	146	123	136	174	182	187	197	218	184	149	182	209	180	184	1
18	X	X	X	223	266	274	290	292	303	266	299	251	227	206	164	142	118	106	108	113	129	140	141	136	144	136	123	192	0
19	X	X	X	184	211	208	200	175	174	197	197	220	176	174	160	119	95	112	92	166	197	193	113	198	229	278	255	180	0
20				238	235	268	270	269	277	278	260	[191	...	...	...	...	...	...	...	...	...	129	] 157	113	196	174	226	...	2
21	X	X		264	254	266	267	219	246	223	102	86	167	174	140	164	156	134	165	138	174	212	146	191	119	91	129	176	1
22	X			183	183	232	258	255	251	267	261	232	155	112	113	[120	91	62	63	80	136	] 144	138	123	101	177	174	163	2
23	X	X	X	218	254	278	258	268	278	256	275	259	244	224	209	205	181	124	113	141	156	186	184	146	197	249	232	214	1
24	X	X	X	245	285	291	302	292	317	287	311	278	227	209	197	157	137	143	144	129	147	180	161	156	149	103	156	208	0
25	X	X	X	195	240	238	278	264	254	278	269	234	220	194	186	138	112	149	175	176	183	188	110	84	123	123	226	193	0
26	X			219	209	211	220	234	267	267	270	233	[208	157	147	157	134	129	131	147	186	] 211	164	187	174	157	203	193	2
27	X	X		175	204	246	255	280	213	191	234	232	174	198	198	164	137	129	137	152	157	151	143	141	143	139	218	184	0
28	X	X		244	261	288	309	297	314	313	290	262	242	217	195	180	134	92	146	157	157	196	150	132	240	274	255	223	1
29	X			256	293	277	290	293	302	302	270	281	267	238	[174	158	167	157	157	156	148	] 146	159	162	167	215	209	218	1
30	X	X		211	220	247	248	256	238	197	229	179	110	97	121	119	103	124	148	162	146	96	130	146	151	122	134	164	1
31				146	174	181	220	244	263	253	253	216	174	142	132	143	112	123	129	133	133	149	123	151	186	218	209	...	0
MEANS *				213	220	235	245	242	248	236	241	227	205	188	167	147	135	139	149	161	171	171	165	167	178	191	199	193	
MEANS †				213	228	239	248	249	255	241	241	228	209	195	172	151	142	142	149	165	172	176	158	163	179	186	199	196	
MEANS ‡				218	234	242	253	256	255	250	258	242	221	213	191	159	145	147	157	176	184	185	168	175	185	190	213	205	

DESIGNATIONS AND REMARKS:

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( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 49

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

MARCH 1932

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

MARCH 1932

DAY	*	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHAR-ACTER
1	x	x	x	141	186	176	189	186	183	201	176	136	146	158	141	95	107	114	117	143	156	99	121	104	139	168	201	149	0
2	x			238	252	220	219	191	210	197	196	155	156	124	105	93	81	133	156	148	139	139	109	156	188	126	139	161	1
3	x			199	214	209	220	206	223	222	212	181	176	189	173	156	153	158	173	156	45	193	189	146	139	169	155	177	1
4	x			126	150	85	189	134	141	122	141	100	86	99	52	53	71	71	74	85	97	121	184	188	183	197	206	122	1
5	x	x		189	209	210	231	227	233	223	184	186	151	124	116	107	90	88	73	109	138	124	133	83	97	107	93	147	0
6	x	x		119	138	139	141	129	164	156	119	128	102	71	55	55	59	55	88	124	116	141	112	83	121	173	173	115	1
7	x			166	194	215	222	173	204	174	197	148	122	114	136	136	71	90	186	199	227	189	128	124	92	116	126	156	.
8	x			156	156	181	206	80	183	146	214	220	179	156	166	122	92	116	191	222	241	155	268	220	254	230	271	184	.
9	x	x	x	268	212	254	294	301	305	308	251	227	183	210	173	169	156	139	141	179	220	188	222	235	296	238	239	223	0
10	x	x	x	228	207	207	238	238	230	238	244	220	191	171	131	122	86	105	156	197	202	235	206	228	148	107	148	188	0
11	x	x	x	171	156	156	206	236	222	241	199	156	141	161	164	90	138	188	206	214	191	238	104	111	173	124	139	172	0
12	x	x		156	173	196	210	225	241	217	244	174	176	121	83	90	92	85	78	80	88	83	105	155	207	238	202	155	1
13	x	x	x	199	183	174	173	173	174	173	186	191	191	191	189	196	197	196	204	210	210	222	223	220	220	222	220	197	0
14	x	x	x	256	268	238	238	243	255	252	270	254	228	249	161	141	156	156	189	199	191	144	225	255	262	316	294	227	0
15				285	291	301	302	305	270	284	298	238	222	210	189	189	188	186	173	176	171	169	158	150	168	164	239	...	1
16	x			178	191	201	188	202	206	129	199	169	153	150	88	67	124	158	164	174	189	210	184	111	131	139	169	161	1
17	x	x		139	168	174	173	191	217	121	163	166	148	146	122	100	124	151	173	174	189	210	122	131	176	191	168	160	1
18	x	x	x	207	247	266	282	271	290	254	270	207	189	166	139	122	105	86	88	102	122	133	124	122	136	129	114	174	0
19	x	x	x	164	199	181	184	155	155	166	171	176	139	122	126	92	73	92	85	153	191	176	111	199	220	270	254	161	0
20				223	222	268	277	266	263	257	246	206	148	74	88	69	71	76	86	131	138	144	148	100	173	158	222	...	2
21	x	x		259	254	262	254	215	239	209	93	73	156	164	138	171	160	134	173	151	178	206	124	183	121	81	119	172	1
22	x			171	169	227	252	254	244	257	222	138	99	107	109	109	122	105	99	107	141	150	141	114	88	168	171	157	2
23	x	x	x	214	246	271	254	270	277	254	247	223	219	191	173	156	169	105	105	136	155	156	156	129	188	246	223	198	1
24	x	x	x	238	282	285	294	299	305	271	288	222	173	171	156	133	114	129	134	124	143	155	150	139	134	90	151	191	0
25	x	x	x	183	233	238	279	262	254	270	265	197	186	160	164	128	105	150	183	188	189	189	97	73	105	114	219	185	0
26	x			210	191	206	210	222	259	257	252	204	189	158	160	173	188	164	173	173	196	223	156	188	171	158	201	195	2
27	x	x	x	164	194	238	249	281	215	194	215	210	144	169	173	156	139	155	134	150	158	144	114	122	141	136	219	176	0
28	x	x		251	271	296	294	293	327	324	268	222	204	189	164	161	131	90	156	173	174	206	144	124	246	282	254	218	1
29	x			259	285	293	299	305	310	304	265	270	255	215	161	158	168	173	176	173	156	139	151	163	173	206	199	219	1
30	x	x		193	206	227	238	251	223	173	196	160	85	86	95	104	99	105	146	161	148	93	144	139	151	111	122	152	1
31				138	164	160	202	222	254	249	230	166	128	114	105	122	...	...	...	...	...	...	...	...	...	...	...	...	0
MEANS *				194	208	217	230	227	232	216	212	183	163	153	136	123	120	125	144	157	164	166	152	152	166	173	185	175	
MEANS †				196	212	223	233	234	237	223	213	186	166	159	140	126	121	122	138	156	166	165	144	149	170	176	187	177	
MEANS ‡				202	218	227	240	243	239	235	232	202	178	177	158	133	129	135	145	166	177	173	154	161	175	180	202	187	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN VOLTS PER METER

MARCH 1932

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY	✱	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	x	x	x	48	38	33	33	41	39	42	63	91	83	87	97	109	106	86	68	60	45	44	35	39	30	26	45	58	0
2				31	38	27	30	35	38	36	43	66	70	99	140	127	128	z	83	77	73	65	71	63	40	38	36	..	1
3				41	33	35	33	32	33	33	34	58	74	77	75	72	67	47	≷ N51	z+	z+	z-	N120	134	153 ≶	65	48	..	1
4			≷	41	z-	z-	z ≶	56	71	75	82	97	130	158	189	N134	N65	141	84	81	69	52	39	49	60	54	54	..	1
5	x	x		39	38	29	36	36	40	38	57	81	94	108	124	140	152	152	150	110	91	75	80	68	57	47	46	79	0
6	x	x		45	44	51	58	48	42	48	81	91	136	200	212	198	214	189	113	87	92	81	78	61	48	N26	N23	94	1
7				31	34	32	29	30	39	48	57	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	.
8				..	..	..	..	..	..	..	..	72	88	103	101	137	134	105	77	64	56	36	29	33	35	24	24	..	.
9	x	x	x	25	29	27	30	28	33	30	39	62	72	63	68	79	73	88	77	55	49	32	39	31	27	35	24	46	0
10	x	x	x	29	25	30	28	39	27	32	41	47	58	69	84	101	126	94	70	64	60	39	24	45	55	43	43	53	0
11	x	x	x	33	36	36	33	33	32	32	63	80	84	87	91	115	73	63	54	54	51	39	36	45	38	45	31	54	0
12	x	x		42	29	29	25	27	27	30	42	66	77	108	134	N63	N42	N40	N54	43	45	54	36	34	31	41	45	48	1
13	x	x	x	45	47	39	42	49	54	60	61	58	60	61	56	60	58	54	51	42	34	31	30	33	32	37	38	47	0
14	x	x	x	33	27	37	42	26	30	24	33	38	49	57	87	89	76	73	61	49	51	50	24	24	25	24	23	44	0
15				25	27	27	25	24	27	27	41	54	63	70	68	≷ N36	N46	N48	46	N36	56	55	43	48	33	33	z ≶	..	1
16			≷	z+	z-	z+	z+	z	z	z ≶	40	56	67	75	98	104	72	57	55	47	48	39	33	51	41	33	39	..	1
17	x	x		32	30	35	30	31	39	77	67	73	77	81	88	91	75	N52	N52	48	49	41	28	36	32	34	24	51	1
18	x	x	x	21	18	17	18	19	22	24	38	56	61	69	77	83	89	83	69	54	51	43	39	28	24	29	29	44	0
19	x	x	x	30	29	24	22	36	45	36	52	53	66	81	56	108	114	83	59	54	51	42	35	30	36	29	23	50	0
20				21	22	16	10	14	22	27	46	[z-	z	z	z	z	z	z	z	z	z	z-]	37	47	27	21	24	..	2
21	x	x		22	20	21	22	22	34	42	97	107	55	57	58	N49	54	45	42	46	48	45	38	27	53	61	40	46	1
22				30	24	22	18	21	24	33	54	65	94	104	72	[85	z-	z	z	z	N23]	33	43	51	42	30	27	..	2
23	x	x	x	24	25	27	23	27	29	33	54	62	67	70	75	87	68	N67	66	51	50	48	51	45	29	25	25	47	1
24	x	x	x	25	21	21	32	26	24	29	48	67	88	80	80	86	86	75	68	66	58	49	49	37	28	40	29	50	0
25	x	x	x	27	21	20	21	20	20	26	41	58	62	66	64	69	56	46	36	36	37	36	33	44	33	26	24	38	0
26				24	19	17	16	18	20	18	31	42	[N44	N41	N21	z-	z-	z-	z-	z-	34]	37	45	33	27	35	39	..	2
27	x	x	x	30	27	30	21	21	26	32	51	63	86	75	78	76	74	61	57	54	44	50	54	34	35	29	23	47	0
28	x	x		24	23	18	23	18	23	27	41	57	72	73	84	75	78	49	N30	N25	33	33	30	36	29	26	24	40	1
29				24	23	21	21	23	24	30	43	42	37	60	[68	49	z	z	z-	z	z]	42	44	44	30	33	31	..	1
30	x	x		39	38	34	28	37	42	72	68	100	139	122	106	83	N75	62	57	57	N48	55	54	44	41	72	42	63	1
31	x			36	37	31	28	30	30	39	57	75	99	108	111	81	72	66	60	55	48	35	38	30	27	26	18	52	0
MEANS ✱				32	30	29	29	31	33	39	55	69	79	86	92	92	88	76	65	56	52	46	42	39	36	36	31	..	.
MEANS †				32	30	29	29	31	33	39	55	69	78	85	90	93	89	77	65	56	52	47	42	39	36	37	32	53	
MEANS ‡				31	29	27	29	30	32	33	49	61	70	72	76	88	83	73	61	53	48	42	37	36	33	32	30	48	

DESIGNATIONS AND REMARKS:

✱=ALL COMPLETE DAYS †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE [ ]=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER ≷=DISTURBED BY BAD WEATHER

N=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT Z=INDETERMINATE IN MAGNITUDE AND SIGN Z+=INDETERMINATE POSITIVE VALUE Z-=INDETERMINATE NEGATIVE VALUE

TABLE 51

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN VOLTS PER METER

APRIL 1932

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY				0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	
1				23	30	25	29	21	25	30	48	58	62	64	60	64	N52	53	55	40	30	31	37	33	23	24	27	39	1
2				48	44	41	29	23	27	33	47	57	64	74	70	79	79	59	N60	45	51	43	40	29	28	23	25	44	1
3				26	24	49	21	30	36	42	52	55	64	70	66	64	N55	N51	33	N40	37	40	43	46	34	36	30	43	1
4				26	26	24	28	27	27	35	47	58	70	73	72	83	68	62	53	N49	47	28	30	35	31	24	24	44	1
5				28	33	30	31	36	52	47	48	62	70	79	73	N60	N 3	35	43	40	36	34	36	30	31	20	22	41	1
6				22	24	21	26	24	22	25	39	61	82	83	62	50	N40	N37	N39	N40	39	46	37		30	30	24	40	1
7				25	21	19	21	24	19	28	40	63	64	57	64	72	63	69	55	54	51	35	53	43	28	22	24	42	0
8				22	18	20	24	30	24	33	56	67	82	88	90	N80	N25	N 3	N 0	-22	N 7	37	28	31	33	33	35	35	1
9				14	29	35	37	34	60	33	51	62	61	61	64	73	70	N42	N39	N26	N35	33	22	29	33	25	34	43	1
10				17	22	29	25	19	21	29	46	57	48	36	46	54	49	49	36	34	36	32	25	22	24	22	24	34	1
11				16	17	24	22	21	27	33	36	N40	Z-	Z-	Z-	Z-	N31	52	48	44	34	33	25	27	28	30	25	..	1
12				24	29	27	21	18	22	25	44	43	44	55	53	N49	N40	N40	N30	32	29	N24	19	16	21	24	29	32	1
13				21	18	16	15	25	18	21	33	45	46	46	53	58	N52	50	N43	43	39	40	30	30	41	27	27	35	1
14				25	21	21	21	18	22	27	34	56	56	61	55	58	53	48	38	N30	N40	34	31	27	33	23	26	36	1
15				24	21	19	23	24	21	27	42	52	59	69	63	61	55	55	50	44	48	36	34	56	22	N22	25	40	1
16				21	24	18	19	30	20	28	38	49	56	53	[Z	Z	Z	Z	Z]	31	34	34	46	42	27	26	26	..	1
17				21	22	18	20	25	22	26	40	49	54	54	55	40	[Z	Z	Z	Z]	31	37	40	43	40	24	..	1
18				26	22	18	15	21	21	25	43	55	63	70	69	68	66	58	N49	N28	42	43	33	28	21	25	34	39	1
19				30	28	24	26	22	22	31	48	60	66	61	64	63	52	49	N37	40	40	39	40	36	29	28	26	40	1
20				21	21	19	20	22	24	30	43	51	Z	Z-	Z-	Z	Z+	Z	Z-	Z-	Z-	N26	40	N36	Z-	Z	Z+	..	2
21				48	34	N22	N22	Z	Z	Z	Z	Z+	Z+	Z	Z	Z	27	58	Z+	Z	Z+	Z	Z+	26	27	49	43	..	2
22				33	30	30	35	40	44	49	67	96	112	104	129	70	67	64	58	49	50	42	26	27	25	24	N16	54	1
23				22	29	21	20	19	19	43	79	82	85	88	94	78	64	61	60	55	54	47	30	25	25	22	30	48	0
24				26	22	22	20	26	21	34	56	67	73	79	76	73	71	53	42	29	39	39	29	22	21	21	22	41	1
25				26	25	21	18	20	20	30	47	55	64	63	70	Z+	Z+	Z	Z	Z+	40	42	41	36	33	21	16	..	1
26				16	19	16	18	19	19	30	44	57	60	74	Z+	Z	Z	Z	Z	Z+	Z	N30	46	40	47	46	37	..	1
27				18	13	20	27	33	51	46	59	83	92	82	75	73	N67	58	52	51	48	47	40	34	25	43	N24	48	1
28				22	21	15	22	19	23	33	56	64	78	76	80	86	85	85	73	79	79	75	67	57	48	34	32	55	0
29				33	34	29	23	24	24	44	73	74	82	76	73	68	66	64	50	N41	40	41	40	33	19	18	25	46	1
30				24	18	19	18	19	21	32	50	51	59	73	85	83	72	76	67	50	46	44	36	27	25	18	18	43	0
31																													
MEANS *				26	24	23	24	25	28	34	50	62	69	71	71	68	57	53	46	40	42	40	35	33	28	25	26	42	
MEANS †				26	23	23	24	25	28	32	48	60	66	69	67	68	57	52	45	39	41	39	36	34	29	26	27	41	
MEANS ‡				26	24	23	23	24	26	31	48	58	64	66	66	68	61	56	48	42	43	39	36	34	28	25	26	41	

DESIGNATIONS AND REMARKS:

*=ALL COMPLETE DAYS †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER ≷=DISTURBED BY BAD WEATHER

N=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT Z=INDETERMINATE IN MAGNITUDE AND SIGN Z+=INDETERMINATE POSITIVE VALUE Z-=INDETERMINATE NEGATIVE VALUE

TABLE 52

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

APRIL 1932 — APRIL 1932

DAY	#	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X	X	197	188	196	238	261	288	271	262	220	208	201	202	188	145	133	127	132	138	127	105	138	192	225	216	190	1
2	X	X	X	250	262	261	294	300	311	300	258	258	241	212	195	157	119	111	163	180	169	171	165	154	260	279	306	224	1
3	X	X	X	291	302	311	329	322	315	304	278	270	230	215	168	139	173	189	179	195	179	188	123	97	160.	198	212	224	1
4	X	X	X	222	226	265	285	301	312	320	309	275	234	200	188	190	169	131	121	109	142	171	167	162	163	226	228	213	1
5	X	X		290	300	276	391	302	248	281	286	252	238	216	212	206	200	206	212	212	214	200	206	292	288	279	286	250	1
6	X	X	X	288	275	290	226	262	294	328	311	252	160	145	168	169	173	188	198	189	194	211	199	163	219	252	264	226	1
7	X	X	X	308	314	320	316	338	339	324	294	251	218	157	152	155	144	143	144	139	142	131	128	156	171	189	188	216	0
8	X	X		294	211	245	239	255	269	278	258	232	189	166	149	122	111	137	146	126	133	137	133	146	169	212	219	187	1
9	X	X	X	226	239	260	252	269	291	312	265	245	250	230	212	133	125	191	200	195	200	215	230	189	175	212	225	223	1
10	X	X	X	244	250	270	274	306	300	306	302	275	239	189	169	188	189	174	159	156	163	121	142	241	262	300	322	231	1
11	X			329	328	312	314	306	284	264	265	240	199	188	168	121	156	168	188	200	211	219	173	240	256	244	284	236	1
12	X	X	X	300	299	308	309	312	324	338	308	275	239	212	169	121	97	110	133	157	169	168	199	250	262	238	239	231	1
13	X	X	X	262	274	275	298	292	312	334	292	270	220	179	151	137	116	116	129	134	133	151	155	198	180	196	218	209	1
14	X	X		219	225	251	252	259	245	250	236	171	166	157	137	133	132	152	156	151	157	189	177	189	145	169	188	188	1
15	X	X	X	190	212	229	238	269	285	288	254	229	188	142	163	146	103	94	109	127	169	177	200	225	254	272	251	201	1
16	X			254	272	286	281	300	308	312	276	234	221	200	⌈168	161	146	151	159⌋	169	191	174	103	85	156	252	288	214	1
17	X			294	269	285	310	285	311	316	286	250	224	211	190	159	⌈123	146	157	169	168⌋	169	167	139	189	171	189	216	1
18	X	X	X	211	261	272	312	322	336	328	300	269	224	167	168	165	160	140	97	154	166	173	161	163	226	274	222	220	1
19				211	205	212	239	250	271	280	256	250	216	189	169	169	159	132	131	143	160	171	134	121	211	224	251	...	1
20				254	264	261	291	10.	308	312	272	226	189	155	157	162	168	133	134	132	168	189	190	190	169	171	168	...	2
21				210	206	...	...	...	...	...	...	...	⌈178	156	145	143	179	146	133	146	108	151	163 ⌋	161	...	...	...	...	2
22				...	...	...	...	...	...	...	...	...	...	...	74	109	132	150	133	150	162	201	157	167	200	232	242	...	1
23				...	...	...	...	...	...	...	198	188	175	119	91	121	142	152	151	157	174	210	199	239	272	288	294	...	0
24	X	X	X	312	314	328	345	336	324	334	288	250	212	201	189	155	136	94	90	157	198	201	188	214	279	260	252	236	1
25	X			284	291	316	322	338	334	348	281	251	238	220	220	204	198	171	175	188	204	212	216	262	268	302	302	256	1
26	X			298	349	365	365	400	399	365	296	285	250	224	200	180	154	159	163	168	169	137	156	225	225	234	229	250	1
27	X	X		225	(224	145	230	216 ⌋	188	212	172	110	69	75	97	137	110	108	129	144	144	157	189	192	172	188	212	160	1
28	X	X	X	260	242	256	280	242	278	300	255	214	191	163	154	154	123	106	79	78	94	109	133	146	168	155	190	182	0
29	X	X	X	178	171	214	238	250	278	295	209	198	175	168	140	121	133	122	125	122	120	123	137	131	142	167	172	172	1
30	X	X	X	157	180	231	216	251	274	284	251	218	175	148	132	133	126	126	108	88	116	144	145	117	125	161	169	170	0
31																													
MEANS #				250	260	271	283	292	298	304	272	240	208	183	170	155	142	143	146	154	163	167	164	181	204	226	235	213	
MEANS †				240	249	260	275	283	291	299	269	237	203	177	166	152	139	139	140	147	157	163	164	178	201	223	229	208	
MEANS ‡				241	252	268	279	290	304	310	277	248	213	183	170	153	139	136	135	144	156	161	161	172	202	225	230	210	

DESIGNATIONS AND REMARKS:

#=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 13

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

APRIL 1932

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

APRIL 1932

DAY	✱	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X	X	144	175	187	213	211	242	259	233	189	180	175	213	192	146	127	118	123	146	128	94	125	182	216	214	177	1
2	X	X	X	246	286	264	284	310	308	305	254	231	199	175	163	146	107	109	168	184	172	168	177	148	264	280	302	218	1
3	X	X	X	284	309	283	330	319	311	296	262	228	198	191	163	137	180	199	194	194	182	182	109	85	148	187	208	217	1
4	X	X	X	214	286	272	284	299	303	308	283	249	194	172	160	156	160	128	111	105	128	165	153	146	168	223	233	201	1
5	X	X		283	297	280	296	299	231	264	272	226	198	182	209	214	213	206	201	204	206	187	192	288	264	272	276	240	1
6	X	X	X	276	260	290	216	247	292	325	270	214	153	132	165	179	182	196	199	198	204	211	194	149	211	247	251	219	1
7	X	X	X	311	319	325	331	342	348	320	275	216	201	163	148	139	128	130	130	135	128	125	128	151	168	180	187	210	0
8	X	X		198	209	246	239	249	272	273	231	196	153	132	123	112	119	146	172	144	146	137	127	156	163	211	213	182	1
9		X	X	224	236	260	252	257	283	296	242	229	231	219	199	125	112	191	196	206	214	231	229	192	170	213	213	218	1
10	X	X	X	231	247	266	264	306	299	288	264	231	229	198	180	192	189	170	155	151	163	123	114	231	256	299	313	223	1
11	X			324	327	311	317	308	283	264	267	247	216	206	198	132	163	168	184	199	211	211	187	238	251	246	296	240	1
12		X	X	310	305	310	322	313	324	327	289	262	234	196	168	125	94	93	144	179	198	179	198	262	273	241	242	233	1
13		X	X	270	278	280	313	296	325	328	283	247	211	180	146	128	125	125	132	144	146	163	135	194	172	191	214	209	1
14	X	X		214	229	256	259	272	234	247	238	175	146	137	128	128	128	162	172	167	180	206	208	189	130	172	184	190	1
15	X	X	X	191	233	228	236	273	276	292	236	203	172	114	155	148	102	89	111	128	180	196	206	231	251	275	241	199	1
16				252	272	291	288	297	324	311	268	214	199	184	⌈175	170	162	165	172⌋	180	180	165	96	76	148	260	283	214	1
17	X			296	275	286	314	288	322	327	280	246	223	198	182	174	⌈128	167	175	189	191⌋	184	160	130	179	160	186	219	1
18	X	X	X	213	267	276	325	330	342	334	286	244	201	146	156	149	160	128	93	163	172	180	139	148	226	288	221	216	1
19				208	199	214	233	247	265	276	234	213	191	163	151	163	163	130	130	148	160	175	155	...	...	...	...	...	1
20				...	...	...	...	...	...	...	239	213	201	184	172	177	177	165	167	165	180	186	179	177	189	180	175	...	2
21				184	184	...	...	...	...	...	...	...	{198	196	203	156	179	130	128	146	123	165	199}	184	206	128	65	...	2
22				{128	172	175	198	175}	182	162	158	130	114	76	71	111	144	144	130	146	167	204	132	160	186	213	234	...	1
23				239	265	264	278	272	297	260	168	151	148	111	78	111	137	153	149	162	182	211	172	231	267	291	288	...	0
24	X	X	X	305	310	331	337	320	313	324	249	213	170	163	163	135	121	93	94	170	203	206	189	206	275	256	247	225	1
25	X			278	291	319	313	334	327	339	273	231	214	211	221	213	208	203	194	187	199	204	213	246	247	297	296	252	1
26				297	357	371	369	400	404	371	297	254	234	218	214	198	180	180	179	177	174	134	155	219	229	231	236	253	1
27	X	X		229	{241	168	233	216}	180	198	162	105	56	73	84	127	102	105	127	135	144	160	187	187	168	172	196	156	1
28	X	X	X	257	231	252	273	229	270	280	221	180	155	144	127	128	105	94	76	74	91	107	127	128	155	130	168	167	0
29	X	X	X	155	163	203	228	234	262	249	184	163	144	148	127	119	123	128	119	114	116	125	127	118	130	162	172	159	1
30	X	X	X	155	180	223	216	246	264	246	211	184	148	114	112	111	111	111	100	91	112	137	135	111	109	163	174	157	0
31																													
MEANS ✱				246	259	271	282	289	294	295	253	215	186	167	163	151	142	145	149	158	167	169	159	174	197	223	231	208	
MEANS †				236	248	260	273	279	285	288	247	209	179	158	154	144	135	136	141	150	162	166	158	172	194	219	223	201	
MEANS ‡				237	249	266	276	284	299	299	253	218	189	164	159	144	134	132	134	147	160	164	153	164	197	222	225	203	

DESIGNATIONS AND REMARKS:

✱=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 54

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

MAY 1932 — MAY 1932

DAY	*	+	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X		201	199	227	240	255	277	273	220	198	168	141	132	130	105	127	128	149	163	168	150	140	164	198	249	183	1
2	X	X		239	272	319	345	331	330	301	282	271	239	210	198	⌈ 178	170	149	154	147	152 ⌋	151	165	145	209	239	271	228	1
3	X	X		297	269	293	315	330	330	362	314	264	223	⌈ 154	147	150	151	140	130	152 ⌋	156	173	184	187	211	236	244	224	1
4	X	X		269	201	224	255	251	275	305	279	238	222	⌈ 173	165	165	161	152	152	165	178 ⌋	189	178	198	214	238	248	211	1
5				...	...	...	...	...	...	...	247	264	224	187	177	133	102	160	168	166	177	219	179	142	145	239	276	...	0
6	X	X		290	≷ 302	268 ≶	290	301	317	325	272	210	199	198	165	189	189	198	184	211	216	226	214	216	163	315	327	241	1
7	X	X	X	309	339	350	399	401	404	387	331	302	251	227	144	119	107	⌈ 105	118	154	188	211	189	137 ⌋	226	297	318	251	1
8	X	X	X	330	346	381	370	395	404	388	306	301	272	199	⌈ 174	159	141	127	130	149	166 ⌋	178	177	130	177	251	314	249	1
9				317	355	354	364	372	396	396	350	296	251	236	163	127	154	180	189	198	189	183	178	...	...	...	...	...	1
10				...	...	...	...	...	...	...	318	292	253	235	147	166	188	168	≷ 165	163	189	223	179	232 ≶	206	211	184	...	1
11	X	X		239	251	251	261	292	317	319	249	201	160	163	165	164	147	126	≷ 110	141	102	130	142 ≶	177	205	185	203	196	1
12	X	X	X	223	224	234	246	228	239	229	220	222	198	173	156	149	127	113	105	102	117	132	98	169	198	203	213	180	0
13	X	X		189	241	247	238	248	259	187	206	209	169	163	135	⌈ 110	113	127	152	165 ⌋	170	178	213	131	177	213	248	187	1
14	X	X		260	261	239	281	304	302	286	238	213	182	≷ 164	72 ≶	⌈ 168	152	123	147	154	165	188 ⌋	167	182	171	117	156	196	1
15	X	X	X	210	277	261	286	280	300	317	272	234	211	187	168	⌈ 151	154	157	159	163	163 ⌋	175	159	161	213	223	249	214	1
16	X	X	X	247	253	261	279	304	252	276	273	227	199	184	171	⌈ 156	152	160	156	123	149 ⌋	187	180	173	227	202	163	206	1
17	X	X	X	240	255	279	304	329	330	313	260	240	179	159	151	137	122	126	117	100	103	126	103	136	157	177	235	195	1
18	X	X	X	263	271	252	290	306	315	323	288	264	236	178	165	161	119	123	163	165	163	126	138	179	214	238	224	215	1
19	X	X		244	239	275	294	308	290	296	228	242	210	174	⌈ 114	117	147	128	127	127	142	156	149	118 ⌋	175	166	175	193	2
20	X	X	X	161	222	261	279	330	345	290	290	264	230	205	183	173	155	114	100	103	159	187	171	223	265	282	292	220	1
21	X	X		281	232	272	285	292	281	247	242	251	242	⌈ 210	198	179	168	154	128	150 ⌋	160	165	160	189	236	230	261	220	1
22	X	X	X	290	264	319	279	345	312	330	265	222	211	⌈ 209	161	103	108	150	165	177	179	178	180 ⌋	175	183	187	206	217	1
23	X	X		226	240	224	252	290	285	302	268	226	198	173	166	⌈ 113	99	102	114	151	184	189 ⌋	215	213	164	180	178	198	1
24	X	X		199	222	223	241	240	263	277	236	205	169	141	144	⌈ 116	114	116	130	146	157	161 ⌋	179	174	207	231	234	188	1
25	X	X		236	218	260	306	322	331	315	267	240	213	⌈ 185	146	90	140	140	154	165	171 ⌋	188	198	154	131	232	240	211	1
26				230	218	251	259	292	292	304	281	251	218	187	⌈ 179	152	141	135	97	137	164	178	202 ⌋	127	185	292	300	...	1
27	X	X	X	315	317	342	343	317	292	314	268	239	216	⌈ 201	179	189	179	166	178	198	201 ⌋	209	226	206	289	298	315	250	1
28	X	X		317	335	330	323	329	330	235	216	216	230	⌈ 187	171	178	173	165	151	146	159	177	182 ⌋	166	179	214	90	217	1
29	X	X		151	235	272	304	310	317	310	302	279	235	222	211	⌈ 145	178	178	161	166	199 ⌋	211	201	216	183	198	244	226	1
30	X	X		255	290	315	356	370	371	323	277	251	232	202	⌈ 130	138	145	156	168	165	166	187	213 ⌋	157	151	178	223	226	1
31	X	X		295	305	302	368	372	383	396	318	267	⌈ 243	224	199	133	135	154	166	183	179	198	214 ⌋	177	165	227	289	245	1
MEANS *				247	264	279	297	310	313	305	266	241	212	185	160	147	143	140	142	152	163	176	176	171	195	221	237	214	
MEANS +				247	264	279	297	310	313	305	266	241	212	185	160	147	143	140	142	152	163	176	176	171	195	221	237	214	
MEANS ‡				259	276	297	308	324	319	317	277	252	220	192	165	150	136	134	139	143	159	171	162	169	215	236	253	220	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES +=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION ≷=DISTURBED BY BAD WEATHER

TABLE 56

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

MAY 1932

Day				0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	A	A		196	206	229	234	250	274	260	197	172	152	133	118	122	98	129	131	146	166	186	137	139	150	190	255	178	1
2	A	A		245	278	307	357	349	344	303	283	260	226	210	197	⌈185	211	190	181	170	161⌋	154	152	137	206	243	271	236	1
3	A	A		262	272	296	326	358	358	370	309	262	208	⌈170	159	163	174	159	152	170⌋	170	170	172	174	190	210	224	228	1
4	A	A		224	196	227	250	255	269	293	279	210	222	⌈192	192	188	181	201	190	181	188⌋	192	179	197	227	227	224	216	1
5				236	206	238	260	255	240	253	222	241	203	170	174	131	101	170	174	157	174	204	176	116	131	222	262	...	0
6	A	A		274	{284	276}	267	283	314	309	245	172	172	168	150	170	177	190	176	190	199	201	174	208	152	313	326	225	1
7	A	A	A	311	326	373	390	396	404	371	288	271	222	201	135	115	101	⌈99	113	142	166	195	174	101⌋	206	281	304	237	1
8	A	A	A	316	334	376	362	390	390	385	283	276	253	181	⌈155	152	133	109	116	137	155⌋	168	157	116	174	257	311	237	1
9				308	355	354	374	371	406	368	329	260	219	226	154	120	159	194	194	190	177	174	192	206	211	255	276	...	1
10				308	304	342	374	413	415	326	313	283	241	208	133	166	174	168	{168	172	174	195	168	211}	177	172	163	...	1
11	A	A		219	238	233	245	289	311	298	213	166	135	135	150	154	124	107	{99	137	144	124	152}	157	177	172	186	182	1
12	A	A	A	208	215	219	227	210	224	210	203	206	179	166	150	135	116	101	98	98	161	116	96	172	188	206	208	171	0
13	[	A		186	226	238	226	233	252	168	168	172	155	144	133	⌈115	115	137	154	155⌋	168	170	176	120	154	188	240	175	1
14	A	A		255	248	234	293	311	298	278	224	188	166	{96	163}	⌈172	159	146	166	170	174	199⌋	161	154	181	105	144	195	1
15	A	A	A	208	278	262	289	284	311	296	264	215	190	172	166	⌈154	168	166	161	157	163⌋	172	188	168	210	222	255	213	1
16	A	A	A	247	257	260	279	311	245	262	257	208	172	166	161	⌈155	154	150	150	126	154⌋	186	174	157	226	199	155	200	1
17	A	A	A	227	243	279	311	334	329	296	248	234	172	142	137	135	120	116	116	91	103	135	115	133	157	174	245	191	1
18	A	A	A	267	279	266	294	311	321	311	274	262	231	174	168	154	116	116	188	185	170	120	146	190	222	236	215	217	1
19	A	A		236	243	283	296	301	283	278	206	213	199	172	⌈115	133	172	174	165	155	168	172	133	116⌋	174	170	188	198	2
20	A	A	A	206	224	271	283	334	346	276	269	248	211	199	174	172	157	116	99	103	163	195	188	210	274	288	298	221	1
21	A	A		288	301	278	286	299	291	234	222	227	227	⌈213	208	208	195	170	157	159⌋	165	165	172	186	217	227	248	223	1
22	[	A	A	294	250	309	278	349	321	314	234	199	186	⌈192	152	98	107	159	181	194	201	197	192⌋	168	185	185	192	214	1
23	A	A		211	227	224	245	288	288	286	247	185	168	154	159	⌈113	96	103	107	154	190	206⌋	227	204	161	176	176	191	1
24	A	A		190	219	222	241	238	260	260	219	179	155	129	133	⌈118	116	128	148	163	157	154⌋	168	172	197	226	227	184	1
25	A	A		227	240	255	309	318	342	308	264	227	190	⌈177	150	98	142	152	172	183	181⌋	185	172	135	172	199	226	209	1
26				...	...	...	...	...	...	...	269	210	190	172	⌈177	157	150	133	99	137	170	174	183⌋	113	186	296	294	...	1
27	A	A	A	321	329	347	358	316	294	298	266	226	199	⌈204	190	194	199	194	206	206	208⌋	208	210	188	284	309	311	253	1
28	A	A		319	342	329	326	328	342	229	204	190	224	⌈206	199	203	194	186	172	155	170	179	186⌋	154	170	201	80	220	1
29	[	A		135	224	272	311	314	321	316	313	264	231	217	226	⌈154	206	211	203	206	208⌋	210	195	210	194	186	240	232	1
30	[	A		259	306	328	366	393	393	344	262	240	229	208	⌈137	168	172	186	194	190	203	211	226⌋	165	155	172	220	239	1
31	A	A		278	313	308	377	384	385	395	321	267	⌈240	224	211	150	152	181	190	206	197	192	195⌋	170	152	227	294	250	1
MEANS #				245	263	279	297	312	315	294	250	220	192	176	163	151	150	151	155	160	172	176	171	163	191	214	232	212	
MEANS †				245	263	279	297	312	315	294	250	220	197	176	163	151	150	151	155	160	172	176	171	163	191	214	232	212	
MEANS ‡				260	274	296	307	324	318	302	259	234	202	180	159	146	137	133	143	144	164	169	164	160	213	236	249	216	

DESIGNATIONS AND REMARKS:

#=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 96

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN VOLTS PER METER

MAY 1932 — MAY 1932

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY	*	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	DAILY RANGE
1	X	X		20	19	18	16	20	20	30	45	52	59	72	76	58	55	N38	N27	43	33	29	36	31	40	28	23	37	1
2	X	X		18	17	16	19	14	16	27	33	37	51	47	55	⌈ 57	N 3	- 7	13	N15	28 ⌋	34	30	28	21	22	21	26	1
3	X	X		18	18	16	21	17	21	22	33	37	52	⌈ N30	N45	N52	N45	N41	N21	N36 ⌋	36	45	41	44	43	36	37	34	1
4	X	X		40	33	43	25	22	25	34	45	57	61	⌈ N40	N40	N36	N36	-20	- 6	N 9	N36 ⌋	49	51	51	43	48	45	35	1
5	X			33	40	34	24	28	24	31	54	63	70	70	61	65	51	45	49	49	50	46	36	44	39	38	41	45	0
6	X	X		52	≷ N44	N28 ≷	30	28	24	37	54	78	84	90	72	76	68	61	57	54	52	50	42	34	39	32	37	51	1
7	X	X	X	28	24	24	21	18	21	36	49	55	64	64	68	52	49	⌈ N53	50	N46	48	41	37	N31 ⌋	25	27	29	40	1
8	X	X	X	24	18	21	19	15	19	24	36	46	47	57	⌈ N54	42	N50	54	N46	N46	47 ⌋	45	58	48	39	40	35	39	1
9	X			22	30	22	21	27	19	31	46	58	66	64	59	52	N45	N43	N45	N49	49	52	55	38	36	36	36	42	1
10	X			30	21	21	17	20	24	45	51	58	59	61	66	N40	46	42	≷ N12	N21	N30	33	N13	N18 ≷	35	40	43	35	1
11	X	X		33	29	18	19	16	18	30	46	61	61	56	53	53	67	70	≷ 54	N 4	N27	N30	N38 ≷	45	36	37	39	39	1
12	X	X	X	33	33	30	27	30	26	39	45	52	54	56	63	67	47	47	48	43	43	25	30	22	21	21	33	39	0
13	X	X		22	22	24	34	23	24	61	60	57	63	65	61	⌈ N44	N52	N36	N53	48 ⌋	50	47	43	34	30	29	28	42	1
14	X	X		28	19	19	21	18	19	30	43	53	57	≷ 54	N53 ≷	⌈ 51	N29	N 0	N34	N37	N43	N40 ⌋	43	27	39	39	30	34	1
15	X	X	X	26	33	21	19	20	20	30	40	50	57	61	67	⌈ N60	N46	N44	49	49	N43 ⌋	52	52	27	27	24	30	39	1
16	X	X	X	29	26	22	20	21	33	40	45	49	57	65	64	⌈ N57	65	66	56	N50	46 ⌋	40	36	28	27	40	40	43	1
17	X	X	X	33	24	20	16	15	22	31	43	40	49	55	58	49	61	60	37	N46	49	34	26	16	25	33	27	36	1
18	X	X	X	28	19	18	16	15	18	27	33	38	41	47	49	55	60	N51	N28	N36	N37	36	39	33	32	26	27	34	1
19	X	X		21	15	17	21	24	18	33	51	56	56	58	⌈ N41	N 0	N 0	-43	-43	-29	- 7	N22	44	N44 ⌋	31	33	27	20	2
20	X	X	X	23	23	24	19	16	21	42	45	49	58	60	61	61	49	N47	58	N45	46	N40	25	22	26	20	24	38	1
21	X	X		28	27	27	28	24	27	45	56	73	70	⌈ 68	N71	N61	N44	N44	N12	N35 ⌋	51	52	58	50	49	40	41	45	1
22	X	X	X	37	34	34	26	24	23	34	56	73	74	⌈ N74	85	N63	71	N52	N46	N42	49	N46	55 ⌋	60	50	55	36	50	1
23	X	X		34	30	27	26	22	33	39	58	75	80	88	77	⌈ 74	64	60	N59	74	57	60 ⌋	52	37	45	35	48	52	1
24	X	X		27	18	17	18	21	22	30	43	48	55	64	65	⌈ N54	N43	N39	N27	N24	N35	42 ⌋	48	49	40	36	37	38	1
25	X	X		28	27	21	24	25	29	39	47	57	75	⌈ 81	77	N21	N53	N56	N32	N49	N55 ⌋	62	63	68	60	43	43	47	1
26	X			33	33	24	22	24	30	42	52	66	72	71	⌈ 66	N64	N61	N50	N34	N39	N50	N50	N50 ⌋	49	33	27	22	44	1
27	X	X	X	22	19	18	21	21	22	34	45	54	61	⌈ 55	N50	N57	N46	N41	N44	N49	46 ⌋	50	43	27	18	29	27	37	1
28	X	X		22	20	21	19	21	27	55	59	59	56	⌈ N52	N34	N55	N57	N47	N18	N17	N40	41	N45 ⌋	55	51	43	46	40	1
29	X	X		39	32	27	22	22	21	32	43	55	52	62	50	⌈ N51	N39	N36	N36	N38	N40 ⌋	46	46	36	30	36	23	38	1
30	X	X		29	22	22	19	18	21	43	46	56	60	54	⌈ N43	N18	N32	N27	N27	N25	N22	N29	N35 ⌋	30	39	30	29	32	1
31	X	X		29	18	19	18	18	18	28	37	45	⌈ N55	N56	47	N43	N29	N40	N30	N34	N37	34	40 ⌋	45	43	34	35	35	1
MEANS *				29	25	23	22	21	23	36	46	55	61	61	59	51	47	39	34	36	41	42	42	38	36	34	34	39	.
MEANS †				29	25	23	22	20	23	35	46	54	60	60	58	51	47	39	34	36	40	42	43	38	36	34	33	39	
MEANS ‡				28	25	23	20	20	22	34	44	51	56	59	62	56	54	52	46	45	45	41	40	31	29	32	31	39	

DESIGNATIONS AND REMARKS:

*=ALL COMPLETE DAYS †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER ≷=DISTURBED BY BAD WEATHER

N=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT Z=INDETERMINATE IN MAGNITUDE AND SIGN Z+=INDETERMINATE POSITIVE VALUE Z-=INDETERMINATE NEGATIVE VALUE

TABLE 57

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

JUNE 1932

EXPRESSED IN VOLTS PER METER

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY	*	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	DISTURBANCE FACTOR
1	X	X		42	29	32	24	21	22	36	47	47	58	57	⌈ 48	N56	N30	N29	N24	N20	N22 ⌋	39	53	50	43	41	52	38	1
2	X	X		35	49	44	21	21	25	36	54	64	70	77	⌈ 68	N61	64	N27	N30	N40	N40	45 ⌋	49	47	48	33	25	43	1
3	X	X		49	41	41	19	21	24	42	46	61	⌈ N35	N25	N 0	N12	-24	N36	N21	N29	N22	46 ⌋	43	43	51	53	52	39	1
4	X			59	55	48	31	31	39	≷ 35	98 ≶	75	94	77	75	N70	N58	≷ 90	N198	119	99 ≶	61	64	67	61	33	24	69	1
5	X	X	X	37	29	25	18	19	29	54	84	131	116	91	92	82	90	73	68	N67	51	58	54	57	64	64	53	63	1
6	X	X	X	41	38	44	25	24	22	46	67	67	69	85	⌈ 80	N85	N84	72	61	N59 ⌋	60	59	57	57	52	49	55	56	1
7	X			56	49	45	36	32	29	48	72	93	96	100	91	N83	N65	85	76	75	67	67	60	55	50	32	27	62	1
8	X	X	X	30	34	36	34	30	30	39	58	⌈ 73	76	69	79	85	N63	67	61	N56	56	N54 ⌋	52	52	52	51	37	53	1
9	X			27	35	29	22	21	24	38	55	⌈ 65	68	74	67	N54	N60	57	N43	N49 ⌋	46	54	48	42	40	40	29	45	1
10	X	X	X	24	25	27	26	25	30	44	44	54	⌈ 61	N69	N69	67	73	60	N60	N48 ⌋	49	49	47	33	24	21	33	44	1
11	X	X	X	21	23	25	22	19	19	27	36	47	58	⌈ 64	64	N63	73	N54	N55	52	52 ⌋	45	40	33	27	22	31	40	1
12	X			40	31	33	27	27	22	36	45	52	51	63	60	62	⌈ N58	52	N56 ⌋	53	51	52	51	36	33	40	40	45	1
13	X			36	31	40	40	24	25	37	58	⌈ N64	69	95	81	87	88	N78	71	60	77	74	50	42	87 ⌋	55	48	59	1
14	X			46	28	24	26	26	24	36	51	58	67	76	⌈ N73	N73	N47	N56	N21	N42	N34	61 ⌋	74	58	44	33	31	46	1
15	X	X		30	25	27	24	24	26	36	51	55	68	70	⌈ 73	N40	-15	N 0	N12	N42	N16	52	46 ⌋	60	55	33	33	37	1
16	X			27	29	32	26	25	39	61	64	68	⌈ 76	N75	N79	N65	N48	N22	N30	N28	N34 ⌋	59	69	60	54	58	45	49	1
17	X			61	41	40	35	27	26	60	60	61	81	71	74	72	88	86	N73	83	77	65	64	55	64	46	42	61	1
18	X	X	X	40	21	24	24	27	24	39	53	76	80	92	⌈ 96	97	N94	N79	N52	N58	61 ⌋	61	62	37	34	33	36	54	1
19	X			50	36	28	27	27	28	41	54	58	64	71	77	76	80	86	N83	N59	63	54	47	33	36	38	45	53	1
20	X			40	34	19	10	28	46	59	46	55	53	61	67	82	83	75	N72	N57	58	62	57	41	37	71	49	55	1
21	X	X	X	40	14	22	12	22	25	32	48	59	64	59	⌈ 63	69	67	N67	65	67	52	56	N52	N46 ⌋	49	37	34	48	1
22	X	X	X	29	30	26	24	22	22	33	35	40	52	57	72	51	64	58	N59	55	N49	49	40	40	37	48	46	43	1
23	X	X	X	42	49	31	21	20	21	23	45	56	66	⌈ 69	70	N64	68	N52	N57	51	58 ⌋	55	46	37	27	26	37	46	1
24	X	X	X	31	27	24	25	24	27	32	38	58	52	63	66	⌈ 71	N64	N58	N61	58	N51	59 ⌋	45	33	24	24	33	44	1
25	X	X		30	25	28	17	13	25	36	46	48	67	69	79	⌈ 82	N70	N70	N54	N61	60	N60	N38 ⌋	37	48	36	32	47	1
26	X	X		25	30	21	19	21	18	33	40	45	74	75	78	79	≷ N70	N58	N65	N58	-30	N 3	-24 ≶	31	24	22	22	36	1
27	X	X		29	25	15	26	24	22	34	44	54	57	58	66	85	66	N43	40	52	55	51	33	25	21	27	29	41	1
28	X	X		21	25	19	26	29	42	37	50	64	71	69	⌈ N69	N58	N94	N93	66	N49	N44	82	161	18	N43	57 ⌋	47	56	1
29				52	37	39	24	29	34	52	54	57	73	71	⌈ N61	N50	N69 ⌋	..	..	..	..	..	..	..	..	..	..	..	.
30				..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	.
31																													
MEANS *				36	32	29	26	24	27	40	53	62	68	71	71	69	63	60	58	55	49	55	53	44	44	40	38	49	
MEANS †				32	29	25	24	23	25	37	49	61	66	68	68	67	61	55	51	51	43	51	50	41	40	38	38	46	
MEANS ‡				34	31	27	25	23	25	37	51	66	69	72	75	73	74	64	60	57	54	54	50	42	39	38	40	49	

DESIGNATIONS AND REMARKS:

*=ALL COMPLETE DAYS †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER ≷=DISTURBED BY BAD WEATHER

N=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT Z=INDETERMINATE IN MAGNITUDE AND SIGN Z+=INDETERMINATE POSITIVE VALUE Z-=INDETERMINATE NEGATIVE VALUE

TABLE 58

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

JUNE 1932

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

JUNE 1932

DAY	*	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	4	4		189	245	279	300	345	368	322	330	286	246	233	⌈179	135	121	141	174	179	195⌋	204	189	192	206	252	192	229	1
2	4	4		404	284	342	388	422	379	339	297	292	259	247	⌈243	229	164	167	178	192	193	214⌋	220	235	227	270	267	264	1
3	4	4		315	355	386	448	500	442	342	300	292	⌈229	204	179	171	142	179	168	167	193	226⌋	250	247	229	236	243	268	1
4				227	192	230	290	310	283	≷293	223≶	197	182	200	141	138	156	≷155	181	168	161≶	138	141	134	159	170	196	...	1
5	4	4	4	159	177	242	297	253	229	236	157	110	117	179	166	156	184	163	121	139	175	179	196	214	164	166	166	179	1
6	4	4	4	279	309	289	325	322	358	322	269	257	243	230	⌈222	214	124	137	163	179⌋	195	214	219	214	236	245	243	242	1
7				...	...	...	...	...	...	...	227	217	179	112	112	80	112	131	189	193	190	193	230	222	214	237	250	...	1
8	4	4	4	283	279	222	243	255	285	303	235	⌈204	214	192	179	115	110	131	166	192	200	214⌋	239	245	223	243	257	218	1
9				...	...	...	...	...	...	...	265	⌈243	222	214	170	110	137	124	163	190⌋	188	220	243	153	245	247	255	...	1
10	4	4	4	276	300	322	327	347	345	327	316	279	⌈243	226	203	203	168	97	91	120⌋	174	206	214	227	243	267	275	242	1
11	4	4	4	269	276	307	315	352	368	386	322	257	243	⌈230	214⌋	181	138	110	101	117	123⌋	139	159	144	214	287	253	229	1
12				241	241	257	279	302	317	307	279	262	227	193	184	164	⌈113	110	144⌋	163	177	170	172	161	229	229	195	...	1
13				189	217	259	204	272	325	340	309	⌈259	219	192	166	157	106	110⌋	...	...	...	...	...	...	...	...	...	...	1
14				...	...	...	...	...	...	...	...	...	...	217	⌈178	115	123	163	150	164	168	181⌋	149	179	197	286	297	...	1
15	4	4		306	300	312	320	336	315	295	285	279	242	222	⌈200	175	152	139	155	163	178	195	181⌋	182	216	283	303	239	1
16				271	312	326	345	358	335	243	265	260	⌈255	229	225⌋	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
17				...	...	...	...	...	...	...	283	257	245	227	214	193	192	149	152	160	179⌋	193	199	214	141	219	286	...	1
18	X	4	4	316	342	341	358	302	337	365	279	192	204	164	⌈139	131	94	117	153	200	196	214	216	229	227	243	250	234	1
19				270	290	272	287	316	329	320	279	246	223	195	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
20				...	...	...	...	...	...	...	270	260	243	216	177	124	109	95	110	117	131	155	177	167	217	153	240	...	1
21	X	X	4	245	259	291	300	300	326	342	295	243	229	206	⌈190	172	161	139	138	153	156	164	186	206⌋	163	178	190	218	1
22	X	X	4	232	211	250	279	283	285	269	260	276	253	217	200	174	168	152	145	155	166	193	195	161	178	167	177	211	1
23	X	X	4	193	199	227	227	229	223	243	185	175	164	⌈164	168	168	120	97	149	149	153⌋	178	196	170	203	269	272	188	1
24	X	X	4	249	259	272	302	303	319	303	265	242	219	197	178	⌈167	164	148	155	155	164	172⌋	196	179	181	196	170	215	1
25	X	4		216	269	289	295	272	280	286	249	255	236	182	159	⌈139	163	155	155	159	152	161	195⌋	170	159	214	193	207	1
26	X	4		216	240	235	275	287	300	289	246	227	196	149	126	141	≷127	149	150	164	113	124	145≶	196	222	265	279	203	1
27	X	X		286	269	269	249	302	300	270	273	240	186	175	166	163	153	104	160	150	145	153	175	200	197	179	217	208	1
28	X	X		216	229	242	246	243	220	237	197	157	134	135	⌈124	115	110	112	126	135	121	145	177	138	174	149⌋	156	168	1
29				169	193	203	204	242	247	179	...	...	...	...	...	...	⌈113⌋	123	...	...	...	...	...	...	...	...	...	...	.
30				...	...	...	...	...	...	...	141	124	110	138	164	163	160	145	141	141	149	168	220	216	252	250	227	...	.
31																													
MEANS *				251	268	283	302	314	316	304	264	237	215	197	180	164	142	135	147	159	166	183	197	197	203	228	228	220	
MEANS †				251	268	283	302	314	316	304	264	237	215	197	180	164	142	135	147	159	166	183	197	197	203	228	228	220	
MEANS ‡				251	263	277	293	295	308	310	258	224	213	200	186	168	143	129	138	156	170	187	202	199	203	226	225	218	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION ≷=DISTURBED BY BAD WEATHER

TABLE 50

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

JUNE 1932

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

JUNE 1932

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY	✱	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	✱	✱		176	238	253	275	339	358	285	285	267	232	219	⌈176	124	120	178	195	202	206⌋	197	170	170	193	227	163	219	1
2	✱	✱		236	271	327	381	411	403	325	243	262	253	232	⌈240	225	163	178	195	202	197	210⌋	208	214	201	234	245	252	1
3	✱	†		282	334	376	443	474	440	328	287	254	⌈236	216	202	182	168	178	176	172	197	214⌋	217	234	219	234	243	263	1
4				...	...	...	...	...	...	...	⟨187⟩	174	147	176	160	140	157	⟨143	141	157	141⟩	126	120	112	136	143	178	...	1
5	†	†	†	140	157	210	232	225	216	178	114	81	91	143	140	134	159	140	104	122	159	165	197	174	138	138	140	154	1
6	†	†	†	251	273	265	296	291	325	298	230	214	197	197	⌈187	197	120	120	153	170⌋	178	182	184	191	225	223	219	216	1
7				208	197	168	216	253	287	267	185	157	140	96	96	67	102	112	178	180	182	187	201	176	178	201	216	...	1
8	†	†	†	251	253	187	216	232	256	253	199	⌈124⌉	159	159	159	100	100	112	151	193	199	210⌋	219	202	195	174	180	187	1
9				199	199	234	267	289	321	291	243	⌈197	178	174	155	102	120	134	157	189⌋	197	217	219	140	232	221	229	...	1
10	†	†	†	253	293	294	321	339	316	291	296	243	⌈216	193	187	180	159	91	83	102⌋	178	216	197	216	230	254	260	225	1
11	†	†	†	253	258	289	303	342	363	351	302	234	212	⌈193	182	174	120	98	94	104	116⌋	140	153	130	178	206	216	209	1
12				...	...	...	...	...	...	...	242	232	199	174	174	145	⌈100	110	140⌋	161	178	178	163	140	210	217	178	...	1
13				178	216	243	176	253	298	293	264	⌈221	180	143	141	145	93	100⌋	...	...	...	...	...	...	...	...	...	...	1
14				...	...	...	...	...	...	...	...	...	...	180	⌈161	100	120	159	161	172	172	172⌋	122	157	180	271	289	...	1
15	†	†		289	291	294	309	289	280	271	269	269	236	216	⌈206	199	189	178	172	165	191	197	176⌋	165	182	269	300	233	1
16				253	305	316	344	256	325	221	216	216	⌈236	230	214	206	180	176	172	161	178⌋	184	178	210	249	249	267	...	1
17				163	180	234	262	305	360	227	238	219	217	216	191	180	166	122	138	141	159	180	178	185	116	187	273	...	1
18	†	†	†	303	344	337	342	289	323	325	232	155	193	136	⌈106	100	79	100	159	206	210⌋	216	201	201	204	229	245	218	1
19				249	217	258	280	309	325	289	236	219	202	176	159	163	155	159	114	104	108	153	174	140	201	243	243	...	1
20				234	217	216	276	278	251	221	253	234	210	195	161	112	98	89	100	112	126	155	172	165	201	140	214	...	1
21	†	†	†	217	234	236	267	305	303	305	258	204	197	184	⌈168	159	145	136	122	143	155	159	178	189⌋	147	157	168	197	1
22	†	†	†	217	216	229	267	282	273	253	247	276	243	204	174	163	157	143	140	145	176	197	182	151	159	153	165	200	1
23	†	†	†	180	193	216	216	216	208	229	151	155	138	⌈130	141	155	102	91	138	143	157⌋	178	184	159	193	260	262	175	1
24	†	†	†	243	247	253	282	289	312	285	234	199	193	176	166	⌈149	155	159	159	159	339	180⌋	206	178	176	191	165	212	1
25	†	†		208	254	253	273	271	267	267	219	221	199	180	147	⌈122	159	161	161	161	157	165	212⌋	159	161	189	178	198	1
26	†	†		206	217	221	271	289	291	269	230	197	149	120	102	128	⟨122	140	141	159	143	143	185⟩	193	212	253	271	194	1
27	†	†		278	256	271	223	305	291	258	249	212	176	157	141	134	130	120	155	130	122	140	166	197	193	178	202	195	1
28	†	†		204	216	232	251	238	216	219	195	157	122	118	⌈114	104	100	98	118	118	118	138	159	141	176	140⌋	145	160	1
29				141	178	178	193	232	232	149	151	159	118	120	⌈118	118	118⌋	120	106	...	...	...	...	...	...	...	...	...	.
30				...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	.
31																													
MEANS ✱				232	252	263	287	301	302	277	236	207	191	176	163	152	136	134	145	155	178	180	189	181	188	206	209	206	
MEANS †				232	252	263	287	301	302	277	236	207	191	176	163	152	136	134	145	155	178	180	189	181	188	206	209	206	
MEANS ‡				231	247	252	274	281	290	277	226	188	184	172	161	151	130	119	130	149	187	184	190	179	184	198	202	199	

DESIGNATIONS AND REMARKS:

✱=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION ⟩=DISTURBED BY BAD WEATHER

TABLE 60

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

JULY 1932

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

JULY 1932

DAY	#	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	N-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1				192	227	131	98	...	...	...	133	84	84	89	103	141	171	156	140	149	151	163	211	186	195	148	192	...	.
2				...	...	...	...	...	...	...	209	170	152	155	136	84	96	64	159	178	185	208	227	254	281	267	122	...	.
3	X			66	229	174	125	123	111	125	105	121	149	141	107	96	125	151	166	166	175	190	195	134	192	231	229	151	.
4	X			243	267	270	290	281	288	227	236	215	201	151	119	137	160	155	166	167	177	185	206	209	215	189	215	207	.
5	X			222	227	225	284	271	291	268	240	213	199	188	[169	171	166	162	164	166	175	178	197]	227	211	244	251	213	.
6	X			298	280	263	281	305	315	310	251	213	164	174	189	182	171	164	{ 164	151	134	79	177 }	192	169	153	171	206	1
7	X			137	178	195	190	211	192	189	182	166	148	129	140	138	125	125	136	{ 140	145	145	121	90	151 }	185	158	155	1
8	X			190	189	190	192	218	244	218	155	148	138	137	136	141	125	96	{ 92	15	49	68	68	86	114	36	77 }	130	2
9	X		{	164	211 }	175	174	164	179	147	141	122	142	152	152	164	136	110	103	122	130	148	144	164	137	166	248	154	1
10	X	X	X	229	208	240	260	277	259	284	237	206	162	152	152	125	121	96	85	101	169	224	243	285	244	284	308	206	0
11	X			324	335	317	300	268	328	312	234	119	84	52	67	{ 99	97	101	166	181	134 }	123	140	145	178	189	208	189	1
12	X			224	246	256	258	241	217	231	121	82	85	93	103	{ 121	122	149	110	104	96	188 }	209	181	225	218	229	171	1
13	X			229	250	260	263	300	284	271	229	171	108	100	141	170	163	96	111	{ 93	85	239	241 }	240	229	266	270	200	1
14	X	X		271	281	300	329	332	352	312	278	263	163	208	233	227	199	178	160	158	166	195	204	199	243	209	229	237	0
15	X			241	189	189	225	225	218	234	173	110	86	68	{ 68	45	33	116 }	125	111	137	134	{ 147	26	42	71	162 }	132	2
16	X	X	{	209	177 }	169	166	224	160	149	152	190	186	170	149	144	147	141	148	159	164	208	192	173	182	227	218	175	1
17				241	253	266	281	270	260	250	230	217	190	178	153	152	163	169	170	188	227	233	201	189	284	271	277	...	0
18				288	285	284	293	314	302	290	294	251	225	202	192	192	197	195	195	{ 160	164 }	225	257	261	267	278	300	...	1
19	X	X	X	314	324	301	327	341	312	315	295	280	237	217	206	195	171	95	137	162	201	234	250	204	215	230	230	241	1
20	X			247	278	281	291	297	294	281	264	227	166	148	177	156	159	163	{ 166	155	178	194	215	153	137 }	258	271	215	1
21	X	X	X	237	246	254	253	248	268	260	239	197	122	148	179	174	175	167	104	162	153	167	189	230	257	218	224	205	1
22	X	X	X	284	257	268	307	312	329	325	274	230	194	192	195	195	185	155	142	158	164	177	215	202	213	230	209	226	1
23	X			243	227	231	253	225	222	222	213	190	182	181	178	171	162	{ 160	81	16	16	175	164	160	163	190	231 }	177	2
24	X			246	258	260	243	274	284	251	250	233	218	208	192	181	184	162	{ 145	166 }	181	179	192	{ 167 }	227	204	231	214	1
25	X			251	227	243	278	267	240	227	271	{ 225	230	78	85	194	158	110	130	175	201	194	178	152	222 }	241	230	200	2
26	X			229	237	258	264	284	268	244	206	208	188	192	209	{ 195	148	123	116	213	260 }	224	184	179	188	218	229	211	1
27				209	229	239	202	240	234	237	227	213	178	170	147	159	163	149	155	151	{ 140 }	...	...	...	...	...	...	...	.
28				...	...	...	...	...	...	...	{ 148	126	115 }	116	132	145	155	181	185	195	186	{ 84	52	133 }	256	213	192	...	1
29	X			181	215	229	229	209	222	{ 241	234	178	89	34	142	213	175	209	178	112	126 }	194	189	195	195	178	227	183	2
30	X	X		209	209	209	206	189	195	229	{ 230	227	209	209	169	169 }	162	164	118	164	215	263	274	287	236	227	234	208	1
31	X			244	206	253	209	213	239	256	248	190	166	186	152	134	90	{ 82	53	144	158	229 }	312	312	263	253	267	202	1
MEANS #				231	238	240	248	253	252	245	218	189	161	148	152	157	146	137	131	138	152	181	194	184	194	205	222	192	
MEANS †				258	243	249	264	275	268	268	244	228	182	185	183	176	166	142	128	152	176	210	224	226	227	232	236	214	
MEANS ‡				278	259	266	287	294	292	296	261	228	179	177	183	172	163	128	117	146	172	200	224	230	232	240	243	219	

DESIGNATIONS AND REMARKS:

#=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 61

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

JULY 1932

JULY 1932

DAY	#	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1				...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	123	133	182	174	184	143	168	...	.
2				165	168	143	...	...	...	...	178	147	111	103	97	62	83	101	133	167	194	215	207	236	253	230	170	...	.
3	X			125	255	192	133	125	105	89	83	97	107	105	83	79	103	149	161	163	172	184	194	117	182	236	223	144	.
4	X			240	255	259	263	261	263	205	211	204	167	133	105	127	163	163	180	182	190	200	205	192	190	186	211	198	.
5	X			223	240	230	259	251	292	259	207	202	192	207	[180	182	182	182	170	168	182	192	217]	221	211	223	236	213	.
6	X			279	263	228	263	294	296	283	215	200	157	161	182	182	180	178	{180	163	178	141	207}	198	159	149	163	204	1
7	X			155	163	167	161	182	184	165	174	125	109	103	111	121	97	87	127	{143	157	149	139	105	125}	170	163	141	1
8	X			182	182	186	180	232	238	200	117	117	107	109	113	123	117	87	{111	131	103	157	83	139	153	141	141}	144	2
9	X			{133	198}	172	161	147	163	123	109	85	99	123	125	143	111	89	85	103	111	141	143	161	123	151	223	134	1
10	X	X	X	205	190	223	240	244	230	207	198	196	139	127	141	121	103	81	79	89	161	202	221	257	223	274	294	186	0
11	X			307	313	298	291	279	305	264	211	103	72	44	56	{93	103	123	161	168	139}	121	139	141	165	182	202	178	1
12	X			204	234	227	223	240	205	211	113	83	79	83	101	{107	89	115	143	99	79	157}	168	182	207	205	211	157	1
13	X			215	234	244	244	259	259	236	188	149	83	76	123	159	151	48	101	{182	91	205	217}	227	202	230	240	182	1
14	X	X		244	249	257	302	313	302	274	261	249	161	202	238	209	186	165	133	139	145	174	182	184	234	207	223	218	0
15	X			244	180	180	202	211	204	221	163	85	83	58	{62	62	56	123}	117	107	105	119	{123	137	143	119	167}	136	2
16	X	X		143	157	143	145	176	141	105	119	163	157	145	127	121	121	121	121	131	147	188	202	165	176	217	213	152	1
17				217	232	249	223	209	198	184	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0
18				...	...	...	...	...	...	...	...	...	...	...	...	...	...	182	182	{204	205}	205	228	236	264	264	279	...	1
19	X	X	X	311	316	289	316	333	302	302	276	230	204	202	198	194	153	87	133	153	219	236	240	205	202	221	202	230	1
20	X			225	272	276	268	287	279	244	227	202	143	121	153	139	147	161	{165	161	184	209	192	143	163}	255	263	203	1
21	X	X	X	272	245	232	238	236	259	244	213	198	107	125	165	168	167	178	176	163	157	167	184	240	257	211	211	201	1
22	X	X	X	268	240	244	292	305	316	311	251	221	172	172	168	176	165	157	139	155	172	182	221	202	190	225	209	215	1
23	X			240	225	221	238	217	205	215	204	153	153	159	163	159	159	{165	182	163	159	38	163	163	149	182	205}	178	2
24	X			217	234	236	223	257	268	238	225	205	184	176	167	149	159	141	{137	155}	163	182	186	{180}	200	182	204	194	1
25	X			209	205	205	240	246	211	217	255	{196	182	176	163	198	145	91	97	141	145	178	137	127	143}	225	227	182	2
26	X			194	202	225	223	255	227	202	184	163	151	176	182	{147	105	147	119	83	236}	204	161	157	163	192	198	179	1
27				172	196	202	178	200	182	184	178	163	155	141	121	121	119	113	129	125	{163	159	168	147	255}	168	123	...	.
28				103	109	103	105	127	143	{139	127	103	97}	101	107	121	121	163	167	182	165	{178	133	93}	266	205	184	...	1
29	X			172	202	221	223	182	202	{221	215	202	217	178	205	249	143	217	167	101	125}	186	180	182	165	143	182	187	2
30	X	X		190	165	176	180	165	182	211	{223	153	204	182	141	143}	149	145	101	133	184	244	257	268	207	202	200	184	1
31	X			227	178	227	190	200	217	221	227	170	125	163	141	117	81	{72	103	147	93	157}	307	302	255	246	261	234	1
MEANS #				217	224	222	228	236	234	220	195	165	142	140	144	147	133	131	136	141	152	173	187	184	183	199	211	181	
MEANS †				233	224	224	245	253	248	242	219	198	163	165	168	162	149	133	126	138	169	199	215	217	213	222	222	198	
MEANS ‡				264	249	247	272	280	277	276	233	206	156	156	168	165	147	126	132	140	177	197	216	226	218	233	229	208	

DESIGNATIONS AND REMARKS:

#=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES

†=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT

‡=SELECTED DAYS

( )=INTERPOLATED

[ ]=APPROXIMATE

⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION

}=DISTURBED BY BAD WEATHER

TABLE 62

JULY 1932

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN VOLTS PER METER

JULY 1932

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED, 105° WEST MERIDIAN MEAN TIME)

DAY	✱	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1				..	..	..	..	..	..	..	..	..	..	..	..	..	..	90	94	62	63	45	43	51	63	67	55	..	.
2				49	61	45	39	42	60	49	47	73	111	121	135	143	109	..	..	..	..	..	..	..	..	..	..	..	.
3				..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	.
4				..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	.
5				..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	.
6				24	40	42	27	25	21	30	40	58	57	61	60	61	59	53	N38	Z	Z	Z	Z	40	46	56	54	..	1
7				38	42	52	55	55	55	62	66	81	91	93	87	85	79	65	58	48	33	N54	Z-	Z	N45	43	48	..	1
8				41	37	34	25	30	31	48	73	76	71	81	79	82	82	66	Z-	Z-	Z	Z	Z	Z-	Z	Z-	Z	..	2
9				2	40	51	64	70	61	81	91	103	101	78	78	82	78	80	72	57	49	36	31	30	24	29	27	..	1
10	A	A	A	28	36	36	33	28	40	43	59	70	81	88	62	76	84	88	79	68	58	55	52	33	25	23	21	53	0
11				23	21	24	22	21	22	29	40	71	86	85	77	Z-	Z-	Z	N65	85	N55	71	76	Z	64	52	46	..	1
12				40	37	25	23	37	46	46	77	128	105	97	63	57	119	156	Z-	Z+	Z	55	47	47	46	50	42	..	1
13				41	27	25	27	33	33	43	60	57	76	88	70	67	74	68	64	Z-	Z	Z	N35	44	43	30	32	..	1
14	A	A		28	28	26	22	23	21	26	33	35	42	55	25	52	61	66	69	67	52	40	18	21	25	16	19	36	0
15				27	34	18	20	25	28	28	50	66	65	91	Z-	Z	Z	Z	36	36	55	47	29	Z-	Z-	Z	Z	..	2
16	A	A		62	N61	60	64	57	76	83	75	76	72	80	70	77	86	85	73	64	63	43	24	39	37	27	15	61	1
17	A			15	15	20	16	18	23	33	43	48	47	52	64	61	66	66	61	48	39	41	22	21	21	15	15	36	0
18				17	19	N21	N19	17	17	30	40	48	60	60	67	75	61	70	61	Z-	Z-	44	28	30	30	39	36	..	1
19	A	A	A	26	24	26	22	24	34	37	39	53	59	58	61	69	67	61	58	65	58	50	43	N37	40	42	42	46	1
20				33	29	26	25	28	30	39	51	61	82	83	70	70	..	..	N45	N40	47	43	N72	Z	Z	28	28	..	1
21	A	A	A	18	24	31	24	19	27	26	51	47	75	66	65	65	66	65	N51	56	49	47	43	37	24	38	25	43	1
22	A	A	A	26	28	19	22	22	22	26	43	47	50	54	65	56	66	N66	60	N50	46	43	37	37	38	25	35	41	1
23				21	34	35	35	41	24	19	34	55	57	69	69	72	71	N16	Z-	Z-	Z-	Z+	Z	-41	94	- 9	69	..	2
24				38	34	28	24	19	20	20	14	41	50	57	66	71	78	70	N41	N62	47	36	40	Z-	66	57	42	..	1
25				52	66	58	34	41	62	71	55	56	N56	Z	Z	Z+	90	130	118	79	75	94	Z	Z	Z+	51	53	..	2
26				46	43	38	26	37	32	38	55	66	56	40	41	98	129	Z	Z	Z+	Z	32	51	52	46	37	36	..	1
27				34	34	31	38	35	25	38	48	54	60	65	76	104	95	90	75	69	Z	Z	Z	Z	N16	23	34	..	.
28				41	47	56	43	52	45	12	19	14	70	78	82	89	114	79	72	66	102	Z-	Z-	Z	25	34	41	..	1
29				41	39	34	25	35	56	N55	Z	Z	Z	Z-	Z	Z	Z	59	88	103	53	49	50	52	57	60	51	..	2
30	A	A		35	41	44	47	53	44	43	N19	80	N51	64	92	108	96	96	109	82	56	49	29	26	31	31	37	57	1
31				37	53	46	50	47	44	43	50	66	74	77	83	90	84	63	Z	Z	Z+	Z+	34	31	31	33	22	..	1
MEANS ✱				30	32	33	31	30	36	40	45	57	60	65	63	70	74	74	70	62	53	46	34	31	30	27	26	47	
MEANS †				32	35	35	33	32	38	41	46	58	61	66	63	72	75	75	71	65	55	47	35	33	31	29	28	48	
MEANS ‡				24	28	28	25	23	31	33	48	54	66	66	63	66	71	70	62	60	53	49	44	36	32	32	31	46	

DESIGNATIONS AND REMARKS:

✱=ALL COMPLETE DAYS †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER ≷=DISTURBED BY BAD WEATHER

N=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT Z=INDETERMINATE IN MAGNITUDE AND SIGN Z+=INDETERMINATE POSITIVE VALUE Z-=INDETERMINATE NEGATIVE VALUE

TABLE 63

AUGUST 1932

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN VOLTS PER METER

AUGUST 1932

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY				0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1				25	28	16	24	20	22	37	46	60	66	73	85	86	84	73	61	53	43	44	35	26	25	19	21	45	0
2				23	25	27	22	22	21	34	40	49	58	72	79	78	72	66	66	51	56	47	35	31	19	21	22	43	0
3				24	24	23	27	19	19	25	43	42	56	56	66	62	69	66	57	53	47	44	27	25	18	16	19	39	0
4				35	47	50	30	47	32	22	[13	- 6	N23]	56	72	90	89	72	66	55	50	43	41	27	26	41	31	44	1
5				48	36	25	33	31	23	26	14	51	59	71	92	85	84	96	82	66	N37	N76	Z	Z	N37	N24	N40	..	1
6				36	26	35	53	28	28	34	51	69	75	60	83	92	94	79	67	69	62	40	25	25	34	32	32	51	0
7				25	24	22	24	22	20	22	36	41	44	57	59	66	81	62	55	62	65	70	43	22	[N33	N84	Z]	..	1
8			[	50]	36	42	51	47	44	51	53	51	54	58	68	68	76	72	76	66	56	57	48	44	56	38	28	54	1
9				33	32	28	25	23	25	37	41	53	64	Z-	Z+	Z	75	79	Z	Z-	64	71	Z	Z-	Z	Z+	Z	..	2
10				42	46	23	24	26	33	46	56	59	56	57	62	65	72	67	62	59	61	52	47	28	26	27	32	47	0
11				26	22	19	17	18	20	28	42	50	52	57	69	79	76	72	66	53	46	37	27	24	23	26	30	41	0
12				26	29	26	20	19	19	34	39	45	62	60	61	75	71	77	59	62	56	43	37	27	22	24	22	42	0
13				25	22	23	19	20	22	19	26	34	51	59	72	75	61	56	53	56	52	43	31	29	21	23	23	38	0
14				32	32	29	31	28	26	27	41	58	69	69	62	76	77	Z	Z-	53	41	32	22	28	30	29	31	..	1
15				22	24	22	25	32	34	37	44	60	65	62	71	78	85	N62	Z-	Z	Z+	44	37	22	24	34	35	..	1
16				37	37	29	27	31	35	47	52	54	64	66	67	74	78	72	74	66	62	53	46	28	37	35	29	50	0
17				29	26	23	23	22	33	37	50	54	62	65	76	80	91	89	87	Z-	Z	Z+	34	31	34	31	42	..	1
18				42	N39	52	62	46	40	43	37	47	59	62	52	57	68	Z-	Z	63	77	57	44	28	26	24	19	..	1
19				27	33	22	27	28	24	34	50	57	59	56	57	53	N47	N49	N40	52	N42	Z-	Z-	Z-	32	34	37	..	2
20				34	37	43	34	34	34	37	45	50	61	61	59	57	N43	53	52	47	31	36	50	N40	33	34	37	43	1
21				41	45	37	30	24	16	35	38	41	38	53	55	60	Z-	Z-	N41	44	46	43	45	37	27	28	24	..	1
22				23	25	22	28	31	22	25	46	55	59	61	72	66	44	N80	N29	56	41	33	28	25	26	24	20	39	1
23				23	22	22	22	20	28	35	48	56	50	64	69	61	83	84	N47	Z	Z-	Z-	Z-	Z+	N53	45	44	..	2
24				44	51	48	44	44	44	52	56	60	73	74	72	80	95	72	77	47	N48	N44	N50	N47	32	31	31	55	1
25				43	41	37	39	30	27	35	46	46	69	60	60	Z	Z+	Z-	Z+	Z+	N37	31	31	20	22	31	37	..	1
26				41	32	25	25	31	22	31	47	57	50	37	37	52	76	87	N59	Z+	Z+	Z	Z	20	31	41	46	..	1
27				47	38	44	31	34	31	40	44	54	60	77	76	79	74	78	71	68	56	51	41	32	20	23	21	50	0
28				22	21	22	20	20	19	25	44	63	72	77	85	[86	83	N71	N66	64	60]	54	40	26	24	28	31	47	1
29				25	24	29	22	22	22	24	37	51	64	[79	75	N75	N68	N47	N37	N44	N49]	50	41	31	26	19	22	41	1
30				29	21	25	22	21	23	27	46	62	56	[62	N59	60	61	N54	N45	N49]	46	41	41	39	28	21	27	40	1
31				37	33	25	25	20	21	31	41	60	59	64	61	66	69	65	58	56	54	46	34	24	18	22	19	42	0
MEANS *				32	31	30	29	28	27	34	43	51	59	65	71	74	73	68	60	57	51	45	38	30	27	27	26	45	
MEANS †				31	31	31	30	28	27	33	42	49	59	64	70	74	72	67	58	55	50	44	38	31	28	27	26	44	
MEANS ‡				28	27	24	23	22	23	32	42	51	59	64	69	72	71	66	59	56	52	45	36	29	24	23	23	42	

DESIGNATIONS AND REMARKS:

*=ALL COMPLETE DAYS

†=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT

‡=SELECTED DAYS

( )=INTERPOLATED

[ ]=APPROXIMATE

⌈ ⌋=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER

≷=DISTURBED BY BAD WEATHER

N=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT

Z=INDETERMINATE IN MAGNITUDE AND SIGN

Z+=INDETERMINATE POSITIVE VALUE

Z-=INDETERMINATE NEGATIVE VALUE

TABLE 64

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

AUGUST 1932

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

AUGUST 1932

DAY	✱ † ‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	✱ † ‡	481	369	391	327	295	300	327	312	253	237	206	185	178	140	121	125	178	194	264	270	244	230	280	295	245	0
2	✱ † ‡	429	317	342	358	365	385	344	301	261	230	194	179	170	178	174	178	178	189	218	241	197	206	310	334	257	0
3	✱ † ‡	445	349	354	355	329	369	359	307	271	227	209	208	173	167	178	178	188	188	188	178	148	229	239	271	249	0
4	✱ † ‡	498	399	392	213	179	186	190	⌈229	192	179⌋	178	158	133	141	129	149	159	174	192	204	182	213	178	164	182	1
5	✱ † ‡	179	240	256	270	287	284	290	254	240	217	181	111	151	151	123	107	125	≀179	213	140	152	230	268	206 ≀	202	1
6	✱ † ‡	241	280	271	229	261	258	271	237	163	130	134	137	147	127	140	140	164	178	230	208	189	190	237	283	202	0
7	✱ † ‡	271	298	301	301	312	291	283	285	260	237	215	211	190	182	158	192	189	199	206	229	239	⌈229	151	64⌋	227	1
8	✱ † ‡	⌈179⌋	198	164	166	179	213	179	186	208	209	192	194	181	164	137	127	127	137	99	125	140	160	163	164	165	1
9	✱ † ‡	178	177	189	197	192	239	215	239	229	201	≀184	227	197	178	160	130	55	229	218	184	68 ≀	...	...	...	...	2
10	✱ † ‡	...	...	...	...	...	...	...	...	195	192	197	194	174	108	125	159	190	190	209	167	284	271	310	308	...	0
11	✱ † ‡	308	312	302	311	317	314	315	260	243	236	225	199	163	123	114	134	166	190	241	209	230	240	301	314	...	0
12	✱ † ‡	494	344	322	325	355	385	342	290	257	204	195	201	186	179	177	166	178	194	201	224	181	264	283	267	250	0
13	✱ † ‡	309	311	315	337	355	351	372	355	325	273	241	227	206	174	149	112	111	134	185	201	188	224	298	291	252	0
14	✱ † ‡	268	192	263	274	295	298	294	251	206	169	148	142	130	≀111	55	95 ≀	148	148	152	181	194	209	240	222	195	1
15	✱ † ‡	441	253	257	256	241	243	257	241	225	199	179	158	137	133	≀126	78	48	123 ≀	173	194	209	192	217	237	193	1
16	✱ † ‡	225	211	222	241	241	251	241	206	194	188	178	164	159	148	137	137	164	177	188	208	213	257	281	284	205	0
17	✱ † ‡	298	301	319	371	382	369	359	310	283	247	230	209	178	148	166	162	≀92	96	225 ≀	243	253	257	244	260	251	1
18	✱ † ‡	225	211	220	199	225	227	211	217	201	181	190	192	184	190	≀137	182	194 ≀	179	194	209	234	239	278	284	208	1
19	✱ † ‡	219	270	278	284	311	311	285	251	239	225	194	178	164	≀163	160	164	178	194	36	27	103 ≀	248	218	231	206	2
20	✱ † ‡	225	240	209	220	213	213	229	201	189	189	179	169	≀163	163 ≀	164	160	166	201	182	178	230	224	218	209	197	1
21	✱ † ‡	178	192	219	269	263	271	295	260	257	231	218	202	≀181	68	55	199 ≀	211	206	182	182	≀194	243	243 ≀	267	213	1
22	✱ † ‡	275	281	266	273	294	284	320	254	211	181	192	≀192	202	209	202	208	213 ≀	227	253	260	281	254	307	310	246	1
23	✱ † ‡	315	341	325	312	325	312	318	257	283	267	248	208	178	167	179	≀178	107	53	58	41	192	201 ≀	208	209	220	2
24	✱ † ‡	243	241	256	270	264	273	241	241	257	243	213	213	213	215	195	208	≀215	240	224	239	211 ≀	244	270	288	238	1
25	✱ † ‡	274	273	257	283	284	294	274	233	236	230	213	197	≀167	42	93	178	209	241 ≀	225	206	258	243	256	227	225	1
26	✱ † ‡	227	243	243	256	285	268	281	243	241	227	≀229	227	202	199	181	206	209	192	121	213	287	240 ≀	257	227	229	1
27	✱ † ‡	230	254	254	270	258	266	268	251	225	204	192	177	184	181	189	190	201	220	239	281	...	...	...	...	...	0
28	✱ † ‡	...	...	...	...	...	...	...	301	270	247	215	208	⌈201	169	175	189	208	211⌋	243	317	278	320	355	315	...	1
29	✱ † ‡	354	369	385	439	426	429	440	399	325	264	⌈231	209	190	179	177	177	179	199⌋	237	283	310	315	315	335	299	1
30	✱ † ‡	349	366	369	378	392	400	413	318	254	227	⌈227	209	208	206	184	182	190⌋	204	215	201	250	251	328	342	278	1
31	✱ † ‡	327	338	355	344	349	381	376	317	271	244	241	220	209	177	96	125	164	211	239	244	208	280	328	328	266	0
MEANS ✱		266	272	281	280	296	302	300	268	243	218	202	188	176	158	146	158	165	179	188	197	211	234	254	254	227	
MEANS †		281	287	286	296	300	312	310	277	242	215	201	191	181	171	157	158	172	190	208	218	211	236	269	278	235	
MEANS ‡		305	316	322	333	335	353	347	301	261	229	211	199	186	171	152	150	169	186	212	221	204	243	293	302	250	

DESIGNATIONS AND REMARKS:

✱=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION ≀=DISTURBED BY BAD WEATHER

TABLE 65

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

AUGUST 1932

DAY	*	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X	X	276	322	284	316	282	293	302	265	227	214	181	167	165	143	113	129	183	220	280	269	241	222	265	289	235	0
2	X	X	X	318	313	338	352	340	385	334	304	241	208	187	161	149	165	181	187	189	202	225	261	214	208	318	334	255	0
3	X	X	X	322	336	349	352	325	366	356	289	250	218	222	214	204	198	191	185	202	202	202	183	147	242	244	280	253	0
4	X	X		278	270	204	225	191	191	204	[252	225	208]	183	145	115	143	143	145	167	185	204	222	208	237	194	194	195	1
5	X			302	306	287	282	298	295	298	237	222	204	185	105	145	145	115	101	131	{ 206	218	163	139	202	276	208 }	204	1
6	X	X		241	296	282	225	250	241	271	229	161	127	143	137	129	125	147	147	165	179	244	233	204	202	258	298	206	0
7	X			276	299	318	315	320	298	295	296	244	241	220	222	200	177	169	204	194	194	208	229	250	[235	149	155]	236	1
8	X	X		206	214	248	161	189	224	187	185	210	210	187	187	185	163	139	123	135	145	113	131	151	159	167	175	175	1
9				183	189	198	210	185	241	224	231	208	189	{ 206	143	191	167	147	185	193	220	210	169	202	161	26	187 }	...	2
10				194	204	181	196	214	204	222	169	179	187	191	185	167	107	127	175	220	198	220	167	300	280	313	298	...	0
11				300	316	320	119	384	356	325	261	242	229	...	...	...	...	123	145	189	216	278	244	241	248	318	327	...	0
12	X	X	X	313	313	334	334	371	390	352	307	269	189	189	196	187	187	177	171	179	198	206	225	194	278	284	276	256	0
13	X	X	X	334	311	325	318	371	370	397	361	331	280	244	220	196	189	155	115	121	139	204	227	212	227	316	300	262	0
14	X			282	206	278	298	320	320	300	258	204	161	145	145	127	{ 109	80	145 }	153	161	179	200	208	227	258	239	208	1
15	X			246	261	261	259	248	244	267	254	231	208	191	165	145	127	{ 145	145	123	86 }	191	218	222	218	227	244	205	1
16	X	X	X	229	222	227	259	259	276	244	200	200	189	183	159	161	149	145	135	161	181	200	214	241	272	269	285	211	0
17	X			298	300	352	385	385	387	350	311	278	246	237	204	179	145	161	163	{ 147	143	220 }	259	261	263	246	263	258	1
18	X			244	225	224	204	222	231	224	214	200	193	191	194	187	183	{ 200	187	204 }	171	204	220	216	231	284	293	214	1
19	X			241	280	278	282	331	320	295	248	224	208	200	183	169	{ 206	179	161	177	202	181	204	208 }	263	225	224	230	2
20	X	X		220	242	210	241	220	280	224	200	185	181	171	169	{ 165	171 }	175	165	173	198	200	183	246	242	235	224	205	1
21	X			206	214	237	282	280	293	304	256	258	242	224	208	{ 196	185	187	220 }	224	220	204	202	{ 208	256	246 }	282	235	1
22	X	X		298	295	280	285	302	298	329	252	218	185	202	{ 194	202	208	204	220	239 }	242	276	261	295	265	306	316	257	1
23	X			334	354	336	333	336	336	331	274	278	295	258	225	193	167	185	{ 202	202	269	208	216	183	204 }	224	225	257	2
24	X	X		242	283	241	254	248	261	224	220	225	225	200	200	200	185	202	196	{ 224	248	233	242	214 }	241	256	278	231	1
25	X			271	267	258	282	296	282	280	229	225	208	200	200	{ 165	169	187	68	161	244 }	239	210	276	239	246	239	227	1
26	X			225	248	246	261	295	259	282	254	224	218	{ 239	229	185	167	167	206	26	51	147	183	315	254 }	258	225	215	1
27				224	242	248	250	252	258	261	246	204	189	181	181	173	185	183	191	193	210	229	280	298	280	295	296	...	0
28				296	338	375	378	389	401	390	304	242	241	210	194	[194	173	202	208	204	208]	227	320	282	318	349	311	...	1
29	X	X		349	356	359	433	426	438	436	396	315	348	[231	222	206	204	208	204	208	212]	239	293	329	331	325	349	309	1
30	X	X	X	352	368	370	373	390	409	407	322	252	225	[229	224	237	208	202	204	200]	206	220	210	239	272	349	368	285	1
31	X	X	X	324	334	361	350	352	373	368	295	259	258	239	225	224	187	90	127	179	227	254	261	220	293	349	345	271	0
MEANS *				274	282	288	295	302	310	302	266	237	219	203	188	178	169	163	164	172	190	212	220	225	242	261	266	234	
MEANS †				287	298	294	299	301	320	309	272	238	218	199	188	182	175	165	164	182	199	220	228	224	246	276	287	240	
MEANS ‡				308	320	324	332	336	358	345	293	254	223	209	196	190	178	157	157	177	197	224	231	214	252	299	310	254	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 06

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

SEPTEMBER 1932

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

SEPTEMBER 1932

DAY	✱	†	‡	0	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X	X	351	378	405	416	431	429	416	363	315	287	253	201	163	181	172	178	179	188	200	216	223	227	295	299	282	0
2				322	337	362	391	402	392	431	389	345	299	260	...	...	...	...	166	179	190	201	246	226	230	316	329	...	1
3	X	X		342	336	347	378	396	412	386	349	316	290	272	243	195	[178	155	142	163	174	197	204]	229	227	283	286	270	1
4	X	X		299	312	317	339	346	369	372	332	283	257	232	214	[193	193	192	189	200	204]	219	204	229	270	283	230	262	1
5	X	X		229	242	256	245	[236	235	229	225	199	179	178	178	185	182	175	181	181]	179	195	197	217	220	203	243	208	2
6	X	X	X	247	251	245	243	242	243	230	220	200	195	[190	184	182	182]	190	196	203	206	229	246	226	265	285	315	226	1
7	X			329	325	316	317	300	273	295	266	255	240	229	226	214	203	192	177	179	{ 188	109	219 }	270	283	306	322	251	1
8				...	...	...	...	...	...	...	329	295	260	230	216	195	190	192	188	193	214	246	272	259	257	272	275	...	0
9				296	329	345	342	350	350	316	297	243	230	217	193	142	135	167	177	181	203	...	...	...	...	...	...	...	0
10				...	...	...	...	...	...	...	243	235	225	192	[170	177	175	166	166	153	182	195	236	266	189	179]	240	...	1
11	X	X		299	269	272	281	299	306	317	290	250	217	178	[188	178	168	159	155	153	164]	182	167	227	246	267	287	228	1
12	X			295	326	358	375	373	376	389	362	299	283	250	214	190	163	{ 142	153	178	182	29	127 }	245	240	256	270	253	1
13	X			280	329	329	345	370	358	369	316	275	239	223	206	179	138	{ 124	137	109	101	160	177	239	242 }	269	275	241	1
14	X			280	315	332	327	343	352	342	[287	270	235	184	152	156	167	128	172	203	255	206	246	197]	257	267	286	248	1
15	X			285	317	325	356	369	392	408	333	327	289	257	[229	184	167	177	178	186	179	152]	229	275	283	302	329	272	1
16	X	X	X	325	356	385	389	413	432	416	419	370	312	277	229	199	182	181	192	196	200	219	206	272	273	289	319	294	0
17	X	X		272	340	372	392	402	408	430	410	360	310	286	237	196	178	127	138	178	203	203	262	269	319	316	329	289	1
18	X			316	359	386	400	398	419	432	372	295	[243	216	193	184	168	161	160	156]	163	182	240	246	216	229	227	265	1
19	X	X		296	267	272	305	299	306	303	272	190	170	167	156	[152	137	128	150	166]	181	242	242	242	243	272	282	225	1
20	X			302	300	332	358	375	405	400	346	299	262	257	237	203	175	160	{ 167	152	184	159	273	134	253 }	259	283	261	1
21	X	X		291	299	273	299	299	329	369	317	197	138	146	142	137	128	134	134	124	138	175	196	237	262	265	262	220	1
22	X	X		289	310	316	313	320	330	345	340	243	182	168	[178	141	102	94]	79	112	123	137	113	150	139	[146	155]	201	1
23	X	X		197	255	259	257	270	272	283	275	273	259	249	226	181	150	110	121	145	184	200	226	243	243	246	277	225	1
24				266	262	272	285	290	309	316	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
25				...	...	...	...	...	...	...	246	170	141	150	{ 188	168	177	190	192	110	182	177	299 }	312	272	262	272	...	1
26	X	X	X	300	305	285	317	345	340	359	339	310	280	249	230	214	204	203	206	179	216	199	246	272	299	312	356	274	0
27	X	X		332	310	315	295	335	322	310	247	214	195	199	200	182	186	179	174	105	134	216	245	245	247	245	230	236	1
28	X			[232	229	226	223	236	232	227	219	232	206	190	222	193	204	216	214	110	196	163	159	72	203	197	178]	199	2
29	X			242	260	262	266	260	272	283	269	272	[257	259	243	245	216	230	214	206	239	257	270	286]	296	290	299	258	2
30	X	X	X	300	315	323	327	326	327	322	333	332	315	299	285	262	239	226	229	260	272	275	282	289	302	299	303	293	0
31																													
MEANS ✱				285	304	312	324	333	339	343	313	274	243	225	209	188	175	165	168	168	186	188	216	231	252	266	277	249	
MEANS †				286	303	308	320	331	337	339	315	270	239	223	206	184	173	162	164	170	184	206	217	238	252	267	278	249	
MEANS ‡				305	321	329	338	352	354	349	335	305	278	254	226	204	198	194	200	203	216	224	239	256	273	296	318	274	

DESIGNATIONS AND REMARKS:

✱=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 67

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

SEPTEMBER 1932

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

SEPTEMBER 1932

DAY	*	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	A	A	A	354	369	416	425	440	439	413	351	294	276	255	196	147	182	182	186	186	202	219	227	236	223	300	209	280	0
2				314	344	374	404	420	402	432	383	335	287	255	234	223	205	167	174	198	202	221	261	242	242	329	347	...	1
3	A	A		356	393	331	386	406	416	383	344	305	279	261	249	196	⌈190	182	176	168	198	221	207⌋	242	223	300	313	278	1
4	A	A		333	333	329	353	369	386	372	307	279	246	221	211	⌈219	205	202	204	205	213⌋	230	219	240	287	307	244	271	1
5	A	A		338	297	272	299	⌈246	253	244	242	228	223	213	215	215	205	194	200	202⌋	198	211	221	221	236	223	259	228	2
6	A	A	A	359	366	363	357	351	349	344	340	319	305	⌈200	200	184	186⌋	200	202	204	207	240	259	238	281	309	351	238	1
7	A			353	340	342	335	313	292	314	285	261	257	246	240	221	213	200	200	184	{194	167	255}	294	300	281	294	266	1
8				316	322	313	318	338	353	370	349	296	261	225	219	202	215	204	215	219	230	264	296	285	272	292	278	...	0
9				313	393	383	367	385	376	345	313	228	219	198	198	143	125	165	184	182	209	236	259	223	196	230	266	...	0
10				298	387	336	335	331	298	272	263	244	221	207	⌈190	202	202	202	204	205	215	221	264	298	225	207⌋	247	...	1
11	A	A		274	279	274	279	309	318	329	283	234	215	190	⌈202	198	184	176	176	180	182⌋	198	180	228	247	281	298	238	1
12	A			311	333	365	395	386	385	399	378	305	279	246	209	182	161	{157	168	167	202	180	103}	253	257	259	261	264	1
13	A			270	338	335	363	392	369	386	316	261	223	217	205	168	139	{119	121	125	109	198	236	242	259}	278	294	248	1
14	A			294	325	347	347	365	365	344	⌈272	234	263	196	145	157	176	147	196	221	246	230	272	207⌋	278	278	298	258	1
15	A			296	335	313	360	378	395	420	353	316	285	255	⌈236	182	192	202	190	207	202	161⌋	255	305	298	313	335	282	1
16	A	A	A	333	365	400	414	425	439	425	399	367	303	276	217	200	202	204	200	219	221	246	225	279	278	300	329	303	0
17	A	A		287	351	385	404	427	425	439	409	358	307	296	246	219	194	189	143	196	225	217	263	281	345	344	349	304	1
18	A			336	370	400	420	418	439	439	372	292	⌈242	207	198	184	184	172	167	159⌋	159	180	227	255	238	232	236	272	1
19	A	A		246	261	281	303	302	309	313	253	176	145	143	141	⌈143	141	159	155	159⌋	167	223	223	246	264	276	278	221	1
20	A			298	298	333	363	400	416	402	329	259	234	242	215	180	157	143	{137	21	21	207	296	123	186}	221	261	239	1
21	A	A		261	264	259	281	278	294	320	283	167	109	119	123	121	107	127	117	125	147	176	167	240	263	259	244	202	1
22	A	A		289	316	314	313	329	333	351	318	223	189	143	⌈172	145	111	99⌋	103	109	127	147	127	163	167	⌈170	163⌋	205	1
23	X	A		202	242	283	255	263	264	274	274	278	261	246	223	174	143	125	109	147	192	205	221	242	236	246	276	224	1
24				255	259	264	270	291	311	314	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
25				...	...	...	...	...	...	...	240	139	109	123	{157	119	157	176	186	184	107	244	292}	318	261	242	259	...	1
26	A	X	X	296	296	279	309	338	330	349	336	279	253	228	207	202	190	198	198	180	211	198	259	259	300	296	356	264	0
27	A	X		340	300	314	300	345	329	309	249	217	202	200	215	202	198	194	178	107	331	221	249	244	244	244	223	248	1
28	X			⌈225	223	223	228	240	234	230	240	249	240	227	234	225	217	219	221	238	238	244	103	202	215	198	196⌋	221	2
29	X			242	257	263	263	259	261	274	274	274	⌈268	263	259	263	244	253	242	242	255	215	278	279⌋	279	278	281	261	2
30	X	X	X	281	300	307	313	314	314	313	329	314	311	296	276	246	219	215	225	259	263	266	274	287	296	292	296	284	0
31																													
MEANS *				290	307	318	330	341	344	345	310	266	242	224	210	191	181	177	176	175	196	208	223	242	258	270	277	254	
MEANS †				288	303	314	323	336	340	339	308	263	235	219	206	187	177	176	171	176	206	215	221	243	259	276	279	252	
MEANS ‡				305	319	333	344	354	354	349	331	295	270	251	219	196	196	200	202	210	221	234	249	260	276	299	306	274	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 68

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

SEPTEMBER 1932

EXPRESSED IN VOLTS PER METER

SEPTEMBER 1932

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY				0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	
1	M	‡	‡	22	20	22	18	17	16	26	40	54	63	67	80	87	73	59	60	55	50	49	35	34	29	22	22	42	0
2	‡			19	46	16	17	15	16	20	33	38	47	51	55	57	62	M51	54	38	39	42	35	22	25	20	26	36	1
3	‡	‡		24	28	20	18	23	25	29	37	43	53	60	72	68	⌈ M59	M16	M25	M39	M46	M40	28 ⌋	26	21	17	20	35	1
4	‡	‡		18	21	17	20	16	19	22	40	50	56	60	64	⌈ M40	M40	M39	M48	M46	44 ⌋	38	40	32	22	21	29	35	1
5	‡	‡		35	35	30	31	⌈ M23	M13	M18	M13	-22	-47	-28	- 5	M23	M37	M35	M35	41 ⌋	38	34	28	30	33	31	31	20	2
6	‡	‡	‡	16	22	25	29	32	M	38	36	35	35	⌈ 41	M35	M42	50 ⌋	48	50	47	43	29	17	21	19	17	17	32	1
7				18	20	18	23	20	27	29	35	41	48	51	58	62	60	60	46	54	≷ 72	Z-	Z- ≷	26	27	39	34	..	1
8	‡			22	22	24	28	22	21	28	30	42	50	64	63	63	60	61	43	47	39	23	17	21	26	24	22	36	0
9	‡			19	16	16	25	22	25	32	42	50	53	60	64	65	75	55	48	42	40	37	29	25	32	26	27	39	0
10				25	21	17	16	18	26	28	38	45	51	48	⌈ M44	M40	M27	M 8	M 9	Z-	M29	35	34	22	Z-	Z- ⌋	22	..	1
11	‡	‡		28	19	16	16	16	20	22	39	53	58	55	⌈ 60	49	M54	48	M33	M21	M34 ⌋	40	47	35	29	15	17	34	1
12				19	20	16	22	19	23	28	35	42	47	57	59	63	69	≷ Z-	Z	51	35	Z-	Z ≷	22	26	23	18	..	1
13				18	19	23	18	19	27	22	32	35	42	47	50	61	74	≷ 72	M90	Z	Z	Z-	Z-	21	M18 ≷	19	20	..	1
14				17	16	19	24	19	20	28	⌈ 24	77	M 7	33	57	73	66	M43	M34	35	35	31	M22	Z ⌋	20	21	25	..	1
15				20	22	20	21	21	13	19	32	40	41	46	⌈ M51	69	M36	M42	M47	M37	Z-	M41 ⌋	35	29	22	25	23	..	1
16	‡	‡	‡	19	16	18	18	18	24	28	36	44	55	66	72	67	55	54	61	57	48	47	28	28	27	22	21	39	0
17	‡	‡		18	16	16	19	16	20	16	25	34	40	46	55	56	M54	M35	40	38	32	32	25	23	22	19	17	30	1
18				18	19	15	15	15	16	22	32	43	⌈ 52	54	M54	M55	M46	M38	M40	M44 ⌋	43	44	33	32	Z	Z	26	..	1
19	‡	‡		26	28	22	22	19	20	24	46	73	74	74	66	⌈ M67	66	M41	M44	M48 ⌋	54	48	35	32	40	36	35	43	1
20				28	22	22	20	16	24	22	39	52	60	57	69	75	71	70	≷ 80	Z+	Z+	Z-	34	Z	120 ≷	44	35	..	1
21	‡	‡		19	32	35	33	35	34	36	52	89	99	97	79	95	78	M73	70	M50	27	M25	35	28	23	31	25	51	1
22	‡	‡		22	18	28	25	19	21	19	35	56	85	96	⌈ M68	92	M72	M57 ⌋	59	59	46	24	25	22	22	⌈ M11	M46 ⌋	43	1
23	‡	‡		M17	32	35	M35	46	51	54	57	55	57	67	70	83	M98	M56	64	31	29	31	32	34	36	29	26	47	1
24	‡			15	22	26	25	20	25	25	36	63	⌈ 69	102	141	143	M75	M69	64 ⌋	69	63	54	45	M28	54	44	31	55	1
25				34	40	22	23	25	34	28	68	108	121	111	≷ 152	185	102	98	Z	Z-	Z+	Z	38 ≷	24	35	47	46	..	1
26	‡	‡	‡	38	37	46	31	25	22	21	47	52	60	66	75	80	79	73	61	63	45	28	25	25	24	26	28	45	0
27	‡	‡		25	22	25	20	12	13	16	28	37	54	48	M59	M63	60	M56	52	45	39	41	42	46	36	M22	M34	37	1
28				⌈ 40	M36	M18	M25	M21	M35	M 6	- 6	M23	Z-	Z-	M38	-16	M40	M53	M19	Z-	Z-	Z-	Z	Z-	Z	Z+	Z ⌋	..	2
29				M29	47	40	46	50	48	54	54	56	⌈ M47	M53	Z-	Z-	Z-	Z-	Z-	Z-	Z-	Z-	Z-	M16 ⌋	36	33	31	..	2
30	‡	‡	‡	34	41	42	36	26	34	41	52	60	64	78	83	89	85	76	63	56	56	51	54	41	40	44	44	54	0
31																													
MEANS *				25	25	25	25	22	24	27	38	48	54	62	66	70	65	53	51	47	43	38	33	29	29	25	27	40	
MEANS †				25	26	27	25	23	24	27	39	48	54	60	62	67	64	51	51	46	42	37	33	30	28	24	27	39	
MEANS ‡				26	27	31	26	24	26	31	42	49	55	64	69	73	68	62	59	56	48	41	32	30	28	26	26	42	

DESIGNATIONS AND REMARKS:

*=ALL COMPLETE DAYS †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER ≷=DISTURBED BY BAD WEATHER

M=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT Z=INDETERMINATE IN MAGNITUDE AND SIGN Z+=INDETERMINATE POSITIVE VALUE Z-=INDETERMINATE NEGATIVE VALUE

TABLE 60

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

OCTOBER 1932

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

OCTOBER 1932

DAY		0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	‡ ‡ ‡	48	278	275	191	126	107	118	285	282	265	225	161	130	129	117	103	114	101	107	155	168	186	217	246	211	0
2	‡	229	219	193	209	214	249	226	174	137	130	126	112	93	90	101	115	121	129	126	150	174	203	201	225	170	.
3	‡	249	238	293	305	309	311	348	306	266	230	200	156	166	156	155	160	168	172	170	179	144	238	270	305	227	.
4	‡	281	319	341	356	375	196	399	364	317	266	234	205	175	165	170	174	181	203	214	227	226	229	245	227	261	.
5	‡ ‡	400	196	202	215	209	217	207	[187	202	200	209	200]	211	206	203	206	213	225	238	246	263	265	266	266	219	1
6	‡ ‡ ‡	265	275	291	279	294	281	269	270	255	247	209	170	138	129	129	138	142	152	151	169	213	267	246	251	218	0
7	‡ ‡	265	282	278	289	293	322	313	295	266	250	211	[191	182	184	182	174	169]	181	191	266	269	255	250	254	242	1
8	‡	270	302	321	318	315	309	315	287	277	241	{ 226	152	235	166	209	203	234	241	234	217	223	181	210 }	213	246	1
9	‡	223	419	229	246	254	250	250	209	143	115	79	58	{ 71	62	115	125 }	86	66	54	62	103	77	81	66	136	1
10	‡	[90	92	93	92	135	112	130	110	52	45	39	49	67	104	101	141	156	173	192	206	101]	229	235	241	124	1
11	‡	250	218	241	251	229	231	238	234	219	201	200	200	192	200	192	{ 207	200	141	84	89	174	135 }	235	233	200	.
12	‡	191	169	163	159	126	86	128	155	146	{ 157	157	192	172	123	93	103	103	132	139 }	156	142	154	163	154	144	.
13	‡	168	165	156	172	178	201	214	225	213	173	160	155	119	135	139	(155)	174	202	(227)	203	211	210	206	239	183	.
14	‡ ‡ ‡	274	274	294	309	307	309	319	310	290	254	227	217	168	166	157	181	182	192	207	225	219	219	237	235	240	0
15	‡ ‡	253	278	306	321	356	358	343	310	307	270	247	227	(209	166)	182	(186)	207	233	(211)	181	230	254	290	294	259	0
16	‡ ‡	321	336	356	384	366	359	362	368	325	166	126	130	(166)	161	168	178	200	179	139	129	281	307	281	314	254	1
17	‡ ‡	310	319	362	374	380	376	360	346	301	282	251	[215	211	191	166	184	181	225]	294	250	226	259	214	249	274	2
18	‡ ‡	234	230	225	225	225	226	217	213	178	200	(182	202)	203	209	(213)	213	221	225	[254	246	229	253	243	229]	221	0
19	‡ ‡	[298	322	329	360	339	390	363	359	295	235	211	181	215	201	179	139	200	238	229	168	187	257	281	314]	260	0
20	‡	[309	356	362	371	356	364	360	336	331	281	243]	{ 211	168	251	255	263	273	233	279	279	239	270	273	263 }	289	1
21		{ 301	290	...	...	...	290	299	274	294	282	200	134	152	154	116	203	215 }	210	242	233	247	(242)	279	...	...	2
22		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0
23		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0
24		...	...	...	...	...	...	...	...	266	291	287	168	[200	210	144	169	210]	265	253	241	241	282	255	253	...	1
25	‡ ‡ ‡	[305	341	359	313	305	309	306	290	257	225	251	238	165	165	200	226	251	285	246	225	253	289	309	203]	263	0
26	‡ ‡ ‡	206	211	321	374	371	388	322	336	286	278	266	285	266	192	221	229	[230	227	242	233	307	279	283	322]	278	0
27	‡	[335	347	359	342	348	356	352	309	327	309	303	291	282	273	269	277	297	259	262	334	386	322	338	360]	318	0
28		[389	388	412	427	451	458	411]	428	399	368	281	281	241	155	191	235	253	294	219	200	201	243	281	306	...	1
29		335	347	387	399	414	426	427	422	394	346	330	310	291	267	178	188	266	277	217	201	226	287	317	344	...	0
30		371	344	318	356	371	356	396	364	350	332	331	290	181	143	192	210	211	230	...	...	...	...	...	...	...	0
31		...	...	...	...	...	...	...	...	306	303	269	251	241	227	214	178	253	225	155	183	210	202	230	281	...	0
MEANS *		251	261	279	285	287	291	290	273	247	218	199	183	174	166	170	177	187	192	195	200	216	242	232	248	228	
MEANS †		266	279	300	312	313	320	308	297	270	239	218	201	189	175	176	180	192	205	209	208	237	258	260	265	245	
MEANS ‡		266	276	308	315	317	320	307	298	274	254	236	214	173	156	165	175	184	191	191	201	232	248	258	251	242	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 70

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

OCTOBER 1932

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

OCTOBER 1932

DAY				0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X	X	282	278	282	310	305	298	326	294	294	263	216	151	117	115	109	100	94	98	109	155	174	196	228	263	211	0
2	X			234	227	208	208	223	257	228	174	117	115	104	102	94	84	98	121	132	136	138	170	[illegible]	[illegible]	208	230	166	.
3	X			246	246	263	332	329	334	354	289	252	208	183	142	168	157	160	172	177	190	179	186	142	243	273	319	231	.
4	X			296	334	338	368	400	414	400	353	305	250	219	205	175	175	183	192	196	210	216	227	232	234	263	238	268	.
5	X	X		219	214	210	214	216	225	212	⌈ 223	225	219	227	214 ⌋	214	212	210	216	218	228	243	245	268	270	273	263	228	1
6	X	X	X	264	275	301	286	315	284	280	282	278	259	216	177	151	136	136	136	153	153	153	172	219	287	261	268	227	0
7	X	X		280	301	298	317	308	349	334	319	278	228	214	⌈ 214	212	212	216	212	207 ⌋	196	190	266	278	266	243	259	258	1
8	X			277	315	338	336	332	329	329	277	266	214	⌇ 214	170	301	207	208	196	225	261	264	248	223	153	196 ⌇	201	253	1
9	X			216	290	225	254	263	261	243	196	119	98	65	51	⌇ 59	106	155	142 ⌇	88	59	57	61	113	77	59	42	136	1
10	X			⌈ 65	61	73	77	104	84	100	90	48	38	38	42	63	108	104	142	159	188	210	208	212 ⌋	228	239	236	122	1
11	X			254	216	241	245	227	221	228	248	225	203	194	192	192	192	192	⌇ 172	50	98	197	238	155	177 ⌇	266	236	202	.
12	X			172	157	149	149	134	121	119	138	119	⌇ 138	159	172	160	113	94	113	115	134	132 ⌇	146	136	151	159	144	138	.
13	X			159	159	155	172	164	190	192	197	186	155	134	134	108	123	136	153	175	205	212	192	192	199	196	230	172	.
14	X	X	X	263	299	282	301	300	300	313	296	259	210	188	157	140	151	174	(188)	188	196	(210)	208	223	225	227	230	229	0
15	X	X		241	275	313	313	356	353	339	298	266	230	205	183	(181	157)	174	(188)	212	219	(208)	183	227	250	287	298	248	0
16	X	X		334	320	365	388	356	353	365	341	301	159	113	119	(157)	155	175	190	208	179	132	136	289	320	287	322	253	1
17	X	X		336	349	380	381	385	388	368	344	282	275	264	⌈ 252	250	241	228	228	225	232 ⌋	287	275	248	264	225	252	290	2
18	X	X		246	246	230	225	225	225	201	205	175	192	(190	210)	227	216	(225)	225	230	243	[277	252	236	257	263	232]	227	0
19	X	X		[266	326	338	376	353	405	356	334	277	225	183	153	175	194	172	138	194	246	241	175	188	266	294	320]	258	0
20	X			[313	366	366	381	370	368	341	326	320	255	194]	⌇ 214	181	246	207	205	243	228	245	250	250	216	270	284 ⌇	277	1
21				⌇ 266	275	291	306	250	268	268	263	257	248	149	159	160	136	159	208	228 ⌇	212	241	221	236	(232)	234	261	...	2
22				264	264	282	280	282	261	282	266	234	[232	190	159	192	132	121	192	212	227	185	159	228	280	313	300]	...	0
23				[305	324	349	319	349	326	351	317	296	234	194]	164	159	162	153	164	177	197	132	210	246	284	278	280	...	0
24				291	332	346	365	368	371	351	329	280	263	278	164	⌈ 208	232	210	218	243 ⌋	280	277	261	246	284	248	261	...	1
25	X	X	X	[301	339	351	317	310	308	305	257	223	186	196	210	159	157	194	228	255	287	246	207	259	282	317	203]	254	0
26	X	X	X	192	192	317	373	365	390	320	310	264	250	241	270	257	190	197	228	[245	241	243	219	319	284	273	326]	271	0
27	X			[341	351	368	338	351	363	349	313	332	315	298	291	286	280	266	266	284	246	261	300	385	326	344	356	317]	0
28				...	...	...	...	...	...	...	...	373	353	241	241	246	160	210	261	277	319	212	192	185	252	298	317	...	1
29				...	...	...	...	...	...	...	...	378	308	294	268	264	264	174	188	280	282	210	208	221	287	329	360	...	0
30				381	349	334	373	385	368	398	341	334	320	319	282	172	130	197	227	228	246	170	207	106	192	214	266	...	0
31				303	327	366	370	365	380	354	356	266	261	234	225	208	210	201	174	248	221	151	192	188	197	228	268	...	0
MEANS *				252	263	278	290	291	297	287	265	235	204	185	175	175	171	174	180	186	194	202	205	224	234	246	250	228	
MEANS †				269	281	306	317	316	323	310	292	260	225	204	192	187	178	184	190	202	210	212	208	244	264	265	270	246	
MEANS ‡				260	269	307	317	319	316	313	288	264	234	211	193	165	150	162	176	187	195	192	192	239	255	261	258	238	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION ⌇=DISTURBED BY BAD WEATHER

TABLE 71

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN VOLTS PER METER

OCTOBER 1932

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY			0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	
1	‡	†	*	42	45	38	35	38	39	40	49	47	58	73	86	89	92	70	72	82	72	66	45	42	43	44	44	56	0
2				..	..	..	..	..	..	..	..	79	88	100	100	95	101	80	61	48	42	Z-	Z-	40	25	28	32	..	.
3				21	17	16	13	11	13	18	38	57	70	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	.
4				..	..	..	..	..	..	..	..	46	61	68	75	76	72	72	62	58	58	45	29	31	41	41	44	..	.
5	‡	†		35	37	44	44	30	48	45	[-34	N17	-11	N27	N17]	51	53	54	51	48	54	51	50	39	37	38	40	37	1
6	‡	†	*	39	41	38	37	33	39	44	55	57	56	69	76	72	70	56	47	42	26	14	15	14	10	12	16	41	0
7	‡	†		16	15	15	17	15	16	19	33	42	54	65	[N49	N47	N46	N40	N28	N30]	47	50	43	32	30	34	31	34	1
8				29	30	30	33	36	38	38	47	53	64	< 63	Z	Z	N13	44	60	41	N 5	- 9	-13	29	Z	46 >	41	..	1
9				37	28	34	35	35	38	47	64	86	105	106	107	< 95	Z-	Z-	26 >	62	88	79	54	45	57	67	55	..	1
10			[	32	28	16	13	7	13	10	31	155	184	191	134	105	70	57	48	33	23	30	N33	Z-]	40	39	41	..	1
11				30	37	33	28	38	38	52	50	68	63	65	71	69	63	55	< Z+	Z+	Z+	Z-	Z	Z	Z- >	..	..	..	.
12				..	..	..	..	..	..	..	..	..	< N54	46	71	44	73	90	Z-	Z	Z	53 >	..	..	..	..	..	..	.
13				..	..	..	..	..	..	..	..	60	65	85	84	100	85	76	67	55	50	38	41	29	32	26	28	..	.
14			†	26	23	22	26	17	15	16	46	63	73	65	85	75	66	57	(56)	54	49	(48)	47	32	24	25	24	43	0
15	‡	†		25	25	22	19	21	20	23	43	53	50	44	58	(45 | 50)	63	(62)	60	45	(47)	40	26	22	22	19	38	0
16	‡	†		18	19	18	16	18	22	19	32	41	71	72	66	(60)	52	N40	N19	26	41	28	33	22	23	21	21	33	1
17	‡	†		19	17	16	16	19	19	23	23	42	45	39	[N 6	N 6	N13	-23	-16	-35	N14]	26	25	32	34	43	35	19	2
18	‡	†		32	32	27	29	26	34	44	41	51	54	(70 | 63)	48	56	(44)	40	49	41	[35	17	28	25	27	36]	40	0
19	‡	†	[	28	15	19	19	21	25	27	43	57	106	97	73	57	54	39	65	41	52	44	51	32	27	25	23]	43	0
20			[	23	24	25	25	22	31	29	31	41	50	82]	< Z	Z	101	Z	Z	Z+	Z	66	58	Z	47	46	Z >	..	1
21			<	36	-	4	Z	31	36	51	58	62	56	52	-16	N16	40	Z+	N 3	38 >	29	39	43	39	(35)	32	28	..	2
22	‡			28	31	25	32	42	47	40	45	57	[61	73	79	78	105	88	57	46	44	34	44	31	33	35	37]	50	0
23	‡		[	22	22	34	22	25	29	40	42	49	60	72]	82	82	76	69	48	45	31	28	15	15	16	17	13	40	0
24				15	22	16	14	15	17	17	34	29	66	67	89	[N68	N45	Z-	Z-	N44]	43	37	35	38	32	32	34	..	1
25	‡	†	<	35	25	31	35	32	33	40	61	73	88	94	83	93	97	76	57	49	41	38	28	22	28	26	46]	51	0
26	‡	†	<	52	39	30	25	26	25	22	39	64	76	79	73	73	57	65	60	[51	46	42	34	28	24	31	27]	45	0
27			[	26	29	26	35	35	34	42	..	..	..	..	..	..	..	..	..	43	26	24	22	22	33	27	25]	..	0
28	‡		[	27	22	16	16	20	24	29]	36	46	52	75	81	78	N68	49	N47	46	38	39	36	30	30	23	20	40	1
29	‡			22	22	23	20	22	26	22	40	52	64	69	71	74	79	77	71	48	47	47	37	24	23	26	23	43	0
30	‡			19	24	23	22	23	22	29	40	51	54	57	65	82	87	65	54	50	40	33	46	55	49	35	26	44	0
31	‡			22	21	24	20	21	23	23	41	57	62	69	71	81	73	70	69	53	38	38	36	29	25	23	24	42	0
MEANS *				28	26	26	25	25	28	30	39	51	60	67	66	66	66	56	49	44	43	39	36	30	28	28	28	41	
MEANS †				31	28	27	26	25	28	30	38	51	60	66	61	60	59	48	45	41	44	41	36	29	27	29	30	40	
MEANS ‡				39	35	32	32	29	30	32	50	61	70	76	81	80	76	65	58	56	47	42	34	28	26	28	31	47	

DESIGNATIONS AND REMARKS:

*=ALL COMPLETE DAYS †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER ≷=DISTURBED BY BAD WEATHER

N=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT Z=INDETERMINATE IN MAGNITUDE AND SIGN Z+=INDETERMINATE POSITIVE VALUE Z-=INDETERMINATE NEGATIVE VALUE

TABLE 72

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

NOVEMBER 1932

EXPRESSED IN VOLTS PER METER

NOVEMBER 1932

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY	●	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	
1	X	X	X	21	18	16	16	17	23	23	34	44	58	58	70	73	65	58	57	⌈N43	N25	N25	N22	54	N33	13 ⌋	29	37	1
2	X			29	19	22	24	23	22	24	38	44	52	64	74	75	68	69	58	50	43	30	30	31	22	23	22	40	0
3	X			18	16	19	20	19	22	34	42	50	58	72	76	79	71	70	54	50	40	44	57	31	38	44	29	44	0
4	X			26	26	19	20	22	23	25	37	55	64	93	101	90	74	74	61	53	55	57	39	38	55	33	34	49	0
5	X	X	X	29	23	24	23	29	29	31	42	61	72	67	59	67	60	49	53	44	34	23	24	25	25	27	23	39	0
6	X			22	19	16	17	19	19	23	32	47	54	63	99	65	71	67	51	41	43	47	32	29	24	22	19	38	0
7	X	X		22	19	22	21	20	22	26	35	49	60	73	81	⌈102	76	N 5	N 3	N10 ⌋	40	54	39	34	36	29	41	38	1
8	X			47	34	40	33	31	30	26	45	56	54	64	N57	59	67	58	50	45	58	56	57	58	57	53	50	49	1
9	X			16	17	16	16	16	13	19	32	43	50	57	67	84	79	56	33	N39	50	50	35	26	20	20	19	36	1
10	X			20	16	16	20	20	22	21	36	57	58	59	84	81	66	N39	47	48	35	36	43	46	46	34	32	41	1
11	X	X	X	27	23	20	25	22	21	34	44	71	96	111	105	82	65	60	50	46	43	29	30	34	43	30	35	47	0
12	X	X		22	21	20	16	16	20	20	31	43	51	60	N42	N40	54	50	48	39	32	27	30	22	22	22	19	32	1
13	X			20	20	20	26	24	27	27	34	46	51	53	56	61	60	66	60	44	50	44	32	26	26	30	25	39	0
14	X			23	22	23	22	26	23	25	42	56	61	72	79	83	85	79	58	43	34	30	24	30	33	32	27	43	0
15	X			27	26	23	22	17	26	26	35	52	75	106	105	101	111	79	61	50	57	54	43	63	40	40	36	53	0
16	X			29	26	24	26	30	27	30	37	64	70	70	66	67	74	92	67	63	50	39	31	29	40	31	34	46	0
17	X			32	26	27	27	21	26	30	38	61	91	107	111	107	125	102	74	50	44	54	44	52	56	65	53	59	0
18	X			41	37	30	33	34	37	44	41	64	92	122	111	106	76	70	60	50	36	32	27	33	33	24	33	53	0
19	X	X	X	40	27	40	36	23	32	30	59	74	89	79	71	67	70	62	50	36	39	27	22	23	23	21	26	44	0
20	X	X	X	23	22	19	19	19	20	28	30	53	53	62	73	71	74	68	59	50	46	52	24	19	25	22	22	40	0
21	X	X	X	22	18	31	20	22	17	19	29	40	54	54	56	64	56	57	50	41	33	39	27	24	19	20	19	35	0
22	X	X		24	17	20	16	17	16	23	31	46	54	72	86	95	109	57	61	48	50	47	29	29	34	27	23	43	0
23				22	25	26	23	27	34	37	42	⌈ 71	N37	Z-	Z-	Z-	Z-	Z-	N10	26 ⌋	40	30	32	39	36	34	38	..	2
24	X	X		34	27	37	36	40	45	34	54	N48	54	57	63	60	54	50	N32	40	39	39	38	37	37	39	40	43	1
25	X	X	X	43	39	39	42	36	27	40	42	53	54	59	61	70	68	53	52	37	39	30	36	37	32	29	41	44	0
26	X	X		40	29	39	37	40	40	39	44	50	N30	60	66	67	60	52	N42	N28	32	29	37	40	41	36	41	42	1
27	X	X	X	37	38	37	36	32	43	46	46	48	49	48	51	47	53	50	44	37	28	32	37	34	33	32	25	40	0
28	X	X	X	26	24	22	23	29	48	35	36	56	65	81	88	73	67	58	49	51	46	44	51	49	50	43	39	48	0
29	X	X	X	57	61	57	50	54	55	54	51	56	63	72	74	71	64	67	52	42	36	27	29	24	26	23	25	50	0
30	X	X		23	20	19	21	17	21	19	25	42	57	78	86	82	82	60	N52	49	41	N29	50	34	32	N26	22	41	1
31																													
MEANS ●				29	25	26	26	25	27	29	39	53	62	72	75	75	73	61	51	44	41	39	35	35	35	31	30	43	
MEANS †				31	27	29	27	27	39	31	40	52	60	68	71	71	67	54	47	40	38	35	33	32	32	27	29	42	
MEANS ‡				32	29	30	29	28	32	34	41	56	65	69	71	68	64	58	52	43	37	33	30	32	31	26	27	42	

DESIGNATIONS AND REMARKS:

●=ALL COMPLETE DAYS †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER ≷=DISTURBED BY BAD WEATHER

N=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT Z=INDETERMINATE IN MAGNITUDE AND SIGN Z+=INDETERMINATE POSITIVE VALUE Z-=INDETERMINATE NEGATIVE VALUE

TABLE 73

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

NOVEMBER 1932 — NOVEMBER 1932

DAY	*	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X	X	319	304	333	341	365	356	355	378	307	336	315	262	248	236	233	193	⌈ 220	207	241	217	170	200	248 ⌋	243	276	1
2				295	276	315	319	304	319	237	331	326	302	262	263	251	238	145	137	189	179	205	286	325	335	294	325	...	0
3				349	365	375	392	402	402	330	326	319	304	304	289	276	229	155	157	237	255	218	149	146	190	168	199	...	0
4				491	244	...	...	...	...	...	...	357	301	226	214	223	220	190	182	198	135	126	123	143	138	157	179	...	0
5	X	X	X	165	190	214	241	242	263	238	234	248	248	252	244	226	224	213	148	161	190	202	261	275	277	267	331	231	0
6				319	344	341	325	326	357	365	367	338	307	276	265	239	182	168	177	182	182	194	182	209	239	257	285	...	0
7	X	X		312	305	302	324	328	318	339	320	287	261	229	190	⌈ 142	148	168	145	148 ⌋	150	124	156	190	172	214	192	228	1
8				198	192	177	181	296	329	304	287	268	252	255	242	239	257	249	253	236	229	266	280	333	335	315	326	...	1
9				315	359	402	412	427	343	457	396	398	357	306	273	194	198	198	200	195	190	154	171	249	257	281	289	...	1
10				126	315	339	318	335	341	381	328	281	287	285	202	170	174	212	238	223	212	200	195	192	146	163	217	...	1
11	X	X	X	243	271	315	355	373	379	375	336	238	200	149	149	239	229	227	215	213	239	252	248	266	251	229	267	261	0
12	X	X		307	277	312	339	302	341	325	314	324	280	275	238	226	239	243	215	238	268	285	284	286	291	331	310	285	1
13				290	305	314	343	348	341	336	307	204	328	305	276	226	189	159	146	145	150	177	212	207	192	231	284	...	0
14				277	294	312	315	339	333	334	319	311	289	258	237	212	148	160	209	241	239	189	237	241	242	243	312	...	0
15				345	291	318	340	353	391	370	369	329	239	192	189	172	118	154	181	194	131	100	104	138	152	165	177	...	0
16				...	...	...	...	...	...	...	315	256	239	256	261	227	194	126	116	140	...	...	...	...	...	...	...	...	0
17				...	...	...	...	...	...	...	338	275	231	212	202	193	127	118	156	220	149	120	166	162	171	...	...	...	0
18				...	...	...	...	...	...	...	340	290	236	192	197	200	252	234	231	242	239	199	262	315	302	330	338	...	0
19	X	X	X	287	319	291	311	328	333	350	300	260	242	278	286	276	260	251	241	226	149	200	256	305	256	267	324	275	0
20	X	X	X	305	315	350	354	358	374	375	381	287	301	267	248	234	197	124	176	229	218	145	157	207	203	237	282	264	0
21	X	X	X	258	306	314	302	314	319	341	338	359	302	252	238	242	236	215	212	217	152	109	162	236	309	270	315	263	0
22	X	X		359	340	319	353	358	375	377	346	319	277	237	190	160	112	156	167	192	157	135	182	189	168	205	267	248	0
23	X			290	290	265	273	296	280	280	286	⌈ 252	268	174	181	192	189	215	228	243 ⌋	265	280	252	252	209	268	237	251	2
24	X	X		261	278	277	304	292	290	253	260	248	252	249	248	251	241	226	237	246	263	267	278	290	311	325	318	269	1
25	X	X	X	309	326	310	304	328	339	341	309	318	328	319	309	290	276	258	276	285	162	209	278	277	312	277	267	292	0
26	X	X		266	292	281	306	318	314	318	315	267	244	262	248	232	228	213	195	173	204	214	227	229	239	234	243	253	1
27	X	X	X	291	289	292	304	316	289	299	292	289	265	292	304	300	287	276	266	275	276	273	275	242	242	270	249	281	0
28	X	X	X	266	277	291	291	208	278	286	278	271	286	244	261	252	241	239	231	238	252	239	217	215	237	272	291	257	0
29	X	X	X	229	220	229	239	252	258	287	272	277	267	236	237	246	232	237	234	237	262	238	278	302	304	291	296	257	0
30	X	X		294	312	321	324	338	363	348	345	335	291	227	197	218	239	232	200	181	152	99	156	212	217	255	300	256	1
31																													
MEANS *				279	289	295	310	313	322	323	312	287	273	250	237	234	224	219	211	219	210	207	228	244	[illegible]	262	278	262	
MEANS †				278	289	297	312	314	324	325	314	290	274	255	241	236	227	219	209	217	206	202	227	243	249	262	261	262	
MEANS ‡				265	282	294	304	308	319	325	312	285	278	260	254	255	242	227	219	230	211	211	235	250	259	263	286	266	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION ≷=DISTURBED BY BAD WEATHER

TABLE 74

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

[redacted] 1932

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

[redacted]

DAY	✱	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X	X	302	308	338	342	365	353	354	359	273	292	277	223	212	213	217	185	⌈225	217	240	288	163	186	245⌋	230	264	1
2				...	...	...	...	...	...	...	...	...	...	225	222	227	...	...	...	...	...	...	...	...	...	...	...	...	0
3				...	...	...	...	...	...	...	306	239	289	271	263	256	222	137	158	245	258	205	139	125	178	156	186	...	0
4				240	269	314	...	...	...	...	...	...	261	180	168	173	200	178	170	188	139	111	106	137	125	156	175	...	0
5	X	X	X	156	180	208	227	238	256	228	207	227	208	227	238	197	208	207	146	173	208	205	263	287	289	260	266	221	0
6				...	...	...	...	...	...	...	...	305	276	241	228	223	180	149	181	192	181	178	192	205	241	260	286	...	0
7	X	X		319	294	303	335	330	318	340	313	261	228	195	161	⌈125	139	190	175	158⌋	152	120	154	180	158	207	188	223	1
8				190	189	173	173	263	224	302	287	273	258	256	245	243	246	241	241	241	230	261	...	...	...	...	...	...	1
9				...	...	...	...	...	...	...	...	...	326	282	250	163	175	222	208	200	181	142	164	258	260	290	289	...	1
10				...	...	...	...	...	...	...	314	258	243	256	241	161	175	225	243	230	208	195	192	171	137	163	212	...	1
11	X	X	X	243	295	327	367	371	382	378	334	205	175	130	125	208	212	210	207	205	240	251	255	271	241	212	263	254	0
12	X	X		310	287	334	353	310	342	326	314	311	292	273	261	243	246	250	222	246	269	290	286	286	294	354	338	293	1
13				...	...	...	...	...	...	338	314	303	310	306	260	208	178	152	140	142	146	175	193	200	192	222	277	...	0
14				286	308	324	330	353	348	335	329	292	263	218	200	188	...	...	...	...	...	...	...	...	...	...	...	...	0
15				...	...	...	...	...	...	...	375	298	197	158	154	142	101	132	178	192	129	90	89	122	140	140	193	...	0
16				193	205	236	225	241	255	305	330	227	200	222	228	208	166	118	104	125	176	140	144	170	...	...	...	...	0
17				...	...	...	...	...	...	...	324	245	181	170	159	156	101	92	125	202	146	122	152	146	142	163	175	...	0
18				197	222	241	266	292	342	289	327	258	205	188	175	161	230	225	217	248	241	190	271	318	305	343	340	...	0
19	X	X	X	273	327	289	306	334	337	357	306	223	223	282	279	273	260	238	235	236	161	193	236	324	260	284	334	274	0
20	X	X	X	319	342	360	364	373	388	375	388	274	271	233	205	207	190	120	171	230	218	137	144	203	197	241	292	260	0
21	X	X	X	261	318	318	321	321	321	354	353	343	276	233	220	210	217	210	197	205	144	94	142	238	322	279	326	259	0
22	X	X		370	353	334	381	381	387	390	356	294	243	200	159	142	94	149	158	180	149	120	171	186	158	193	263	242	0
23	X			287	290	258	268	292	279	271	281	⌈222	258	218	225	250	238	240	245	243⌋	260	287	256	255	277	279	235	259	2
24	X	X		258	286	273	295	297	292	255	253	250	253	256	256	258	255	235	253	258	266	276	287	294	308	330	322	274	1
25	X	X	X	308	334	321	311	332	356	342	334	319	338	322	302	294	271	258	255	277	171	207	306	274	321	289	274	296	0
26	X	X		276	322	292	322	337	335	334	346	281	274	282	264	238	240	217	202	180	208	220	230	240	243	241	255	266	1
27	X	X	X	286	303	308	310	334	300	306	308	306	287	303	322	311	294	261	273	282	290	277	263	228	240	266	243	268	0
28	X	X	X	269	287	305	306	351	264	286	281	258	243	233	213	255	243	241	235	241	258	245	225	220	240	274	310	262	0
29	X	X	X	227	222	225	241	256	263	290	290	290	277	230	238	260	246	238	228	238	271	241	290	321	326	308	321	264	0
30	X	X		303	324	342	338	360	401	359	353	324	256	198	164	188	208	235	192	180	140	89	135	205	197	250	310	252	1
31																													
MEANS ✱				260	298	302	317	328	328	326	316	274	258	241	227	228	222	219	211	221	213	205	228	246	250	265	281	262	
MEANS †				260	299	304	320	331	331	330	318	277	258	242	227	226	221	217	208	220	210	200	226	245	249	265	263	262	
MEANS ‡				264	292	299	310	328	322	327	316	272	259	247	236	243	235	220	213	231	218	209	235	253	262	266	266	264	

DESIGNATIONS AND REMARKS:

✱=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION ≷=DISTURBED BY BAD WEATHER

TABLE 75

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DECEMBER 1932 — DECEMBER 1932

DAY	#	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X		265	266	299	302	312	310	324	276	220	203	212	214	216	202	215	230	231	194	230	236	104	126	129	193	230	1
2	X	X	X	200	216	253	262	277	274	275	265	296	238	227	188	137	109	116	137	137	114	80	84	126	119	130	164	185	0
3	X	X		150	161	193	236	228	217	229	216	192	152	138	96	95	102	118	128	159	118	124	164	223	229	206	206	170	0
4	X	X	X	218	283	240	290	288	286	265	312	322	308	238	276	265	257	258	265	265	204	256	311	256	234	248	300	269	0
5	X	X	X	316	334	330	334	344	348	360	370	325	290	242	218	214	194	147	115	182	192	187	140	154	202	205	220	248	0
6	X	X	X	263	276	289	302	324	343	325	343	310	312	296	263	223	101	139	192	229	218	194	266	253	231	264	224	258	0
7	X	X	X	323	322	278	332	348	356	344	320	304	310	277	250	228	226	129	155	205	196	140	162	274	334	248	248	263	0
8	X	X	X	288	324	362	360	360	378	361	354	354	323	277	275	247	236	234	231	229	203	238	301	312	277	282	287	296	1
9	X	X		266	266	301	320	322	314	{251}	276	229	{193}	231	218	218	199	212	230	264	271	238	288	286	266	278	248	258	1
10				270	295	242	192	252	334	313	278	290	260	⌈227	198	191	197	191	188	164⌋	...	...	...	...	...	...	...	...	2
11				...	...	...	...	...	...	...	{192}	206	164	108	95	90	115	136	148	126				192	203	221	319	...	1
12	X			370	358	300	350	368	394	384	318	280	266	283	254	298	274	265	300	312	325	{326}	298	313	274	274	265}	310	2
13	X			{206}	268	228	231	217	246	182	215	238	194	185	154	150	104	87	144	107	162	143	181	192	94	107	188}	176	2
14	X			{228}	172	124	161	217	140	150	182	222	216	208	204	202	208	81	208	194	200	119	217	204	250	203	222}	189	2
15	X			{171}	240	238	244	214	202	173	128	215	253	218	193	172	228	226	113	202	208}	125	118	114	193	236	227	194	1
16	X	X		165	198	190	187	102	114	192	202	202	204	206	228	130	121	96	142	161	117	97	95	140	147	138	157	155	0
17	X	X		152	107	251	121	208	226	206	181	180	228	299	299	290	290	278	252	215	157	157	153	151	146	139	166	202	0
18	X	X		194	238	238	238	228	206	203	180	152	145	125	81	82	82	82	96	104	81	93	123	137	113	126	119	144	0
19	X	X		117	130	151	155	180	190	153	157	137	171	198	173	165	162	162	180	190	122	108	108	104	145	159	153	153	0
20	X	X	X	191	221	227	228	231	214	190	173	182	228	234	226	226	182	118	158	162	131	140	128	152	131	148	180	183	0
21	X			194	224	242	253	252	265	263	252	226	204	167	190	199	218	190	216	220	242	{227}	198	266}	220	262	272	226	1
22	X			253	277	{292}	256	215	79	101	37}	153	205	190	139	159	180	226	226	203	172	182	70	139	202	231	138	180	1
23	X	X	X	262	275	218	238	262	275	276	271	265	276	262	277	275	244	186	157	182	93	93	92	101	106	129	135	206	0
24	X	X		161	226	223	214	217	246	264	253	⌈256	151	196⌋	204	214	229	224	218	229	216	162	108	191	187	162	171	205	1
25	X	X	X	226	239	228	277	272	282	294	250	280	265	212	228	218	147	151	142	165	181	161	133	147	180	188	212	212	0
26	X	X	X	238	240	239	287	264	278	274	221	228	265	264	181	128	124	147	139	160	172	181	159	180	193	223	242	209	0
27	X	X		265	277	281	277	347	384	332	336	317	311	239	203	202	140	87	130	148	167	154	162	226	162	229	260	235	0
28	X			262	286	288	312	340	346	371	304	322	287	312	304	⌈223	130	129	153	220⌋	244	246	224	204	248	292	289	264	1
29	X	X		323	317	328	318	337	358	374	293	202	202	147	168	181	⌈162	191	200	150⌋	137	140	122	102	110	121	151	214	1
30	X	X		162	192	210	238	248	239	244	226	244	251	184	162	104	65	101	116	130	131	117	164	173	220	257	298	186	0
31	X	X		⌈277	254	245	242	218	241	242	250	242	233	252	250	253	240	240	248	260	254	264	264⌋	276	301	325	340	259	1
MEANS #				232	249	251	261	267	267	262	247	245	237	225	211	197	178	167	180	194	180	170	175	190	194	205	216	217	
MEANS †				229	245	253	262	269	276	272	260	247	239	225	213	196	173	165	176	189	167	162	171	185	189	197	212	216	
MEANS ‡				254	275	266	291	297	303	296	288	287	282	253	238	216	182	162	169	192	170	167	178	196	204	206	221	233	

DESIGNATIONS AND REMARKS:

#=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 76

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

DECEMBER 1932

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DECEMBER 1932

DAY	*	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X		295	303	340	356	362	354	337	276	239	234	240	235	237	218	239	254	252	215	267	257	101	126	130	203	253	1
2	X	X	X	217	254	284	297	316	316	284	290	303	234	217	175	139	112	114	134	144	117	78	89	135	130	134	169	195	0
3	X	X		153	168	204	251	242	220	239	234	189	135	115	91	84	95	117	132	182	143	132	185	225	254	208	223	176	0
4	X	X	X	256	307	267	319	329	318	303	332	334	319	230	300	287	282	284	282	271	220	287	345	289	240	269	337	292	0
5	X	X	X	359	379	379	377	389	377	383	403	337	284	223	201	189	203	148	115	197	215	190	153	168	217	222	251	265	0
6	X	X	X	254	315	327	340	356	394	368	389	324	316	298	276	232	112	148	204	264	261	222	302	276	257	289	237	282	0
7	X	X	X	359	354	319	368	391	409	392	354	321	[illegible]	274	256	225	223	134	169	223	222	157	194	303	379	287	274	288	0
8	X	X	X	318	370	412	410	404	412	410	398	363	319	276	282	259	251	247	242	247	204	251	321	334	289	331	303	319	1
9	X	X		289	287	323	349	351	348	} 303 {	292	240	} 199 {	251	237	237	217	235	254	272	276	252	300	295	285	324	303	280	1
10				356	370	318	300	335	365	335	292	307	276	⌈252	252	252	259	234	237	237	254 ⌋	237	144	164	} 99 {	155	190 }	...	2
11				} 223 {	244	225	217	239	189	204	168 }	164	162	93	76	73	95	126	148	146	97	159	251	204	206	223	334	...	1
12	X			385	377	318	362	385	401	383	327	272	266	274	256	294	298	282	321	335	338	} 354 {	337	354	324	370	313 }	330	2
13	X			} 290 {	292	297	313	290	290	316	264	228	187	168	144	132	168	132	169	204	222	251	298	259	282	251	245 }	237	2
14	X			} 234 {	190	95	130	213	218	204	192	217	190	168	225	187	237	208	267	289	302	269	267	302	271	271	223 }	224	2
15	X			} 252 {	235	222	222	168	155	146	101	166	215	168	164	171	220	192	155	203	204 }	132	114	108	197	203	189	179	1
16	X	X		117	135	134	101	75	67	99	80	146	148	146	182	121	99	76	128	134	104	80	61	101	115	115	130	112	0
17	X	X		112	78	220	97	150	187	135	132	99	164	256	254	252	249	254	240	206	148	153	146	132	128	128	152	170	0
18	X	X		164	222	194	220	199	155	182	153	132	104	91	63	58	61	73	76	89	76	88	99	128	99	119	97	123	0
19	X	X		91	114	132	135	150	164	119	141	99	119	162	150	117	130	123	117	182	114	101	97	95	123	135	146	127	0
20	X	X	X	171	203	201	215	218	185	168	143	132	187	176	176	168	148	95	152	159	123	146	130	150	119	123	162	160	0
21	X			173	203	223	245	240	252	254	242	206	185	132	171	168	201	189	223	244	267	} 252 {	194	289 }	220	252	240	219	1
22	X			235	269	} 274 {	300	256	128	146	104 }	137	169	146	104	112	185	206	196	192	169	159	44	126	171	194	101	122	1
23	X	X	X	240	222	187	192	171	232	225	225	204	217	210	199	199	166	132	101	130	76	61	63	75	76	99	97	158	0
24	X	X		130	178	169	169	150	185	190	201	⌈269	119	146 ⌋	166	169	197	199	187	189	180	132	95	144	132	114	134	164	1
25	X	X	X	164	183	185	222	203	213	222	225	173	169	132	153	152	101	115	110	134	146	130	106	112	135	152	164	158	0
26	X	X	X	199	203	190	240	215	227	220	162	152	189	180	134	99	99	119	114	134	153	152	137	146	146	180	199	166	0
27	X	X		222	223	239	232	276	323	271	271	247	239	168	132	134	110	61	97	117	144	130	130	183	137	199	220	188	0
28	X			222	240	252	276	289	300	319	271	272	237	237	234	⌈183	180	203	217	225 ⌋	220	218	199	171	218	262	252	237	1
29	X	X		272	267	295	279	274	298	307	252	153	162	114	134	150	⌈137	162	178	137 ⌋	115	130	135	80	91	95	121	181	1
30	X	X		130	155	171	185	203	180	201	183	185	166	155	114	73	42	59	75	93	110	95	146	132	190	222	249	146	0
31	X	X		⌈234	220	203	204	187	203	204	218	230	223	222	223	235	223	218	223	234	232	236	237 ⌋	245	271	290	303	230	1
MEANS *				225	240	243	255	257	259	253	236	220	207	192	187	175	171	164	177	196	183	176	179	188	194	206	208	208	
MEANS †				216	234	244	253	255	262	253	243	221	208	195	188	173	158	152	163	181	163	158	169	175	179	189	203	201	
MEANS ‡				254	279	275	298	299	308	298	292	264	255	222	215	195	170	154	162	190	174	167	184	199	199	209	219	228	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES

†=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT

‡=SELECTED DAYS

( )=INTERPOLATED

[ ]=APPROXIMATE

⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION

} {=DISTURBED BY BAD WEATHER

TABLE 77

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

DECEMBER 1932

EXPRESSED IN VOLTS PER METER

DECEMBER 1932

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY	✱	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X		34	24	19	91	N 4	N10	21	37	40	63	72	77	65	66	61	49	48	38	24	32	78	36	44	37	45	1
2	X	X	X	27	24	24	23	25	29	28	33	48	77	85	95	113	109	93	73	60	62	55	31	34	33	29	28	52	0
3	X	X		25	26	26	31	27	32	30	41	68	99	124	161	141	128	83	69	55	48	38	26	30	44	51	21	59	0
4	X	X	X	27	28	27	27	30	34	34	32	54	61	77	57	52	55	50	48	25	26	24	27	30	28	24	24	38	0
5	X	X	X	26	26	23	23	27	28	27	29	51	62	75	80	84	73	77	69	49	51	48	45	32	23	23	24	45	0
6	X	X	X	23	21	20	20	23	24	24	26	44	45	51	56	63	64	61	49	40	30	27	30	35	23	21	27	35	0
7	X	X	X	27	19	23	24	24	25	24	33	44	52	56	57	59	59	59	51	44	38	36	38	23	20	23	28	37	0
8	X	X	X	21	21	20	23	33	35	28	30	44	52	62	63	N62	60	N44	48	42	47	33	32	20	30	27	37	38	1
9	X	X		38	31	18	20	14	28	≷ 40	≷ 40	52	≷ N57	≷ 56	58	56	52	44	45	44	43	44	24	23	24	27	24	38	1
10				26	18	24	35	31	28	27	38	50	50	⌈ N55	N 9	-31	-69	0	N15	-105	-17 ⌋	39	52	65.	≷ N69	N51	Z-	≷ ..	2
11			≷	Z	Z	58	77	Z	80	73	Z ≷	95	89	117	137	132	98	76	58	34	N25	21	18	27	30	29	28	..	1
12				24	24	23	24	17	28	36	38	49	48	42	48	50	36	24	35	33	31	≷ 26	N71	N 5	Z	-30	-33 ≷	..	2
13			≷	-60	N 6	-43	-35	-26	- 4	-30	-10	N 6	12	41	83	93	Z-	Z-	Z-	Z-	Z-	Z-	Z-	Z-	Z-	Z-	Z- ≷	..	2
14			≷	..	..	..	..	..	Z-	Z-	..	..	94	67	Z-	52	Z	Z-	Z	..	..	..	..	..	..	..	..	.. ≷	..	2
15			≷	..	..	..	..	..	..	..	..	..	..	94	98	61	52	83	Z	48	61 ≷	72	77	87	69	55	44	..	1
16	X	X		38	14	16	10	17	21	23	23	16	81	126	109	143	156	171	125	109	105	99	113	69	51	20	21	70	0
17	X	X		20	24	13	28	9	10	7	7	57	91	81	76	82	84	70	72	79	89	77	72	66	56	46	40	52	0
18	X	X		41	38	30	29	23	18	34	24	68	120	155	216	222	193	150	145	113	88	85	63	59	66	56	59	87	0
19	X	X		52	43	45	33	38	28	36	30	92	120	115	121	132	109	98	85	79	87	75	66	61	56	48	59	71	0
20	X	X	X	51	45	44	46	51	51	51	49	88	88	100	110	117	124	133	90	101	70	45	48	56	77	55	48	72	0
21				44	31	35	41	39	37	40	49	55	69	84	86	77	47	68	42	27	32	≷ N22	Z	N28 ≷	49	45	47	..	1
22				37	33	≷ Z	Z	Z-	Z	Z	Z ≷	36	24	81	152	115	53	62	72	65	60	80	146	89	35	26	30	..	1
23	X	X	X	19	44	49	46	48	45	48	46	59	67	79	83	80	87	96	92	77	77	109	93	90	79	66	62	68	0
24	X	X		42	31	34	34	28	29	20	23	⌈ -25	54	110 ⌋	88	92	82	74	71	73	63	73	100	78	56	61	55	56	1
25	X	X	X	52	48	51	37	36	35	37	36	62	96	113	99	105	130	117	105	84	70	63	66	49	37	44	57	68	0
26	X	X	X	28	28	33	35	31	40	34	46	62	74	81	111	129	112	94	88	76	59	34	49	46	52	38	35	59	0
27	X	X		31	34	34	38	42	35	33	39	66	77	106	123	109	135	153	88	70	50	41	30	35	43	33	27	61	0
28				30	26	27	29	29	27	24	45	51	63	68	76	⌈ 99	Z	Z	Z	Z- ⌋	48	42	27	40	36	41	44	..	1
29	X	X		38	37	27	21	23	18	26	35	83	96	119	103	82	⌈ 62	N53	N33	N39 ⌋	62	59	61	81	52	44	33	54	1
30	X	X		38	35	31	27	24	33	38	39	59	76	105	123	174	172	135	105	68	62	59	50	54	45	50	50	69	0
31	X	X		⌈ 56	N44	N44	N47	N38	46	N47	51	N35	N13	N44	N52	58	N51	N48	N42	48	N43	N41	41 ⌋	44	41	39	34	44	1
MEANS ✱				34	31	30	32	28	30	31	34	53	74	91	96	101	98	89	75	65	59	54	52	50	44	40	38	55	
MEANS †				34	31	30	32	28	30	31	34	53	74	91	96	101	98	89	75	65	59	54	52	50	44	40	38	55	
MEANS ‡				30	30	31	30	33	35	34	36	56	67	78	81	86	87	82	71	60	53	47	46	42	40	35	37	51	

DESIGNATIONS AND REMARKS:

✱=ALL COMPLETE DAYS †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER ≷=DISTURBED BY BAD WEATHER

N=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT Z=INDETERMINATE IN MAGNITUDE AND SIGN Z+=INDETERMINATE POSITIVE VALUE Z-=INDETERMINATE NEGATIVE VALUE

TABLE 10

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

JANUARY 1933

EXPRESSED IN VOLTS PER METER

JANUARY 1933

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY				0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	DAILY RANGE
1	X	X	X	33	30	26	25	24	26	30	29	32	59	57	56	51	45	46	36	27	20	30	35	31	28	26	21	34	0
2	X	X	X	21	26	23	23	27	27	27	31	42	58	73	76	74	76	60	52	51	52	33	33	32	31	30	27	42	0
3	X	X	X	26	28	27	23	24	26	22	25	48	54	61	68	62	66	81	65	52	48	65	51	32	34	36	32	44	0
4				33	32	28	31	31	33	30	42	56	60	72	92	..	..	102	73	72	60	45	37	42	35	35	38	..	0
5	X	X	X	37	33	36	30	34	34	38	37	55	61	71	52	55	54	48	45	44	38	30	31	29	38	43	42	42	0
6	X	X	X	40	39	29	22	26	27	33	27	35	37	41	70	61	64	66	48	37	34	30	20	23	24	23	22	37	0
7	X	X	X	22	20	20	24	24	26	31	35	57	63	55	90	94	84	66	58	45	34	42	28	28	37	27	25	43	0
8	X	X	X	26	28	29	27	25	24	25	26	44	48	51	51	46	55	48	44	42	37	35	32	28	24	21	21	35	0
9	X	X	X	23	22	17	17	19	24	21	30	42	47	41	42	45	50	44	43	28	28	31	23	21	23	20	23	30	0
10	X	X		24	23	20	20	23	31	38	38	37	43	46	50	48	54	60	39	37	28	42	52	46	48	35	37	38	0
11	X	X		29	17	27	24	31	28	32	35	37	76	85	86	88	78	68	50	44	28	31	28	23	24	30	N13	42	1
12	X	X		N24	36	43	20	40	40	42	60	59	55	58	72	82	84	80	83	74	60	48	N45	45	40	30	36	52	1
13	X	X	X	33	24	30	25	34	29	31	33	63	71	89	87	73	68	54	51	51	37	32	28	38	39	35	37	46	0
14	X	X		32	30	28	40	45	59	65	60	70	65	61	63	63	73	79	73	52	38	32	57	52	35	35	34	52	0
15	X			34	45	37	37	46	41	40	48	44	66	60	69	[68	N38	N53	N13	54	] 55	42	45	46	47	46	31	46	1
16	X			33	30	28	30	34	35	35	42	52	51	59	38	49	51	} N13	-37	29	N31	-7	N23 }	24	33	31	37	31	1
17				40	37	38	} N29	28	39	39	60	63	68	Z-	Z-	Z-	Z-	Z-	Z	Z-	Z	Z+	N26	N23	41	Z-	Z- }	..	2
18	X	X	}	N59 }	55	59	64	62	72	81	63	52	74	78	81	N59	85	73	65	54	40	24	50	63	68	55	55	62	1
19	X	X		50	47	37	38	43	32	44	56	100	93	112	119	138	124	101	72	61	36	59	84	72	51	54	58	70	0
20				51	41	47	44	41	} N17	Z-	Z	N13	70 }	65	74	73	70	60	50	55	52	47	31	} 28	Z	Z-	Z- }	..	2
21			}	4	Z	N27	36	-34	-34 }	38	60	86	87	80	80	80	85	73	73	76	52	49	50	81	62	58	65	..	1
22	X	X		69	63	55	50	58	51	59	58	81	84	93	82	154	139	123	110	88	68	62	84	67	58	68	51	78	0
23				50	43	41	40	44	46	51	57	79	93	90	84	84	72	68	..	..	..	..	..	..	..	..	..	..	.
24				..	..	..	..	..	..	..	..	..	..	81	99	94	89	76	67	58	46	77	86	104	74	88	74	..	.
25	X	X	X	58	52	51	48	52	63	48	63	70	87	92	96	111	109	102	96	67	41	30	36	28	33	44	41	63	0
26	X	X		33	25	26	37	79	73	60	57	69	81	96	123	119	99	89	83	66	61	43	44	54	47	44	48	65	0
27	X	X		50	52	50	41	48	45	52	45	70	107	93	77	77	74	84	62	57	48	39	30	30	} N23	73	24 }	56	1
28	X	X	}	24	N21	N20 }	42	37	41	37	48	59	52	65	55	64	81	65	54	55	54	49	47	48	52	44	48	48	1
29	X	X		70	79	65	55	40	34	41	40	83	97	93	74	86	96	92	86	58	45	41	75	62	43	37	54	64	0
30				36	26	35	35	27	25	30	31	48	56	51	45	47	} 37	Z	N 3	N22	Z-	Z-	20	N17	Z-	N19	31 }	..	2
31	X	X	}	29	36	47	37	N19	N48	86 }	[100	84	72]	84	79	79	83	84	73	66	60	60	59	60	73	99	54	65	1
MEANS *				37	30	34	33	37	39	42	45	58	67	71	73	77	76	70	57	52	43	38	43	41	40	41	36	49	
MEANS †				37	30	35	33	37	39	43	45	59	67	72	75	79	79	73	63	53	42	40	44	41	40	41	36	50	
MEANS ‡				34	30	29	26	29	31	31	34	49	58	63	69	67	67	62	54	44	37	36	32	29	31	30	29	42	

DESIGNATIONS AND REMARKS:

*=ALL COMPLETE DAYS †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER } =DISTURBED BY BAD WEATHER

N=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT Z=INDETERMINATE IN MAGNITUDE AND SIGN Z+=INDETERMINATE POSITIVE VALUE Z-=INDETERMINATE NEGATIVE VALUE

TABLE 10

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

JANUARY 1933

DAY	#	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHAR-ACTER
1	x	x	x	344	359	339	392	399	372	351	365	315	273	295	281	282	278	278	281	261	255	211	208	223	287	267	305	297	0
2	x	x	x	[illegible]	398	433	370	390	374	343	285	298	280	240	253	242	230	243	232	201	199	223	197	221	234	280	318	283	0
3	x	x	x	400	434	340	347	361	407	404	373	330	343	315	291	280	269	205	160	184	144	177	191	201	185	199	256	272	0
4	x			249	278	325	318	338	355	319	412	315	323	291	243	187	145	128	176	185	181	146	158	147	168	259	257	247	0
5	x	x	x	258	243	242	288	278	257	290	289	269	257	263	302	298	287	282	280	280	226	234	207	260	207	183	200	257	0
6	x	x	x	162	212	283	358	406	400	332	367	330	322	339	198	201	158	145	197	247	248	153	187	192	185	239	259	255	0
7	x	x	x	229	292	260	274	280	319	275	194	198	214	260	147	127	132	139	165	191	149	115	198	235	260	261	290	215	0
8	x	x	x	315	294	269	278	323	316	336	321	267	294	278	267	264	221	238	246	223	230	134	145	233	220	276	281	261	0
9	x	x	x	289	340	329	351	351	360	350	304	283	338	339	294	281	255	267	257	280	191	238	255	235	246	342	355	297	0
10	x	x		270	324	378	386	393	388	387	314	360	326	269	275	289	226	114	216	283	304	181	124	178	154	168	254	273	0
11	x	x		300	340	310	292	349	340	330	218	270	158	127	124	103	114	128	137	192	234	236	238	245	249	257	249	231	1
12	x	x		255	259	280	297	268	289	246	212	234	255	247	200	136	124	136	148	158	215	190	177	201	247	243	223	217	1
13	x	x	x	262	275	256	292	280	315	315	303	273	267	165	176	192	199	245	228	252	211	220	260	248	259	271	289	252	0
14	x	x		302	338	330	336	271	270	283	253	270	268	269	271	271	243	208	208	211	166	209	181	168	221	216	230	250	0
15				248	259	246	292	282	295	295	284	292	221	222	235	[215	218	208	168	200]	243	292	284	275	257	271	271	...	1
16				276	284	318	330	331	321	288	315	271	263	259	291	247	230	ʒ 268	211	236	236	225	252 ʒ	284	264	271	271	...	1
17	x			266	292	283	ʒ 275	271	280	270	273	247	205	108	159	102	49	93	214	151	104	245	245	247	248	165	177 ʒ	207	2
18	x	x		ʒ 246 ʒ	236	234	259	256	235	220	206	234	257	260	207	219	211	211	208	209	223	201	113	114	124	179	157	209	1
19	x	x		195	207	274	257	282	284	271	147	184	220	188	157	116	124	139	136	146	145	132	116	120	122	158	167	179	0
20				209	257	283	236	216	ʒ 225	59	187	241	211 ʒ	267	270	269	252	246	268	257	247	269	248	ʒ 271	247	115	81 ʒ	...	2
21	x			ʒ 252	242	285	278	208	232 ʒ	281	228	193	236	240	230	206	204	159	158	156	177	127	136	101	149	200	184	203	1
22	x	x		188	246	243	247	255	255	257	252	246	246	248	186	120	115	127	88	103	125	134	124	127	134	167	181	184	0
23	x			197	229	215	225	249	259	266	220	218	211	233	246	234	226	207	181	236	138	107	56	158	191	209	248	207	.
24	x			199	248	190	257	232	177	80	115	201	219	234	212	155	153	178	199	211	144	79	69	71	97	113	148	166	.
25	x	x	x	131	200	188	185	185	230	199	183	191	177	176	160	136	146	138	101	157	208	209	271	274	281	238	268	193	0
26	x	x		256	275	318	329	168	167	187	191	191	234	185	124	105	101	112	115	147	98	141	148	199	216	200	223	185	0
27	x	x		208	208	234	200	225	248	232	252	221	150	213	256	234	200	160	160	136	155	199	197	232	ʒ 153	168	201 ʒ	202	1
28	x	x		ʒ 212	278	235 ʒ	236	238	238	243	212	214	228	248	267	235	148	221	190	219	257	257	271	243	211	187	157	227	1
29	x	x		145	124	144	145	145	166	159	127	113	122	193	243	212	94	106	115	122	213	199	132	127	147	166	232	154	0
30	x			216	247	247	262	289	283	298	283	266	270	281	281	270	ʒ 254	255	220	257	101	88	269	247	58	246	256 ʒ	239	2
31	x	x		ʒ [illegible]	259	222	259	278	132	128 ʒ	[114	179	222]	238	226	197	160	102	148	153	159	136	104	101	112	102	145	173	1
MEANS #				244	267	274	282	283	284	274	250	247	247	241	224	203	181	177	184	198	186	176	178	191	192	213	232	226	
MEANS †				248	270	279	286	288	289	279	249	249	248	243	223	206	183	179	183	198	198	188	184	199	202	217	238	230	
MEANS ‡				260	285	293	309	320	335	319	298	275	276	267	237	230	218	218	215	228	206	191	212	232	236	256	282	258	

DESIGNATIONS AND REMARKS:

= ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES † = ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡ = SELECTED DAYS

( ) = INTERPOLATED [ ] = APPROXIMATE [ ] = APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION ʒ = DISTURBED BY BAD WEATHER

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

JANUARY 1933

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105th WEST MERIDIAN MEAN TIME)

JANUARY 1933

Date	*	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	
1	X	X	X	330	346	328	349	349	364	344	359	309	253	272	263	273	261	257	273	259	259	203	200	220	275	252	300	287	●
2	X	X	X	356	383	410	378	385	378	351	282	275	259	233	218	203	196	233	222	200	182	213	196	215	231	277	313	275	●
3	X	X	X	277	293	342	356	364	395	395	376	288	314	268	266	241	241	179	142	188	144	159	173	184	167	179	252	257	●
4	X			246	272	295	307	297	346	328	366	270	275	237	200	146	122	106	140	163	161	130	152	138	182	239	237	223	●
5	X	X	X	226	220	224	272	272	241	259	263	220	215	226	293	291	284	284	273	270	216	228	207	253	179	175	161	240	●
6	X	X	X	140	203	272	341	383	378	325	370	320	297	321	163	177	148	142	196	250	242	152	179	186	167	235	255	243	●
7	X	X	X	220	233	248	270	273	325	259	171	167	179	226	144	116	118	122	146	179	140	100	179	237	252	248	279	201	●
8	X	X	X	309	293	273	275	297	309	325	316	241	261	255	253	259	211	224	242	222	222	321	146	228	215	270	275	260	●
9	X	X	X	290	330	327	347	359	370	356	295	255	300	330	290	270	235	253	241	257	179	252	257	237	235	361	351	291	●
10	X	X		288	330	393	395	393	398	380	334	359	313	252	250	275	226	112	231	300	314	184	116	167	157	159	248	274	●
11	X	X		295	349	321	293	354	341	330	228	268	155	120	116	100	100	120	138	184	235	228	235	231	231	237	239	227	1
12	X	X		235	237	270	253	259	266	231	192	198	220	216	173	126	120	116	142	148	207	167	142	180	237	231	196	198	1
13	X	X	X	239	257	241	279	279	306	290	284	231	233	144	143	161	173	241	233	246	203	196	264	244	255	275	282	237	0
14	X	X		293	330	327	339	270	264	272	241	257	272	270	270	264	233	203	188	201	167	200	179	161	218	200	222	243	0
15				250	299	242	291	266	298	290	277	270	182	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
16				...	...	...	...	...	...	...	...	...	...	...	...	216	213	{ 275	281	237	239	241	261 }	291	261	275	272	...	1
17	X			257	291	288	{ 282	282	286	273	273	239	179	142	218	190	196	177	222	252	179	203	220	218	213	220	196 }	229	2
18	X	X		{ 213 }	194	182	216	218	177	165	171	198	213	186	161	180	159	163	167	175	177	180	104	100	104	144	136	178	1
19	X	X		173	169	239	235	235	250	237	134	124	161	140	114	82	86	100	116	196	122	124	92	98	108	140	144	147	0
20				180	...	...	...	...	...	...	...	{ 146	148 }	218	237	237	...	224	253	248	233	252	231	{ 255	235	231	290 }	...	2
21	X			{ 318	255	257	235	253	250 }	244	186	146	163	180	173	161	161	138	126	112	142	106	120	74	106	165	146	176	1
22	X	X		144	186	198	216	207	215	207	211	184	188	182	144	78	78	102	66	84	118	118	96	100	108	142	146	147	0
23	X			171	211	171	205	229	237	233	179	175	161	161	180	179	182	175	163	222	126	92	42	155	182	180	220	176	.
24	X			173	235	270	237	200	144	46	86	144	167	180	161	120	126	140	148	179	144	66	60	54	78	88	118	140	.
25	X	X	X	102	177	146	148	146	194	140	148	142	142	128	124	104	106	106	84	146	201	205	242	252	257	201	239	162	0
26	X	X		231	252	295	323	161	140	152	167	144	175	142	98	82	78	86	102	128	80	128	144	165	186	161	194	159	0
27	X	X		159	177	198	179	194	203	200	201	182	106	154	207	180	146	124	138	122	144	175	179	216	{ 146	142	188 }	169	1
28	X	X		{ 198	259	233 }	216	213	218	213	180	150	184	196	226	205	138	200	175	201	253	253	259	233	179	161	144	204	1
29	X	X		122	100	114	118	122	132	140	102	80	80	136	194	159	82	82	98	108	196	182	108	102	124	144	190	126	0
30	X			194	215	224	239	268	255	282	248	235	215	239	239	222	{ 237	255	222	248	273	203	218	239	229	237	231 }	236	2
31	X	X		{ 218	216	175	190	241	122	84 }	[74	106	163]	180	180	157	130	84	120	122	144	122	72	82	82	76	100	135	1
MEANS *				229	250	259	268	268	268	252	230	211	209	204	194	179	163	162	170	188	185	175	164	177	182	198	214	208	
MEANS †				230	252	262	272	272	272	257	232	214	213	208	194	181	161	161	170	186	188	186	171	186	187	200	221	212	
MEANS ‡				249	274	281	302	311	326	304	286	245	245	240	214	210	197	204	205	222	199	203	204	226	223	247	271	245	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 81

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

FEBRUARY 1933

FEBRUARY 1933

DAY	✱	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X		[160	189	152	140	146	140	66	69	74	208]	236	240	192	123	142	214	234	235	158	143	144	88	87	100	153	0
2	X	X		132	176	179	195	216	182	214	217	198	186	192	130	118	190	153	144	128	106	99	87	95	109	117	104	153	0
3	X	X	X	111	120	131	125	123	123	121	120	121	153	176	141	98	112	110	108	117	85	87	99	108	110	194	159	123	1
4	X	X		176	172	174	171	190	193	211	209	211	162	150	123	132	255	203	251	270	271	270	273	282	282	296	297	218	0
5	X	X		293	296	301	297	307	316	243	255	200	273	281	272	≷ 272	247	207	201	215	194	201	254≷	277	249	251	268	256	1
6	X			247	286	307	318	≷ 371	330	214	284	297	308≷	304	282	242	⌈ 252	260	251	202	257	226	240⌋	285	280	247	238	272	1
7	X			240	229	234	200	≷ 190	136	126	105	158	227	235≷	207	192	⌈ 152	119	119	142⌋	156	150	140	89	70	129	112	161	2
8	X	X	X	170	194	290	240	281	272	293	234	191	201	259	250	245	228	153	160	144	120	86	88	150	206	228	215	202	0
9	X	X		247	268	282	295	317	338	328	173	268	275	251	247	262	181	125	226	246	257	235	138	122	145	119	271	235	0
10	X	X	X	291	182	216	237	293	292	240	244	177	144	97	119	101	99	106	112	125	152	121	109	116	150	181	193	169	0
11	X	X	X	194	180	215	250	247	243	259	228	209	158	162	181	190	142	133	170	162	181	182	191	237	281	236	253	204	0
12	X	X		285	279	315	298	325	330	328	339	315	241	246	255	192	⌈ 173	198	190	202⌋	224	170	133	88	95	170	170	232	1
13	X	X		189	205	199	290	347	339	303	245	285	261	228	210	100	140	211	220	234	245	202	189	140	184	170	181	221	1
14	X	X	X	231	273	304	284	315	262	272	259	296	240	181	150	120	132	134	183	202	206	156	130	120	150	170	153	205	0
15	X	X	X	171	219	215	216	262	262	237	216	182	193	179	184	224	231	228	238	249	236	147	183	189	161	172	192	208	0
16	X	X	X	228	216	254	257	281	286	284	282	281	236	201	203	205	118	99	161	202	225	180	141	149	188	285	324	220	0
17	X	X	X	196	171	190	194	319	329	336	313	293	263	227	249	219	129	97	121	180	215	155	138	113	162	170	216	240	0
18	X	X		227	234	273	290	327	318	284	266	279	314	286	193	⌈ 122	177	202	206	218	231⌋	246	226	171	190	205	181	236	1
19	X	X	X	182	181	229	226	289	302	270	280	286	244	155	133	138	141	118	111	140	131	106	111	122	128	132	180	[illegible]	0
20	X	X	X	173	208	203	214	245	249	192	238	218	162	131	120	189	247	247	252	270	282	282	308	303	285	306	328	236	0
21	X	X		328	292	282	329	359	353	359	333	349	338	290	267	245	249	216	153	186	226	195	153	152	205	191	206	261	0
22				270	254	261	259	294	281	307	308	316	276	246	246	249	243	215	205	203	201	200	150	191	177	194	197	...	0
23				250	261	285	255	285	290	293	301	272	237	226	224	240	192	121	205	228	201	192	133	121	158	236	177	...	0
24				314	294	287	285	304	303	282	261	266	285	249	225	212	206	198	190	194	215	201	148	216	171	192	216	...	1
25				220	244	262	305	316	292	266	≷ 280	241	172	182	153	171	97	133	191	160	234	272≷	268	155	189	195	162	...	2
26				111	206	206	212	240	293	280	287	315	260	200	118	182	225	215	211	206	214	191	109	221	171	190	146	...	0
27				182	242	257	245	232	259	264	216	238	235	194	134	125	104	129	129	131	112	97	84	119	179	147	183	...	0
28				240	241	238	233	305	314	292	295	328	307	272	246	236	155	102	119	161	203	223	150	193	193	237	273	...	0
29																													
30																													
31																													
MEANS ✱				219	227	243	248	275	266	248	234	233	228	213	198	181	177	165	181	194	202	174	165	164	177	193	207	209	
MEANS †				216	224	240	247	274	270	256	238	233	224	207	193	177	174	162	180	196	201	173	163	162	177	194	210	208	
MEANS ‡				207	214	241	244	266	262	[illegible]	241	225	199	177	173	173	158	142	162	179	183	150	150	161	182	207	221	199	

DESIGNATIONS AND REMARKS:

✱=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION ≷=DISTURBED BY BAD WEATHER

TABLE 8.

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

FEBRUARY 1933

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

FEBRUARY 1933

DAY	‡	†	#	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	A	A		[127	138	117	100	94	102	40	38	44	155]	177	192	160	104	134	265	228	227	147	136	119	75	65	77	125	0
2	A	A		113	136	138	174	192	151	190	164	142	153	142	113	94	159	136	136	115	94	84	75	92	96	102	94	129	0
3	A	A	A	92	96	109	94	102	106	102	96	88	128	151	121	84	98	102	104	113	79	79	94	100	96	174	149	107	1
4	A	A		195	151	142	151	170	153	170	151	157	121	119	102	111	241	174	228	243	246	248	254	266	270	282	282	191	0
5	A	A		278	284	280	232	289	298	234	232	179	252	264	261	264	259	205	194	207	190	199	250	266	232	243	259	244	1
6	A			239	284	286	298	351	356	252	291	280	296	264	219	203	[250	248	227	205	250	238	248]	271	252	218	214	260	1
7	A			214	223	225	172	170	170	155	125	153	216	238	197	188	[159	142	138	142]	158	136	115	77	55	115	98	157	2
8	A	A	A	146	168	232	225	259	261	248	197	130	138	188	181	192	185	134	136	117	100	75	61	1132	179	196	188	170	0
9	A	A		225	246	270	282	317	319	305	127	212	228	192	179	216	159	113	227	250	248	216	134	102	130	96	246	210	0
10	A	A	A	228	155	196	227	284	268	210	212	132	119	83	92	83	81	88	98	115	136	102	102	100	138	157	174	149	0
11	A	A	A	185	159	188	227	216	225	239	192	177	134	117	134	151	123	121	146	138	155	174	147	225	263	227	232	179	0
12	A	A		261	257	308	291	313	322	319	313	291	175	179	205	172	[159	212	196	201]	227	142	115	77	77	146	151	213	1
13	A	A		170	192	175	266	326	319	286	225	239	210	172	170	84	134	214	230	245	232	181	155	117	166	155	159	201	1
14	A	A	A	214	261	286	252	294	245	234	236	250	177	136	127	98	108	115	159	175	188	140	113	111	123	140	140	180	0
15	A	A	A	140	207	208	196	238	238	216	188	132	157	138	157	177	190	196	212	223	225	136	162	168	144	162	175	183	0
16	A	A	A	212	207	234	238	264	264	268	257	243	190	142	142	168	104	94	155	208	227	170	119	151	172	280	320	201	0
17	A	A	A	351	365	386	390	319	326	334	298	238	201	175	223	188	111	94	102	155	208	153	121	96	140	155	194	222	0
18	A	A		223	230	277	287	320	320	282	259	243	280	250	170	[119	174	208	225	230	228]	243	207	155	172	190	166	227	1
19	A	A	A	151	159	230	194	278	298	264	245	241	188	121	104	113	113	100	100	123	121	94	94	119	115	113	157	160	0
20	A	A	A	157	174	168	192	225	214	159	216	160	132	98	96	159	243	238	250	264	280	282	303	296	282	300	320	217	0
21	A	A		319	282	268	332	351	351	354	324	313	308	268	241	230	227	212	142	201	234	205	132	140	199	170	208	250	0
22				263	246	270	246	284	266	315	282	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0
23				...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0
24				...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0
25				...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
26				...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2
27				...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0
28				...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0
29																													0
30																													
31																													
MEANS #				200	208	225	230	256	253	231	209	193	188	172	163	155	161	156	172	186	193	164	149	151	161	176	191	189	
MEANS †				197	204	222	229	255	252	234	209	190	181	164	158	151	156	152	171	187	192	162	146	149	162	176	194	187	
MEANS ‡				188	195	224	224	248	244	227	214	179	156	135	138	141	136	128	146	163	172	140	132	150	165	190	205	177	

DESIGNATIONS AND REMARKS:

#=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 83

POTENTIAL-GRADIENT AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN VOLTS PER METER

FEBRUARY 1933

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY				0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	DAILY RANGE
1	✱	†	‡	66	56	57	52	79	91	195	197	208	100	79	84	96	101	95	65	56	51	58	62	65	50	56	52	85	0
2	✱	†		55	52	58	59	57	64	59	45	66	73	84	109	129	87	85	81	84	81	70	77	58	40	52	48	66	0
3	✱	†	‡	52	44	46	46	342	47	59	50	70	76	82	84	104	97	92	78	66	83	93	63	48	53	36	29	64	1
4	✱	†		48	50	57	42	57	45	51	58	74	105	102	106	96	62	89	58	55	47	41	40	36	37	35	36	56	0
5	✱	†		36	34	35	48	50	28	10	46	48	50	48	44	≷ 36	N32	43	48	35	36	N 0	N16 ≷	20	27	21	24	34	1
6				48	27	40	26	≷ 20	- 3	-80	N12	32	37 ≷	51	72	84	[N43	N22	55	Z	30	- 7	Z]	23	24	44	44	..	1
7				37	38	38	48	≷ 41	Z	Z	Z	85	N55	58 ≷	78	65	[N 8	-41	-17	N29]	59	72	83	99	143	73	87	..	2
8	✱	†	‡	56	51	45	41	42	44	48	85	117	113	92	89	86	81	88	86	87	74	66	62	38	32	51	33	67	0
9	✱	†		27	28	25	24	27	38	40	93	66	66	71	76	70	76	82	55	44	41	30	38	62	59	77	39	52	0
10	✱	†	‡	41	35	31	41	37	37	52	68	91	101	143	122	127	120	84	88	73	55	54	55	41	36	37	29	67	0
11	✱	†	‡	24	27	31	30	36	41	38	59	88	108	106	96	89	107	95	74	70	59	38	31	27	44	31	34	58	0
12	✱	†		34	29	24	24	31	29	31	41	63	88	89	85	99	[95	N32	35	51]	55	68	70	84	45	51	41	54	1
13	✱	†		41	41	38	41	45	35	44	62	71	84	98	95	119	74	N44	N41	N34	53	61	69	99	42	41	40	59	1
14	✱	†	‡	42	31	41	35	41	37	34	47	59	90	117	136	141	120	101	83	66	62	70	69	52	65	59	26	68	0
15	✱	†	‡	34	33	38	40	37	36	45	56	95	109	132	109	84	74	62	53	51	38	59	48	35	63	35	29	58	0
16	✱	†	‡	34	29	32	23	30	30	32	39	65	73	89	96	95	102	81	62	52	51	44	44	46	51	44	37	53	0
17	✱	†	‡	32	27	23	23	23	29	30	40	62	80	87	77	83	102	84	73	59	51	53	73	50	40	24	28	52	0
18	✱	†		33	29	31	30	31	33	35	45	70	65	78	99	[86	N58	N44	N36	N32	N49]	56	56	74	65	63	73	53	1
19	✱	†	‡	73	63	48	35	35	30	30	38	63	86	123	136	124	102	90	84	69	69	83	70	44	50	44	35	68	0
20	✱	†	‡	38	38	35	44	41	35	38	47	79	109	136	136	96	60	59	55	52	42	38	38	39	40	41	38	57	0
21	✱	†		40	48	50	37	36	28	27	37	52	54	58	64	66	67	60	66	36	47	48	60	52	44	37	30	48	0
22	✱			37	31	31	27	27	37	31	41	61	71	94	80	80	88	78	66	65	60	61	68	33	45	40	36	54	0
23	✱			37	38	39	42	30	31	31	47	76	95	98	117	90	80	87	59	56	55	59	82	63	40	30	28	59	0
24	✱			16	N11	N15	33	43	51	55	44	44	62	72	74	73	N58	61	58	59	55	60	66	37	38	41	34	48	1
25				31	31	34	27	35	30	33 ≷	Z	Z	Z	Z	101	102	132	Z	Z	Z	Z	Z ≷	27	52	44	35	80	..	2
26	✱			73	43	54	44	48	38	35	40	54	71	100	109	85	70	62	54	43	52	61	79	51	37	41	48	58	0
27	✱			49	37	38	37	38	37	39	69	88	91	113	135	148	154	116	109	95	89	64	51	42	45	41	55	74	0
28	✱			51	50	50	36	33	27	37	52	55	54	64	67	74	82	82	48	27	29	24	19	16	27	20	23	44	0
29																													
30																													
31																													
MEANS ✱				41	37	37	36	37	39	45	58	75	83	94	97	95	86	76	65	57	55	54	56	48	45	42	37	58	
MEANS †				40	38	37	36	38	40	47	61	79	86	95	97	96	85	74	64	56	55	54	55	51	46	44	37	59	
MEANS ‡				43	38	36	35	36	36	41	53	79	94	111	108	103	96	84	74	64	58	60	55	42	47	40	32	61	

DESIGNATIONS AND REMARKS:

✱=ALL COMPLETE DAYS †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER ≷=DISTURBED BY BAD WEATHER

N=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT Z=INDETERMINATE IN MAGNITUDE AND SIGN Z+=INDETERMINATE POSITIVE VALUE Z-=INDETERMINATE NEGATIVE VALUE

TABLE 84

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN VOLTS PER METER

MARCH 1933

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY			0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	DISTURBED HOURS
1			24	22	27	25	27	24	42	47	80	101	113	123	122	111	104	99	75	73	65	66	42	39	41	38	64	0
2			37	36	31	31	27	30	36	50	65	95	106	139	170	143	98	77	51	60	62	37	26	34	47	23	62	0
3			23	26	30	26	31	35	34	54	68	77	80	80	90	87	M47	55	61	62	52	55	36	51	33	27	51	1
4			36	30	28	31	27	27	30	38	59	79	85	102	84	⌈ M36	-87	-51	M18	M40	42	51 ⌋	46	56	60	⌈ -34 ⌋	35	1
5			⌈ 40 ⌋	34	42	32	40	34	45	46	131	127	M39	M35	73	79	77	77	65	52	40	59	62	39	37	54	57	1
6			39	37	34	45	37	40	44	68	85	95	93	94	109	120	99	77	63	59	88	69	51	27	27	30	64	0
7			35	31	30	27	30	24	24	38	58	73	84	87	103	111	80	68	61	56	51	33	25	24	20	27	50	0
8			33	31	37	32	32	35	34	41	51	55	58	64	64	65	62	48	40	45	42	44	35	27	26	23	43	0
9			23	17	17	17	19	34	27	32	47	48	46	55	56	63	54	44	38	32	38	36	30	24	24	27	35	0
10			20	20	22	20	24	24	28	42	46	58	64	61	54	58	51	55	45	24	27	23	26	24	26	24	36	0
11			23	22	19	20	30	23	24	38	45	50	56	56	57	59	62	52	45	44	51	43	27	27	21	22	38	0
12			23	20	23	23	23	24	24	37	45	48	51	56	66	M36	M40	35	37	38	38	32	37	33	21	24	35	1
13			24	23	21	21	21	22	24	43	52	62	77	73	50	M46	M40	M40	50	48	41	34	44	34	25	25	39	1
14			23	24	24	24	31	27	28	42	65	82	74	90	80	83	72	66	56	45	41	37	30	31	28	34	47	0
15			27	20	20	18	24	30	31	45	63	66	72	81	83	76	63	62	55	50	36	44	40	30	25	27	45	0
16			24	23	20	20	25	30	36	53	63	71	80	78	⌈ 81	81	M63	M13	-27	M12 ⌋	48	43	48	40	48	30	42	1
17			24	26	25	23	24	24	38	45	55	83	116	125	⌈ 74	M55	M36	M34	M16	- 3	- 8	51	M44 ⌋	50	41	54	44	1
18			81	54	41	33	35	34	41	55	73	92	126	95	M64	53	M65	56	-25	M35	62	58	59	55	44	38	55	1
19			43	40	30	31	27	35	34	50	70	81	⌈ 148	117	M29	M48	M53	M28	M25	40 ⌋	48	50	37	33	31	31	48	1
20			34	48	42	31	31	33	45	55	81	80	83	76	81	83	74	66	58	47	44	44	45	37	27	20	53	0
21			24	26	33	30	26	31	40	62	61	61	61	76	⌈ M71	M31	M12	- 9	-69	-27	M51 ⌋	62	51	44	40	30	34	2
22			24	24	21	20	19	31	30	46	51	62	62	72	66	63	54	55	42	37	27	27	18	20	23	22	38	0
23			22	24	23	23	24	26	27	34	48	73	74	⌈ M63	M38	M18	M10	M18	N 3	M31	31 ⌋	44	56	54	38	37	35	1
24			34	45	44	45	44	40	32	60	72	73	87	90	73	80	106	91	79	65	42	52	44	26	26	20	57	0
25			23	19	24	20	25	23	37	49	60	58	80	79	88	82	66	72	60	39	48	55	41	33	24	23	47	0
26			24	23	26	27	27	28	24	48	65	80	81	80	81	90	68	55	42	M38	45	46	37	24	30	26	46	1
27			24	24	30	25	21	27	30	37	53	58	63	83	62	66	44	48	42	38	31	35	38	27	26	27	40	0
28			23	20	27	23	24	20	23	41	51	50	56	66	73	76	M58	M46	44	37	42	38	35	37	31	34	41	1
29			25	43	24	21	27	21	23	37	55	65	67	66	⌈ M62	M43	M12	M 4	M10	M23 ⌋	42	39	40	44	45	48	38	1
30			38	27	27	26	20	23	21	39	42	58	80	⌈ 55	M23	M 3	M15	M24	33	38 ⌋	38	26	30	25	20	19	31	1
31			24	25	28	26	27	38	42	56	64	81	80	78	94	75	77	62	61	44	34	32	42	36	38	43	50	0
MEANS *			30	29	28	26	27	29	32	46	62	72	79	80	75	68	54	47	37	39	43	44	39	35	31	29	45	
MEANS †			30	29	28	26	27	29	32	46	62	72	79	80	75	68	54	47	37	39	43	44	39	35	31	29	45	
MEANS ‡			26	25	26	24	26	29	32	44	59	68	73	78	78	78	66	61	51	44	41	40	34	29	27	27	45	

DESIGNATIONS AND REMARKS:

*=ALL COMPLETE DAYS †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER ≷=DISTURBED BY BAD WEATHER

M=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT Z=INDETERMINATE IN MAGNITUDE AND SIGN Z+=INDETERMINATE POSITIVE VALUE Z-=INDETERMINATE NEGATIVE VALUE

TABLE 25

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

MARCH 1933

DAY		0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1		319	290	315	308	308	307	253	224	242	201	198	177	202	210	164	128	161	193	215	192	205	221	207	221	230	0
2		268	293	294	297	297	298	271	305	292	242	220	176	124	131	146	172	162	184	161	228	232	174	215	256	227	0
3		257	262	278	291	269	273	259	265	241	224	219	192	177	157	177	202	184	182	220	175	176	165	162	223	217	1
4		279	244	276	314	291	311	333	344	291	243	232	171	124	113	[91	145	139	150	136	161]	209	195	214	[209]	217	1
5		[248]	211	259	248	282	256	302	306	140	114	193	234	255	219	195	195	230	261	251	205	210	238	246	244	230	1
6		218	246	278	339	343	347	335	325	280	280	250	255	177	148	177	177	207	201	140	154	170	200	232	248	239	0
7		269	260	323	323	326	347	346	365	302	243	219	206	176	124	172	192	207	234	221	238	279	361	372	373	270	0
8		348	380	397	387	384	397	394	406	369	320	300	282	243	172	149	219	260	291	293	241	212	280	320	298	304	0
9		365	351	369	380	410	361	392	415	324	301	279	279	252	126	109	144	228	283	229	201	215	205	243	282	281	0
10		305	330	344	370	349	399	419	356	372	342	300	282	265	232	223	214	228	269	265	253	280	346	297	320	307	0
11		307	374	379	436	419	422	426	378	358	314	296	270	262	230	161	207	256	230	196	207	205	274	266	289	298	0
12		291	319	329	398	346	384	388	392	372	353	320	305	220	204	248	252	260	268	271	246	265	259	323	387	307	1
13		312	348	389	362	371	411	371	310	355	330	256	176	216	228	219	210	227	234	266	220	230	260	233	255	283	1
14		259	266	296	310	312	365	340	355	284	234	244	201	193	193	198	201	233	247	154	141	233	215	237	276	249	0
15		296	294	317	339	344	301	283	305	279	305	252	246	193	202	223	234	252	246	230	144	159	228	284	259	259	0
16		311	374	388	381	387	383	356	317	340	306	288	292	[297	260	159	229	192	228]	269	283	253	273	260	357	299	1
17		303	283	346	355	399	445	419	376	334	268	205	112	[87	153	171	195	196	207	204	220	204]	236	239	230	256	1
18		161	193	270	275	299	302	333	298	337	265	148	176	165	162	196	216	184	192	239	273	259	233	270	294	239	1
19		280	306	283	332	374	398	387	369	294	270	[135	146	218	212	174	117	138	177]	209	236	237	241	219	228	249	1
20		228	247	266	278	305	298	330	319	280	264	285	275	242	193	149	185	253	278	284	215	207	209	283	329	258	0
21		332	348	360	398	357	361	399	328	319	324	296	236	[138	193	193	170	79	182	174]	185	241	255	260	301	268	2
22		321	323	344	380	407	292	358	342	321	305	269	247	250	252	205	171	239	268	269	244	315	317	324	343	296	0
23		347	349	355	399	397	384	394	370	342	283	270	[236	229	218	221	224	218	237	215]	230	166	162	305	308	286	1
24		312	274	283	264	287	229	282	266	269	274	268	260	230	165	81	97	128	172	192	159	214	184	244	232	224	0
25		243	270	303	323	360	387	383	344	310	291	220	216	182	182	144	112	125	179	195	184	193	216	220	248	243	0
26		303	339	358	369	344	367	369	361	296	252	243	220	215	146	146	172	192	192	185	174	164	214	230	227	253	2
27		256	292	319	317	342	349	360	332	293	271	244	220	232	246	216	197	197	161	215	205	201	176	228	175	252	0
28		239	256	307	334	297	342	356	334	305	291	279	247	182	110	114	170	207	229	246	220	214	239	317	357	258	1
29		420	230	380	419	369	399	461	449	358	346	296	253	[165	172	202	205	219	223]	243	246	230	230	230	172	288	1
30		220	264	224	274	310	330	360	320	311	257	175	[171	174	171	192	192	195	182]	242	215	216	280	337	320	247	1
31		372	315	371	310	379	356	332	315	306	270	270	247	265	259	230	196	165	257	220	218	253	219	243	201	274	0
MEANS *		290	295	322	337	344	348	355	338	307	277	247	226	205	187	176	185	199	221	221	210	221	236	260	273	262	
MEANS †		290	295	322	337	344	348	355	338	307	277	247	226	205	187	176	185	199	221	221	210	221	236	260	273	262	
MEANS ‡		299	312	334	345	356	353	356	344	310	280	258	241	227	198	178	184	214	238	226	204	223	249	268	274	270	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES

†=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT

‡=SELECTED DAYS

( )=INTERPOLATED

[ ]=APPROXIMATE

⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION

}=DISTURBED BY BAD WEATHER

TABLE 88

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

MARCH 1933

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

MARCH 1933

DAY	✱	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X	X	301	320	311	305	305	298	227	187	213	161	142	128	149	165	138	105	147	185	207	155	195	213	191	203	206	0
2	X	X		246	269	273	283	283	292	265	277	246	195	173	142	95	103	136	165	169	185	153	209	229	167	205	246	209	0
3	X	X		244	231	267	269	265	248	248	236	215	177	175	163	165	134	134	221	195	185	213	167	165	169	153	213	202	1
4	X	X		262	242	271	303	282	305	318	318	231	221	195	155	118	⌈128	126	167	151	157	142	169⌋	189	193	203	⌈229⌋	212	1
5	X	X		⌈256⌋	193	244	225	273	243	269	279	132	107	191	246	244	213	189	185	205	242	244	191	205	215	235	233	219	1
6	X	X		205	233	242	322	311	355	311	279	242	213	207	211	167	130	151	165	187	181	130	126	165	189	227	233	216	0
7	X	X	X	250	254	305	309	301	342	340	359	271	205	181	167	155	109	167	187	207	229	209	233	265	375	375	371	257	0
8	X	X	X	346	387	348	400	378	401	412	398	340	290	286	262	244	167	144	233	286	314	307	244	215	277	327	303	305	0
9	X	X	X	366	357	368	391	419	360	403	403	305	271	267	264	250	128	107	147	235	320	227	201	203	203	242	283	280	0
10	X	X	X	303	339	355	377	346	417	432	333	322	303	271	252	252	229	149	193	211	227	227	229	271	357	301	322	292	0
11	X	X	X	309	373	378	432	412	417	422	355	313	288	269	262	267	246	169	207	265	235	187	209	205	290	277	300	295	0
12	X	X		273	322	339	360	348	384	392	378	368	359	324	301	215	215	271	284	271	288	269	229	267	252	327	392	310	1
13	X	X		320	362	391	369	389	412	378	300	340	301	246	175	231	252	244	244	244	248	290	248	213	262	225	246	289	1
14	X	X	X	269	269	300	305	301	364	337	331	242	207	215	169	175	163	183	189	211	262	144	147	246	211	235	275	240	0
15	X	X	X	296	303	316	342	340	286	269	283	235	271	223	223	181	191	223	244	267	252	223	155	149	227	283	262	252	0
16	X	X		307	366	385	362	391	392	355	288	305	271	252	264	⌈246	248	169	265	231	244⌋	267	273	235	279	264	351	292	1
17	X	X		303	281	239	348	377	432	400	316	281	231	167	95	⌈88	153	187	207	227	229	223	221	211⌋	231	231	209	245	1
18	X	X		144	187	258	267	288	269	316	240	265	225	132	167	179	175	207	227	227	223	248	267	264	235	252	281	231	1
19	X	X		283	300	267	311	364	398	378	340	252	235	⌈124	136	231	209	191	132	151	191⌋	221	248	244	235	209	223	245	1
20	X	X	X	219	229	248	262	284	288	311	269	225	229	236	248	213	169	147	185	244	284	300	229	191	189	271	335	242	0
21	X	X		324	357	357	415	362	373	387	311	271	290	284	229	⌈142	225	225	229	171	213	177⌋	173	225	235	269	300	273	2
22	X	X	X	326	337	344	395	414	300	346	329	324	269	246	227	2235	236	191	171	233	284	267	246	320	322	342	357	294	0
23	X	X		359	364	371	412	400	380	396	360	307	235	242	⌈242	235	229	236	238	235	238	209⌋	211	167	167	320	327	287	1
24	X	X		326	286	283	248	271	227	269	229	229	244	225	225	227	153	80	86	109	175	191	157	195	175	235	231	212	0
25	X	X	X	244	271	303	322	359	400	391	309	265	262	193	191	161	167	149	107	126	193	195	173	187	213	217	254	236	0
26	X	X	X	301	344	359	378	357	364	364	326	271	211	207	195	195	130	144	173	205	203	187	171	165	203	231	215	246	1
27	X	X	X	265	296	318	311	355	359	375	335	269	246	223	183	229	233	233	205	195	165	227	205	197	173	235	187	251	0
28	X	X		235	267	320	355	309	355	364	327	283	286	271	242	171	103	111	185	225	254	260	225	213	248	326	375	263	1
29	X	X		434	244	396	438	373	419	455	426	335	329	284	246	⌈173	185	233	244	262	254⌋	267	244	225	225	215	159	294	1
30	X	X		223	267	215	269	309	342	378	301	300	235	169	⌈171	195	209	213	207	205	191⌋	252	264	213	283	344	337	254	1
31	X	X	X	377	320	375	322	387	359	309	307	267	229	229	231	231	252	227	187	169	269	215	189	246	223	229	191	264	0
MEANS ✱				287	296	314	335	340	348	349	314	273	245	221	207	195	182	177	193	209	230	222	207	215	233	258	272	255	
MEANS †				287	296	314	335	340	348	349	314	273	245	221	207	195	182	177	193	209	230	222	207	215	233	258	272	255	
MEANS ‡				298	314	331	346	354	354	353	323	276	246	228	214	210	185	169	181	214	244	223	199	218	248	268	276	261	

DESIGNATIONS AND REMARKS:

✱=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION ≷=DISTURBED BY BAD WEATHER

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

APRIL 1933

DAY	✱	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X	X	304	291	290	274	264	293	421	304	343	263	261	248	242	215	154	130	163	243	278	208	218	179	208	199	264	0
2	X	X		291	286	314	318	276	276	246	320	300	259	243	224	220	180	179	176	174	186	209	224	196	199	255	222	240	1
3		X	X	247	286	289	322	342	372	376	332	308	260	244	228	173	165	185	165	185	203	235	203	158	230	272	240	251	1
4	X			286	246	268	313	319	287	312	296	287	277	270	[169	149	126	130	76	102	160	179]	164	205	276	307	311	231	2
5	X	X		302	307	316	328	317	340	365	321	235	205	140	147	140	113	98	108	115	150	188	225	198	234	260	244	224	1
6	X	X	X	286	298	304	328	347	351	341	338	306	243	218	218	238	209	144	175	204	221	212	234	263	233	287	306	263	1
7	X			347	341	325	333	374	402	390	354	322	287	[251	211	205	207	212	176	174	211]	221	224	209	248	257	309	275	2
8	X	X		272	308	351	368	390	404	393	378	302	263	261	[234	204	195	213	174	198]	199	188	196	224	166	257	257	266	1
9	X	X		243	298	311	308	299	338	339	354	260	244	234	165	[188	178	184	186	186	196	220]	220	237	246	243	238	246	1
10	X	X		218	302	297	282	348	394	425	358	234	212	180	151	196	[212	176	164	151	164]	164	152	160	173	179	173	226	1
11	X	X	X	176	231	264	270	302	291	299	269	247	174	196	198	195	173	170	168	165	149	163	171	160	168	209	173	208	1
12	X	X		173	220	242	257	266	285	321	282	229	174	186	150	[113	126	144	152	174	196	225]	209	122	209	250	315	209	1
13	X			277	315	341	364	374	374	374	332	312	286	[229	152	137	101	98	110	86	140	198]	248	238	185	209	263	239	2
14	X	X		234	266	238	264	283	259	[225	239	220	220	234	234]	246	250	248	246	246	213	207	185	256	329	329	338	250	1
15	X	X	X	341	325	337	346	355	354	354	278	257	274	259	244	217	152	127	154	140	163	224	196	178	164	234	315	250	0
16				347	312	} 337	377	351	218	324	299	248	234 }	221	[211]	...	...	...	...	...	...	...	...	...	...	...	...	...	2
17				...	...	...	...	...	...	...	...	302	277	[252	216	176	176	166	174	178	186	211]	209	222	269	259	276	...	2
18	X			333	339	323	325	335	339	309	175	[186	185	175	175	131	146	127	139	97	78	165]	164	218	183	{ 165	276 }	212	2
19	X			276	272	264	234	260	231	195	173	179	163	129	116	100	111	116	{ 144	171	183	149	188	243 }	257	204	257	192	1
20	X	X	X	264	217	221	250	286	309	351	287	220	220	165	115	174	202	170	205	221	244	270	273	244	248	289	277	238	0
21	X	X	X	286	296	321	332	364	369	382	361	289	248	221	196	198	204	208	209	202	211	220	224	152	141	150	161	248	0
22	X	X	X	195	179	179	216	250	250	270	220	174	154	146	122	115	115	126	149	152	161	195	174	142	135	173	198	175	0
23	X	X		207	202	220	215	302	261	324	274	217	180	205	209	208	179	160	152	152	147	161	165	140	127	199	269	203	1
24	X	X		322	274	274	276	286	308	298	285	263	244	239	238	[230	224	221	205]	215	224	238	228	258	320	315	360	264	1
25	X			395	400	438	456	442	426	441	370	272	[263	220	123	117	98	180	118	170	198	221]	243	233	229	298	346	279	2
26	X	X	X	339	372	394	417	426	426	419	376	334	285	272	247	238	257	224	140	141	195	270	250	238	286	300	309	298	1
27	X			333	335	315	316	330	309	295	280	184	147	{ 126	112	176	217	207	217	208	179	229	260	270	274	296	281 }	246	1
28	X			308	298	276	260	290	299	289	290	261	{ 247	164	173	180	136	142	135	134	211 }	208	180	222	257	250	263	228	2
29	X	X	X	285	282	269	302	302	316	322	292	287	269	247	166	100	105	184	221	204	188	211	160	255	309	322	311	246	0
30	X	X		309	360	342	354	380	365	377	304	281	246	205	[204	208	196	180	186	208	220]	231	230	209	209	244	208	261	1
31																													
MEANS ✱				280	289	300	313	326	333	338	302	261	232	211	185	180	171	168	164	169	187	210	207	209	222	249	265	240	
MEANS †				265	277	293	307	319	333	342	309	265	232	218	197	192	182	175	173	180	194	215	206	200	215	249	256	241	
MEANS ‡				278	274	297	316	324	344	354	306	276	239	223	198	189	180	169	172	178	198	228	209	201	209	244	249	244	

DESIGNATIONS AND REMARKS:

✱=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 88

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

APRIL 1933

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

APRIL 1933

DAY				0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1				397	248	396	377	252	408	426	279	316	225	242	236	229	227	147	128	175	254	292	209	229	185	203	193	259	0
2				227	286	339	337	290	264	233	288	286	248	219	205	213	187	195	201	199	209	229	231	203	209	260	227	241	1
3				268	301	296	335	360	391	394	329	284	235	225	209	173	169	187	179	207	227	264	211	149	233	267	248	255	1
4				301	252	271	346	342	292	329	294	286	283	256	⌈169	211	193	203	169	169	193	199 ⌋	159	191	288	305	311	250	2
5				298	309	326	340	322	324	364	298	209	183	132	147	149	128	109	111	126	165	193	227	175	233	250	250	224	1
6				296	305	309	326	360	353	339	309	265	223	191	209	231	211	144	183	211	246	242	248	286	231	283	316	263	1
7				344	344	324	340	366	408	382	353	301	281	⌈265	236	236	236	250	233	229	229 ⌋	229	217	209	252	254	309	284	2
8				254	301	360	385	401	415	400	348	267	246	244	⌈246	227	229	246	227	217 ⌋	209	185	191	211	171	248	265	271	1
9				262	303	311	320	305	346	342	318	229	217	215	169	⌈207	195	197	219	227	225	231 ⌋	219	227	229	229	217	248	1
10				205	305	250	279	360	392	417	318	205	189	179	159	205	⌈229	205	187	165	169 ⌋	167	149	153	175	169	175	225	1
11				185	277	279	275	305	305	309	244	225	173	187	199	205	181	169	169	173	153	175	189	165	175	215	173	211	1
12				169	227	250	267	271	290	329	267	207	153	167	142	⌈111	142	171	191	191	227	244 ⌋	209	122	203	252	337	214	1
13				286	319	375	396	392	384	396	357	307	283	⌈244	189	213	203	195	203	205	201	223 ⌋	264	250	171	221	265	273	2
14				240	248	244	264	284	264	⌈231	244	229	235	235	233 ⌋	242	233	233	235	235	219	211	203	264	339	335	342	252	1
15				342	340	331	340	364	357	366	273	254	290	271	264	215	155	124	151	144	169	244	201	183	171	244	327	255	0
16				368	339	≷368	378	387	213	344	307	267	244 ≷	240	⌈246 ⌋	...	...	...	...	...	...	...	...	...	...	...	...	...	2
17				...	...	...	...	...	...	...	...	301	288	⌈269	235	227	225	203	207	207	211	215 ⌋	225	225	273	273	286	...	2
18				348	362	342	353	356	359	327	187	⌈193	205	189	203	203	213	207	207	201	169	187 ⌋	167	209	185	≷193	279 ≷	244	2
19				283	250	264	229	254	221	191	155	167	151	120	107	103	105	111	≷132	187	197	191	221	248 ≷	244	191	242	190	1
20				250	197	209	240	288	313	353	252	189	189	151	111	173	207	189	215	227	236	271	290	233	250	284	284	233	0
21				283	301	324	340	371	378	392	344	262	231	209	189	199	211	219	227	211	225	231	236	151	147	149	153	249	0
22				179	171	173	209	246	242	250	191	153	142	132	122	109	111	116	153	153	169	203	173	144	132	175	193	168	0
23				203	197	213	215	305	267	300	252	175	175	189	203	185	189	165	153	161	167	171	185	140	132	195	273	200	1
24				342	283	290	284	300	305	301	273	254	235	240	250	⌈244	250	242 ⌋	227	231	238	246	229	254	313	337	385	273	1
25				406	415	461	480	463	441	449	368	246	⌈271	250	242	244	229	229	219	229	225	227 ⌋	225	229	229	309	342	310	2
26				344	380	396	439	449	449	420	371	307	265	269	256	265	279	244	155	151	205	275	233	235	307	329	326	306	1
27				340	359	333	339	359	309	290	279	193	153	≷144	128	173	213	197	187	171	153	213	250	271	277	288	283 ≷	246	1
28				322	301	283	283	300	309	305	298	271	≷267	227	227	233	209	195	165	193	211 ≷	211	193	217	246	246	258	249	2
29				283	275	267	290	303	318	314	294	288	264	242	171	95	107	193	233	209	207	209	157	248	309	326	320	247	0
30				316	364	346	362	392	387	382	283	284	244	209	⌈215	233	244	240	246	236	244 ⌋	248	235	195	133	225	205	270	1
31																													
MEANS ❋				283	292	306	321	334	339	340	286	245	223	209	194	197	196	190	189	194	205	222	211	207	220	249	268	247	
MEANS †				264	278	295	311	326	338	343	289	244	218	207	197	196	194	187	190	192	208	227	211	198	214	248	260	243	
MEANS ‡				277	274	298	317	330	351	356	289	254	224	212	197	189	186	173	179	186	209	241	215	202	214	247	253	245	

DESIGNATIONS AND REMARKS:

❋=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION ≷=DISTURBED BY BAD WEATHER

TABLE 88

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN VOLTS PER METER

APRIL 1933

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY				0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	DIAG. NOTES
1				25	30	20	20	18	21	10	44	49	75	73	70	73	64	62	51	45	44	31	40	27	33	45	32	44	0
2				32	25	30	24	33	40	53	53	59	66	73	75	73	70	55	37	N27	33	N33	31	24	24	30	27	43	1
3				23	24	25	18	16	18	21	39	51	64	64	75	80	72	61	N47	N40	37	38	28	40	47	31	31	41	1
4				24	28	26	23	21	28	30	44	47	54	62	[N59	Z-	Z-	Z-	Z-	Z-	Z-	N21]	55	49	25	20	31	..	2
5				21	21	22	21	21	24	37	58	83	94	116	96	N73	N54	N57	55	52	42	48	44	38	36	40	58	51	1
6				32	30	26	30	27	34	33	49	59	72	80	73	66	N70	74	59	N54	56	58	34	42	40	30	28	48	1
7				28	28	15	27	23	30	37	49	55	61	[N55	Z	Z	Z	Z-	Z-	Z-	Z]	40	55	46	43	38	25	..	2
8				24	27	28	24	24	24	31	44	65	75	82	[N65	N37	N31	N25	-41	N36]	48	62	59	56	43	26	32	39	1
9				36	33	25	38	28	30	34	43	61	65	61	54	[N44	N37	N40	N 8	- 7	N 4	45]	55	55	56	55	59	40	1
10				48	15	31	25	23	30	33	55	77	91	88	71	68	[N55	N31	N35	N48	44]	59	64	56	40	30	45	49	1
11				30	27	25	24	27	28	32	52	70	83	74	64	N52	56	58	48	45	39	38	37	41	38	27	39	44	1
12				27	24	21	20	19	20	30	47	70	79	79	84	[72	N43	N30	N12	N24	N30	N41]	44	55	42	40	21	41	1
13				24	22	21	19	21	24	30	38	45	51	[52	Z-	Z-	Z-	Z-	Z-	Z-	Z-	N 7]	41	31	32	40	34	..	2
14				31	40	19	36	27	30	[N24	N26	-24	-25	N45	65]	83	88	77	70	65	74	63	42	36	38	41	40	43	1
15				37	38	30	44	33	45	40	70	74	62	65	64	76	72	63	63	54	41	44	51	38	23	27	24	49	0
16				20	20	X N14	36	N39	Z	44	55	61	59 X	56	[N33	N 7	Z-	Z-	N 6	N 3	N17	35]	42	32	23	24	24	..	2
17				25	21	24	22	21	27	34	40	54	58	[50	N24	Z	Z-	Z-	Z-	Z-	- 3	34]	31	34	27	23	17	..	2
18				16	20	24	19	20	21	35	58	[N44	N 8	N39	Z	Z-	Z-	Z-	Z-	Z-	Z-	N34]	59	48	48	X Z	45 X	..	2
19				17	60	26	27	35	35	66	74	77	73	78	80	78	66	55	X N40	35	N24	Z-	Z	48 X	23	47	51	..	1
20				54	50	37	23	23	22	31	53	80	83	103	108	92	78	68	66	65	59	56	44	31	32	36	26	55	0
21				27	24	23	23	24	35	34	52	73	79	80	76	68	54	51	51	49	55	48	41	40	48	39	45	47	0
22				51	42	37	37	39	30	47	70	93	101	102	92	91	92	83	65	60	51	49	44	49	35	32	47	60	0
23				36	29	25	28	37	36	33	59	86	78	77	71	85	64	56	N45	N48	N35	38	40	38	44	31	24	48	1
24				23	30	23	32	23	33	38	50	63	65	65	59	[58	N44	N49	N46]	48	45	48	46	37	30	23	20	42	1
25				20	20	19	20	20	23	24	34	54	[62	N41	Z-	Z-	Z-	Z	Z-	Z-	N24	N35]	48	37	31	31	28	..	2
26				23	20	20	21	20	23	32	45	55	62	72	N61	54	51	45	50	N40	40	34	33	23	17	16	19	36	1
27				19	21	20	16	20	34	38	50	69	68 X	N52	N44	56	N60	N94	117	Z	Z	98	49	27	31	N42	43 X	..	1
28				27	21	24	17	44	41	45	39	44	X N34	Z-	Z-	Z-	Z-	Z	Z	Z	N26 X	37	31	42	31	23	24	..	2
29				17	27	26	28	31	21	12	20	25	35	42	41	59	48	51	39	37	40	41	44	37	20	22	21	33	0
30				20	24	17	17	17	20	27	48	56	63	59	[N43	N17	N12	-24	-34	N21	N32]	45	47	55	54	41	52	30	1
31																													
MEANS #				31	30	26	27	26	28	33	49	61	68	75	70	66	58	51	39	43	42	46	43	41	37	33	34	44	
MEANS †				31	30	26	27	26	28	33	49	61	68	75	70	66	58	51	39	43	42	46	43	41	37	33	34	44	
MEANS ‡				32	31	27	27	28	28	31	50	63	72	76	72	71	66	62	54	49	46	44	40	37	33	30	31	46	

DESIGNATIONS AND REMARKS:

#=ALL COMPLETE DAYS †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE [ ]=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER X=DISTURBED BY BAD WEATHER

N=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT Z=INDETERMINATE IN MAGNITUDE AND SIGN Z+=INDETERMINATE POSITIVE VALUE Z-=INDETERMINATE NEGATIVE VALUE

TABLE 00

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

MAY 1933

EXPRESSED IN VOLTS PER METER

MAY 1933

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

Date	#	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	
1	X	X	X	35	31	24	18	20	27	37	48	77	79	78	80	72	64	76	72	62	63	59	48	41	36	40	42	51	0
2	X	X		35	21	24	20	20	19	32	50	77	83	84	86	65	⌈N69	N66	N62	N26	N24	N16⌋	52	51	55	56	⌈N48⌋	48	1
3			⌈N 5	- 8	N 9	N 5	51	47	66	43	-37	-48	Z-	Z-	Z-	Z-	Z-	Z-	-12	N17	N30⌋	52	44	38	24	24	..	2
4	X	X		27	24	21	26	29	30	33	42	58	68	⌈N44	N25	N20	N11	N 7	N12	N24	N33	40⌋	51	51	32	37	33	32	1
5	X	X		29	27	31	27	33	45	42	48	58	66	67	⌈N52	N50	N12	N10	N20	N30	N27	48⌋	48	48	48	60	54	41	1
6				55	38	33	28	24	28	28	45	64	65	⌈N44	N25	N22	-12	Z-	Z-	Z-	- 6	35⌋	46	44	54	59	58	..	2
7	X	X	X	41	31	23	23	21	20	35	45	68	68	70	72	86	⌈N55	49	N47	N39	N36	N35⌋	34	33	44	37	32	44	1
8	X	X		32	28	23	20	20	30	36	48	64	79	79	⌈ 63	N58	N46	N40	N45	N37	N26⌋	42	41	37	33	33	30	41	1
9	X	X		24	28	24	24	20	26	34	42	62	⌈N62	N49	N15	- 6	- 7	N16	N16	N13	N14	24⌋	40	42	59	58	51	30	1
10				28	31	26	26	21	21	34	49	59	66	65	⌈ 57	N54	N30	Z-	Z-	N 3	- 9	- 2	28	N27⌋	37	45	50	..	1
11	X	X		46	45	47	40	50	58	63	71	73	86	75	⌈ 67	N67	N48	N46	N38	N31	40	36⌋	47	50	46	48	52	53	1
12	X	X	X	52	37	24	20	14	17	30	49	63	79	62	59	60	N58	46	N52	51	51	54	46	36	34	41	32	44	1
13	X	X	X	23	34	33	24	19	20	30	46	63	75	73	59	57	65	59	54	48	51	51	45	40	49	33	26	45	0
14	X	X	X	33	38	44	25	27	31	41	55	66	80	68	72	N51	59	N51	58	44	N33	40	48	48	40	30	30	46	1
15	X	X	X	41	26	21	18	20	20	37	59	68	59	49	48	48	N35	N31	48	55	47	N37	45	34	39	38	59	41	1
16	X	X	X	23	24	23	22	24	27	37	50	61	61	65	⌈N67	N61	N54	N38	N47	N42	N56⌋	49	48	43	31	30	26	42	1
17	X	X		24	23	22	22	20	20	31	44	56	66	60	⌈ 58	N50	N36	N35	N44	N48⌋	39	44	39	40	31	34	27	36	1
18	X	X	X	20	18	17	27	20	21	31	42	52	56	64	70	81	67	58	N56	N46	47	51	40	34	26	27	25	42	1
19	X	X		28	31	26	29	31	33	38	46	55	59	70	73	75	N43	N65	71	60	52	56	51	61	67	64	41	51	1
20	X	X	X	30	27	28	28	26	30	41	57	64	72	92	N90	N86	71	N70	63	58	54	65	62	51	69	63	38	56	1
21	X	X		35	27	30	24	24	29	40	48	63	75	78	68	62	59	55	⌈ 51	-10	N13	N17	34	37	N28	N34	N46⌋	40	1
22			⌈Z-	Z-	Z-	N30⌋	58	45	51	68	83	102	77	79	72	80	73	64	62	51	50	51	56	47	30	42	..	1
23	X	X	X	44	39	34	31	24	26	38	51	55	68	73	76	83	78	83	80	66	58	61	61	58	59	35	37	55	0
24	X	X		40	28	24	22	22	20	39	42	52	65	66	70	62	N51	N57	N61	N51	48	49	41	31	29	23	27	42	1
25	X	X		31	31	28	20	22	34	33	42	52	50	63	64	N42	N36	N38	N27	42	N38	43	37	27	26	21	33	37	1
26	X	X		27	23	21	25	20	20	30	35	41	48	59	54	60	⌈ 48	N46	N38	41	N41	N44⌋	35	23	24	24	25	36	1
27	X	X		28	20	14	16	16	18	23	34	41	45	48	48	⌈ 46	36	N31	N33	N36	N31	N25⌋	33	30	30	24	27	31	1
28	X	X		45	34	26	23	18	20	26	39	45	45	47	51	⌈N48	50	N22	N21	N27	N21	N35⌋	43	36	31	31	24	34	1
29	X	X		40	33	32	33	26	26	42	55	64	65	68	65	69	65	⌈ - 4	N47⌋	59	46	41	36	38	44	39	35	44	1
30	X	X		24	23	26	20	20	30	31	51	66	65	50	⌈N34	N37	N52	N47	N10	N31	N20	N12	45⌋	37	38	31	33	35	1
31	X	X		30	21	17	20	18	18	24	33	37	43	48	⌈N51	0	N25	-48	N35	N30	N59	51	75	59⌋	38	34	36	31	1
MEANS #				33	29	26	24	23	26	35	47	59	65	65	61	55	48	40	45	40	40	42	45	41	40	38	36	42	
MEANS †				33	29	26	24	23	26	35	47	59	65	65	61	55	48	40	45	40	40	42	45	41	40	38	36	42	
MEANS ‡				34	30	27	24	22	24	36	50	64	70	69	69	68	61	56	58	51	50	50	48	42	43	37	35	47	

DESIGNATIONS AND REMARKS:

#=ALL COMPLETE DAYS †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS.

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER ≷=DISTURBED BY BAD WEATHER

N=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT Z=INDETERMINATE IN MAGNITUDE AND SIGN Z+=INDETERMINATE POSITIVE VALUE Z-=INDETERMINATE NEGATIVE VALUE

TABLE 81

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

MAY 1933

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

MAY 1933

DAY	✱	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X	X	224	228	279	292	349	332	363	328	246	234	220	200	161	122	105	127	185	231	240	282	243	213	210	190	233	0
2	X	X		314	274	279	297	293	316	320	260	188	161	174	174	165	⌈ 151	190	234	218	215	217 ⌋	254	274	278	282	⌈ 197 ⌋	238	1
3	X			⌈ 178	177	182	171	215	208	221	198	190	185	163	177	146	123	98	122	208	211	231 ⌋	220	222	184	356	375	199	2
4	X	X		378	379	400	400	389	400	379	343	239	165	⌈ 210	197	200	190	185	198	198	210	227 ⌋	208	177	238	263	336	271	1
5	X	X		317	309	332	334	359	357	374	375	317	299	264	⌈ 260	239	232	218	221	222	220	243 ⌋	272	264	253	214	250	281	1
6	X			274	294	317	322	335	322	339	322	295	240	⌈ 198	198	221	188	158	145	174	189	210 ⌋	238	260	182	174	189	240	2
7	X	X	X	261	238	281	331	361	385	386	368	291	265	253	239	147	⌈ 82	125	198	229	238	264 ⌋	267	252	174	231	371	260	1
8	X	X		392	334	403	392	416	470	428	363	286	234	239	⌈ 190	172	197	208	213	221	224 ⌋	240	264	267	288	292	239	290	1
9	X	X		402	406	391	403	389	400	375	357	278	⌈ 249	249	222	218	220	211	211	197	200	231 ⌋	236	249	225	250	165	281	1
10	X			359	350	364	364	363	361	373	322	292	285	254	⌈ 208	123	213	153	177	197	225	252	267	192 ⌋	264	265	272	271	1
11	X	X		281	296	301	289	296	267	253	259	250	174	150	⌈ 121	138	146	157	169	177	208	222 ⌋	236	242	253	254	246	224	1
12	X	X	X	242	282	296	304	349	407	400	346	270	208	189	190	198	208	210	224	228	235	264	285	261	265	256	289	267	1
13	X	X	X	306	309	318	274	357	379	384	327	293	259	243	224	211	196	188	232	236	247	256	300	282	282	303	322	280	0
14	X	X	X	320	309	299	322	346	406	417	363	304	274	211	208	186	137	149	190	211	190	184	186	210	217	220	264	255	1
15	X	X	X	277	270	304	321	336	392	386	318	250	229	357	189	188	184	173	172	157	151	178	200	196	222	309	316	253	1
16	X	X	X	328	342	352	392	427	392	417	366	321	275	263	⌈ 254	186	189	211	215	222	234 ⌋	239	277	249	228	349	371	296	1
17	X	X		373	400	421	442	431	417	424	350	293	271	264	⌈ 222	134	130	189	217	221 ⌋	235	253	208	245	265	304	349	294	1
18	X	X	X	361	361	402	416	442	448	455	410	334	292	268	247	220	127	118	166	222	239	263	295	259	284	359	335	305	1
19	X	X		391	406	403	389	421	443	459	399	357	322	281	260	236	162	131	158	200	220	227	267	193	177	172	257	289	1
20	X	X	X	310	334	343	331	378	425	393	332	279	253	221	208	157	134	173	188	197	208	213	242	220	161	210	259	257	1
21	X	X		322	341	328	379	400	392	386	339	293	267	234	222	198	188	172	⌈ 186	170	178	177	198	225	227	231	234 ⌋	262	1
22	X			⌈ 172	98	94	221 ⌋	252	309	289	257	192	96	182	188	188	190	188	174	190	200	221	239	239	245	291	317	209	1
23	X	X	X	284	343	336	363	375	386	342	302	281	263	222	185	178	153	105	102	134	149	154	149	173	217	210	239	235	0
24	X	X		239	236	292	322	345	334	350	327	261	224	200	188	176	143	121	107	177	200	229	263	213	249	316	373	245	1
25	X	X		320	317	329	320	348	300	391	341	306	277	246	172	123	117	107	117	123	159	185	232	208	250	293	253	243	1
26	X	X		281	292	311	309	293	334	338	320	276	247	234	197	163	⌈ 149	117	121	147	159	176 ⌋	220	177	192	217	217	229	1
27	X	X		229	253	261	275	303	324	336	277	234	190	139	149	⌈ 146	133	118	123	127	133	150 ⌋	172	161	172	185	198	200	1
28	X	X		162	188	220	222	260	263	282	271	238	222	208	184	⌈ 163	158	145	121	122	121	125 ⌋	150	176	174	186	228	191	1
29	X	X		213	208	198	225	228	268	274	229	213	197	185	177	161	146	⌈ 138	149 ⌋	146	147	170	163	188	165	184	220	191	1
30	X	X		259	267	278	268	267	176	197	146	106	94	99	⌈ 99	84	91	91	96	118	135	137	145 ⌋	186	225	246	242	169	1
31	X	X		257	261	310	318	334	318	309	278	252	220	170	⌈ 131	106	119	130	153	163	178	180	149	149 ⌋	214	278	293	220	1
MEANS ✱				292	292	310	323	344	353	356	316	265	231	219	196	172	159	154	169	185	196	212	229	221	225	255	271	248	
MEANS †				298	303	321	331	352	360	364	322	269	236	222	197	172	156	155	171	184	195	209	227	220	226	253	269	250	
MEANS ‡				292	301	321	335	372	395	394	346	287	255	245	214	183	153	156	181	202	212	226	248	234	226	266	296	264	

DESIGNATIONS AND REMARKS:

✱=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION ≷=DISTURBED BY BAD WEATHER

TABLE 12

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

MAY 1933

DAY	✱	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X	X	217	221	286	295	261	338	336	390	204	200	196	185	160	116	96	129	183	235	243	282	237	196	204	179	224	0
2	X	X		301	278	266	305	299	321	319	250	175	138	164	173	179	[162	200	241	241	243	239]	252	278	282	278	[204]	241	1
3	X		[	225	200	196	196	208	200	185	206	239	245	243	241	241	237	225	206	245	237	241]	219	198	183	362	390	232	2
4	X	X		374	374	399	396	383	390	390	347	235	166	[225	229	237	235	227	233	235	233	235]	196	170	256	243	342	282	1
5	X	X		321	323	328	38	361	344	364	332	288	274	262	[278	262	260	260	254	241	237	241]	262	247	245	200	250	282	1
6	X			245	262	305	305	333	317	340	290	266	239	[215	233	258	243	243	235	237	235	243]	258	262	183	164	183	253	2
7	X	X	X	260	241	286	340	377	399	374	338	264	237	227	225	136	[85	136	221	262	268	297]	286	274	183	231	381	264	1
8	X	X		401	344	408	406	431	481	431	357	268	223	223	[204	183	235	247	254	260	258]	264	282	278	288	297	394	309	1
9	X	X		403	414	408	405	406	414	379	336	266	[243	266	258	262	262	258	250	241	231	241]	243	254	215	227	286	299	1
10	X			342	340	374	375	364	375	368	307	272	264	256	[215	136	237	227	235	239	245	288	290	295]	288	262	282	286	1
11	X	X		295	305	319	315	319	264	245	252	243	175	153	[134	140	155	175	196	200	227	241]	241	225	225	241	227	230	1
12	X	X	X	225	297	297	315	374	426	410	330	258	194	200	200	204	217	221	235	243	258	282	317	280	260	243	286	274	1
13	X	X	X	303	315	309	278	366	394	381	301	264	239	217	221	217	200	200	237	247	256	280	319	297	301	301	321	282	0
14	X	X	X	317	317	292	317	359	419	377	334	280	243	202	198	190	138	158	200	227	213	198	194	194	202	202	270	252	1
15	X	X	X	274	282	319	327	346	415	361	282	233	223	225	221	200	215	187	181	162	160	204	202	196	241	321	325	254	1
16	X	X	X	342	353	364	417	449	417	419	357	299	282	262	[264	198	217	260	254	250	245]	254	272	245	243	364	390	309	1
17	X	X		399	419	449	469	463	449	438	344	284	262	278	[250	151	151	229	258	252]	258	270	243	260	280	321	362	314	1
18	X	X	X	381	383	419	430	469	481	464	397	351	311	282	260	210	147	132	185	256	280	297	321	266	301	377	351	323	1
19	X	X		408	419	417	403	431	442	454	392	362	327	286	276	258	181	136	162	225	258	258	282	187	162	162	260	298	1
20	X	X	X	328	342	361	336	381	417	392	307	294	243	198	200	162	149	179	217	221	237	219	241	217	162	183	258	260	1
21	X	X		315	359	336	396	410	403	377	330	266	243	215	221	219	198	179	[187	208	204	196	198	217	227	225	237]	265	1
22	X		[	217	155	160	227]	254	282	252	217	194	151	173	183	194	196	192	175	192	202	217	221	217	217	288	303	212	1
23	X	X	X	284	340	340	368	375	392	327	264	245	235	210	179	170	158	98	96	129	155	155	151	177	204	206	237	229	0
24	X	X		227	341	299	338	359	336	344	303	241	213	196	194	177	140	129	112	183	223	245	295	213	245	323	381	248	1
25	X	X		334	325	340	334	362	315	379	342	286	270	235	175	134	132	114	134	147	175	200	245	221	258	303	262	251	1
26	X	X		284	299	321	334	295	359	344	319	274	241	223	204	164	[155	118	132	158	173	185]	241	198	213	233	221	237	1
27	X	X		227	262	262	288	321	338	344	274	237	202	149	158	[155	145	134	138	138	153	175]	198	173	179	200	215	211	1
28	X	X		175	194	217	233	266	274	282	241	225	227	221	196	[179	173	158	140	145	140	153]	160	194	179	192	239	200	1
29	X	X		221	206	217	227	225	282	268	208	194	179	183	177	158	142	[155	153]	140	158	177	164	198	175	196	225	193	1
30	X	X		264	282	288	280	288	192	229	138	110	96	98	[110	92	92	92	112	136	158	158	151]	198	241	247	258	180	1
31	X	X		262	276	319	321	344	336	319	286	260	215	179	[136	132	136	166	179	196	194	200	136	149]	204	303	317	232	1
MEANS ✱				296	302	319	338	350	362	351	302	254	226	215	206	186	178	178	192	208	218	229	237	226	227	255	265	256	
MEANS †				302	312	328	341	360	372	361		256	226	214	205	183	170	172	189	205	216	226	236	224	228	253	284	257	
MEANS ‡				293	309	327	342	376	410	384	330	269	241	222	215	185	164	167	196	218	231	243	258	238	229	263	300	267	

DESIGNATIONS AND REMARKS:

✱=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 98

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

JUNE 1933

JUNE 1933

DAY	*	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X	X	327	397	469	459	454	434	468	387	327	272	200	175	184	175	178	174	225	234	243	199	215	302	390	374	302	1
2	X	X	X	375	354	344	278	338	345	324	340	285	254	191	174	168	187	194	188	203	187	203	274	288	315	315	322	269	1
3	X	X		374	390	406	426	412	422	442	418	328	273	225	197	⌈ 196	190	174	188	207 ⌋	250	242	284	191	318	312	342	300	1
4	X			378	422	435	412	387	396	432	447	276	243	190	203	165	167	⌈ 112	142	196	196	228 ⌋	279	258	300	346	358	290	1
5	X			414	408	422	448	450	465	417	345	273	254	⌈ 240	174	174	142	125	145	141	144	158 ⌋	231	240	256	258	272	275	2
6	X			390	334	350	378	404	408	378	318	258	235	⌈ 238	181	187	190	184	203	226 ⌋	226	236	203	188	240	261	312	266	1
7	X	X	X	333	331	369	362	384	405	405	330	300	261	255	246	240	202	145	145	188	230	266	308	286	216	300	374	287	1
8	X	X	X	374	348	397	390	453	474	450	352	308	280	255	246	210	157	129	116	187	230	250	262	256	268	332	368	294	1
9				362	330	346	376	387	420	420	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	.
10				...	...	...	...	...	...	...	372	330	312	270	232	175	177	181	164	157	132	138	158	162	184	203	213	...	.
11	X	X		226	237	245	278	292	300	342	254	225	209	191	187	174	173	167	161	158	146	157	174	202	187	173	206	211	1
12	X			242	267	298	318	320	345	345	267	248	240	231	200	187	158	130	145	⌈ 154	152	119	188	145	174	215	199 ⌋	220	1
13				...	...	...	...	...	...	...	⌈ 206	196	187	188	173	174	177	184	188	190	193	181	116 ⌋	113	157	187	202	...	2
14	X	X	⌈	190	186	174	225	199	184	188	188	188	175	173	167	174	174	174	174	186	196 ⌋	203	203	204	225	228	206	191	1
15	X			234	243	242	256	258	290	258	255	254	248	234	234	≷ 213	200	230	130	116	174 ≷	272	238	255	256	254	252	233	1
16				240	199	...	...	...	210	171	117	116	149	157	144	125	...	...	...	255	207	213	242	186	183	243	255	...	.
17				271	228	...	...	...	...	...	225	210	216	216	206	160	≷ 174	162	145	206	254	255	285 ≷	322	322	342	300	...	.
18	X			327	339	342	375	309	354	352	278	216	155	130	≷ 129	136	104	135	174	174	202 ≷	202	216	262	270	270	242	237	1
19	X	X	X	299	272	318	316	296	330	308	255	254	242	226	225	188	184	191	187	196	203	215	285	297	303	326	332	261	1
20	X	X		300	318	338	316	322	288	≷ 302	308 ≷	258	242	188	102	⌈ 139	194	196	194 ⌋	202	204	225	254	268	279	332	344	255	1
21	X	X		368	386	408	374	388	412	406	368	300	270	194	187	⌈ 175	177	174	177	186	191	204 ⌋	238	254	300	348	330	284	1
22	X	X	X	324	332	303	308	298	334	327	270	255	243	215	171	⌈ 158	183	175	175	178 ⌋	189	207	240	250	254	282	230	246	1
23				...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	.
24				...	...	...	...	...	...	...	...	270	260	⌈ 203	194	116	119	148	161	188	202	216 ⌋	232	252	255	290	339	...	.
25	X	X	X	342	346	382	386	384	392	375	309	285	270	244	203	⌈ 120	119	175	188	203	204	226 ⌋	232	255	255	255	270	268	1
26	X	X	X	269	285	360	374	414	405	408	346	300	267	215	⌈ 188	188	191	187	181	199	215	226	258 ⌋	203	200	225	286	266	1
27	X	X		303	324	292	327	412	435	400	334	304	274	210	188	⌈ 152	133	149	175	187	167	226 ⌋	210	258	267	286	300	263	1
28	X	X	X	292	285	314	345	330	362	375	314	300	292	272	203	102	115	152	190	196	206	226	256	268	284	300	344	263	1
29				368	348	404	459	...	...	...	...	...	...	268	207	119	102	130	158	188	209	236	236	260	312	316	344	...	1
30	X	X	X	350	351	345	435	438	465	442	360	345	312	270	171	88	115	152	145	183	202	225	225	231	270	250	300	278	1
31																													
MEANS *				315	315	342	354	361	375	370	320	277	250	218	189	169	165	165	168	186	198	216	239	240	261	284	298	262	
MEANS †				315	321	340	350	363	374	373	321	285	258	220	189	166	167	170	172	193	203	222	244	245	265	291	308	265	
MEANS ‡				328	329	357	365	379	395	388	326	296	269	234	200	165	163	168	169	196	210	229	254	255	267	298	320	273	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION ≷=DISTURBED BY BAD WEATHER

TABLE 24

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

JUNE 1933

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

JUNE 1933

DAY	*	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X	X	355	413	502	489	489	454	469	395	338	287	198	177	186	184	186	189	221	244	244	198	221	322	418	397	316	1
2	X	X	X	397	386	374	309	376	374	333	331	316	256	174	162	150	179	226	221	240	217	219	303	333	344	353	403	291	1
3	X	X		420	448	458	438	458	477	438	397	351	290	231	200	⌈203	233	233	240	244⌋	244	238	228	351	344	361	399	330	1
4	X			454	448	426	407	420	438	454	307	274	244	214	235	196	174	⌈177	198	221	221	247⌋	290	309	366	374	442	314	1
5	X			418	448	479	481	510	438	344	312	267	244	⌈233	174	198	179	174	172	174	174	172⌋	267	274	272	283	303	291	2
6	X			331	346	393	401	434	380	314	331	269	198	⌈228	189	200	244	256	244	244⌋	244	251	210	186	238	249	312	279	1
7	X	X	X	333	351	370	376	380	418	378	301	390	244	244	244	240	200	150	153	196	244	278	314	301	191	312	376	291	1
8	X	X	X	376	370	380	401	473	481	448	386	294	267	249	249	226	155	131	138	198	256	269	247	256	272	346	380	302	1
9				374	333	368	389	397	434	422	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	.
10				...	...	...	...	...	...	...	355	338	296	283	226	196	196	186	174	170	150	150	174	198	184	198	226	...	.
11	X	X		221	244	269	281	312	309	348	344	198	189	184	179	165	172	174	148	153	153	177	191	214	184	165	221	216	1
12	X			244	272	307	336	353	366	344	280	219	207	210	181	174	150	129	153	⌈155	170	174	221	170	177	210	221⌋	226	1
13				...	...	...	...	...	...	...	⌈221	221	217	210	184	184	196	198	198	198	203	198	138⌋	138	150	179	193	...	2
14	X	X		⌈198	177	174	212	200	186	196	191	196	191	184	162	172	177	174	170	184	193⌋	198	219	210	221	221	210	192	1
15	X			221	231	233	249	256	290	267	267	244	244	242	244	≷244	240	200	210	240	193≷	307	303	224	244	233	219	244	1
16				203	184	181	196	186	221	177	126	102	141	150	124	102	126	72	102	249	221	198	240	186	174	228	221	...	.
17				240	226	224	205	226	244	224	212	196	196	198	198	158	≷179	174	198	179	181	212	244≷	296	309	316	272	...	.
18	X			312	316	322	344	294	348	333	292	200	148	124	≷111	133	177	143	174	150	184≷	198	191	244	267	256	240	229	1
19	X	X	X	290	267	333	305	378	314	274	226	219	235	231	196	172	200	198	196	198	205	221	265	294	314	331	331	258	1
20	X	X		294	329	338	312	333	278	≷322	325≷	233	221	177	102	⌈138	205	219	219⌋	219	221	233	244	290	272	329	333	258	1
21	X	X		351	395	420	391	378	395	397	355	305	267	205	203	⌈193	224	200	200	198	212	226⌋	221	267	305	327	322	290	1
22	X	X	X	327	331	298	307	312	355	309	256	240	226	221	174	⌈172	200	219	217	212⌋	219	224	233	267	269	290	254	256	1
23				...	...	...	...	...	...	...	...	...	...	....	...	...	...	...	...	...	....	...	...	...	...	...	...	...	.
24				...	...	...	...	...	...	...	290	278	278	⌈263	221	129	129	153	170	212	221	242⌋	249	251	285	296	331	...	.
25	X	X	X	333	344	380	378	384	403	374	301	274	272	251	200	⌈116	124	174	198	221	221	231⌋	233	244	244	244	256	267	1
26	X	X	X	267	281	355	359	401	407	395	333	309	285	193	⌈193	198	200	200	196	212	224	244	263⌋	214	200	217	292	268	1
27	X	X		307	294	290	333	420	448	397	305	312	296	219	210	⌈179	138	174	184	210	210	233⌋	219	260	267	263	294	269	1
28	X	X	X	296	276	309	353	336	374	380	272	285	296	274	210	99	124	158	219	221	219	249	267	269	281	307	355	268	1
29				378	361	401	...	...	...	...	...	...	...	296	238	121	102	131	177	198	244	205	244	265	318	322	353	...	1
30	X	X	X	342	331	353	440	442	495	462	401	380	353	272	167	84	124	150	148	186	221	240	238	226	263	207	285	284	1
31																													
MEANS *				322	332	353	359	379	383	363	314	278	248	216	189	174	182	184	190	204	213	231	244	256	266	286	311	270	
MEANS †				319	327	350	355	380	386	370	320	290	261	219	189	168	177	185	190	207	219	233	243	264	268	293	319	272	
MEANS ‡				332	335	365	372	397	408	382	320	304	272	231	197	164	169	179	188	210	227	242	256	262	270	302	333	280	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION ≷=DISTURBED BY BAD WEATHER

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN VOLTS PER METER

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

JUNE 1933

DAY	●	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X	X	40	27	14	18	19	23	26	40	45	49	64	70	62	60	N58	N56	N54	52	55	42	27	27	21	28	40	1
2	X	X	X	41	24	26	24	27	24	27	36	44	49	70	81	78	70	N50	N45	47	N34	56	53	35	28	30	24	42	1
3	X	X		41	24	23	27	21	24	25	33	37	44	56	51	[N44	N 6	-25	- 6	N17]	48	48	40	28	31	25	23	28	1
4				20	17	20	17	14	13	19	24	37	47	49	48	51	40	[Z-	Z-	N33	N27	37]	34	39	33	20	16	..	1
5				22	26	14	13	17	17	26	38	50	56	[N52	N48	N11	Z-	Z-	Z-	Z-	Z-	22]	38	44	48	48	44	..	2
6				37	23	19	17	19	28	38	55	64	80	[N65	N63	N31	-12	Z-	N18	N51]	48	52	58	55	54	45	40	..	1
7	X	X	X	31	40	35	21	24	20	31	45	60	62	66	65	68	61	N51	56	N52	51	48	38	31	30	22	20	43	1
8	X	X	X	23	22	20	20	20	20	31	44	56	62	71	63	63	N64	N54	49	52	54	58	52	41	31	25	37	43	1
9				37	26	26	21	18	23	33	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	.
10				..	..	..	..	..	..	..	36	42	51	52	58	62	60	62	51	51	N26	N31	43	48	30	27	32	..	.
11	X	X		34	21	20	29	23	25	30	45	61	70	66	72	80	72	N52	59	63	42	N16	44	45	48	44	37	46	1
12				22	25	24	N23	17	18	34	45	56	62	61	70	70	72	63	52	[N56	N45	Z-	N32	-27	N24	33	27]	..	1
13	X			42	33	[-34	-50	-76	-43	N11	35	N18	- 4	N 0	N11	N26	N26	N29	N38	N46	45	42	N47]	56	66	48	72	20	2
14	X	X		[N54	55	48	41	48	56	61	52	N47	N20	N26	N49	68	68	N65	68	N59	48]	58	55	59	55	50	56	53	1
15				51	46	54	44	48	40	51	52	55	61	60	59	≷N17	N53	92	Z-	Z-	Z ≷	63	64	45	46	47	47	..	1
16				41	55	62	38	45	62	73	..	..	85	80	80	..	..	..	..	..	..	..	..	..	..	..	..	..	..	.
17				..	..	..	..	..	..	..	..	..	..	51	66	96	90	≷N45	N62	Z-	Z+	Z+	N102	48 ≷	30	35	31	33	..	.
18				37	30	21	20	23	23	28	38	58	76	81	≷N99	72	Z-	Z	Z	N69	48 ≷	49	44	30	24	25	19	..	1
19	X	X	X	20	19	16	23	24	25	35	49	55	48	52	63	58	51	N43	N34	52	48	46	31	26	22	21	21	37	1
20	X	X		24	22	10	17	26	26	≷N 8	N20 ≷	44	54	54	54	[56	N50	N44	N41]	48	44	37	38	40	40	31	20	35	1
21	X	X		20	N14	14	14	15	15	24	37	42	44	50	48	[N40	N 5	N 7	N25	N29	N33	N37]	39	30	18	21	20	27	1
22	X	X	X	21	20	21	18	16	21	37	48	54	59	56	55	[50	N38	N30	N36	N37]	42	38	35	23	28	31	32	35	1
23			[	41	19	29	19	16	22	40	44]	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	.
24				..	..	..	..	..	..	..	..	50	53	[N55	N58	N12	N33	N38	N30	N33	N34	N46]	46	46	35	28	32	..	.
25	X	X	X	28	18	18	18	20	22	31	47	55	59	55	71	[60	N48	59	55	N50	N40	47]	47	41	40	41	38	42	1
26	X	X	X	39	34	24	18	19	20	35	44	51	58	63	[63	N70	67	N70	N69	59	59	48	N44]	40	43	43	37	47	1
27	X	X		23	31	21	20	18	19	29	43	52	59	78	76	[N66	N60	59	66	N58	-93	N64]	58	48	38	45	44	41	1
28	X	X	X	43	43	30	27	23	25	35	51	55	60	62	41	51	N52	52	N27	48	N42	N44	41	39	37	38	27	41	1
29	X			30	28	27	16	16	20	24	33	44	49	50	68	69	N58	N48	N37	51	50	N48	51	45	37	37	35	40	1
30	X	X	X	38	29	22	19	17	17	29	40	44	47	52	59	55	N26	N56	N40	46	48	50	51	45	42	44	38	40	1
31																													
MEANS ●				30	28	20	18	17	20	29	41	48	49	55	59	59	49	45	44	48	38	47	45	39	37	34	34	39	
MEANS †				29	28	23	22	22	24	31	42	50	53	59	61	61	50	45	45	48	37	47	44	37	35	33	31	40	
MEANS ‡				28	28	23	21	21	22	32	44	52	55	61	63	62	54	52	47	50	47	49	43	35	33	32	30	41	

DESIGNATIONS AND REMARKS:

●=ALL COMPLETE DAYS †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE [ ]=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER ≷=DISTURBED BY BAD WEATHER

N=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT Z=INDETERMINATE IN MAGNITUDE AND SIGN Z+=INDETERMINATE POSITIVE VALUE Z-=INDETERMINATE NEGATIVE VALUE

TABLE 26

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN VOLTS PER METER

JULY 1933

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY	✱	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1				35	27	18	20	20	26	37	50	56	58	45	⌈ N51	N42	N44	N62	58	N44	Z	Z ⌋	48	36	37	31	44	..	1
2	A	A	A	43	33	37	39	24	27	32	34	37	51	54	53	59	62	N55	71	55	54	52	41	37	20	29	41	43	1
3				20	25	24	26	23	21	33	34	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	.
4				..	..	..	..	..	..	..	..	41	43	39	36	44	≷ N56	Z	Z	Z	Z	Z	Z ≷	48	40	42	41	..	.
5				43	37	28	23	38	51	82	73	73	76	65	58	≷ N67	Z	Z	Z-	Z	Z ≷	36	20	21	24	27	31	..	1
6				34	33	41	32	22	27	36	45	52	48	58	59	60	56	64	70	78	⌈ Z+	Z+	Z+	67 ⌋	44	37	27	..	1
7			≷	Z-	Z+ ≷	26	18	20	20	44	55	57	65	71	69	⌈ Z+	Z-	Z	Z+	N37	N41 ⌋	48	48	32	34	21	20	..	1
8				17	24	20	20	28	20	30	39	57	60	55	≷ N59	Z-	Z-	Z	Z	56	N40 ≷	45	35	31	18	28	30	..	1
9				31	24	24	35	22	33	44	50	55	59	62	68	69	≷ N55	Z-	Z-	Z	Z+	Z	Z	Z	Z+ ≷	37	48	..	2
10				67	41	42	35	41	33	62	80	91	99	92	76	≷ 74	Z- ≷	54	74	53	45	40	43	35	25	24	26	..	1
11				26	27	28	23	25	26	41	55	69	76	70	67	≷ N46	Z+	Z+	Z+	Z	Z-	Z-	Z-	Z+	Z+	Z-	Z+ ≷	..	2
12				44	40	37	34	24	41	48	45	58	66	N53	54	47	45	≷ 43	Z+	Z+	Z	Z+	Z	Z-	Z-	30	33 ≷	..	2
13				30	≷ Z- ≷	37	29	35	37	60	73	80	76	68	⌈ 69	N65	71	72	68	56	52	54	93	59	N53 ⌋	33	21	..	1
14				29	33	37	52	38	24	27	37	53	44	≷ 57	Z-	Z	Z+	59	65	62	38	31	25	Z	Z	Z+	Z ≷	..	1
15				41	34	23	21	34	36	34	48	56	59	58	60	69	N60	N55	N45	55	55	≷ 66	Z-	Z-	Z	Z+	91 ≷	..	1
16			≷	Z+	Z- ≷	64	43	37	52	52	55	65	68	62	73	73	79	65	69	61	65	61	40	27	27	32	28	..	1
17				27	27	31	24	24	25	34	37	48	50	65	≷ Z+	Z-	Z+	Z-	Z+ ≷	47	48	41	20	18	20	16	19	..	1
18	A	A		16	16	17	17	17	18	20	38	51	57	65	54	⌈ N65	N53	N41	N39	44	N44	41	34	24	18	N11	N48 ⌋	35	1
19				⌈ Z-	N45 ⌋	24	24	30	24	Z-	51	55	59	59	69	68	55	N51	45	N25	N38	37	32	29	26	24	30	..	1
20				34	28	23	24	17	15	33	41	54	45	47	52	≷ 53	71	51	Z	Z	Z-	Z	Z ≷	32	37	35	37	..	1
21				34	27	30	31	37	42	41	43	50	51	62	64	68	69	≷ Z	Z	69	102	Z-	Z-	Z	Z	Z	102 ≷	..	2
22			≷	Z	Z-	Z	Z	N48	59	62	50	62	93	98	83	88	N79	69	Z	59	-20	53	150	43	34	N32	43 ≷	..	1
23			≷	Z+	Z+	62 ≷	39	24	39	37	48	48	41	48	62	74	75	82	..	..	..	..	..	..	..	..	..	..	.
24				..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	.
25				..	..	..	..	..	..	..	..	41	41	41	N45	N42	N51	55	58	58	48	44	31	20	21	18	17	..	.
26				20	20	28	34	29	24	37	78	80	55	52	58	60	58	≷ N62	Z-	N29	N50	69	Z-	Z-	Z	Z ≷	30	..	2
27				24	32	20	18	20	20	27	29	40	42	55	58	N48	59	51	38	47	41	45	27	N20	N24	27	22	35	1
28				23	22	30	37	24	30	37	48	51	58	65	69	67	≷ Z-	Z	Z	Z	Z-	Z-	41 ≷	27	44	26	24	..	2
29				27	33	27	25	31	27	37	45	48	55	60	72	62	70	64	69	≷ Z+	Z+	Z	Z ≷	51	29	34	48	..	1
30				41	26	33	31	26	33	35	37	48	48	48	51	57	51	51	64	50	48	Z-	39	27	24	20	18	..	1
31				17	14	15	17	20	18	21	36	43	46	48	53	≷ N47	N37	N31	61	63	69	Z	Z	Z+ ≷	30	30	25	..	1
MEANS ✱				28	27	25	25	20	22	26	34	43	50	58	55	57	58	49	49	48	46	46	34	27	21	22	37	36	
MEANS †				28	27	25	25	20	22	26	34	43	50	58	55	57	58	49	49	48	46	46	34	27	21	22	37	38	
MEANS ‡				34	32	28	28	22	24	30	32	38	46	54	56	54	60	53	54	51	48	48	34	28	22	28	32	39	

DESIGNATIONS AND REMARKS:

✱=ALL COMPLETE DAYS †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER ≷=DISTURBED BY BAD WEATHER

N=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT Z=INDETERMINATE IN MAGNITUDE AND SIGN Z+=INDETERMINATE POSITIVE VALUE Z-=INDETERMINATE NEGATIVE VALUE

TABLE 97

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

JULY 1933

DAY		0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	323	303	307	290	307	302	348	304	279	257	210	⌈130	104	110	135	188	195	182	147⌋	220	254	270	296	250	253	1
2	X X X	294	348	348	284	320	343	359	328	296	279	250	224	234	210	202	210	224	250	250	300	242	300	331	265	275	1
3	X	334	324	339	356	374	387	374	359	328	309	265	200	190	166	166	195	195	195	218	248	268	243	248	218	269	.
4	X	291	295	297	296	265	297	254	273	236	246	250	242	250	≷ 257	237	172	90	180	200	210≷	210	273	273	281	233	.
5	X	267	264	264	245	287	296	253	210	180	180	165	165	≷ 162	147	120	30	108	128≷	281	242	248	250	273	268	209	1
6	X	294	296	299	348	309	342	320	273	245	234	236	237	210	195	165	128	128	⌈166	195	186	234⌋	253	281	293	240	1
7	X	≷ 140	306≷	346	345	374	378	314	297	256	237	210	208	⌈210	116	213	210	196	174⌋	162	210	210	259	296	342	249	1
8	X	348	343	360	392	371	354	406	335	273	254	219	≷ 202	68	75	68	194	194	166≷	170	250	257	296	292	284	256	1
9	X	261	285	291	251	279	295	285	296	284	264	254	224	196	≷ 176	58	46	68	207	200	253	135	324≷	300	284	226	2
10	X	190	271	282	298	304	246	195	182	153	150	168	194	≷ 165	142≷	158	144	174	210	236	210	279	253	268	268	213	1
11	X	339	334	312	341	328	335	328	289	234	207	234	212	≷ 198	190	174	170	159	144	135	78	224	213	27	264≷	226	2
12	X	285	285	285	320	343	320	289	259	250	210	192	200	196	194	≷ 170	158	165	165	194	142	90	60	259	212≷	218	2
13	X	291	≷ 202	≷ 275	291	268	312	250	184	172	165	178	⌈117	142	168	153	168	178	196	224	264	250	202⌋	285	309	217	1
14	X	348	328	328	250	300	312	342	303	268	250	≷ 237	166	60	250	250	250	250	267	323	323	314	323	270	296≷	275	1
15	X	250	312	320	314	356	359	328	289	262	264	250	208	184	152	165	165	177	194	≷ 208	165	52	153	264	281≷	236	1
16	X	≷ 250	282≷	262	284	262	279	285	285	234	264	281	278	250	250	212	212	212	194	198	264	309	314	278	328	258	1
17	X	367	319	312	328	359	388	328	320	265	234	180	≷ 165	257	237	52	282≷	295	268	296	359	388	388	382	371	298	1
18	X X	365	406	407	410	437	437	415	335	287	234	180	208	⌈165	180	180	180	196	219	253	279	282	239	343	348⌋	291	1
19	X	⌈120	296⌋	323	320	312	328	150	254	242	237	212	180	172	176	166	168	218	213	218	237	295	321	340	315	242	1
20	X	281	267	281	304	314	334	312	271	234	251	218	200	≷ 196	172	172	150	111	15	120	208≷	194	196	234	259	221	1
21	X	265	282	281	284	282	289	290	278	281	268	234	202	180	202	≷ 200	195	220	242	45	50	195	165	135	234≷	221	2
22	X	≷ 150	115	180	168	180	195	220	256	236	153	135	150	142	106	135	150	195	195	234	264	254	279	237	281≷	193	1
23	X	≷ 310	270	312≷	370	378	296	343	326	282	273	251	234	237	224	224	123	38	118	57	90	180	165	189	162	227	.
24	X	165	150	150	150	165	195	250	239	246	237	242	237	213	194	219	222	234	265	270	306	317	312	315	285	232	.
25	X	301	343	359	328	324	312	309	281	253	248	224	214	208	212	213	212	224	242	268	312	331	345	323	406	283	.
26	X	406	418	409	315	343	367	279	111	147	224	222	208	196	180	≷ 182	152	194	182	216	180	112	346	312≷	312	251	2
27	X X X	390	329	378	404	406	407	385	370	312	296	273	265	250	239	224	248	224	237	273	293	250	234	267	312	303	1
28	X	331	328	362	328	328	320	320	296	281	268	239	210	192	≷ 158	142	128	75	56	165	378≷	324	242	253	304	251	2
29	X	296	324	331	345	382	356	367	328	296	281	239	251	176	188	200	234	≷ 250	254	90	188≷	270	312	312	293	273	1
30	X	281	314	328	343	378	340	328	328	306	284	282	264	212	165	180	194	208	237	195	237	285	368	376	376	284	1
31	X	420	393	417	418	437	426	446	384	321	289	256	234	≷ 142	108	118	150	180	239	158	135	315≷	335	312	343	291	1
MEANS #		278	296	311	315	327	327	312	284	289	243	225	207	186	179	169	175	180	194	200	228	244	266	276	292	250	
MEANS †		336	354	371	366	388	396	386	344	298	270	234	232	216	210	202	213	215	235	259	291	258	258	314	308	290	
MEANS ‡		322	328	353	344	363	375	372	349	304	288	262	244	242	224	213	229	224	244	262	296	246	267	299	288	289	

DESIGNATIONS AND REMARKS:

#=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES

†=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT

‡=SELECTED DAYS

( )=INTERPOLATED

[ ]=APPROXIMATE

⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION

≷=DISTURBED BY BAD WEATHER

TABLE 98

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

JULY 1933

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

JULY 1933

DAY	✱	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X			324	362	371	388	390	373	330	317	277	254	210	⌈139	111	118	128	198	206	193	156⌋	186	266	259	289	242	254	1
2	X	X	X	242	319	296	281	301	326	335	277	296	256	249	235	235	230	237	230	237	237	242	282	230	296	328	261	268	1
3	X			282	319	326	348	364	380	371	289	328	301	242	193	181	174	176	186	203	213	230	242	266	249	249	230	264	.
4	X			256	230	206	228	254	254	247	263	235	249	249	242	251	⌊230	225	131	237	225	215	237⌋	230	254	254	254	236	.
5	X			249	230	235	223	270	268	242	181	159	154	154	159	⌊139	151	95	105	92	131⌋	277	208	235	235	273	261	197	1
6	X			230	263	273	305	308	324	324	254	228	218	206	206	193	186	156	123	128	⌈161	156	188	213⌋	230	249	266	224	1
7	X			237	230	324	319	326	369	284	239	230	206	193	193	⌈154	208	191	174	193	179⌋	169	230	196	251	277	326	237	1
8	X			321	326	346	373	344	326	377	301	237	232	228	⌊213	198	206	156	191	181	179⌋	181	261	254	280	291	273	261	1
9	X			232	225	254	249	266	294	277	299	291	273	254	228	201	⌊191	198	188	141	181	146	179	181	230⌋	291	277	231	2
10	X			206	254	261	284	289	228	179	136	123	118	144	179	⌊151	179⌋	154	134	159	206	230	254	277	232	249	254	203	1
11	X			299	277	296	324	301	324	303	268	208	193	225	228	⌊230	206	181	188	184	191	174	206	203	139	206	225⌋	232	2
12	X			263	254	256	291	319	284	242	220	218	193	181	201	213	203	⌊179	179	181	191	169	92	230	218	242	193⌋	217	2
13	X			230	237	247	254	237	277	235	164	154	169	154	⌈103	141	151	136	156	179	203	232	239	230	203⌋	280	280	204	1
14	X			335	324	305	254	280	289	328	294	247	244	⌊201	254	149	218	223	228	206	254	324	326	303	299	203	299⌋	266	1
15	X			249	291	303	301	326	344	310	263	228	232	206	201	171	154	169	169	181	203	⌊208	223	188	151	174	230⌋	228	1
16	X			⌊111	256⌋	232	266	237	254	275	275	220	239	261	254	247	232	208	203	196	179	181	232	282	294	266	310	238	1
17	X			346	301	287	319	339	362	324	324	239	230	176	⌊159	154	144	230	230⌋	277	247	249	321	369	346	346	321	277	1
18	(	X		339	373	380	369	416	429	410	308	261	223	179	208	⌈161	191	206	198	218	242	242	289	291	218	248	321⌋	280	1
19	X			⌈230	259⌋	305	301	277	301	273	230	225	218	225	166	164	179	179	181	206	225	206	254	273	310	324	301	242	1
20	X			270	254	275	273	296	324	291	266	208	230	206	203	⌊181	169	181	169	335	206	85	201⌋	198	181	213	237	227	1
21	X			235	251	254	254	261	254	266	263	254	237	225	201	154	203	⌊220	237	235	228	196	191	154	203	179	188⌋	223	2
22	X			⌊179	206	206	156	159	154	156	218	184	128	105	134	131	111	126	161	196	228	230	181	210	251	232	239⌋	178	1
23	X			⌊247	225	254⌋	321	324	277	319	303	254	254	230	188	201	181	186	181	201	131	218	225	181	154	157	126	222	.
24	X			131	116	100	92	131	184	230	230	242	239	232	235	230	218	230	228	230	254	256	277	321	308	324	280	222	.
25	X			299	328	348	312	299	301	303	280	261	254	239	225	228	230	230	230	237	251	280	301	324	324	277	369	280	.
26	X			375	397	388	301	330	357	249	108	131	206	210	203	193	181	⌊181	210	206	206	223	176	203	346	326⌋	296	250	2
27	X	X	X	369	308	351	351	371	380	353	282	299	284	254	254	239	230	225	232	223	230	232	230	261	225	254	289	280	1
28	X			321	301	357	312	312	308	305	277	249	242	230	203	184	⌊213	198	105	184	228	275	360⌋	301	218	230	273	258	2
29	X			277	294	305	324	353	346	353	299	282	254	228	230	156	181	208	237	⌊230	188	176	193⌋	254	296	301	273	260	1
30	X			261	296	312	321	353	326	324	326	301	282	289	266	225	181	188	218	218	242	206	230	301	266	351	369	277	1
31	X			410	397	412	412	421	412	438	353	303	266	230	230	⌊134	111	128	154	179	213	154	118	251⌋	326	280	273	275	1
MEANS ✱				269	281	292	293	305	311	298	262	238	228	213	204	184	186	185	186	203	208	210	230	248	251	263	269	242	
MEANS †				317	333	342	327	363	378	366	289	285	254	227	232	212	217	223	220	226	236	239	267	261	246	277	290	276	
MEANS ‡				306	314	324	306	336	353	344	280	298	270	252	244	237	230	231	231	230	234	237	256	246	260	291	275	274	

DESIGNATIONS AND REMARKS:

✱=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION ⌊ ⌋=DISTURBED BY BAD WEATHER

TABLE 88

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

AUGUST 1933

DAY	*	+	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X		191	196	191	340	209	359	302	263	246	218	210	195	152	179	179	176	134	140	149	216	293	283	308	246	246	1
2	X			196	196	199	456	447	484	439	311	277	203	177	164	177	194	194	201	195	197	282	305	294	296	326	336	293	1
3	X	X	X	191	196	191	196	362	393	396	336	326	305	293	266	260	156	134	194	222	256	234	257	279	288	328	323	290	1
4				191	319	191	377	414	385	416	262	254	194	134	149	119	106	...	...	...	...	...	...	...	...	...	...	...	.
5	X	X		179	182	198	404	248	285	319	285	179	198	191	134	121	137	103	119	133	137	149	194	239	165	122	134	180	1
6	X			168	201	201	198	221	231	239	213	222	216	221	237	231	15	60	231	197	137	161	179	185	209	291	209	195	1
7	X			290	291	211	305	300	286	257	216	198	179	176	164	145	45	104	137	149	191	195	265	273	277	283	331	220	1
8	X			193	289	279	305	277	293	308	254	246	219	204	192	179	182	149	149	134	64	167	218	290	314	308	323	237	1
9	X			191	194	197	142	191	402	377	323	277	239	209	195	182	194	37	27	179	276	293	253	260	282	293	339	268	1
10	X			169	114	119	159	179	188	173	308	293	262	246	248	216	149	156	164	179	97	245	270	280	323	311	320	274	1
11	X			291	285	278	284	291	293	288	260	246	251	251	248	234	231	234	240	234	246	186	0	209	339	320	293	253	.
12	X			249	291	198	274	301	328	311	270	248	239	222	231	231	209	209	194	195	207	210	216	262	265	263	293	252	.
13	X			299	291	291	288	274	293	262	277	234	209	201	236	246	236	195	198	209	207	216	209	222	293	368	320	252	2
14	X			321	323	331	323	320	310	317	316	270	188	176	106	164	189	192	251	259	293	308	319	323	339	365	416	280	2
15	X			400	346	297	356	424	449	462	296	231	169	101	164	152	168	182	185	146	104	218	277	209	276	331	340	263	1
16	X			331	340	357	373	363	370	431	331	293	253	231	191	176	185	194	194	119	89	60	82	253	254	297	308	253	2
17	X			316	241	246	319	305	310	323	300	266	216	262	207	251	249	218	216	216	237	271	270	277	323	339	351	272	1
18	X			300	299	321	320	343	369	359	326	293	277	248	233	179	161	133	149	177	209	245	293	300	294	285	293	266	1
19	X			356	300	299	259	262	285	317	326	265	249	260	253	236	191	137	212	209	82	254	259	237	259	282	290	251	1
20	X			341	351	359	299	356	282	260	299	293	262	245	246	209	210	237	231	186	216	246	179	262	342	354	346	265	1
21	X			403	367	367	377	402	416	397	340	308	277	279	259	242	209	216	149	122	134	52	140	104	164	249	274	260	2
22	X	X	X	216	189	207	236	260	263	280	257	209	231	179	119	174	167	146	179	212	209	216	319	362	373	370	385	240	0
23	X	X	X	356	400	371	370	402	385	383	330	323	290	276	221	121	145	176	179	170	182	207	212	234	209	239	273	269	0
24	X	X	X	274	351	383	396	393	385	393	320	276	262	254	209	164	191	186	207	236	246	270	300	300	288	254	319	286	1
25	X			340	321	394	414	414	416	422	348	323	296	262	119	192	67	162	262	209	308	339	257	323	326	308	339	296	1
26	X			308	325	336	370	351	351	362	316	277	285	268	236	203	119	209	207	246	186	265	280	248	319	308	323	279	1
27	X	X	X	377	385	442	428	430	427	462	416	354	308	256	146	149	161	142	183	218	262	291	282	308	370	308	271	307	1
28	X	X	X	285	319	373	424	419	462	490	377	362	331	311	246	207	210	192	212	233	246	265	283	293	263	340	339	313	0
29	X			319	370	386	417	451	428	453	451	365	308	262	242	176	142	106	89	119	125	79	164	198	246	231	265	267	2
30	X	X	X	286	299	308	339	339	343	331	274	262	256	246	240	245	240	236	234	240	246	283	253	285	319	325	326	261	1
31				316	323	354	356	362	382	408	242	149	142	110	107	130	189	...	...	...	...	...	...	...	...	...	...	...	1
MEANS *				316	312	323	336	335	354	355	307	275	248	232	205	194	170	166	185	189	191	219	233	262	286	300	308	263	
MEANS +				299	315	327	343	340	367	368	318	282	267	246	197	177	176	166	187	200	214	229	257	288	284	288	291	268	
MEANS ‡				304	326	348	354	372	380	385	330	302	283	259	207	189	181	173	198	219	235	252	272	294	301	309	319	284	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES +=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 100

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

AUGUST 1933

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

AUGUST 1933

DAY				0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1				346	339	351	342	193	308	277	262	230	242	235	208	154	156	161	169	128	136	151	263	284	282	301	249	239	1
2				335	326	344	390	434	490	393	308	266	193	156	176	181	218	232	249	230	254	284	301	301	284	310	335	290	1
3				326	328	326	344	389	373	366	310	301	289	277	263	235	164	136	184	230	254	259	273	275	277	299	301	280	1
4				282	280	317	330	399	369	390	220	230	181	123	146	105	108	105	103	154	171	184	186	181	218	218	188	...	.
5				186	191	161	206	254	266	301	237	136	181	201	131	118	111	80	111	126	136	156	203	218	181	131	131	173	1
6				176	179	198	203	228	230	230	206	218	206	210	230	220	249	174	82	151	144	169	181	201	218	296	232	201	1
7				286	225	275	296	301	296	273	181	181	159	154	141	139	118	131	118	149	159	184	254	273	273	266	326	215	1
8				346	277	277	291	277	282	282	230	225	203	181	179	159	156	169	144	151	184	134	181	277	296	266	303	228	1
9				344	344	346	335	357	390	357	312	244	210	206	161	161	206	208	179	156	259	273	249	256	277	287	335	270	1
10				351	326	326	351	373	373	373	277	254	230	223	225	201	136	154	156	184	196	244	273	273	328	321	312	269	1
11				280	277	282	289	289	280	277	277	263	266	256	259	254	254	251	249	235	254	242	218	230	344	326	296	269	.
12				247	296	303	246	301	342	344	259	254	247	247	239	230	225	223	206	206	208	225	208	254	291	280	301	258	.
13				299	273	287	277	277	266	266	280	273	259	254	273	277	273	254	254	235	235	237	228	254	321	369	324	273	2
14				328	335	324	303	326	319	321	326	289	206	186	169	235	247	259	299	305	324	321	301	319	326	357	380	296	2
15				386	339	346	369	434	454	452	254	191	136	131	154	128	154	181	181	203	113	208	289	230	280	328	348	262	1
16				326	346	369	373	353	346	416	346	266	225	208	181	159	203	220	225	232	188	169	184	156	251	280	273	262	2
17				301	280	206	324	289	301	330	277	266	259	244	259	266	230	203	206	208	232	275	254	289	321	353	357	272	1
18				321	280	317	301	346	369	369	308	277	254	235	220	174	151	156	156	181	228	232	277	289	299	277	289	263	1
19				344	280	273	254	249	282	308	326	273	266	266	242	218	181	154	230	218	228	254	259	235	273	254	156	251	1
20				324	326	324	324	105	277	247	254	259	239	239	218	210	203	218	213	201	206	244	235	218	324	326	335	253	1
21				373	353	364	384	397	410	390	351	280	254	242	210	230	208	186	103	198	312	324	277	156	103	237	242	274	2
22				186	131	179	208	242	249	261	223	203	181	154	103	169	149	139	141	188	196	196	324	348	348	333	348	217	0
23				328	364	348	360	408	395	380	312	299	254	242	191	87	128	139	171	171	180	203	213	218	184	220	259	252	0
24				254	328	369	382	390	388	369	282	249	230	206	198	136	176	184	206	230	235	273	289	301	266	230	299	270	1
25				312	301	386	388	386	393	412	364	326	277	228	92	156	179	206	230	87	275	324	254	296	317	289	324	283	1
26				277	319	324	344	346	351	351	291	230	235	230	186	154	77	203	181	206	203	259	266	235	301	296	312	257	1
27				355	369	431	397	401	410	452	390	326	266	213	116	100	111	126	174	230	254	266	289	310	357	301	254	287	1
28				259	319	346	386	393	431	457	393	344	301	280	203	174	181	181	208	230	244	273	303	294	259	346	344	298	0
29				337	357	371	414	423	414	436	438	362	294	242	206	154	118	103	105	105	131	156	206	230	254	254	254	265	2
30				301	266	299	326	324	342	328	273	266	256	247	239	230	230	232	232	232	235	282	254	299	317	321	326	277	1
31				305	324	337	346	348	364	390	235	136	136	100	92	126	161	166	139	126	151	203	220	230	242	159	134	...	1
MEANS *				304	299	313	325	326	344	345	294	260	235	220	196	183	179	181	185	193	214	235	252	259	261	292	295	259	
MEANS †				282	293	312	328	328	351	355	296	262	244	228	184	156	156	153	177	196	208	229	268	283	275	276	279	255	
MEANS ‡				287	301	328	343	357	370	373	312	284	254	231	188	162	163	162	188	216	228	250	278	292	287	293	304	269	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 101

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN VOLTS PER METER

AUGUST 1933

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

Day	*	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	x	x		98	85	21	33	37	21	37	46	50	N24	31	38	63	92	80	84	72	65	57	38	40	27	N35	N21	44	1
2				25	27	17	15	17	15	24	39	49	72	80	83	74	67	N46	N40	Z-	Z-	41	35	36	37	21	24	..	1
3	x	x	x	31	25	17	16	12	12	22	34	41	47	53	50	63	N59	N55	64	50	31	N15	N30	37	31	28	30	36	1
4				28	30	29	26	28	26	22	40	50	60	76	69	N75	Z	Z	Z	Z	Z	Z	Z	48	43	37	50	..	1
5	x	x		N87	N31	N79	53	48	43	44	51	63	58	48	53	90	91	120	76	70	53	36	47	64	50	59	62	60	1
6				46	37	33	21	40	36	47	56	44	47	40	40	N60	Z-	Z-	Z+	Z+	N21	34	21	28	25	27	30	..	1
7				39	Z+	Z-	32	31	37	37	50	58	68	70	82	N90	Z-	Z-	Z+	Z+	Z+	63	27	25	24	17	17	..	1
8				16	25	25	25	25	27	35	46	48	48	50	56	66	87	Z	Z+	Z-	Z-	Z	52	28	24	31	19	..	1
9				26	22	18	18	16	18	28	39	56	63	67	105	78	N43	Z-	Z-	Z	31	25	26	23	26	24	21	..	1
10				24	19	22	23	18	16	24	36	41	52	47	65	55	63	56	52	Z	Z-	N39	37	31	25	15	21	..	1
11				41	41	32	30	30	31	34	35	N35	35	49	48	N44	N40	N42	47	46	..	..	..	..	..	..	..	..	.
12				..	..	..	..	..	..	..	41	N29	N29	N29	N37	N34	N40	N41	N38	N34	N37	40	40	36	35	37	34	..	.
13				31	40	37	34	N33	N33	N34	N37	Z-	Z-	Z-	Z	Z	Z	Z	Z	Z	Z	N45	46	N32	37	26	35	..	2
14				38	40	37	38	37	41	40	43	43	44	63	Z	Z-	Z-	Z-	Z-	Z-	Z	26	22	21	21	18	22	..	2
15				26	30	24	21	17	22	24	45	62	76	92	105	115	84	61	53	Z-	Z	32	24	23	21	22	27	..	1
16				32	29	23	19	22	18	25	32	47	56	59	66	N57	N51	Z	Z	Z-	Z-	Z-	Z-	Z+	Z	30	31	..	2
17				28	Z+	Z+	20	29	21	28	32	N15	Z-	47	Z-	N40	58	59	56	51	43	37	36	31	16	16	25	..	1
18				26	32	18	18	24	18	22	33	43	55	47	54	76	80	Z-	N56	Z	N34	40	28	32	28	34	22	..	1
19				15	36	37	40	44	40	34	36	50	49	56	63	64	66	58	57	Z	Z-	47	43	N37	Z	Z	Z+	..	1
20				25	25	25	Z-	Z	40	47	52	53	62	56	79	71	79	74	68	Z	Z	Z	Z	Z	28	21	28	..	1
21				26	27	25	21	19	16	23	34	47	53	67	Z	69	96	116	Z+	Z-	Z	Z-	Z-	Z	Z+	Z	56	..	2
22	x	x	x	86	86	70	54	50	45	47	50	57	64	83	99	79	95	99	94	66	56	61	41	33	31	28	26	62	0
23	x	x	x	32	33	40	25	25	22	27	37	43	52	59	76	127	113	106	69	63	62	59	50	47	44	25	31	53	0
24	x	x	x	31	31	27	22	20	24	29	48	61	73	92	90	108	78	76	73	63	N54	50	41	39	45	53	43	53	1
25				38	36	28	19	22	16	17	32	47	61	68	111	Z+	Z-	Z	Z+	Z+	Z	28	N22	34	26	32	28	..	1
26				44	28	25	24	22	28	34	40	56	58	65	79	104	153	N86	69	73	Z	50	49	47	29	28	24	..	1
27	x	x	x	24	25	18	28	27	20	26	43	58	73	92	130	156	130	N83	86	N68	62	56	48	47	28	47	41	59	1
28	x	x	x	31	27	32	25	18	22	24	35	52	59	72	89	103	103	90	68	58	53	46	40	32	26	21	30	48	0
29				25	19	24	23	20	20	22	42	50	68	74	82	93	N71	Z	Z	56	Z	Z-	Z-	Z-	N11	Z	27	..	2
30		x	x	N11	40	40	34	31	36	41	56	54	52	N61	N68	73	N69	59	N54	50	42	33	24	30	30	31	33	44	1
31				37	37	29	27	28	22	22	69	78	80	77	79	71	73	71	61	N47	47	34	26	19	33	Z	Z	..	1
MEANS *				38	34	38	32	30	27	33	44	53	56	66	77	96	92	85	74	62	53	46	40	41	35	36	35	51	
MEANS †				38	34	38	32	30	27	33	44	53	56	66	77	96	92	85	74	62	53	46	40	41	35	36	35	51	
MEANS ‡				35	38	35	29	26	26	31	43	52	60	73	86	101	92	81	73	60	51	46	39	38	34	33	33	51	

DESIGNATIONS AND REMARKS:

*=ALL COMPLETE DAYS †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER x=DISTURBED BY BAD WEATHER

N=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT Z=INDETERMINATE IN MAGNITUDE AND SIGN Z+=INDETERMINATE POSITIVE VALUE Z-=INDETERMINATE NEGATIVE VALUE

TABLE 108

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN VOLTS PER METER

SEPTEMBER 1933

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

Day	✱	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1				} 8	8	N12	N 6	19 }	27	30	38	41	51	57	64	67	62	55	45	38	38	42	36	34	25	41	33	..	1
2				14	19	20	19	19	18	24	39	46	63	77	77	78	80	77	} 68	Z+	Z+	Z-	Z	50 }	26	19	19	..	1
3				10	22	20	21	17	-22	20	36	41	45	52	59	70	63	64	} N55	N60	Z	N121	N30 }	31	23	24	15	..	1
4	X	X	X	16	22	16	18	16	17	18	30	36	38	48	63	63	54	N44	45	44	41	33	19	25	24	22	28	32	1
5	X	X	X	27	17	14	25	22	19	28	35	45	48	48	N42	N41	N44	42	45	N36	38	38	28	26	25	19	18	34	1
6	X	X	X	18	26	48	41	27	37	32	44	56	60	58	60	56	N60	N67	67	54	53	33	22	18	N24	31	22	42	1
7				20	19	26	25	19	20	19	28	41	52	54	73	87	57	} Z	50	Z	Z	Z+	N28	N 6	N19 }	30	31	..	1
8				47	54	41	39	41	54	43	} Z	Z-	Z	34	N25	N50	64	86	138	Z- }	40	44	44	41	38	41	37	..	1
9				15	32	32	34	28	30	39	55	53	57	67	74	70	} N62	72	70	Z	Z }	44	36	25	22	28	22	..	1
10				25	30	30	29	24	25	31	41	48	51	44	} -16	Z	Z-	Z-	Z	Z-	Z+	N19 }	51	62	68	64	57	..	2
11				55	57	52	44	47	48	55	55	51	67	86	118	115	105	76	66	60	46	41	[Z+	Z+]	40	32	20	..	1
12	X	X		15	12	9	4	9	11	35	41	46	58	74	102	98	91	80	77	68	57	43	42	34	18	21	20	45	0
13	X	X	X	24	20	19	19	18	21	32	29	54	67	83	90	77	97	83	67	60	50	39	38	26	22	22	22	45	0
14				14	11	29	19	18	26	28	36	38	44	51	56	56	58	61	55	} Z-	Z	138 }	35	31	25	25	23	..	1
15	X	X	X	29	30	34	21	25	25	25	32	35	50	64	63	67	71	74	60	54	41	32	27	27	19	19	20	39	0
16	X	X	X	16	16	14	16	21	18	20	30	41	52	54	58	70	60	57	60	51	34	25	16	13	19	43	22	34	0
17				25	25	25	22	25	38	21	41	39	57	57	57	62	71	} Z-	Z-	Z-	Z-	Z+	Z }	34	36	38	38	..	2
18	X	X		38	32	29	32	35	34	34	43	44	56	68	84	94	78	82	N51	69	63	52	45	44	29	25	19	49	1
19				30	22	25	25	23	25	25	31	49	66	66	81	95	} N28	Z+	Z	Z-	Z+	34	28	28	Z-	Z-	Z }	..	2
20				} 8	35 }	32	28	55	47	50	54	50	55	64	70	67	67	44	51	51	49	44	22	} N24	Z	21 }	31	..	1
21	X	X	X	31	31	30	37	31	31	44	55	57	67	72	84	100	92	85	72	58	48	38	25	25	26	20	19	49	0
22	X	X		21	22	17	17	17	18	22	34	43	57	70	56	81	77	77	66	55	51	36	36	58	60	28	25	44	0
23	X			25	28	27	23	25	31	31	35	48	64	77	89	102	92	84	70	56	38	28	32	26	22	23	22	46	0
24	X			21	25	21	19	21	19	21	31	41	55	65	70	75	66	61	57	52	49	43	31	30	28	28	28	40	0
25	X	X		19	22	21	20	26	22	31	32	66	71	74	74	84	84	31	60	52	48	37	41	32	25	22	22	42	0
26	X	X	X	28	22	19	20	23	28	25	41	57	67	81	91	88	81	84	77	72	59	36	41	28	25	22	22	47	0
27	X	X	X	30	35	20	19	19	18	18	29	47	47	51	59	66	67	55	40	40	39	35	31	19	25	18	15	35	0
28	X	X	X	16	18	18	12	16	16	21	25	35	66	80	88	88	63	45	30	27	23	25	23	} N23 }	19	16	18	34	1
29				25	22	21	22	28	28	27	31	46	57	67	78	93	100	77	58	78	} N74	Z+	Z	Z	45 }	39	41	..	1
30	X	X		51	47	32	22	24	31	22	38	54	61	71	80	88	N60	77	N44	58	57	54	48	30	20	24	24	47	1
31																													
MEANS ✱				26	26	24	22	22	23	27	36	47	58	67	74	79	73	66	58	53	46	37	32	28	25	24	22	41	
MEANS †				27	26	24	22	22	23	27	36	48	58	66	73	77	72	66	57	53	47	37	32	29	25	23	21	41	
MEANS ‡				24	26	25	23	22	23	26	35	46	56	64	70	72	69	64	56	50	43	33	27	23	23	23	21	39	

DESIGNATIONS AND REMARKS:

✱=ALL COMPLETE DAYS †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE [ ]=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER }=DISTURBED BY BAD WEATHER

N=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT Z=INDETERMINATE IN MAGNITUDE AND SIGN Z+=INDETERMINATE POSITIVE VALUE Z-=INDETERMINATE NEGATIVE VALUE

TABLE 103

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

SEPTEMBER 1933

DAY	*	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1				...	...	...	...	...	...	...	...	...	...	209	195	186	194	203	207	212	218	234	262	266	259	276	300	...	1
2	A			319	314	350	367	385	382	385	321	282	242	233	212	198	201	209	209	219	164	206	136	231	260	293	271	267	1
3	A			274	296	279	280	291	328	339	293	248	249	254	234	209	212	213	231	231	240	280	276	262	263	311	290	265	1
4	A	A	A	336	353	357	367	382	400	388	354	305	279	245	231	231	231	216	207	209	233	277	300	265	282	303	305	294	1
5	A	A	A	308	277	293	305	323	323	343	296	240	222	222	207	203	209	209	207	195	195	194	201	288	262	280	294	254	1
6	A	A	A	271	211	164	192	212	239	308	271	256	242	221	213	212	204	194	209	231	251	290	305	246	280	276	326	244	1
7	A			197	196	163	173	183	185	354	350	319	294	260	195	149	122	142	158	134	203	221	260	197	207	213	195	258	1
8	A			196	195	210	206	209	213	234	251	30	300	263	253	231	222	237	233	170	262	221	197	210	231	231	259	219	1
9	A			262	266	277	293	283	277	296	277	257	249	236	210	197	186	164	191	201	134	231	245	326	351	293	308	250	1
10	A			326	154	162	181	181	173	370	313	290	326	300	164	143	39	42	70	106	277	186	236	164	146	146	153	231	2
11	A			176	176	179	206	209	222	260	233	270	248	194	104	73	121	180	239	262	271	297	277	246	266	310	308	222	1
12	A	A		216	219	236	228	262	291	377	377	351	320	263	161	164	179	191	194	246	277	308	282	300	336	382	405	296	0
13	A	A	A	402	387	400	447	445	451	422	439	346	305	248	189	182	192	179	164	140	164	180	207	246	209	246	317	288	0
14				279	308	326	325	325	322	339	308	290	277	274	260	260	251	260	246	74	149	221	209	233	246	246	276	263	1
15	A	A	A	277	279	249	262	276	285	294	297	268	231	245	221	206	176	164	150	177	257	270	239	207	253	323	323	247	0
16	A	A	A	301	302	319	367	408	416	434	376	323	285	277	239	201	179	176	186	195	231	239	231	273	320	209	192	279	0
17	A			290	290	246	274	356	339	323	340	316	260	260	210	168	164	134	13	15	30	167	222	231	246	245	260	222	2
18	A	A		254	265	290	270	270	262	296	246	246	246	231	179	161	168	164	149	162	189	204	243	231	191	236	274	225	1
19	A			316	321	368	342	370	394	407	308	290	251	236	233	152	153	179	180	37	152	316	308	323	291	48	104	253	2
20	A			242	300	279	271	191	231	194	209	221	219	219	204	186	124	134	127	104	112	121	179	195	67	260	215	192	1
21	A	A	A	222	211	231	251	248	280	262	248	231	210	197	194	179	149	121	122	180	239	254	274	285	197	290	308	225	0
22	A	A		331	387	382	400	413	416	447	393	331	293	288	283	262	245	218	197	164	248	293	236	168	134	371	326	301	0
23				368	336	354	419	477	442	427	428	370	323	305	290	195	149	149	156	260	259	277	323	331	326	334	362	...	0
24				339	326	370	400	417	433	424	431	370	297	263	260	246	234	246	246	248	254	242	221	316	305	342	367	...	0
25	A	A		353	387	390	454	477	480	445	377	340	300	277	274	274	210	212	234	246	248	188	131	236	279	305	348	311	0
26	A	A	A	430	454	462	499	508	516	533	485	393	336	296	280	260	234	234	209	150	216	164	156	192	308	294	328	331	0
27	A	A	A	359	359	351	400	413	439	480	440	359	308	308	316	262	161	201	245	249	263	262	279	308	262	280	333	318	0
28	A	A	A	340	357	419	400	428	436	396	416	336	231	201	149	127	150	176	164	179	179	189	221	210	209	209	245	265	1
29	A			246	245	259	263	280	280	293	263	246	239	246	204	149	119	156	194	207	194	180	52	186	262	249	246	219	1
30	A	A		242	246	279	293	325	323	330	294	263	249	243	221	195	164	162	165	179	195	212	234	254	231	262	294	244	1
31																													
MEANS *				293	306	311	325	337	348	352	325	283	267	250	216	194	176	180	181	173	206	229	227	241	244	263	278	259	
MEANS †				315	322	327	349	366	377	382	354	306	270	251	224	208	190	188	187	193	226	235	236	247	250	284	308	275	
MEANS ‡				325	323	326	349	364	378	386	362	306	265	246	224	206	188	187	186	190	223	232	241	252	258	271	297	274	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 104

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

SEPTEMBER 1933

SEPTEMBER 1933

DAY	✱	†	‡	0-	-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1				104	121	306	268	242	240	272	275	270	249	226	190	197	202	209	233	244	237	240	261	256	249	272	295	...	1
2	A			291	304	324	353	379	372	364	318	272	226	216	200	178	178	200	202	180	187	244	233	204	240	263	256	258	1
3	A			249	258	270	272	272	285	315	261	226	226	228	218	200	207	202	218	204	230	218	249	249	247	300	277	245	1
4	A	A	A	320	340	355	360	383	402	383	329	288	251	224	202	202	224	224	207	204	221	268	315	270	272	297	293	285	1
5	A	A	A	295	249	272	295	320	311	351	318	249	226	211	224	224	207	209	221	202	197	187	187	268	251	279	281	251	1
6	A	A	A	261	230	153	180	202	226	320	256	249	242	235	226	224	204	200	202	197	226	275	320	249	272	261	322	239	1
7	A			357	344	342	362	377	357	318	320	315	284	244	166	116	101	151	153	183	202	202	249	211	211	214	200	249	1
8	A			183	178	180	176	163	151	195	235	275	306	249	251	226	204	200	178	224	237	200	183	202	204	207	224	210	1
9	A			226	233	249	261	228	242	242	209	218	202	197	187	153	178	153	176	224	153	214	244	318	320	286	295	225	1
10	A			300	340	360	318	318	342	360	256	256	291	268	153	163	197	136	153	249	230	202	128	128	111	98	108	228	2
11	A			121	108	153	168	153	153	173	178	226	200	161	81	55	83	153	214	235	261	288	[78	185]	249	275	284	176	1
12	A	A		272	295	284	291	320	364	329	340	318	286	228	128	138	153	166	176	230	261	291	272	277	311	362	383	270	0
13		A	A	383	366	381	430	426	440	415	404	306	277	204	161	151	151	148	136	133	158	185	214	244	185	207	302	267	0
14	A			268	295	318	322	320	318	340	313	295	293	272	261	249	244	226	214	228	202	163	204	224	228	244	268	263	1
15	A	A	A	261	256	226	249	258	261	279	270	249	202	202	200	178	148	133	128	158	249	268	275	202	251	313	318	231	0
16	A	A	A	279	284	320	340	368	394	421	360	306	277	249	214	183	176	158	161	176	195	237	221	277	318	237	197	264	0
17	A			204	293	228	272	372	329	313	336	315	249	230	202	156	156	176	240	226	202	86	178	214	207	204	230	234	2
18	A	A		214	233	251	249	249	249	226	202	214	204	200	173	133	156	148	136	153	176	183	190	202	178	226	251	200	1
19	A			293	315	346	329	360	372	383	295	249	207	197	197	138	153	161	176	207	153	300	293	315	249	268	202	257	2
20	A			251	275	254	249	178	183	180	190	200	207	224	200	180	128	133	128	104	124	124	197	202	131	226	214	187	1
21	A	A	A	204	202	218	224	216	247	226	202	180	176	156	148	128	124	101	106	161	226	289	272	272	180	272	295	201	0
22	A	A		306	170	362	383	385	381	426	383	306	249	244	226	224	211	197	180	141	228	293	214	146	106	357	304	276	0
23				355	320	336	402	456	426	409	385	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0
24				...	...	...	...	...	...	...	...	324	261	230	218	209	224	224	224	226	226	226	178	295	295	333	344	...	0
25	A	A		342	362	388	432	448	466	442	404	306	249	249	261	228	178	202	226	244	230	166	104	214	272	284	318	292	0
26	A	A	A	409	446	466	504	480	466	498	486	362	311	249	237	249	214	202	200	153	197	176	176	180	311	295	329	316	0
27	A	A	A	340	342	336	383	404	426	466	415	353	304	275	277	228	128	197	244	254	263	254	272	313	251	272	329	305	0
28	A	A	A	342	342	411	377	402	421	383	409	291	190	173	128	111	151	176	173	180	178	190	211	226	202	202	224	254	1
29	A			233	218	244	261	261	272	272	226	221	200	224	185	133	116	128	190	190	209	141	224	228	230	244	242	212	1
30	A	A		226	233	256	251	315	306	315	281	224	202	200	180	158	148	136	166	173	197	207	204	244	226	249	277	224	1
31																													
MEANS ✱				275	280	294	307	317	324	331	304	269	242	223	196	174	167	171	182	193	207	217	219	232	230	257	268	245	
MEANS †				297	303	312	330	345	357	365	337	280	243	220	199	184	172	173	177	184	213	231	230	239	239	274	295	258	
MEANS ‡				309	306	314	334	346	359	374	345	283	246	218	202	188	173	175	178	182	211	233	246	250	249	264	289	261	

DESIGNATIONS AND REMARKS:

✱=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 106

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

OCTOBER 1933

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

OCTOBER 1933

DAY		0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	‡	297	286	313	300	314	316	312	222	121	175	⌈ 142	55	62	83	159 ⌋	131	152	190	219	236	249	257	265	272	212	1
2	‡ ‡	259	269	265	252	262	257	299	257	229	229	217	225	222	227	222	214	222	233	236	243	247	262	267	286	246	1
3	‡ ‡	281	282	272	279	273	270	270	249	250	256	243	232	227	243	243	230	229	250	252	265	272	265	263	273	257	1
4	‡	272	281	269	260	259	272	270	257	257	250	243	257	{ 229	52	17	166	242	177 }	200	226	229	257	282	293	230	2
5	‡	300	295	286	289	297	300	296	286	267	257	200	145	97	{ 108	109	159	139	172	195	110	135	193	160	105 }	204	1
6	‡	190	188	191	195	200	179	167	167	136	204	193	164	{ 138	126	135	124	141 }	272	315	293	320	340	342	343	213	1
7	‡ ‡	329	317	330	332	302	313	329	272	229	226	177	152	131	141	102	112	155	166	217	193	289	230	260	259	229	0
8	‡	242	284	299	272	295	297	297	279	286	265	⌈ 216	179	178	41	152 ⌋	192	206	230	242	230	253	262	283	315	239	1
9	‡	293	299	315	342	341	353	356	356	315	286	243	{ 214	195	69	95	206	230	121	79	112 }	316	229	193	179	239	2
10	‡ ‡ ‡	194	200	216	225	229	245	242	265	257	237	175	186	178	141	159	145	179	186	128	167	190	223	230	226	205	0
11	‡	227	247	246	255	259	259	230	283	230	217	225	⌈ 181	110	145 ⌋	204	206	214	233	257	255	286	295	293	289	235	1
12	‡	260	289	286	295	312	307	326	316	272	243	204	193	179	164	168	193	246	243	184	{ 190	167	233	286 }	259	242	1
13	‡	{ 201	316 }	312	326	340	322	333	275	184	127	149	124	117	115	113	141	182	204	192	230	152	145	166	192	206	1
14	‡ ‡ ‡	182	231	255	279	303	280	326	286	236	203	229	190	113	155	178	179	192	219	237	269	275	329	330	292	240	0
15	‡ ‡ ‡	332	343	370	369	372	355	365	350	300	250	243	190	200	193	204	214	226	204	214	229	222	190	243	257	268	0
16	‡ ‡ ‡	300	329	372	365	383	402	412	343	325	280	257	242	219	227	200	179	190	229	260	262	239	303	286	230	285	0
17	‡ ‡ ‡	289	326	326	355	372	356	363	330	337	312	287	269	247	243	246	229	229	257	273	265	272	332	299	315	297	0
18	‡ ‡ ‡	355	366	403	429	430	408	416	430	350	327	279	223	181	152	124	141	135	177	226	152	193	230	201	230	272	0
19	‡ ‡ ‡	273	279	292	329	336	336	340	336	310	286	245	240	243	232	193	226	239	246	280	229	286	300	315	356	281	0
20	‡ ‡ ‡	373	388	373	385	415	416	423	287	383	302	295	259	166	217	190	214	239	243	152	287	310	329	315	345	304	0
21	‡ ‡ ‡	370	385	372	386	386	386	393	358	343	302	265	246	229	181	138	203	190	226	182	279	260	317	300	307	292	1
22	‡ ‡ ‡	327	332	369	372	388	399	402	422	380	312	277	257	246	230	227	229	243	184	227	229	245	214	256	222	291	0
23	‡	259	302	305	327	340	329	360	289	286	286	253	229	217	206	204	{ 186	190	181	57	51	243	200 }	243	279	243	1
24	‡ ‡ ‡	259	240	245	269	302	297	297	297	257	243	246	229	214	214	214	177	181	163	121	185	237	252	259	259	236	0
25	‡ ‡ ‡	286	307	325	345	346	360	360	315	327	286	246	225	197	186	179	190	214	229	243	257	286	302	282	255	273	0
26	‡ ‡ ‡	289	303	330	337	346	385	356	385	332	302	272	240	164	145	184	193	217	229	256	214	229	259	255	227	269	0
27	‡ ‡ ‡	226	249	305	332	343	340	340	372	307	286	237	217	193	172	152	193	240	217	272	312	345	273	300	303	272	1
28	‡	327	329	327	360	379	375	369	358	336	315	273	249	240	232	217	181	185	167	214	192	257	279	327	379	266	.
29	‡ ‡ ‡	315	358	347	376	400	393	428	400	379	336	299	272	243	236	245	246	255	145	120	167	172	243	260	297	289	0
30	‡ ‡	330	315	342	379	403	422	415	393	388	350	316	279	163	117	126	124	179	168	193	230	177	243	296	330	278	1
31	‡	400	393	400	422	415	430	415	380	330	283	269	265	239	245	229	229	229	227	289	350	282	257	272	{ 200 }	310	1
MEANS *		284	301	310	323	332	337	339	317	290	266	239	214	186	169	172	186	204	206	211	223	244	259	269	270	256	
MEANS †		293	307	322	336	345	354	357	334	312	280	253	230	199	192	186	191	208	209	215	233	247	268	275	277	268	
MEANS ‡		291	309	327	344	355	364	364	345	322	284	257	232	202	195	189	197	211	210	213	234	251	273	275	275	272	

DESIGNATIONS AND REMARKS:

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( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 106

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

OCTOBER 1933

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

OCTOBER 1933

DAY	*	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X			295	291	300	287	302	314	302	190	98	156	⌈ 138	69	74	98	177 ⌋	145	156	202	213	217	235	235	244	246	206	1
2	X	X		246	235	239	237	239	248	281	235	231	215	217	213	213	208	208	195	213	228	213	235	235	257	259	274	232	1
3	X	X		274	272	257	268	261	259	261	244	235	246	248	228	233	231	231	224	235	235	246	257	259	252	257	268	249	1
4	X			261	272	261	263	257	261	257	257	255	246	250	257	⌊ 261	235	231	168	235	145 ⌉	195	190	224	246	257	274	240	2
5	X			289	274	268	268	268	268	268	270	259	259	193	121	76	⌊ 76	81	163	93	126	190	190	25	172	133	168 ⌉	187	1
6	X			195	184	170	190	190	168	147	163	170	186	168	133	⌊ 102	86	98	109	145 ⌉	257	300	270	308	318	321	331	196	1
7	X	X		314	341	321	312	278	278	304	224	188	168	138	109	95	102	54	86	140	147	190	208	206	208	235	239	204	0
8	X			224	278	246	252	268	276	274	255	261	231	⌈ 168	145	142	168	165 ⌋	165	170	208	233	215	235	261	261	295	225	1
9	X			261	274	300	316	325	323	339	312	259	235	186	⌊ 147	121	163	145	168	211	170	74	145 ⌉	300	213	170	145	221	2
10	X	X	X	165	170	170	179	190	206	190	186	213	170	133	138	126	109	109	119	145	188	109	168	174	208	211	193	165	0
11	X			199	219	231	235	231	246	215	255	213	193	211	⌈ 168	142	179 ⌋	188	188	208	224	235	257	268	278	278	268	222	1
12	X			255	272	278	278	300	297	285	289	237	190	168	168	156	149	145	168	231	239	163	⌊ 235	208	278	276 ⌉	237	229	1
13	X			⌊ 255	278 ⌉	297	289	321	289	281	235	172	126	145	100	88	98	100	126	190	208	193	211	121	109	145	168	189	1
14	X	X	X	168	213	237	253	297	244	297	261	195	163	172	156	95	133	165	170	190	208	213	300	278	331	323	300	223	0
15	X	X	X	339	341	351	362	362	345	358	323	268	208	190	165	177	190	208	208	213	193	202	235	193	208	246	246	255	0
16	X	X	X	278	331	362	358	368	392	378	300	263	239	213	202	186	170	174	179	202	235	278	257	235	293	276	217	266	0
17	X	X	X	283	314	321	331	382	337	351	341	318	278	252	224	213	208	213	211	235	257	268	278	261	310	289	316	283	0
18	X	X	X	341	341	386	417	399	392	405	390	310	300	250	190	165	145	119	124	124	168	213	145	202	224	213	211	257	0
19	X	X	X	257	276	293	318	331	325	331	345	302	261	217	208	217	208	179	193	215	217	255	246	278	302	304	347	268	0
20	X	X	X	380	392	368	380	405	438	438	278	345	297	259	235	168	204	188	206	213	239	145	341	304	345	306	351	301	0
21	X	X	X	380	368	364	392	386	380	401	345	323	276	224	190	188	168	126	174	188	188	170	297	246	321	289	300	278	1
22	X	X	X	310	321	355	380	362	386	397	401	351	276	255	224	224	213	208	213	231	190	219	213	257	208	246	213	277	0
23	X			295	295	302	323	341	331	362	283	278	261	213	211	193	188	190	⌊ 172	168	165	204	98	211	228 ⌉	235	270	241	1
24	X	X	X	252	222	208	265	297	281	289	274	239	244	246	208	172	190	211	168	188	154	119	186	215	246	259	242	224	0
25	X	X	X	278	304	323	349	362	364	343	295	300	255	211	177	156	168	168	170	197	233	250	265	297	302	261	252	262	0
26	X	X	X	281	297	325	337	337	386	341	364	304	263	224	208	145	121	165	170	208	235	257	172	213	259	257	208	253	0
27	X	X	X	213	217	304	341	341	351	341	341	268	233	190	179	165	156	145	190	222	215	257	316	351	263	300	300	258	1
28	X			325	325	337	366	392	382	366	343	337	285	239	213	208	211	190	165	172	163	208	235	257	283	345	376	280	.
29	X	X	X	318	374	360	382	392	392	421	399	351	302	263	239	215	224	231	233	239	161	119	158	168	235	252	297	280	0
30	X	X		331	310	341	382	401	401	403	355	380	321	304	263	158	98	102	100	169	179	172	190	174	235	289	325	266	1
31	X			399	392	399	425	417	430	403	355	295	255	235	235	224	224	224	217	217	211	261	297	257	252	259	⌊ 272 ⌉	298	1
MEANS *				277	290	299	314	323	322	324	294	265	237	210	185	164	165	166	171	192	200	205	227	232	254	258	263	243	
MEANS †				285	297	310	329	336	337	344	311	283	248	221	198	174	171	169	175	198	204	205	235	239	264	267	268	253	
MEANS ‡				283	299	315	336	347	348	352	323	290	251	220	196	174	174	174	182	201	205	205	238	245	270	269	266	257	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION ⌊ ⌉=DISTURBED BY BAD WEATHER

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN VOLTS PER METER

OCTOBER 1933

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY	✱	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1				27	25	22	22	27	32	38	44	127	89	⌈ N84	Z	70	84	35 ⌋	44	48	51	54	51	38	36	40	N45	..	1
2	X	X		44	44	44	38	48	49	48	N61	N38	N39	N16	N44	61	73	68	54	49	47	44	43	41	38	41	38	46	1
3	X	X		41	41	44	46	54	57	60	64	64	60	41	N45	N67	N61	55	62	52	54	46	44	43	43	41	44	51	1
4				45	44	45	46	50	51	54	54	61	60	48	70	≷ Z	Z-	Z-	Z	Z	Z+ ≷	39	39	35	41	41	38	..	2
5				37	41	47	45	43	44	49	58	64	59	73	98	129	≷ Z+	Z+	Z	Z+	Z	Z	Z	Z+	Z+	Z+	Z- ≷	..	1
6				27	47	44	30	38	48	57	47	48	51	58	83	≷ 116	151	87	91	Z ≷	26	19	21	16	13	16	25	..	1
7	X	X		18	18	19	22	22	23	31	35	59	64	78	115	125	113	158	87	62	54	26	29	21	20	23	22	52	0
8				22	23	23	28	25	22	25	51	51	61	⌈ 94	107	Z	Z-	Z ⌋	64	51	52	47	34	25	39	41	31	..	1
9				40	31	26	21	25	20	25	40	58	70	98	≷ 140	Z+	Z-	Z	Z+	Z+	Z	Z	Z ≷	18	41	60	67	..	2
10	X	X		61	55	54	54	52	52	57	60	60	73	102	108	112	114	103	80	66	46	49	33	35	23	35	32	63	0
11				30	37	30	29	29	25	41	51	57	79	76	⌈ 102	Z-	Z- ⌋	60	58	51	41	31	29	38	34	28	31	..	1
12				25	24	25	23	21	23	26	44	61	70	76	85	89	N71	70	57	54	38	50	≷ 29	Z-	Z-	N26 ≷	42	..	1
13			≷	Z-	38 ≷	20	19	35	29	41	55	74	91	106	123	162	129	113	74	57	54	54	44	38	41	42	36	..	1
14	X	X	X	19	19	19	18	18	22	31	49	62	82	75	83	112	79	62	58	53	47	31	19	19	21	28	19	44	0
15	X	X	X	19	15	16	15	17	27	25	36	47	61	70	76	74	64	55	45	48	48	49	35	30	25	20	21	39	0
16	X	X	X	19	16	18	14	14	18	20	44	52	60	70	71	76	84	62	59	51	44	32	28	21	21	26	24	39	0
17	X	X	X	19	21	16	19	16	20	20	44	44	52	60	70	64	60	61	50	46	38	31	25	21	26	16	16	36	0
18	X	X	X	16	15	22	19	18	19	19	31	44	44	54	62	59	62	56	48	48	35	29	24	23	16	21	25	34	0
19	X	X	X	30	19	19	26	19	21	25	35	40	45	58	62	62	23	53	51	41	38	23	27	20	24	22	22	34	0
20	X	X	X	19	21	31	25	21	25	22	41	36	44	57	64	57	50	48	47	42	30	33	22	20	16	22	20	34	0
21	X	X	X	21	22	19	18	25	34	28	35	44	50	62	75	72	64	N60	63	55	28	26	20	23	16	16	18	37	1
22	X	X	X	29	23	19	19	28	25	18	31	37	51	54	64	64	56	53	45	38	32	25	15	15	32	20	24	34	0
23				16	22	21	18	19	19	22	40	43	51	70	69	67	58	49	≷ N33	45	N22	Z-	Z	Z+	Z- ≷	24	27	..	1
24	X	X	X	29	28	23	18	22	25	38	51	54	58	69	71	79	77	57	56	46	28	29	25	23	30	22	21	41	0
25	X	X	X	25	21	16	17	18	29	24	43	54	67	84	92	98	86	84	77	64	47	34	22	22	22	37	24	46	0
26	X	X	X	24	31	21	19	17	18	19	33	48	56	67	70	91	92	67	57	48	41	31	41	22	18	19	25	41	0
27	X	X	X	25	22	22	19	20	20	19	30	41	54	61	72	74	64	58	46	38	25	19	19	N16	25	17	19	34	1
28				20	20	21	18	18	25	23	31	37	..	..	..	..	..	..	..	..	..	..	..	22	25	19	23	..	.
29	X	X	X	25	23	22	25	22	21	32	41	48	55	70	76	69	67	68	54	48	40	47	47	38	30	25	30	43	0
30	X	X		27	23	20	22	26	23	30	41	40	48	38	48	47	68	72	60	44	36	28	N38	36	31	26	22	37	1
31				19	18	16	18	16	18	25	37	45	60	70	77	64	65	N53	N51	43	48	44	32	43	46	48	≷ Z- ≷	..	1
MEANS ✱				27	25	24	24	25	28	30	42	48	56	62	72	77	71	68	58	49	40	33	29	26	25	25	25	41	
MEANS †				27	25	24	24	25	28	30	42	48	56	62	72	77	71	68	58	49	40	33	29	26	25	25	25	41	
MEANS ‡				25	23	22	22	22	25	26	40	47	57	68	74	78	69	63	56	49	38	33	27	23	23	23	23	40	

DESIGNATIONS AND REMARKS:

✱=ALL COMPLETE DAYS †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER ≷=DISTURBED BY BAD WEATHER

N=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT Z=INDETERMINATE IN MAGNITUDE AND SIGN Z+=INDETERMINATE POSITIVE VALUE Z-=INDETERMINATE NEGATIVE VALUE.

TABLE 108

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN VOLTS PER METER

NOVEMBER 1933

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY	✱	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1				[40	60	58	Z-	108	81	Z	N74 }	90	84	89	91	[70	N57	Z-	Z-	Z-]	57	48	29	33	31	39	36	..	2
2	✱	†	‡	36	28	28	32	27	30	34	54	57	78	105	105	92	60	57	51	44	33	24	22	31	45	44	47	48	0
3	✱	†	‡	35	40	41	49	51	47	31	58	80	88	94	110	102	90	84	76	51	37	31	19	22	28	29	19	55	0
4				22	25	18	22	19	22	28	46	57	60	[N58	Z	Z-	30	Z-	Z	Z]	38	41	38	40	51	51	37	..	1
5	✱	†		25	25	16	15	18	25	25	32	43	60	64	78	64	58	N43	N28	33	35	44	44	35	57	41	35	39	1
6	✱	†		25	31	26	23	19	25	24	39	50	67	82	107	94	N63	N48	N19	48	57	60	31	57	50	38	28	46	1
7				28	25	22	22	21	23	28	35	..	..	..	..	..	..	..	38	35	26	25	20	23	21	19	27	..	.
8				..	..	..	..	..	..	..	..	63	71	75	89	94	93	81	70	57	48	41	28	25	31	30	28	..	.
9	✱	†	‡	25	25	26	22	26	25	23	38	54	61	74	79	57	56	N47	46	44	38	25	28	31	19	26	21	38	1
10	✱	†	‡	27	28	23	17	19	25	24	33	42	48	51	50	55	N54	51	41	46	39	38	34	20	22	22	26	35	1
11	✱	†	‡	19	18	19	18	21	28	29	38	47	61	64	64	77	84	71	67	62	54	35	29	31	25	22	25	42	0
12	✱	†	‡	21	19	16	18	19	22	31	30	54	N55	67	82	77	60	51	34	38	41	32	27	31	24	19	18	37	1
13				19	25	28	25	29	[N20	Z-	Z-	Z-	Z	Z	Z-	Z-	Z-	Z-	Z-	Z	N31]	37	41	35	41	38	28	..	2
14	✱	†	‡	27	30	34	32	38	43	39	51	57	57	64	60	60	57	51	51	33	18	19	22	28	41	29	22	40	0
15	✱	†	‡	22	16	17	16	16	22	19	27	44	60	72	74	70	57	48	44	26	21	25	19	19	19	24	22	33	0
16	✱	†	‡	22	21	16	18	16	19	22	31	49	51	57	60	64	60	45	44	37	30	37	N22	28	22	28	21	34	1
17	✱	†		19	25	16	21	25	21	20	31	45	48	47	52	51	45	48	N31	35	33	38	25	22	38	26	22	33	-
18	✱	†	‡	19	19	19	16	17	21	25	30	54	60	77	72	74	71	N59	N38	38	44	31	25	37	28	31	28	39	1
19	✱	†	‡	26	23	22	25	19	23	25	41	49	55	54	60	54	57	53	44	31	25	22	35	23	25	25	21	35	0
20	✱	†		19	21	16	17	17	19	28	27	38	67	65	65	73	71	N48	44	46	51	32	45	31	31	31	25	39	1
21	✱	†	‡	28	23	22	19	27	21	25	43	52	63	68	71	91	94	81	64	55	47	37	25	26	24	19	18	43	0
22	✱	†	‡	22	22	23	24	21	25	28	38	57	64	71	77	102	83	60	51	47	41	32	25	28	26	25	30	43	0
23	✱	†	‡	35	28	28	31	28	29	40	55	63	64	70	66	70	65	60	60	52	41	31	29	28	31	25	29	44	0
24	✱	†	‡	28	25	21	21	25	31	28	34	64	60	N55	67	67	57	58	48	47	37	38	37	38	46	30	25	41	1
25	✱	†		35	19	22	22	24	22	25	31	45	57	54	58	61	67	60	35	46	54	39	34	24	25	27	27	38	0
26				25	28	28	N22	42	41	53	[N45	Z-	N31	55]	56	53	52	46	43	38	37	32	31	22	28	38	37	..	1
27				30	28	36	21	26	26	23	28	44	51	55	54	68	70	85	75	48	35	31	{ Z-	Z+	28	Z-	Z+ }	..	1
28			{	Z	19	22	N16	22	Z	Z	N28 }	35	39	[Z	Z	Z-	Z-	Z-	Z-	Z	17	20	15	Z]	49	50	54	..	2
29			{	N41	51	37	31	Z	49	Z	N42	N44	Z	Z+	Z	60	48	Z	Z-	Z-	Z-	Z	Z	N31	70	71	58 }	..	2
30			{	51	60	Z-	Z-	N55	75	84	110	115	155	179	134	108	120	157	102	67	Z-	Z-	Z-	Z-	Z-	Z-	Z- }	..	2
31																													
MEANS ✱				26	24	23	23	24	26	27	38	52	61	68	73	73	65	56	46	43	39	34	29	30	31	28	25	40	
MEANS †				26	24	23	23	24	26	27	38	52	61	68	73	73	65	56	46	43	39	34	29	30	31	28	25	40	
MEANS ‡				26	24	24	24	25	27	28	40	55	62	69	73	74	67	58	51	43	36	30	27	28	28	27	25	40	

DESIGNATIONS AND REMARKS:

✱=ALL COMPLETE DAYS †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE [ ]=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER }=DISTURBED BY BAD WEATHER

N=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT Z=INDETERMINATE IN MAGNITUDE AND SIGN Z+=INDETERMINATE POSITIVE VALUE Z-=INDETERMINATE NEGATIVE VALUE

TABLE 109

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

NOVEMBER 1933

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

NOVEMBER 1933

DAY	✱	†	‡	0	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X			195	249	218	173	249	217	208	220	176	194	181	173	181	176	127	122	149	159	188	197	253	194	208	200	192	2
2	X	X	X	215	259	277	297	307	313	320	278	292	267	222	210	221	272	282	289	292	309	297	327	334	293	303	332	285	0
3	X	X	X	154	148	140	118	106	114	327	291	271	257	215	192	177	172	173	174	198	158	141	291	297	247	236	240	251	0
4	X			263	261	291	292	278	293	316	278	260	291	307	228	210	235	208	224	220	229	238	239	239	232	236	318	258	1
5	X	X		263	222	320	297	363	374	391	402	378	285	382	331	229	236	232	210	239	261	213	161	146	141	147	161	268	1
6	X	X		275	322	282	273	277	406	407	386	373	292	264	176	170	185	213	214	231	217	163	224	174	200	235	247	267	1
7				264	267	285	278	295	306	303	278	285	313	292	...	...	...	...	...	...	...	...	...	...	...	...	...	...	.
8				...	...	...	...	...	...	...	...	303	292	249	198	168	141	134	134	182	192	221	190	235	268	238	221	...	.
9	X	X	X	234	264	324	328	309	331	346	345	304	278	252	240	263	263	260	252	268	243	265	307	314	348	349	360	294	1
10	X	X	X	377	361	371	363	363	403	377	331	354	338	281	263	236	190	163	119	134	172	178	208	162	198	196	224	265	1
11	X	X	X	234	252	306	311	306	317	331	348	314	275	265	224	200	161	161	161	173	174	149	222	236	263	264	253	246	0
12	X	X	X	292	291	306	320	341	360	386	403	292	318	272	213	188	200	208	235	224	238	235	181	292	264	293	307	278	1
13	X			341	322	254	270	303	297	250	129	235	275	260	238	221	188	211	243	250	278	282	264	264	278	304	332	262	2
14	X	X	X	332	324	316	309	320	316	321	306	291	292	292	282	268	265	250	260	299	293	253	274	285	348	249	321	294	0
15	X	X	X	360	375	363	378	403	417	436	396	345	250	188	186	174	185	215	222	236	228	208	250	356	313	317	341	298	0
16	X	X	X	341	356	389	389	409	400	417	403	320	300	289	253	239	238	236	235	222	162	174	188	250	292	325	320	298	1
17	X	X		306	292	348	375	354	363	363	360	316	292	303	292	257	236	186	174	239	249	155	149	222	208	257	235	272	1
18	X	X	X	274	307	338	375	374	389	404	361	267	282	222	234	225	192	220	222	261	235	174	250	242	275	252	274	277	1
19	X	X	X	277	295	313	335	386	375	361	334	334	325	291	282	267	252	229	211	222	176	190	189	235	268	271	293	280	0
20	X	X		341	361	370	389	382	410	392	389	309	275	292	292	256	158	243	253	257	260	253	231	214	235	229	292	295	1
21	X	X	X	311	306	322	360	389	420	417	345	356	320	345	322	275	197	208	236	249	252	236	259	281	288	309	303	304	0
22	X	X	X	289	320	335	336	359	348	349	334	306	278	278	260	188	188	250	261	252	178	172	235	278	274	278	306	277	0
23	X	X	X	318	345	348	349	342	364	304	239	249	303	300	317	289	275	267	250	257	268	238	250	282	289	303	303	294	0
24	X	X	X	353	345	389	392	396	402	395	375	324	317	295	303	292	289	289	293	289	309	318	322	291	238	293	317	326	1
25	X	X		306	318	327	336	348	363	361	382	368	334	317	289	259	229	256	253	147	121	159	220	275	293	292	304	286	0
26	X			329	314	306	332	342	374	343	320	279	279	293	295	289	291	291	296	274	264	285	307	345	320	278	293	306	1
27	X			334	346	292	336	350	373	375	375	318	317	284	250	221	180	147	161	250	211	235	186	278	285	220	263	274	1
28	X			264	334	313	292	292	310	249	303	293	306	250	174	158	208	188	141	222	236	238	240	211	236	238	240	247	2
29	X			235	250	271	285	245	293	208	291	285	194	215	215	215	173	147	80	186	74	181	222	208	147	141	105	203	2
30	X			149	217	121	80	263	239	198	119	181	127	122	176	197	134	106	118	127	113	120	70	147	82	92	113	142	2
31																													
MEANS ✱				292	306	312	323	338	349	341	323	300	281	267	247	227	213	213	211	227	217	212	231	254	252	254	271	269	
MEANS †				304	313	333	350	357	369	370	350	318	294	278	258	234	219	227	226	234	225	209	237	258	264	270	287	283	
MEANS ‡				306	317	334	344	354	365	366	339	308	293	267	252	233	223	227	228	238	226	215	250	276	280	283	300	284	

DESIGNATIONS AND REMARKS:

✱=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 110

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

NOVEMBER 1933

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

NOVEMBER 1933

DAY	✱	†	‡	0-	-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X			108	201	207	193	154	154	152	170	154	187	168	162	172	170	168	170	162	152	191	211	233	168	170	172	173	2
2	X	X	X	211	231	253	269	275	285	287	233	233	207	154	150	170	233	241	243	249	273	253	310	308	271	261	291	245	0
3	X	X	X	320	310	283	297	273	293	300	247	221	201	183	150	129	129	129	125	154	150	112	253	304	233	211	225	218	0
4	X			241	247	269	273	255	271	293	251	229	231	271	221	221	231	221	227	221	217	231	221	231	195	195	275	239	1
5	X	X		229	177	291	347	362	366	384	368	347	251	229	168	207	227	231	211	241	241	185	170	129	133	129	129	240	1
6	X	X		293	302	267	349	349	386	377	347	310	231	221	150	148	170	207	211	219	193	146	181	154	172	201	227	240	1
7				251	251	273	251	269	281	279	231	239	291	251	...	...	...	...	...	...	...	...	...	...	...	...	...	...	.
8				...	...	...	...	...	...	...	...	241	231	189	170	139	129	127	127	160	191	207	170	111	251	221	191	...	.
9	X	X	X	201	241	308	316	297	310	328	300	263	228	195	172	229	251	231	231	235	228	231	293	299	326	339	339	266	1
10	X	X	X	371	329	345	349	347	369	350	320	314	304	249	217	201	174	150	114	129	160	172	191	154	189	174	201	245	1
11	X	X	X	207	231	271	291	293	293	328	291	269	221	217	172	170	148	148	146	168	164	143	197	211	221	249	237	220	0
12	X	X	X	271	289	277	308	328	339	364	333	231	271	239	191	189	191	207	231	227	231	231	154	271	233	275	291	257	1
13	X			328	306	235	269	291	291	251	211	235	255	251	251	241	227	227	231	235	251	255	251	251	253	273	329	258	2
14	X	X	X	314	310	300	289	299	306	310	275	271	289	287	271	267	261	251	241	287	275	231	310	271	368	213	308	284	0
15	X	X	X	339	368	368	368	377	401	421	377	310	211	160	146	150	148	181	185	215	211	291	235	347	310	295	329	281	0
16	X	X	X	328	347	371	368	396	362	405	384	291	251	229	195	191	207	181	213	211	148	156	231	229	273	308	291	274	1
17	X	X		297	287	331	368	349	366	358	329	291	267	287	253	231	231	174	170	231	231	137	150	221	189	231	207	258	1
18	X	X	X	271	300	328	352	358	364	396	350	249	251	179	191	187	177	185	217	249	217	154	251	231	253	229	251	258	1
19	X	X	X	249	289	297	320	368	358	352	316	322	310	289	271	261	231	211	170	189	150	162	174	394	247	251	271	269	0
20	X	X		314	349	349	368	368	396	377	377	297	221	231	251	227	343	233	253	251	231	245	229	203	211	209	271	264	1
21	X	X	X	295	299	328	352	371	408	420	354	308	247	261	269	221	160	154	211	229	231	193	223	269	269	291	271	276	0
22	X	X	X	271	300	328	322	347	329	331	295	251	217	247	201	150	152	211	251	235	170	150	189	251	261	253	269	249	0
23	X	X	X	306	328	349	347	329	350	287	211	189	233	261	267	261	231	229	221	237	259	231	231	273	269	281	271	269	0
24	X	X	X	331	328	386	392	405	390	382	358	271	308	287	273	269	269	251	281	271	308	312	310	273	211	275	300	310	1
25	X	X		281	312	320	329	349	352	349	368	331	333	291	251	229	189	197	251	147	93	148	201	269	285	285	291	269	0
26	X			310	271	287	329	347	366	320	306	285	277	277	271	271	271	275	277	251	251	269	271	347	314	261	279	291	1
27	X			314	328	285	329	343	364	352	360	271	261	231	211	170	146	129	143	233	207	221	201	251	289	251	166	252	1
28	X			227	329	297	283	275	287	269	271	269	291	241	215	221	233	221	179	215	227	231	225	193	225	229	221	245	2
29	X			211	211	235	247	231	253	211	239	235	177	201	203	172	150	170	154	217	221	221	221	191	125	108	89	196	2
30	X			129	191	195	201	217	174	148	101	127	84	69	108	131	108	65	78	104	129	170	166	221	170	197	191	145	2
31																													
MEANS ✱				269	286	299	315	320	328	325	298	263	243	229	209	203	202	196	201	215	208	203	223	249	238	237	250	250	
MEANS †				283	296	318	335	342	351	355	322	278	253	235	210	204	206	200	209	219	208	194	224	253	246	248	264	261	
MEANS ‡				286	300	319	329	338	344	351	310	266	250	229	209	203	197	197	205	219	212	201	237	272	262	260	276	261	

DESIGNATIONS AND REMARKS:

✱=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 111

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

[illegible] 1933

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

[illegible] 1933

DAY	#	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
	X	X		[illegible]	212	196	181	168	201	189	142	165	196	196	178	168	169	155	141	115	98	84	114	129	130	143	141	159	0
2	X	X	X	142	119	155	177	215	189	195	178	173	165	181	196	151	154	148	142	117	76	120	126	152	155	166	195	159	0
3	X	X		179	170	278	189	241	266	286	263	279	214	133	92	92	90	106	132	116	90	103	102	116	139	161	209	168	0
4	X	X	X	212	211	218	246	270	293	251	227	196	204	196	219	239	254	217	212	196	198	196	181	170	193	226	263	221	0
5	X	X		242	225	206	247	217	225	233	278	239	242	233	155	200	242	116	168	181	181	166	152	181	181	152	161	202	0
6				...	...	...	...	...	...	...	293	200	192	212	226	226	212	217	181	181	179	181	165	219	196	223	231	...	0
7	X	X	X	219	270	295	266	287	279	279	321	239	253	259	266	275	196	168	182	181	161	181	211	203	212	215	263	238	0
8	X	X	X	279	277	290	305	313	318	330	352	251	259	203	201	226	193	190	168	130	133	142	168	142	184	189	192	226	0
9	X	X	X	196	227	221	210	226	238	253	270	226	257	250	226	193	164	155	165	156	155	155	179	161	169	211	237	205	0
10	X	X	X	253	249	251	261	270	266	266	266	269	212	144	106	117	143	170	142	139	152	129	139	142	142	156	201	191	0
11	X	X	X	251	246	242	201	226	254	227	278	251	253	237	223	211	226	222	204	185	159	143	142	161	139	166	214	209	0
12	X	X	X	251	289	274	279	295	306	318	330	306	226	251	226	239	230	226	195	181	189	129	142	175	214	181	226	237	0
13	X	X	X	289	294	313	319	326	346	356	346	303	277	266	225	222	261	233	198	217	189	116	279	366	266	286	343	277	0
14	X			146	332	307	295	189	146	239	221	110	116	238	165	133	150	154	178	196	195	126	253	227	222	267	273	212	1
15	X	X		255	266	253	266	294	306	281	279	226	266	227	233	174	142	77	94	146	208	165	209	250	266	227	277	224	1
16	X	X		212	251	277	251	346	253	277	255	266	252	278	179	186	215	227	214	227	146	159	159	76	128	144	271	219	0
17	X	X	X	265	242	241	277	277	266	212	152	168	186	155	133	122	111	134	122	145	146	173	212	252	229	227	249	196	0
18	X	X	X	280	258	261	302	338	316	301	278	265	249	226	214	186	214	210	207	202	174	157	186	205	202	265	287	241	0
19	X	X		315	340	346	321	324	315	314	290	321	315	312	266	290	262	275	253	239	156	146	186	204	233	275	252	273	0
20	X	X	X	341	328	331	354	372	403	364	368	289	290	246	214	202	173	165	157	143	159	159	202	241	226	290	300	263	0
21	X	X	X	340	340	364	378	375	387	382	353	277	319	277	265	258	265	226	184	172	134	159	214	231	277	256	315	281	0
22	X	X		341	364	359	362	391	403	417	416	426	352	252	220	185	186	188	203	239	173	99	146	246	241	261	292	282	0
23	X	X		351	365	351	402	382	391	378	378	339	291	284	231	178	212	134	168	215	213	150	202	214	252	278	277	277	0
24	X	X		300	329	352	365	353	391	401	403	403	378	355	277	258	214	253	217	186	170	159	186	222	256	289	276	291	0
25	X	X	X	304	292	304	324	378	381	391	403	404	418	252	214	208	192	218	227	212	239	228	252	262	266	300	302	290	0
26	X	X	X	324	328	352	375	401	379	391	339	378	326	228	198	237	227	241	185	214	212	191	242	204	194	214	239	276	0
27	X			290	329	292	325	353	343	339	289	252	275	277	275	271	268	265	227	184	170	315	384	241	260	291	266	263	1
28				266	226	246	280	239	277	289	238	212	265	263	252	239	202	144	152	228	220	172	265	265	290	233	228	...	0
29				265	239	265	262	290	277	239	265	281	239	233	227	265	265	266	256	277	266	277	302	304	236	200	174	...	0
30	X	X		202	229	249	258	277	290	299	265	246	168	122	156	165	196	214	252	253	165	165	214	129	213	239	271	218	0
31				294	315	292	314	328	334	340	321	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
MEANS #				268	274	279	287	301	302	303	294	269	258	233	206	199	198	188	183	181	164	156	192	196	207	225	252	234	
MEANS †				264	269	278	286	304	306	304	297	276	263	231	205	199	197	187	181	180	163	151	182	193	204	221	250	233	
MEANS ‡				265	265	273	286	305	308	301	297	266	260	225	208	206	200	195	179	173	165	159	192	204	205	223	255	234	

DESIGNATIONS AND REMARKS:

#=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES

†=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT

‡=SELECTED DAYS

( )=INTERPOLATED

[ ]=APPROXIMATE

⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION

}=DISTURBED BY BAD WEATHER

TABLE 112

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

DECEMBER 1933

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DECEMBER, 1933

DAY	✱	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X		144	164	126	116	110	146	126	85	110	156	164	136	128	128	116	105	85	83	68	105	107	103	114	112	119	0
2	X	X	X	103	95	110	146	148	146	128	136	126	103	122	144	105	95	103	95	89	62	105	85	126	130	146	154	116	0
3	X	X		154	148	242	158	206	244	267	230	249	187	110	78	57	57	64	105	101	83	95	83	89	105	140	176	143	0
4	X	X	X	187	206	188	236	244	265	228	180	164	180	176	192	206	206	196	187	187	187	172	166	146	162	200	232	196	0
5	X	X		202	187	168	202	206	202	188	226	184	206	184	126	60	83	95	148	164	166	134	144	156	164	144	148	162	0
6				...	...	...	...	...	...	...	263	160	126	152	164	184	184	196	182	166	166	146	164	212	184	206	206	...	0
7	X	X	X	216	246	265	234	263	249	228	284	184	184	170	210	214	156	130	156	166	146	166	190	187	187	196	226	202	0
8	X	X	X	248	242	265	284	294	297	313	322	224	226	162	146	156	146	152	146	142	144	170	187	146	196	192	206	209	0
9	X	X	X	206	240	226	226	206	228	246	248	206	244	238	206	182	132	128	144	142	146	136	178	164	168	190	226	194	0
10	X	X	X	236	226	246	240	265	244	244	255	212	166	105	68	66	101	136	124	128	144	116	126	126	128	138	184	168	0
11	X	X	X	204	206	200	190	206	240	206	246	212	206	180	146	146	164	176	160	144	126	116	105	144	105	142	184	174	0
12	X	X	X	210	246	248	263	263	284	284	303	248	182	190	168	166	158	187	164	164	174	105	99	148	188	150	202	200	0
13	X	X	X	265	284	307	303	314	339	341	337	275	244	216	176	142	216	216	187	202	166	66	251	350	265	269	307	252	0
14	X		X	322	322	282	224	202	216	206	184 }	85	85	188	144	124	126	126	162	187	166	105	206	187	184	244	228	188	1
15	X	X		192	244	226	216	265	284	263	265	206	200	166	184	142	116	64	85	136	187	146	184	202	226	206	246	194	1
16	X	X		180	206	263	222	303	226	240	226	200	201	237	144	163	201	216	216	218	142	157	152	72	122	124	255	195	0
17	X	X	X	255	233	218	268	255	255	184	142	140	144	122	106	100	98	122	118	142	144	154	171	237	209	215	218	177	0
18	X	X	X	255	239	252	279	309	306	293	235	226	218	180	161	159	177	177	179	179	150	122	161	175	175	237	257	213	0
19	X	X		291	311	327	293	297	291	288	237	279	277	273	218	263	218	237	222	241	144	140	161	186	218	255	235	246	0
20	X	X	X	309	291	309	325	346	358	341	323	237	218	165	175	157	122	124	130	122	140	142	200	209	200	268	275	229	0
21	X	X	X	309	325	344	347	354	359	361	311	237	273	231	205	200	203	175	142	142	122	140	177	220	273	255	293	250	0
22	X	X		307	344	344	349	370	375	378	378	396	307	196	179	161	163	167	180	218	159	82	124	237	229	239	288	257	0
23	X	X		328	342	334	378	364	359	344	361	316	255	237	179	140	173	108	140	192	182	136	200	200	237	275	257	252	0
24	X	X		295	306	335	361	330	358	378	375	359	327	311	252	216	200	184	161	157	144	138	161	186	233	272	272	263	0
25	X	X	X	291	273	272	291	356	378	375	370	375	253	203	161	142	159	179	186	169	226	216	252	237	266	286	293	259	0
26	X	X	X	320	323	344	358	380	378	383	342	361	307	200	161	177	180	211	163	207	190	182	237	205	194	196	220	259	0
27	X			272	307	298	311	344	341	327	257	226	252	257	233	209	182	205 }	165	140	180	297	429	237 }	257	257	239	259	1
28				233	179	200	239	235	241	239	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0
29				...	...	...	...	...	...	...	255	257	216	205	200	235	257	257	237	272	270	257	277	307	233	196	167	...	0
30	X	X		188	213	237	237	257	257	255	235	215	161	108	100	106	146	179	220	233	142	122	218	102	180	218	241	190	1
31				288	268	273	284	320	323	334	327	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
MEANS ✱				242	250	258	261	276	282	275	263	232	213	189	163	151	152	155	155	163	150	138	176	177	189	206	229	206	
MEANS †				237	245	250	261	276	283	275	266	236	217	186	161	150	152	154	155	163	148	133	165	174	187	203	228	205	
MEANS ‡				242	244	253	266	280	288	277	269	228	210	177	162	155	155	161	152	155	151	141	172	188	190	205	232	206	

DESIGNATIONS AND REMARKS:

✱=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌉=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 113

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN VOLTS PER METER

DECEMBER 1933

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY	‡	†	#	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X		46	61	62	62	86	77	80	112	130	110	102	103	97	102	88	92	80	76	80	62	52	62	69	80	82	0
2	X	X	X	85	97	76	66	67	76	69	80	107	118	121	129	138	131	123	110	110	86	69	56	48	69	72	56	90	0
3	X	X		66	62	49	46	43	43	42	41	60	80	120	161	156	151	125	86	52	86	80	53	46	43	48	36	74	0
4	X	X	X	36	35	36	34	39	32	52	59	72	86	107	111	79	71	66	56	52	49	55	63	58	56	47	43	58	0
5	X	X		26	34	44	42	29	16	28	38	62	66	79	102	131	118	90	62	59	52	56	44	36	62	49	43	57	0
6	X			34	26	19	9	15	13	16	31	76	99	101	93	90	95	74	73	72	67	57	56	42	38	52	49	54	0
7	X	X	X	48	35	42	22	33	23	39	40	79	90	107	100	90	107	107	86	76	76	56	38	29	26	38	29	59	0
8	X	X	X	26	28	22	22	27	25	26	31	57	68	95	90	87	76	68	63	72	72	49	42	36	38	34	39	50	0
9	X	X	X	36	42	32	33	36	42	43	56	66	66	65	66	59	62	52	38	21	42	32	29	27	22	26	24	42	0
10	X	X	X	28	22	26	22	29	26	32	31	55	86	121	143	145	117	94	90	82	67	83	42	48	37	37	34	62	0
11	X	X	X	38	36	36	33	32	36	36	48	66	66	73	83	83	87	90	89	73	62	72	52	36	36	32	29	55	0
12	X	X	X	25	39	29	33	32	32	28	31	52	76	80	80	76	72	68	68	59	49	52	39	33	42	36	24	48	0
13	X	X	X	26	19	25	28	27	22	19	33	52	62	63	72	72	63	52	53	54	49	58	20	23	26	23	25	40	0
14			X	17	22	31	125	8	8	64	93	155	129	97	104	112	97	87	74	59	46	49	44	39	43	36	33	..	1
15	X	X		39	36	41	44	36	36	43	39	76	73	91	83	90	104	97	72	53	46	43	45	38	38	N29	32	55	1
16	X	X		33	35	36	32	26	36	32	22	49	60	64	93	69	58	56	57	48	50	45	48	83	52	59	32	49	0
17	X	X	X	19	31	26	27	24	36	38	53	66	79	97	115	114	110	86	69	54	46	32	25	29	20	19	19	51	0
18	X	X	X	25	32	26	22	20	25	29	38	45	72	80	77	85	66	59	53	52	58	52	39	26	26	28	26	44	0
19	X	X		30	25	27	35	25	29	34	40	46	58	63	66	56	62	52	45	36	58	66	52	39	25	30	34	43	0
20	X	X	X	32	22	25	25	26	32	30	36	70	87	100	107	115	114	110	90	87	60	54	49	36	36	26	27	58	0
21	X	X	X	25	21	26	26	29	25	32	36	55	65	74	77	73	62	66	66	64	62	43	31	29	29	28	29	45	0
22	X	X		25	22	25	26	23	22	22	28	38	57	83	90	100	83	74	62	43	40	54	39	32	26	23	19	44	0
23	X	X		22	23	25	22	19	26	30	35	46	62	60	90	114	87	97	83	63	59	62	39	36	26	26	26	49	0
24	X	X		29	32	26	27	32	38	26	31	42	50	55	72	80	91	62	85	72	45	59	52	42	35	32	32	48	0
25	X	X	X	35	33	25	26	26	32	29	34	39	62	77	85	84	83	69	59	55	42	47	28	20	24	19	19	44	0
26	X	X	X	22	20	20	19	23	27	26	29	36	56	70	78	73	64	58	63	48	49	49	32	31	29	25	26	41	0
27				28	31	29	38	32	26	32	32	46	56	63	62	69	76	Z	Z+	Z+	Z	Z+	Z+	Z+	39	39	37	..	1
28	X			53	66	62	43	45	49	44	52	63	56	56	54	63	65	84	66	49	38	22	22	20	36	22	32	48	0
29	X			36	32	32	35	31	43	36	45	46	58	61	66	54	50	49	42	32	31	35	29	18	28	29	29	39	0
30	X	X		37	34	25	25	29	25	28	25	49	86	117	95	83	74	59	39	42	43	36	29	49	32	32	31	47	0
31	X			32	46	29	31	27	30	31	32	49	74	77	86	85	111	100	103	69	66	N46	29	29	32	30	28	53	1
MEANS #				35	36	34	32	32	34	35	42	60	73	85	92	91	87	78	70	60	56	53	41	37	36	35	33	53	
MEANS †				34	35	33	31	33	34	36	42	61	74	87	95	94	89	79	69	60	57	55	42	38	37	35	33	53	
MEANS ‡				34	34	31	29	31	33	35	42	61	76	89	94	92	86	78	70	64	58	54	39	34	34	33	30	53	

DESIGNATIONS AND REMARKS:

#=ALL COMPLETE DAYS †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

()=INTERPOLATED []=APPROXIMATE ⌈⌋=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER ≷=DISTURBED BY BAD WEATHER

N=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT Z=INDETERMINATE IN MAGNITUDE AND SIGN Z+=INDETERMINATE POSITIVE VALUE Z-=INDETERMINATE NEGATIVE VALUE

JANUARY 1934

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN VOLTS PER METER

JANUARY 1934

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY	●	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	DIST. ACTIV.
1	X			30	27	43	40	36	37	31	35	52	60	92	127	112	88	91	62	43	54	43	40	45	53	49	62	56	0
2	X	X		40	40	44	50	75	39	33	31	53	130	88	89	95	90	N63	74	69	70	67	48	41	51	36	28	60	1
3	X	X		34	33	45	40	62	67	85	102	167	149	173	221	196	177	133	115	84	85	99	74	47	43	43	37	96	0
4	X	X		43	31	37	33	36	36	46	47	64	77	92	113	120	133	108	75	59	46	54	44	67	49	46	39	62	0
5	X	X		N26	41	27	43	56	35	33	44	57	60	56	101	94	90	71	68	58	48	46	49	36	46	37	48	53	1
6	X	X	X	41	39	39	34	29	30	37	34	70	91	97	124	158	147	115	84	81	68	39	38	37	43	50	56	66	0
7				41	41	39	36	34	36	40	45	53	95	[N109	Z-	N81]	75	70	67	60	51	34	36	40	53	60	64	..	1
8				70	68	[N97	N80	Z-	N69]	63	64	67	[63	Z	Z-	Z	Z	Z	47]	53	50	54	56	57	66	66	N67	..	2
9			[	73	N67	N55	Z	Z	N70	N72	80	75	71	Z	Z-	Z	Z-	Z	Z	N46]	53	50	51	50	50	44	43	..	2
10	X	X	X	47	60	63	61	60	51	43	46	64	79	81	78	77	70	67	58	50	39	51	27	31	45	26	33	54	0
11	X	X		33	32	36	30	43	66	50	53	75	81	84	89	95	103	82	74	57	43	32	46	55	36	33	45	57	0
12	X	X	X	28	21	21	21	23	26	43	36	56	78	74	85	81	64	57	77	60	54	55	25	22	33	30	34	46	0
13	X	X		34	30	27	36	26	27	27	29	54	63	81	81	101	95	84	57	N40	57	N46	47	40	37	53	61	51	1
14	X	X	X	43	38	29	26	31	38	40	31	47	65	74	70	70	74	93	92	68	70	43	42	24	30	29	23	50	0
15	X	X	X	26	26	28	26	26	27	30	26	45	58	70	78	108	105	77	57	50	56	53	46	N40	36	35	23	48	1
16				27	30	30	23	28	27	32	37	61	79	[60	Z-	Z-	N23	N37	Z-]	33	36	36	38	40	37	43	34	..	1
17				37	41	40	[N16	- 3	Z	Z	Z	Z	40	Z	Z	47	N36]	46	43	39	33	27	23	23	25	31	43	..	1
18	X	X	X	29	22	21	23	43	32	26	28	48	64	67	74	85	79	63	54	N41	N50	50	34	28	28	24	20	43	1
19	X	X	X	23	23	20	29	26	24	27	30	36	57	74	64	69	68	68	58	64	63	56	42	29	26	23	26	43	0
20	X	X	X	36	26	20	28	26	28	29	29	51	55	63	67	61	N53	N39	N46	43	41	44	42	39	47	43	33	41	1
21	X	X		27	19	19	21	20	22	27	28	34	51	60	69	67	77	67	50	36	N30	51	45	N32	36	26	26	39	1
22	X	X	X	22	23	26	24	31	33	32	37	55	77	106	102	106	95	91	92	91	77	67	46	39	29	30	30	57	0
23	X	X	X	29	26	23	26	32	32	46	40	50	64	70	77	69	66	63	85	67	50	54	39	26	29	23	23	46	0
24				29	33	27	24	22	23	39	32	35	51	52	[N57	Z-	Z-	Z-	Z-	Z-	Z-]	50	40	27	26	27	19	..	2
25	X	X		22	20	18	16	16	30	23	22	40	33	29	≷N27	- 7	N11≷	36	36	39	24	19	23	32	16	19	13	23	1
26	X	X		13	17	19	13	13	14	17	20	68	89	109	120	161	119	92	85	74	63	37	38	45	43	43	26	56	0
27	X	X	X	36	30	29	38	39	50	57	56	66	63	64	64	63	60	63	46	36	32	34	33	32	30	33	36	45	0
28				39	37	27	37	≷42	30	Z	Z	≷56	62	64	57	70	78	≷Z	Z-	Z	25	Z+	Z	N67	Z	Z+	Z	..	2
29			≷	Z	Z	Z	Z	Z	57	47	Z	≷128	74	96	106	84	72	70	72	119	Z	43	42	N20	28	N26	43	..	2
30			≷	30	Z-	Z	Z	Z	34	Z	Z	51≷	60	67	66	68	66	74	69	58	46	30	N38	26	33	27	24	..	1
31	X	X	X	19	22	25	23	27	36	41	36	62	62	67	89	88	88	76	67	53	41	26	29	20	19	29	26	45	0
MEANS ●				31	29	30	31	35	35	37	38	60	73	80	91	94	89	77	69	57	53	48	41	37	37	35	34	52	
MEANS †				31	30	29	31	35	35	38	38	60	74	80	90	93	89	77	69	58	53	49	41	36	36	34	33	52	
MEANS ‡				31	30	29	30	33	34	38	36	54	68	76	81	86	81	73	68	59	53	48	37	31	33	31	30	49	

DESIGNATIONS AND REMARKS:

●=ALL COMPLETE DAYS †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE [ ]=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER ≷=DISTURBED BY BAD WEATHER

N=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT Z=INDETERMINATE IN MAGNITUDE AND SIGN Z+=INDETERMINATE POSITIVE VALUE Z-=INDETERMINATE NEGATIVE VALUE

TABLE 115

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

JANUARY 1934 — EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT — JANUARY 1934

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY	#	+	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1				...	...	...	...	...	...	...	353	341	330	234	160	146	213	202	252	275	146	219	267	302	244	258	214	...	0
2	X	X		[illegible]	[illegible]	[illegible]	[illegible]	219	415	454	415	363	218	208	217	214	190	182	186	176	174	185	220	162	145	182	227	254	1
3	X	X		227	276	256	244	172	227	159	200	129	157	142	126	110	122	144	157	212	172	135	133	131	179	160	188	173	0
4	X	X		[illegible]	219	215	242	272	257	236	237	236	241	226	196	163	111	120	149	180	200	159	124	135	132	143	186	192	0
5	X	X		[illegible]	[illegible]	290	202	200	290	290	263	249	257	202	184	185	172	184	214	215	133	146	214	173	156	167	174	206	1
6	X	X	X	[illegible]	237	276	263	296	314	290	265	278	239	239	188	143	134	157	186	190	118	215	249	266	214	168	145	220	0
7	X			204	258	294	341	353	364	339	291	340	226	[204	224	229]	238	239	239	249	265	273	252	271	278	265	271	270	1
8				277	289	[265	263	249	266]	268	265	265	[276	...	...	196	205	220	241]	261	261	[illegible]	278	267	280	278	250	...	2
9	X			[219	213	194	159	174	196	218	241	239	258	213	196	216	196	218	218	237]	258	274	263	258	261	276	286	229	2
10	X	X	X	271	217	219	239	263	304	345	367	304	280	256	254	250	239	239	237	246	209	331	222	325	261	261	258	267	0
11	X	X		284	104	192	141	108	258	282	310	216	241	261	246	218	180	180	178	233	258	224	343	319	196	213	159	252	0
12	X	X	X	218	280	291	345	329	319	327	319	282	243	271	261	258	239	216	155	159	172	174	172	157	176	174	253	242	0
13	X	X		258	219	217	104	102	321	304	361	304	258	239	237	178	176	178	211	192	122	116	171	192	176	172	137	224	1
14	X	X	X	196	290	261	321	304	321	325	321	302	293	261	269	250	196	133	116	139	137	157	198	192	222	252	265	237	0
15	X	X	X	284	104	282	299	339	345	351	333	299	280	286	222	157	147	174	182	178	176	157	155	141	190	229	250	240	1
16	X			280	278	263	291	282	302	310	289	237	233	[196	239	216	241	258	218]	241	248	239	258	263	274	267	278	258	1
17	X			269	254	241	[229	216	205	190	190	196	216	216	218	216	196]	198	200	205	220	205	239	282	302	280	267	227	1
18	X	X	X	278	258	241	267	261	261	261	258	246	237	265	248	220	207	218	216	235	190	149	159	218	261	241	261	236	1
19	X	X	X	265	321	321	296	347	325	325	369	365	282	239	246	192	220	192	205	176	114	167	176	165	174	218	261	248	0
20	X	X	X	243	222	261	102	104	325	282	267	239	261	235	241	239	237	216	216	239	224	216	151	196	139	224	196	236	1
21	X	X		233	331	341	329	365	345	265	327	325	280	304	261	237	159	172	237	211	218	184	149	155	176	203	241	252	1
22	X	X	X	235	254	267	343	333	323	308	295	284	271	218	235	233	196	192	161	157	174	116	141	159	235	220	261	234	0
23	X	X	X	265	261	282	282	299	323	323	293	308	276	252	239	241	258	229	116	174	243	182	192	209	218	271	302	252	0
24	X			341	345	341	361	345	365	325	349	347	299	304	[261	182	196	94	63	37	80]	176	198	161	250	280	261	248	2
25	X	X		286	276	261	295	323	325	335	355	286	263	237	}258	248	261}	241	220	254	239	261	218	165	271	289	218	266	1
26	X	X		209	190	196	282	243	237	241	200	211	180	159	137	80	98	98	102	118	98	96	108	137	216	218	218	170	0
27	X	X	X	280	286	280	293	304	237	213	256	280	261	263	261	256	233	235	220	224	218	250	261	282	280	137	196	250	0
28	X			304	282	302	299	}269	293	280	304}	278	258	258	239	176	139	}98	110	145	178	157	122	190	172	196	135}	216	2
29				}171	239	57	149	218	241	216	118}	96	182	174	139	139	161	182	176	165	218	186	157	192	...	...	...	...	2
30				...	...	...	...	...	...	...	}153	239}	218	216	235	220	224	157	163	176	192	123	159	203	218	207	233	...	1
31	X	X	X	226	222	256	258	256	241	233	218	220	239	224	159	143	137	135	151	165	196	153	145	192	213	252	237	203	0
MEANS #				253	264	270	286	285	299	289	292	273	250	236	225	202	190	183	180	192	186	189	194	204	214	221	227	234	
MEANS +				247	261	270	269	288	302	293	297	273	250	237	223	201	186	183	182	194	180	180	186	194	201	209	221	231	
MEANS ‡				247	261	270	292	303	305	[illegible]	[illegible]	284	264	251	235	215	204	195	180	190	181	189	185	208	215	221	240	239	

DESIGNATIONS AND REMARKS:

= ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES — + = ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT — ‡ = SELECTED DAYS

( ) = INTERPOLATED — [ ] = APPROXIMATE — [ ] = APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION — } = DISTURBED BY BAD WEATHER

TABLE 116

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

JANUARY 1934 — EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT — JANUARY 1934

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY	#	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHAR-ACTER
1				...	...	...	...	...	...	...	319	297	270	175	118	108	158	154	211	239	120	203	213	294	230	252	207	...	0
2	x	x		309	323	299	305	207	411	425	380	301	158	160	190	188	175	171	173	160	156	171	216	147	133	143	211	230	1
3	x	x		211	254	235	213	141	194	137	205	95	100	98	97	95	83	98	127	175	147	112	98	118	152	131	152	144	0
4	x	x		175	194	188	213	248	228	194	194	177	194	156	137	[illegible]	84	192	[illegible]	[illegible]	[illegible]	137	[illegible]	118	[illegible]	[illegible]	[illegible]	161	0
5	x	x		194	285	268	190	181	263	266	228	224	220	156	137	154	135	152	173	175	118	135	198	137	133	147	150	184	1
6	x	x	x	162	213	250	228	257	286	266	250	218	162	179	143	98	95	118	137	152	98	200	285	252	205	152	118	188	0
7	x			177	230	268	305	341	341	323	244	286	173	[190	231	220]	216	230	230	246	250	283	250	274	250	239	235	251	1
8	x			250	250	[241	250	237	248]	244	235	246	[254	183	198	211	230	231	250]	254	250	257	270	250	268	268	250	...	2
9	x			[244	230	194	164	166	194	200	220	235	250	250	218	230	215	226	228	242]	252	268	259	255	261	285	285	232	2
10	x	x	x	268	242	222	244	259	306	323	332	296	274	252	246	242	231	213	231	241	220	118	194	339	250	250	255	252	0
11	x	x		297	323	321	358	305	233	292	321	194	215	203	198	194	169	179	175	248	283	237	112	116	190	213	152	230	0
12	x	x	x	209	285	286	349	342	357	314	308	268	213	216	209	211	213	194	141	158	175	171	158	158	171	175	218	229	0
13	x	x		248	215	230	286	270	317	305	314	270	230	207	194	154	156	177	194	190	98	98	188	194	177	156	120	208	1
14	x	x	x	209	250	246	332	286	297	324	299	266	252	230	250	228	194	124	100	135	126	141	213	194	231	250	259	226	0
15	x	x	x	286	305	290	306	339	362	358	328	272	250	216	183	149	114	154	177	190	175	147	154	124	177	218	250	230	1
16	x			288	257	283	286	285	303	308	250	228	203	[194	288	250	268	266	233]	250	248	231	237	259	266	259	272	259	1
17	x			266	250	244	[230	213	213	201	194	203	211	207	213	213	205]	211	209	213	231	213	248	305	321	288	259	232	1
18	x	x	x	272	246	250	268	266	250	252	242	209	205	230	213	203	181	211	224	233	188	137	162	211	268	248	268	227	1
19	x	x	x	285	337	333	306	357	337	339	351	323	266	209	220	175	190	175	190	162	104	156	169	173	181	216	259	242	0
20	x	x	x	231	231	268	315	310	342	288	265	246	233	209	213	237	235	218	216	255	233	228	188	190	137	218	185	237	1
21	x	x		228	348	362	353	383	357	250	337	326	255	268	248	231	152	173	235	230	213	190	139	139	177	211	250	252	1
22	x	x	x	250	266	268	332	351	306	321	250	246	231	160	175	158	156	156	156	139	171	112	135	139	233	224	263	217	0
23	x	x	x	277	268	286	290	306	341	321	299	297	222	211	209	233	242	228	286	162	254	183	218	228	215	85	305	249	0
24	x			346	357	371	394	362	372	326	351	360	268	286	[279	257	246	188	168	98	150]	188	231	149	250	266	252	271	2
25	x	x		305	285	265	303	341	317	339	357	274	268	231	{ 259	274	272 }	235	213	250	233	266	179	156	268	281	211	266	1
26	x	x		194	175	185	266	230	230	230	181	166	147	133	112	69	79	81	89	98	79	95	97	137	203	211	213	154	0
27	x	x	x	268	268	277	286	299	231	211	270	268	268	268	252	250	231	228	230	231	231	252	275	285	286	152	175	250	0
28	x			296	279	301	286	{ 268	305	286	299 }	272	259	248	231	188	135	{ 124	147	152	175	122	91	173	137	98	190 }	211	2
29				{ 175	266	190	203	201	218	164	116 }	56	152	137	154	118	147	152	143	104	194	194	156	...	...	...	...	...	2
30				...	...	...	...	...	...	...	{ 143	231 }	213	194	215	213	213	156	162	169	186	118	158	200	213	194	211	...	1
31	x	x	x	224	215	246	206	250	246	213	190	177	216	194	137	137	126	129	149	145	177	158	118	175	209	239	215	190	0
MEANS #				249	264	267	283	279	292	281	275	248	221	205	203	192	180	178	186	191	187	179	185	193	209	205	219	215	
MEANS †				243	263	265	286	282	296	284	281	243	218	199	192	181	168	167	179	186	175	164	171	178	196	192	209	217	
MEANS ‡				245	260	268	294	302	305	294	282	257	233	214	204	193	184	179	186	184	179	167	189	206	214	202	231	228	

DESIGNATIONS AND REMARKS:

#=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES; †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT; ‡=SELECTED DAYS

( )=INTERPOLATED; [ ]=APPROXIMATE; [ ]=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION; }=DISTURBED BY BAD WEATHER

TABLE 117

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

FEBRUARY 1934

DAY	#	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	x	x	x	241	248	297	275	261	270	303	292	245	232	184	184	182	201	212	248	191	223	187	164	228	248	290	272	235	0
2	x	x	x	256	294	341	365	359	319	317	343	308	283	279	268	184	274	259	257	201	144	168	154	193	164	168	205	257	0
3	x	x	x	261	213	236	310	290	297	288	336	321	294	248	201	184	162	164	166	172	184	184	150	193	241	270	250	233	0
4	x	x		219	346	297	279	294	215	335	365	354	315	232	228	199	162	158	148	102	150	182	160	141	144	187	257	227	1
5	x			{119	261 }	290	270	279	310	279	286	272	223	184	166	201	148	150	201	205	219	180	182	150	184	189	292	218	1
6	x	x	x	310	299	343	341	348	336	377	409	317	281	268	270	248	184	182	234	228	245	270	250	210	205	310	292	283	0
7	x	x	x	312	337	386	365	339	337	399	394	341	321	292	290	201	141	187	189	184	223	219	191	168	243	225	274	273	0
8	x	x		294	319	346	360	394	377	392	365	339	281	248	148	141	199	205	205	201	212	182	152	158	168	199	250	256	0
9	x			248	297	343	379	360	337	290	306	339	297	292	[184	193	205	187	164	184	221]	252	268	261	250	230	382	269	1
10	x	x	x	248	360	274	319	343	384	401	396	396	301	274	210	123	180	184	205	205	205	174	180	236	250	299	286	266	1
11	x			272	297	294	315	341	343	319	337	330	310	[254	248	252	225	216	234	230]	248	250	248	268	272	272	272	277	1
12	x	x	x	263	272	288	254	254	259	268	254	248	250	245	243	250	254	259	261	250	243	250	272	292	279	290	277	261	1
13	x	x	x	281	317	358	319	341	337	317	312	303	299	272	259	252	250	241	252	259	250	234	254	245	358	332	337	291	0
14	x	x		367	365	341	401	377	319	379	356	292	283	270	232	228	144	109	189	225	223	144	168	144	121	180	164	251	1
15	x	x		252	317	252	268	315	317	330	317	321	317	301	263	228	223	219	228	166	182	139	170	193	195	184	250	248	0
16	x	x		272	265	279	294	290	315	283	317	279	270	250	234	228	230	144	115	232	236	277	270	144	189	205	241	244	1
17	x	x		263	274	277	292	270	356	337	358	317	288	[223	150	141	144	182	184]	193	178	205	146	189	182	245	317	238	1
18	x	x	x	279	339	354	360	384	403	363	384	388	294	277	230	223	219	205	205	180	176	144	191	166	184	182	199	264	0
19	x	x		205	248	236	232	250	272	272	319	292	252	277	184	137	144	131	92	137	187	184	168	141	146	170	210	204	0
20	x			274	268	{152	283 }	277	337	382	365	164	160	234	216	201	225	223	214	210	{201	205	257 }	272	270	272	337	258	1
21	x	x	x	292	277	315	339	317	335	317	299	250	248	232	245	189	109	82	127	182	250	308	277	341	292	403	369	266	0
22	x	x	x	401	382	424	424	432	439	437	405	390	339	241	228	212	250	230	172	182	252	261	250	230	205	187	225	[illegible]	0
23	x	x		243	317	290	358	339	317	332	379	360	332	301	290	292	199	219	230	144	268	286	162	219	283	339	360	286	0
24	x			384	360	317	319	{299	292	268	301	210	234	178	210	96	170	225	205	178	92	133	252	154	55	139	234 }	221	2
25	x			{70	205	66	144	248	205	232	221 }	207	193	146	156	164	182	214	184	123	121	158	189	162	182	205	245	[illegible]	2
26	x	x		290	315	346	326	360	252	294	277	297	254	214	199	191	144	102	148	191	259	294	239	205	125	160	184	236	0
27	x	x	x	212	252	306	294	306	330	367	356	317	230	180	182	148	166	148	139	144	144	187	127	223	219	225	214	226	0
28	x			290	232	245	283	294	{270	268	301	261	228	178	158	201	178	162	148	187	148	257	189 }	146	139	131	164	209	1
29																													
30																													
31																													
MEANS #				265	295	301	313	320	320	326	333	301	272	242	217	196	190	186	191	189	203	211	203	203	207	232	263	249	
MEANS †				275	303	314	322	327	327	338	343	316	284	253	226	199	189	182	190	189	211	213	195	203	212	240	259	255	
MEANS ‡				280	299	326	330	331	344	346	346	315	281	249	234	200	199	196	205	198	212	216	205	227	241	265	267	263	

DESIGNATIONS AND REMARKS:

#=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 118

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

FEBRUARY 1934

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

FEBRUARY 1934

Date	*	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHAR-ACTER
1	X	X	X	238	230	226	259	251	299	284	263	208	202	152	166	166	188	222	234	190	226	184	136	230	246	297	273	228	0
2	X	X	X	273	298	354	361	376	339	322	344	301	261	282	284	192	265	257	265	224	166	187	164	202	180	168	206	261	0
3	X	X	X	226	228	299	307	303	318	294	313	288	265	230	192	180	158	152	164	188	206	206	128	190	240	259	241	233	0
4	X	X		228	322	307	267	299	311	313	354	339	284	206	202	184	148	144	142	128	166	187	170	146	146	187	269	227	1
5	X			(220	299)	251	284	284	314	284	269	267	202	187	164	187	138	150	226	228	244	182	170	128	184	170	273	219	1
6	X	X	X	284	296	335	331	350	383	377	414	320	259	230	234	224	170	166	257	261	273	286	269	188	194	303	286	279	0
7	X	X	X	328	339	387	377	326	335	397	377	301	299	246	244	178	126	184	187	188	228	222	226	166	224	230	269	266	0
8	X	X		301	337	359	363	412	381	383	361	265	234	206	124	126	164	224	202	206	226	172	134	150	182	194	249	248	0
9	X			246	286	305	377	370	341	286	303	322	267	278	[187	202	226	216	187	206	234]	265	282	282	246	228	146	262	1
10	X	X	X	348	377	265	341	357	415	419	403	328	265	249	184	112	174	178	206	210	192	162	156	216	246	286	284	261	1
11	X			269	292	301	326	342	326	294	339	318	282	[265	257	265	244	240	242	230]	246	248	253	282	282	290	297	280	1
12	X	X	X	273	284	294	265	275	267	267	259	257	261	255	251	246	244	244	240	253	242	249	257	292	280	278	276	263	1
13	X	X	X	284	320	348	320	350	333	299	297	301	307	286	265	244	232	226	218	246	246	234	265	244	366	341	335	288	0
14	X	X		377	379	346	412	359	305	396	342	284	255	244	206	206	128	110	202	248	244	146	162	126	114	162	164	247	1
15	X	X		248	303	248	284	305	318	311	294	303	284	248	253	188	184	187	206	162	146	118	144	166	164	158	242	228	0
16	X	X		246	249	267	278	248	284	269	303	267	261	234	184	184	192	140	118	246	240	284	284	128	166	166	206	227	1
17	X	X		238	265	265	276	261	339	324	359	251	226	[180	136	142	164	202	202]	208	184	206	152	190	168	246	311	229	1
18	X	X	X	282	341	359	368	397	408	357	381	359	267	263	200	202	204	188	188	182	170	128	168	180	190	166	187	256	0
19	X	X		206	230	226	192	226	269	267	313	259	212	248	166	124	126	118	89	158	206	202	172	128	154	168	210	195	0
20	X			282	267	(361	280)	263	299	359	348	138	146	244	216	206	224	226	212	226	(214	251	276)	284	280	259	322	258	1
21	X	X	X	265	275	314	324	303	320	299	87	210	202	188	206	170	99	83	128	187	248	307	276	331	271	396	355	244	0
22	X	X	X	377	370	396	403	430	444	419	377	352	303	212	210	202	224	226	172	187	265	278	232	228	184	170	218	287	0
23	X	X		228	307	280	341	333	305	311	355	355	265	263	284	280	206	222	234	150	248	265	180	224	288	324	341	275	0
24	X			381	335	286	284	(267	282	284	297	206	228	152	226	168	238	230	226	202	218	180	216	154	142	146	194)	231	2
25	X			(216	192	226	224	206	206	214	178)	182	150	101	124	132	142	160	140	93	101	150	172	146	172	202	226	169	2
26	X	X		261	273	297	303	339	206	246	255	249	188	166	158	164	124	85	130	174	248	307	244	206	103	148	166	210	0
27	X	X	X	192	238	301	286	299	313	324	328	265	206	146	164	134	146	138	136	144	148	192	116	226	212	210	206	211	0
28	X			228	206	210	265	290	(275	282	286	230	206	187	162	224	152	146	160	105	101	246	206)	142	120	105	140	195	1
29																													
30																													
31																													
MEANS *				266	289	300	311	315	317	317	314	276	242	220	202	187	180	181	190	194	210	216	200	199	202	223	247	242	
MEANS †				267	298	308	317	324	326	328	323	289	253	225	205	183	175	176	187	197	215	215	192	198	206	231	253	245	
MEANS ‡				273	300	323	328	335	344	338	329	291	258	228	217	188	186	189	200	205	218	220	199	224	236	259	263	256	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

FEBRUARY 1934

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN VOLTS PER METER

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

FEBRUARY 1934

DAY	*	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	DIURN. RANGE
1	X	X	X	27	29	23	23	23	26	30	30	44	52	75	77	78	64	54	46	51	40	33	29	20	18	16	16	38	0
2	X	X	X	16	14	13	16	20	22	24	21	36	49	46	50	61	47	42	36	35	40	35	35	20	24	20	24	31	0
3	X	X	X	20	21	23	28	20	25	33	36	46	49	57	63	72	78	67	57	50	40	42	30	27	21	21	17	39	0
4	X	X		25	20	17	27	24	21	24	21	32	42	54	52	51	64	58	N54	N23	34	33	26	16	23	19	18	32	1
5				Z-	N33	28	22	25	31	23	21	37	50	58	62	72	98	76	41	N14	42	38	39	37	27	27	31	..	1
6	X	X	X	31	20	22	21	26	31	22	26	42	56	66	67	75	80	75	56	45	46	40	32	39	47	29	19	42	0
7	X	X	X	20	17	20	20	31	34	30	30	51	56	39	79	99	111	85	74	67	60	68	60	43	33	30	43	50	0
8	X	X		25	22	19	23	17	23	20	28	49	63	87	154	158	92	71	65	56	46	49	53	27	30	24	31	51	0
9				20	22	22	20	22	24	36	29	36	51	62	⌈ 73	N74	Z	Z	Z	Z	21 ⌋	47	47	45	53	56	67	..	1
10	X	X	X	40	32	26	22	20	23	25	23	42	58	76	97	106	87	N72	67	51	54	43	31	24	24	23	25	45	1
11				30	26	20	24	28	37	34	28	43	57	⌈N50	N33	N44	Z	Z	N30	N36 ⌋	39	39	38	38	40	39	39	..	1
12	X	X	X	41	41	40	N42	50	N53	54	58	58	66	70	70	67	66	63	58	49	38	36	32	31	33	42	37	50	1
13	X	X	X	40	25	29	40	36	43	52	52	57	62	68	73	75	78	67	66	51	32	29	26	30	28	19	19	46	0
14	X	X		23	23	20	23	33	26	26	28	50	56	59	71	84	103	72	60	55	52	60	63	40	N63	46	45	49	1
15	X	X		30	34	30	35	31	39	56	55	59	67	78	88	103	98	85	83	72	43	49	79	78	70	43	57	61	0
16	X	X		39	30	32	41	48	46	43	46	47	48	74	97	106	91	91	71	N63	60	43	36	73	77	76	61	60	1
17	X	X		61	53	46	30	40	37	30	37	61	77	⌈115	134	N81	N70	N 3	N54 ⌋	57	56	57	57	46	37	33	27	54	1
18	X	X	X	25	26	23	26	26	20	25	28	38	57	66	81	79	77	61	60	57	61	56	46	37	34	49	32	45	0
19	X	X		29	30	29	33	32	33	37	36	54	63	67	85	89	88	91	85	48	48	47	40	60	46	39	40	52	0
20				30	36	N17	N26	28	36	23	37	110	64	59	64	63	67	60	59	39	Z	Z	N10	21	21	29	20	..	1
21	X	X	X	23	28	26	29	29	27	40	52	67	83	94	84	88	112	92	74	62	54	40	18	23	26	24	21	51	0
22	X	X	X	24	23	33	23	26	23	30	32	40	56	80	80	74	78	62	74	59	52	44	36	36	47	33	24	45	0
23	X	X		20	27	26	30	28	34	36	40	43	63	65	62	62	60	49	46	64	50	54	66	65	53	39	23	46	0
24				26	32	41	49	N62	N43	Z	50	N18	Z+	Z	N15	Z	Z-	53	Z	Z	Z	Z	46	Z	Z-	Z	N33	..	2
25				Z-	Z	Z-	Z-	30	N16	N14	50	79	99	135	118	105	96	85	82	74	61	50	43	33	32	26	36	..	2
26	X	X		23	24	23	21	22	43	11	38	62	78	98	88	88	89	92	72	54	46	30	36	42	80	43	39	52	0
27	X	X	X	44	33	26	23	26	24	29	36	53	74	99	96	103	78	74	65	54	54	46	47	27	23	23	22	49	0
28				28	27	36	18	21	N10	- 3	N27	44	49	38	48	N12	71	52	Z	Z+	Z+	Z	N39	40	60	52	50	..	1
29																													
30																													
31																													
MEANS *				30	27	26	27	29	31	32	36	49	61	73	83	86	81	68	63	53	48	44	42	38	40	33	30	47	
MEANS †				30	27	26	27	29	31	32	36	49	61	73	83	86	81	68	63	53	48	44	42	38	40	33	30	47	
MEANS ‡				29	26	25	26	28	29	33	35	48	60	70	76	81	80	68	61	53	48	43	35	30	30	27	25	44	

DESIGNATIONS AND REMARKS:

*=ALL COMPLETE DAYS

†=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT

‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE

⌈ ⌋=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER

}=DISTURBED BY BAD WEATHER

N=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT

Z=INDETERMINATE IN MAGNITUDE AND SIGN

Z+=INDETERMINATE POSITIVE VALUE

Z-=INDETERMINATE NEGATIVE VALUE

MARCH 1934

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

MARCH 1934

EXPRESSED IN VOLTS PER METER

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED FOR WEST MERIDIAN MEAN TIME)

DAY		0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	
1		37	33	45	50	62	67	46	81	74	98	129	118	85	68	78	69	47	50	50	40	50	47	34	35	0
2		26	26	23	22	21	24	29	38	69	80	98	108	102	88	91	92	78	78	43	50	55	48	43	45	1
3		40	36	31	44	34	42	37	47	79	85	96	107	130	136	129	78	68	57	54	56	58	43	40	37	0
4		36	33	24	20	25	26	36	35	59	69	85	106	111	86	73	59	47	51	53	46	36	43	28	29	0
5		28	24	36	26	32	30	36	61	63	78	88	110	113	97	74	63	57	58	45	43	26	23	27	29	0
6	X X X	20	31	23	31	23	26	30	36	59	63	84	88	86	81	85	68	54	43	29	29	20	18	21	28	0
7	X X	22	30	29	28	24	28	33	51	63	78	91	92	131	N80	N59	81	N38	50	42	44	40	22	22	34	1
8		N31	43	47	Z-	Z-	Z	Z	Z	Z	Z	Z	Z	Z-	Z-	Z-	Z-	Z-	Z-	N25	N36	N46	N40	N43	47	2
9	X X X	29	30	58	61	62	54	52	63	79	74	75	69	70	60	61	53	47	N48	46	40	42	40	37	40	1
10	X X	41	43	30	43	46	50	51	52	49	57	67	66	54	N43	45	44	40	37	36	34	29	34	31	33	1
11	X X	36	37	31	41	48	37	26	41	53	71	75	76	72	74	71	68	60	53	69	47	34	34	25	23	0
12	X X X	21	21	25	30	22	26	27	35	57	77	78	76	79	83	63	N57	N48	45	33	30	26	23	31	23	1
13	X X	22	29	31	29	18	23	22	27	43	53	69	78	78	74	64	N54	N50	51	43	45	29	33	30	43	1
14	X X	30	28	24	24	26	26	33	42	67	80	N67	74	71	74	68	61	63	57	54	43	27	34	34	40	1
15		34	27	30	21	21	19	20	30	39	46	65	81	88	N50	Z-	Z-	N 7	36	43	38	29	25	23	18	1
16	X X	20	19	21	24	20	20	23	42	53	89	71	84	93	N73	N60	N47	45	44	51	47	55	34	23	22	1
17	X X	16	18	20	19	21	26	24	31	47	60	70	68	58	N52	N50	N43	43	47	51	40	34	36	39	40	1
18		40	46	40	39	53	48	Z-	Z-	Z-	N15	Z-	Z-	43	53	51	48	42	37	37	30	34	29	30	30	2
19	X X	34	36	40	46	43	44	43	40	36	39	36	39	64	N61	57	58	47	N44	N38	39	35	25	39	26	1
20	X X X	23	21	21	21	24	22	29	36	45	57	72	83	86	81	N67	45	N40	37	41	28	23	16	23	36	1
21	X X X X	23	25	21	24	30	27	29	37	50	50	53	63	63	61	52	43	35	28	33	27	24	26	21	25	0
22	X X X	23	17	16	17	25	22	21	34	39	47	60	67	66	63	N54	N48	43	44	40	40	38	29	23	23	1
23		24	23	20	20	18	19	28	36	50	58	57	60	53	N37	Z	Z	36	N22	24	16	N16	Z	23	20	1
24		8-	8+	43	41	42	43	50	43	Z	N40	N74	N79	Z+	Z	Z+	Z-	Z	-10	15	30	40	45	38	43	2
25	X	37	39	39	39	46	44	44	68	78	104	138	135	120	88	71	61	57	55	46	40	30	26	22	20	0
26	X	21	20	22	23	24	27	29	34	54	71	81	78	67	70	63	49	43	42	46	39	27	19	18	20	0
27	X X X	22	24	27	17	20	16	23	36	51	67	76	87	76	56	55	38	41	36	26	18	16	19	19	17	0
28	X X X	14	13	15	13	13	22	23	40	71	72	77	76	68	64	63	53	60	60	42	35	36	23	19	21	0
29	X	20	20	23	16	20	17	26	35	50	67	70	78	68	56	54	51	49	50	37	26	22	19	20	18	0
30	X	21	20	18	16	16	15	16	30	36	47	64	77	74	71	59	47	50	45	29	27	23	22	25	26	0
31		22	20	19	24	23	24	27	33	51	54	64	70	N67	Z-	Z-	Z-	N44	N53	66	84	41	33	43	27	1
MEANS *		27	28	28	29	30	30	32	43	56	69	79	84	83	74	66	57	50	48	43	38	33	29	27	29	
MEANS †		28	28	28	30	30	31	33	43	57	69	77	82	84	74	67	58	50	48	44	39	35	31	29	30	
MEANS ‡		27	27	28	28	30	30	33	44	58	69	81	87	84	74	67	57	50	48	40	36	33	29	26	27	

DESIGNATIONS AND REMARKS:

*=ALL COMPLETE DAYS †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER ≷=DISTURBED BY BAD WEATHER

N=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT Z=INDETERMINATE IN MAGNITUDE AND SIGN Z+=INDETERMINATE POSITIVE VALUE Z-=INDETERMINATE NEGATIVE VALUE

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED [illegible] WEST MERIDIAN MEAN TIME)

MARCH 1934

DAY				0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	DIST-URB.
1	X	X	X	187	185	189	189	187	185	187	185	197	174	141	151	191	193	168	164	233	204	166	210	210	191	240	252	191	0
2	X	X	X	236	273	268	303	344	328	349	362	284	245	210	210	210	174	185	147	147	170	174	166	149	147	170	215	228	0
3	X	X		189	236	238	280	277	280	293	319	263	280	261	210	145	147	124	147	149	181	195	189	187	164	147	172	211	0
4	X	X	X	233	250	303	298	280	303	330	333	303	305	233	195	168	168	185	210	215	226	229	287	326	273	305	284	260	0
5	X	X	X	368	355	414	390	419	423	453	351	328	303	273	238	174	206	220	210	231	240	282	287	226	257	347	349	306	0
6	X	X	X	357	419	423	414	460	447	445	436	351	303	277	245	231	191	109	139	168	215	224	193	289	326	351	307	305	0
7	X	X		328	314	360	310	342	368	405	349	321	300	273	277	⌈164	168	197	215	210⌋	220	275	243	210	277	289	305	280	1
8				⌈266	263	261	233	197	224	86	...	...	...	...	...	122	147	158	189	210	229	210	178	181	193	213⌋	261	...	2
9	X	X	X	284	326	289	280	275	280	310	310	303	275	287	261	257	254	257	257	238	254	280	312	303	310	326	(324)	286	1
10	X	X		319	326	317	333	300	280	297	291	303	245	252	⌈250	238	236	238⌋	254	257	259	257	284	321	321	347	349	286	1
11	X	X		340	333	326	305	277	314	326	310	324	263	297	252	247	231	229	233	191	197	151	379	166	233	305	280	270	0
12	X	X	X	347	371	397	408	392	416	421	328	326	277	266	193	187	193	224	215	229	254	275	257	233	326	344	317	300	1
13	X	X		335	390	371	375	377	392	412	392	368	340	282	236	220	210	174	187	189	206	252	261	183	189	303	280	288	1
14	X	X		263	312	303	324	333	326	328	328	261	254	206	174	166	168	170	168	174	189	213	257	240	257	261	254	247	1
15	X			298	300	337	349	328	349	358	349	287	300	233	172	⌈168	183	170	187	189	191⌋	231	229	189	277	351	300	264	1
16	X	X		317	333	379	390	410	416	412	349	303	187	257	254	183	191	231	233	224	220	217	185	170	257	284	321	280	1
17	X	X		347	330	287	303	319	347	326	340	282	275	280	210	195	197	206	193	206	210	200	187	174	284	282	266	260	1
18	X			261	282	226	247	215	280	⌈231	149	183	210	187	213	233⌋	238	243	240	254	280	266	305	300	326	333	326	251	2
19	X	X		324	326	307	259	324	317	337	321	305	303	300	259	217	147	158	168	149	147	155	423	217	193	147	176	249	1
20	X	X	X	231	298	305	319	344	305	340	326	305	172	63	166	168	168	168	187	210	257	229	252	191	282	321	296	246	1
21	X		X	303	328	347	326	328	371	375	362	324	303	263	236	233	185	187	149	213	215	233	257	204	266	333	349	279	0
22	X		X	366	324	358	419	425	414	414	328	333	305	259	250	183	147	128	153	170	224	245	210	151	326	395	412	289	1
23	X			373	371	364	375	388	395	395	392	347	307	289	270	⌇238	233	181	210	261	275	287	358	280	126⌇	303	298	305	1
24	X			⌇178	101	273⌇	270	259	280	280	202	⌇185	149	118	111	149	109	220	69	195	268	296⌇	270	236	206	240	236	204	2
25				254	250	275	273	263	277	280	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0
26				...	...	...	...	...	...	...	312	280	215	204	189	189	149	170	189	193	210	217	236	261	250	326	284	...	0
27	X	X	X	326	307	280	300	349	377	386	330	321	233	168	164	132	147	147	160	174	210	257	257	275	270	277	289	256	0
28	X	X	X	321	340	351	351	366	326	347	314	217	215	206	195	202	202	[illegible]	195	130	149	217	257	210	193	217	261	249	0
29				270	259	326	330	305	326	355	371	291	240	229	178	166	168	191	206	210	215	254	240	270	328	349	259	...	0
30				298	328	353	355	364	368	362	344	319	280	236	238	191	109	126	149	160	187	210	191	210	263	314	310	...	0
31	X			303	326	326	326	351	349	328	284	303	277	[illegible]	[illegible]	189	120	126	166	189	170⌋	168	128	[illegible]	261	233	231	247	1
MEANS *				[illegible]	314	3[illegible]	325	333	342	348	321	293	262	235	216	196	185	186	187	200	217	230	256	228	251	287	286	263	
MEANS †				301	318	325	327	339	344	355	332	301	265	239	220	196	187	186	185	196	212	225	255	221	254	285	288	265	
MEANS ‡				296	315	327	333	347	348	363	330	299	259	220	209	195	186	181	182	196	218	234	245	231	264	302	305	266	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES

†=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT

‡=SELECTED DAYS

( )=INTERPOLATED

[ ]=APPROXIMATE

⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION

⌇=DISTURBED BY BAD WEATHER

TABLE 12

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

MARCH 1934

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

MARCH 1934

DAY				0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	DAYS NOTED
1	X	X	X	153	149	151	147	149	157	153	157	153	142	118	124	169	167	149	151	205	193	175	217	221	185	233	248	169	0
2	X	X	X	246	264	248	283	309	286	316	333	246	193	157	153	142	149	153	128	142	167	157	149	136	128	157	189	201	0
3	X	X		171	217	225	262	264	235	264	271	209	205	191	187	116	107	99	128	142	171	173	169	155	147	128	167	185	0
4	X	X	X	217	229	286	283	242	277	294	305	269	213	183	149	149	167	185	217	238	236	246	281	320	248	288	260	241	0
5	X	X	X	348	329	378	377	396	392	396	305	298	238	223	191	149	185	201	205	229	233	269	267	213	244	326	322	290	0
6	X	X	X	386	364	389	375	443	417	431	387	294	248	229	195	183	169	107	128	149	227	215	187	284	320	339	305	280	0
7	X	X		303	294	349	292	335	342	362	307	267	252	217	229	[126	155	211	229	227]	229	269	231	191	267	281	292	261	1
8			[	264	252	248	246	229	229	128	187	...	...	...	...	157	169	169	183	199	209	201	177	185	191	205	244	...	2
9	X	X	X	267	296	248	238	185	130	283	267	267	260	264	265	248	244	248	248	233	244	265	301	290	305	322	311	260	1
10	X	X		305	290	344	318	284	267	248	288	290	248	248	[248	242	229	244]	248	248	256	250	267	307	300	322	324	276	1
11	X	X		324	311	318	300	267	298	324	313	324	269	246	209	185	189	191	199	153	167	124	149	173	250	292	286	244	0
12	X	X	X	362	380	410	400	414	417	417	316	294	252	265	221	173	165	205	209	219	248	269	248	217	298	324	305	293	1
13	X	X		326	360	357	364	344	378	378	360	322	288	252	213	193	189	163	173	189	201	235	213	187	185	303	267	268	1
14	X	X		244	296	305	307	316	305	275	286	191	187	165	128	109	122	128	138	147	153	195	248	227	231	235	233	215	1
15	X			298	267	301	313	301	322	337	288	248	248	205	149	[149	171	193	203	209	199]	223	229	185	279	342	305	247	1
16	X	X		318	339	368	375	389	396	384	320	288	161	209	205	151	189	246	248	236	244	213	128	149	254	283	326	267	1
17	X	X		340	322	286	298	322	331	305	279	267	254	231	209	215	217	225	213	229	233	227	209	171	275	267	248	257	1
18	X			248	250	209	238	209	252	[233	175	189	209	209	213	225]	227	229	231	235	267	264	298	281	316	324	309	243	2
19	X	X		309	305	286	246	294	294	322	324	322	324	316	264	227	155	169	169	165	157	169	207	217	189	147	187	240	1
20	X	X	X	233	309	305	305	342	307	342	303	286	248	207	165	167	165	173	209	229	283	229	269	209	284	320	281	257	1
21	X	X	X	298	313	339	307	326	185	364	351	271	281	248	209	217	171	187	147	209	233	244	286	193	283	342	344	264	0
22	X	X	X	359	309	348	431	415	429	403	337	331	305	244	229	181	153	128	149	171	215	252	225	134	324	369	401	285	1
23	X			360	362	364	362	384	396	401	368	309	284	267	256	{233	240	199	227	248	269	292	339	269	227 }	283	286	301	1
24	X		{	267	88	229 }	227	229	238	248	169	{ 169	130	86	88	136	111	149	233	235	265	267 }	242	195	169	201	187	190	2
25				209	219	231	225	229	223	240	229	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0
26				...	...	...	...	...	...	...	301	227	165	161	149	151	128	151	173	181	197	219	227	269	233	284	248	...	0
27	X	X	X	307	286	244	248	305	339	331	301	262	189	136	120	111	128	130	149	163	191	248	244	248	244	264	248	226	0
28	X	X	X	300	322	320	322	335	305	311	265	169	171	165	157	169	185	185	189	128	149	217	240	193	167	215	250	226	0
29				254	246	309	322	305	307	342	359	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0
30				...	...	...	...	...	...	...	324	265	229	197	195	173	105	107	130	153	171	195	213	225	252	313	305	...	0
31	X			305	318	305	326	344	339	320	264	258	248	225	209	[191	201	195	209	193	175]	157	88	265	203	217	191	239	1
MEANS *				288	291	304	306	313	309	325	294	261	233	212	192	175	175	180	191	199	216	225	228	217	243	274	272	247	
MEANS †				288	299	310	308	318	309	329	304	268	235	215	194	172	171	177	184	193	211	221	225	211	244	274	276	247	
MEANS ‡				284	296	306	310	322	303	337	302	262	228	203	182	172	171	171	177	193	218	232	243	222	252	292	289	249	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

{ }=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE [illegible]

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

APRIL 1934

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED [illegible]

Day				0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
1	[illegible]			[illegible]	306	340	388	390	388	433	388	319	275	271	269	[illegible]	[illegible]	244	237	269	255	235	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2	[illegible]			298	309	405	369	339	482	369	311	258	251	255	249	[252	235	235	235	237	235]	246	266	272	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3	[illegible]			306	300	280	260	[260	235	262	284	267	231	251	235	286	213	231	219	235]	253	269	194	201	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4	X	X		300	384	390	443	459	440	452	302	313	273	240	162	167	215	271	269	262	255	258	278	382	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
5	X	X		306	320	350	418	409	426	452	388	282	213	169	122	129	144	125	174	198	167	176	283	426	255	[illegible]	[illegible]	[illegible]	[illegible]
6	X	X	X	286	304	335	330	311	332	420	324	258	210	162	146	164	178	169	190	213	219	162	190	249	264	[illegible]	311	290	0
7	X	X	X	293	266	345	345	302	306	280	289	280	280	269	258	231	235	215	213	206	185	219	235	217	169	222	298	295	0
8	X	X		258	324	293	298	371	411	407	388	335	244	213	185	190	[174	122	101	146	222]	210	171	180	258	300	298	293	1
9	X	X	X	369	300	409	409	405	411	471	430	348	286	249	260	244	235	146	148	144	213	258	246	233	275	278	302	295	0
10	X	X	X	293	342	407	430	469	492	486	420	324	293	273	242	249	213	192	194	160	[213	282	313	271	253	298	324]	312	0
11	X			[306	326	348	363	350	311	345]	269	278	280	253	215	183	169	167	169	{153	167	231	258	213	244	269	286 }	256	1
12	X			[273	286	262	255	258	237	231	208	210	197	197	199	203	231 }	222	213	203	215	258	217	203	187	201	215	226	2
13	X			237	258	262	324	326	324	262	253	153	141	169	148	120	150	162	171	180	{208	206	187	136	206	217 }	224	209	1
14				244	258	284	289	298	322	311	304	146	150	167	157	144	185	{190 }	...	...	...	...	...	...	...	...	...	...	1
15				...	...	...	...	...	...	...	213	213	215	222	224	215	210	208	213	206	215	226	258	264	271	278	298	...	1
16	X	X		304	293	405	388	428	430	438	332	226	201	219	231	210	199	206	215	213	215	224	231	235	244	255	298	277	1
17	X			335	317	332	365	369	345	365	284	280	{282	289	264 }	192	213	192	178	132	134	215	275	280	298	267	291	271	1
18	X	X	X	280	343	324	356	388	350	405	260	255	213	210	213	201	187	171	176	167	167	192	190	215	235	286	319	258	0
19	X	X	X	300	311	306	337	352	339	341	269	235	215	192	206	199	192	197	192	213	213	222	251	267	235	226	235	252	1
20	X	X		240	278	298	343	326	328	302	273	249	231	215	210	201	192	185	174	167	141	[157	190	210]	215	224	258	234	1
21	X			262	235	260	286	280	300	317	222	157	146	{194	203	169	160	169	144	146	187	222 }	253	282	275	280	306	227	1
22	X	X	X	304	319	311	343	356	326	380	345	273	258	217	192	180	190	190	187	192	206	226	213	129	249	300	271	257	1
23	X	X	X	308	284	324	363	375	390	409	350	255	237	213	213	192	171	162	141	190	210	237	264	260	289	275	258	265	1
24	X	X	X	271	280	332	360	447	471	390	324	319	280	269	240	235	164	167	203	215	235	231	258	249	258	317	371	287	1
25	X	X		375	388	394	409	434	432	488	354	306	300	278	244	96	141	185	235	213	235	215	213	235	206	167	190	281	1
26	X			282	300	343	415	451	409	388	324	282	273	222	[120	122	190	190	192	192	197]	215	185	278	286	127	153	256	1
27	X	X		235	282	302	343	367	304	365	317	255	213	210	206	167	125	122	99	139	187	213	258	275	255	280	249	240	1
28	X			260	306	345	304	371	360	345	315	258	190	174	[180	169	122	167	169	180	171	167	190]	228	235	260	275	239	1
29	X	X		273	298	282	302	304	291	345	267	169	141	134	144	144	{144	122	167	146	185	235	190	185	228	282 }	286	219	1
30	X			300	306	328	322	306	339	390	356	308	262	235	215	[217	215	213	192	187	185]	183	176	169	213	244	284	256	1
31																													
MEANS #				294	309	332	352	364	362	376	316	266	236	223	206	189	188	184	186	188	203	219	225	233	247	256	273	259	
MEANS †				297	315	341	367	383	381	402	334	278	242	222	208	191	186	177	184	190	207	220	228	237	250	265	277	266	
MEANS ‡				296	310	342	366	380	380	400	340	287	255	232	224	214	202	185	188	195	212	226	237	239	258	275	288	272	

DESIGNATIONS AND REMARKS:

= ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES † = ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡ = SELECTED DAYS

( ) = INTERPOLATED [ ] = APPROXIMATE [ ] = APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION { } = DISTURBED BY BAD WEATHER

APRIL 1936

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN VOLTS PER METER

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED (105° WEST MERIDIAN MEAN TIME))

Day				0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24		
1				26	26	28	20	21	20	26	35	51	67	66	72	77	70	H46	H56	48	50	56	64	48	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2				36	29	23	29	35	25	30	36	57	56	55	62	[H43	H38	H37	Z-	Z-	Z-]	40	29	H31	36	[illegible]	[illegible]	[illegible]	[illegible]
3				28	37	41	47	[H46	H29	23	26	20	H25	H31	H43	Z-	Z-	Z-	H40	42]	42	53	67	63	37	[illegible]	[illegible]	[illegible]	[illegible]
4	x	x		30	28	20	29	33	25	36	58	63	70	75	102	95	71	H43	H51	46	54	57	51	36	43	[illegible]	[illegible]	[illegible]	[illegible]
5	x	x		28	26	20	20	23	20	26	43	62	82	96	106	96	73	69	54	H33	44	53	46	30	20	[illegible]	[illegible]	[illegible]	[illegible]
6	x	x	x	28	29	25	23	26	27	37	52	71	85	110	108	96	81	69	74	64	56	63	58	40	27	23	36	56	0
7	x	x	x	29	29	30	35	36	41	46	45	52\	53	63	63	72	59	70	67	59	57	33	32	38	36	26	30	46	0
8	x	x		27	30	28	29	20	31	30	42	54	67	77	84	85	[H72	H53	57	H42	H42]	50	43	33	30	26	26	47	1
9	x	x	x	30	27	25	30	23	36	29	40	53	69	74	73	81	75	63	82	70	53	43	33	29	20	30	28	46	0
10	x	x	x	26	24	20	18	24	26	22	38	57	67	67	68	68	70	60	51	48	[45	40	33	23	16	22	20]	40	0
11				[24	20	21	23	23	27	33]	57	57	63	69	78	82	75	69	58	} Z-	H53	31	H11	H13	H33	Z	H3 }	--	1
12				} H35	H11	26	H27	H15	Z-	Z	Z	Z	Z	Z	82	H74	80 }	90	74	74	77	49	63	60	58	57	37	--	2
13				33	28	28	28	31	37	46	63	97	107	102	111	103	100	71	65	54	} H54	53	H43	Z+	Z+	Z }	60	--	1
14				53	47	30	30	24	23	24	45	61	85	71	H75	65	67 }	H56	H46	H42	Z	Z	H30 }	30	42	43	36	--	1
15	x			46	42	43	34	33	45	38	50	71	78	92	H82	83	H71	H68	58	48	53	55	50	48	45	47	40	55	1
16	x	x		36	33	29	21	20	23	31	40	74	84	75	77	81	79	64	H43	H42	56	56	56	53	53	[illegible]	[illegible]	50	1
17				20	24	23	24	32	27	43	66	61 }	Z-	Z-	H39 }	70	78	86	81	81	80	50	44	47	40	43	36	--	1
18	x	x	x	28	26	24	23	33	36	40	63	74	98	84	81	75	81	81	65	77	64	48	34	30	20	22	16	51	0
19	x	x	x	20	20	18	16	26	24	34	59	71	66	75	59	H51	55	61	H61	52	46	29	25	23	27	33	40	41	1
20	x	x		42	39	37	26	31	36	46	58	60	63	68	59	66	70	69	63	63	56	[H58	H33	28]	30	27	31	48	1
21				26	26	26	27	25	26	27	60	81	83 }	64	H60	H72	132	H70	47	Z-	Z-	H44 }	36	22	28	26	20	--	1
22	x	x	x	23	20	20	20	20	33	33	44	57	73	78	88	81	H69	70	64	64	66	53	53	38	23	25	32	48	1
23	x	x	x	27	23	23	23	23	25	27	44	H61	67	82	71	81	71	H67	H54	46	46	49	47	50	43	45	52	48	1
24	x	x	x	40	26	25	23	20	23	42	58	57	59	66	63	70	68	H46	H50	43	H35	43	43	37	29	34	32	43	1
25	x	x		29	26	24	23	24	19	26	39	53	60	70	76	92	70	57	H48	H43	H45	47	49	47	46	50	27	45	1
26				22	28	17	16	14	23	32	40	54	58	74	[88	H48	H41	H33	Z	H45	H33]	50	50	37	33	82	45	..	1
27	x	x		36	32	24	20	20	26	34	55	69	73	78	79	74	H77	59	75	63	46	48	40	31	29	30	40	48	1
28				27	32	27	35	23	23	33	38	43	50	54	[49	H53	Z	Z	Z-	36	45	40	42]	46	31	35	39	..	1
29	x	x		31	27	29	23	19	17	27	46	70	75	81	80	72	} 62	H54	50	34	47	39	43	30	23	H22 }	19	42	1
30				26	25	26	23	17	16	23	38	47	54	66	57	[H54	H58	H51	Z	Z	46]	46	50	45	40	35	30	..	1
31																													
MEANS *				31	28	26	24	24	28	33	48	62	71	78	78	79	71	62	59	52	51	48	44	36	32	32	32	47	
MEANS †				30	27	25	23	24	27	33	47	62	71	77	78	78	71	61	59	52	50	48	44	35	31	32	31	46	
MEANS ‡				28	25	23	23	25	29	34	48	60	70	76	75	75	70	63	62	57	52	46	42	35	28	30	32	46	

DESIGNATIONS AND REMARKS:

* = ALL COMPLETE DAYS † = ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡ = SELECTED DAYS

( ) = INTERPOLATED [ ] = APPROXIMATE [ ] = DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER } = DISTURBED BY BAD WEATHER

H = VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT Z = INDETERMINATE IN MAGNITUDE AND SIGN Z+ = INDETERMINATE POSITIVE VALUE Z- = INDETERMINATE NEGATIVE VALUE

MAY 1936

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN VOLTS PER METER

MAY 1936

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED FOR WEST MERIDIAN MEAN TIME)

Date	*	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	
1				23	19	20	17	15	20	27	42	52	N49	N58	62	N33	N30	Z-	Z-	Z-	-13	N25	45	37	43	45	38	--	1
2				40	41	43	36	N 7	67	63	70	N36	53	N38	N33	Z-	Z	Z	Z	N30	59	50	47	39	23	21	35	--	1
3	X			26	25	21	20	20	22	30	41	50	61	69	85	68	N56	56	54	50	46	N38	30	17	21	20	20	30	1
4	X			21	20	18	17	17	20	26	37	46	55	63	65	71	66	64	63	61	55	55	48	36	27	23	26	40	1
5	X			33	19	17	17	19	19	27	34	50	50	55	63	60	N64	62	62	51	48	38	26	N21	19	24	23	38	1
6	X	X	X	20	16	13	12	13	20	20	24	33	39	47	48	N53	N47	48	46	N35	N20	N20	30	33	36	32	30	31	1
7				23	23	19	16	14	16	20	Z	N46	39	40	29	47	Z-	Z	N 5	Z	46	47	43	40	38	40	29	--	1
8				25	20	21	23	26	23	34	44	57	Z	N33	60	74	N68	Z	N40	43	41	21	23	17	36	54	50	--	1
9	X	X	X	45	23	21	26	20	23	30	58	99	102	87	74	71	54	46	N43	N43	45	N43	38	43	N30	30	26	47	1
10				30	26	20	20	23	30	37	45	54	57	N65	75	99	Z+	Z+	Z	N33	Z-	Z	Z+	Z+	Z-	Z-	Z-	--	2
11	X	X		25	20	25	22	20	20	19	30	40	43	55	53	N58	90	N16	N41	N52	N34	34	35	N10	35	22	N43	35	1
12				24	23	24	22	21	25	26	37	46	52	57	N50	N53	Z	Z	Z-	Z-	Z	N34	44	51	44	42	33	--	1
13				23	28	..	..	..	..	..	..	50	49	54	N53	N21	N33	N33	N51	N47	41	44	46	47	31	33	27	--	1
14	X			23	19	19	19	16	14	24	35	48	N60	N69	N90	71	N63	55	N57	N52	50	58	46	35	23	31	32	42	1
15				40	30	N43	Z	Z-	Z-	Z-	Z-	Z-	Z-	Z-	Z	N42	53	N51	N53	43	50	30	26	22	25	30	20	--	2
16	X	X	X	18	17	17	21	20	23	28	43	51	53	54	57	51	N41	N59	N47	46	40	43	43	51	46	30	23	38	1
17	X	X	X	27	20	20	21	21	23	26	40	57	64	66	71	N58	N48	N49	N47	N46	N43	N41	46	37	35	30	32	40	1
18	X	X		26	23	12	14	10	16	20	31	39	43	43	53	N46	N29	N47	N32	41	N46	47	46	36	30	33	31	33	1
19	X	X	X	28	19	16	16	17	19	26	40	52	57	62	N49	60	N58	N57	N46	41	45	38	37	36	40	35	34	39	1
20	X			29	29	18	16	16	15	25	36	43	62	62	70	N63	55	N54	61	51	51	46	47	40	32	25	47	41	1
21				32	24	20	19	16	18	30	45	57	65	70	88	N84	N76	N70	86	Z	Z	52	39	32	27	26	43	--	1
22	X	X		30	29	33	20	21	23	35	48	64	78	76	83	84	85	82	N26	N44	92	N80	46	38	31	31	36	51	1
23	X	X	X	28	23	23	23	21	25	37	59	67	79	87	116	81	76	N63	56	N47	47	52	48	44	42	41	41	51	1
24	X	X	X	36	27	21	18	26	29	30	40	50	61	67	77	N96	N81	74	N48	N57	46	N34	N46	46	37	31	28	46	1
25				30	20	19	16	17	19	33	42	50	65	63	68	N67	N67	N41	Z	Z-	Z	43	N20	42	42	36	28	--	1
26				21	20	17	18	20	20	33	37	42	61	68	Z	Z	Z	Z	Z-	Z-	Z-	26	37	57	45	30	30	--	2
27				26	26	30	27	16	20	23	38	52	N40	60	N16	N28	N62	N57	63	Z	50	35	48	Z	Z	43	41	--	1
28				50	13	Z	Z	28	30	33	Z	72	84	97	70	78	76	71	N62	N54	N45	54	50	40	41	49	29	--	1
29				23	19	23	24	31	41	48	57	57	66	71	73	74	Z-	Z	N51	Z	Z	Z	Z-	Z	43	37	40	--	2
30				39	40	36	36	34	41	39	63	92	78	77	Z	Z	N60	N67	N59	55	53	N28	50	54	46	53	39	--	1
31	X			28	21	21	20	17	24	36	47	52	73	78	N75	71	68	N74	70	64	57	52	60	47	28	30	24	47	1
MEANS *				28	22	20	19	18	21	27	40	53	61	65	71	66	61	57	50	49	48	45	42	36	32	29	31	41	
MEANS †				28	22	20	19	19	22	27	41	55	62	64	68	66	61	54	43	45	46	43	42	37	36	32	32	41	
MEANS ‡				29	21	19	20	20	23	28	43	58	65	67	70	67	58	57	48	45	41	39	41	41	38	33	31	42	

DESIGNATIONS AND REMARKS:

*=ALL COMPLETE DAYS †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌉=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER ≷=DISTURBED BY BAD WEATHER

N=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT Z=INDETERMINATE IN MAGNITUDE AND SIGN Z+=INDETERMINATE POSITIVE VALUE Z-=INDETERMINATE NEGATIVE VALUE

TABLE 127

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

MAY 1934

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

MAY 1934

DAY	*	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X			323	347	329	379	403	431	408	342	313	⌈270	244	216	219	221	211	214	199	216	231⌋	244	244	249	268	339	286	1
2				313	297	300	318	{236	238}	249	219	⌈187	192	170	177	190	199	202	194	216⌋	236	244	244	292	300	315	323	...	1
3				276	321	292	329	401	403	428	363	350	315	252	163	194	244	244	244	244	257	270	300	313	334	377	431	...	1
4				403	395	413	446	459	456	461	403	353	315	297	246	182	168	192	211	221	236	246	262	...	...	...	...	...	0
5				...	...	...	...	...	...	...	350	321	273	214	187	170	151	148	146	141	143	146	148	175	182	175	194	...	1
6	X	X	X	214	273	270	326	363	350	369	353	315	297	249	216	170	124	92	124	146	170	173	194	211	216	273	313	242	1
7	X			353	377	350	361	377	401	413	⌈403	371⌋	273	225	219	225	{224	214	207	214}	199	219	214	228	244	276	270	286	1
8	X			297	347	350	358	347	355	428	297	297	⌈257	249	257	244	224	238	225	221	252	310	228⌋	273	214	170	197	276	1
9	X	X	X	236	244	270	315	326	329	329	260	119	117	146	165	158	165	170	146	129	163	175	194	194	202	244	254	210	1
10	X			268	302	297	358	326	326	345	289	352	221	⌈194	187	170	148	126	114	153	143	104	160	156	102	119	185⌋	214	2
11	X	X		273	307	305	305	334	323	355	286	244	219	173	⌈170	165	122	100	168	175	173	190	219	221	219	211	199⌋	227	1
12	X			199	221	270	262	305	326	350	273	260	236	194	⌈175	175	170	156	146	143	165	173	190⌋	219	246	270	249	224	1
13	X			270	326	313	342	374	353	374	313	273	219	⌈194	148	151	168	165	192	197⌋	202	214	219	194	211	284	294	250	1
14				300	323	350	387	403	403	428	323	284	244	197	209	194	197	194	194	194	173	168	211	194	216	246	273	...	1
15				221	244	⌈273	219	194	224	211	216	192	214	221	228	236	244	224	173	131⌋	148	190	194	221	276	278	273	...	2
16	X	X	X	278	326	350	323	297	321	297	270	265	254	233	207	173	126	90	146	173	199	219	216	170	214	270	294	238	1
17	X	X	X	347	366	350	331	387	403	403	313	254	216	146	107	175	170	221	221	216	225	260	224	265	231	273	307	267	1
18	X	X		350	379	413	451	454	456	454	321	300	265	231	214	⌈211	173	194	175	214	231⌋	254	244	273	224	297	369	298	1
19	X	X	X	403	371	408	403	423	454	454	403	355	302	260	241	219	214	143	148	187	224	238	268	273	221	246	297	298	1
20				289	302	347	371	431	469	481	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
21				...	...	...	...	...	...	...	...	...	...	...	...	...	148	129	190	141	97	221	286	244	270	318	297	...	1
22	X	X		323	321	323	353	387	403	377	305	246	221	244	219	214	151	177	148	190	207	197	244	287	294	273	315	267	1
23	X	X	X	318	353	366	382	401	390	456	326	297	268	224	129	143	187	194	180	194	216	224	219	270	300	305	307	277	1
24	X	X	X	350	406	428	428	449	406	428	408	350	315	276	170	173	160	197	209	192	194	180	170	192	211	238	270	283	1
25	X			276	294	302	353	326	345	297	265	244	214	192	175	170	177	173	156	143	151	173	170	197	244	270	265	232	1
26	X			302	350	347	355	350	377	350	270	265	224	⌈177	173	148	175	146	136	122	148	209	219⌋	219	214	268	300	243	2
27	X			300	323	318	342	326	345	355	321	194	{165	170	151	146	170	165	146	126	148	170	180	136	146	199	214}	219	1
28	X			214	{216	117	175	244	244	225	177}	175	146	119	100	146	148	170	143	170	143	160	185	238	194	224	273	181	1
29	X			270	292	276	297	284	289	254	241	221	224	219	219	{168	141	165	187	175	122	190	66	83}	221	244	252	212	2
30	X			273	249	278	297	313	326	326	281	192	236	238	⌈173	194	219	211	197	211	221	244	270	254	148⌋	168	294	242	1
31	X			345	350	361	431	428	469	408	374	297	238	148	182	238	238	216	224	244	233	244	219	219	281	377	406	299	1
MEANS *				295	319	321	345	358	366	368	308	270	235	206	183	182	175	171	172	180	189	207	207	218	219	251	281	251	
MEANS †				309	335	348	362	382	384	392	324	274	247	218	184	180	159	158	166	182	200	211	219	236	233	263	292	261	
MEANS ‡				307	334	349	358	378	379	391	333	279	253	219	176	173	164	158	168	177	199	210	212	225	228	264	292	259	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

MAY 1934

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

MAY 1934

DAY				0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEANS	
1	X			316	338	332	383	383	426	381	345	284	⌈256	240	282	231	247	247	252	226	233	247⌋	242	240	249	254	332	287	1
2				314	286	273	293	⌈266	224⌉	219	208	⌈207	188	188	190⌋	...	...	...	...	...	...	...	...	...	...	...	...	...	2
3				...	...	...	...	...	...	...	325	320	280	228	154	180	252	268	266	263	277	298	325	316	356	404	439	...	1
4				400	389	424	447	480	464	468	385	318	293	291	242	173	168	180	209	224	254	282	289	...	...	...	...	...	1
5				...	...	...	...	...	...	...	318	282	256	204	178	176	156	149	146	137	149	173	176	176	185	202	250	...	1
6	X	X	X	207	296	273	338	385	361	365	338	311	305	263	219	171	132	119	129	151	188	200	221	202	216	270	302	248	1
7	X			378	389	372	378	389	417	424	⌈347	341⌋	275	235	226	240	⌈247	231	202	173⌉	200	219	228	231	247	273	268	289	1
8	X			302	341	361	352	325	361	389	277	261	⌈289	254	224	224	247	254	228	224	252	307	233⌋	289	214	176	197	274	1
9	X	X	X	228	254	282	325	320	338	320	256	127	104	132	151	154	176	171	154	151	171	193	231	224	204	247	266⌋	216	1
10	X			256	314	302	361	341	343	311	270	224	200	⌈178	161	146	99	89	137	173	171	151	142	129	173	180	200⌋	210	2
11	X	X		261	302	298	314	327	316	338	289	224	224	176	⌈173	171	129	127	176	180	180	200	228	238	224	231	204⌋	230	1
12	X			195	216	273	270	311	314	338	275	231	216	176	⌈190	183	188	180	180	185	180	197	190⌋	204	228	268	247	226	1
13	X			284	318	307	338	385	363	365	293	247	219	⌈197	154	178	180	195	209	221⌋	224	228	240	178	224	280	293	255	1
14				298	316	341	387	422	419	415	...	....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	....	...	1
15				...	...	...	...	...	...	...	⌈249	238	247	242	245	231	224	221	176	151⌋	134	176	171	235	270	256	247	...	2
16	X	X	X	261	296	334	293	275	289	293	268	238	224	197	188	176	127	104	151	154	197	209	193	171	216	270	270	225	1
17	X	X	X	316	309	302	261	273	293	293	221	254	178	127	104	178	166	231	242	226	242	252	226	263	224	247	298	239	1
18	X	X		359	383	428	468	451	449	445	354	289	240	226	200	⌈200	180	176	190	226	226⌋	247	231	275	200	296	376	296	1
19	X	X	X	400	343	385	404	417	468	464	381	316	289	252	247	226	219	154	151	190	242	270	296	289	221	233	311	299	1
20				300	289	336	378	415	449	464	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
21				...	...	...	...	...	...	...	...	...	...	...	...	...	142	127	171	156	151	235	268	207	289	268	259	...	1
22	X	X		277	296	309	341	378	413	359	268	197	178	200	183	171	137	151	163	195	185	202	224	261	275	256	273	246	1
23	X	X	X	280	338	361	363	417	404	422	296	273	224	214	119	132	178	190	190	216	231	233	224	282	311	305	293	271	1
24	X	X	X	338	376	441	453	436	407	394	389	336	296	284	221	168	122	168	214	183	214	197	176	195	221	228	273	280	1
25	X			280	296	318	361	343	365	311	256	204	176	178	176	173	176	176	171	159	154	173	202	224	247	247	259	234	1
26	X			316	359	354	363	361	381	327	302	259	221	⌈183	178	176	180	154	159	149	171	214	221⌋	202	221	268	311	251	2
27	X			293	323	318	332	343	352	345	291	202	⌈176	171	154	168	163	171	146	122	149	168	159	178	127	190	178⌉	2	1
28	X			180	⌈137	122	190	233	226	221	122⌉	154	127	99	104	127	137	149	146	154	151	176	176	242	185	202	268	168	1
29	X			266	286	270	291	266	282	247	221	224	224	224	200	⌈163	200	200	197	178	197	200	190	142⌉	228	238	242	224	2
30	X			254	224	240	270	284	291	273	204	190	235	247	⌈180	287	242	224	221	226	242	270	275	224	132⌋	159	273	234	1
31	X			336	338	345	407	411	464	404	318	270	202	151	176	242	228	221	219	247	240	252	228	226	275	385	381	290	1
MEANS *				286	307	319	342	350	362	349	286	246	221	200	180	185	178	177	184	187	202	218	216	222	220	248	275	248	
MEANS †				293	319	341	356	368	374	369	306	256	226	207	180	175	157	159	176	187	208	220	225	240	231	258	287	255	
MEANS ‡				290	316	340	348	360	366	364	307	265	231	210	178	172	160	162	176	182	212	222	224	232	230	257	288	254	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION ⌉=DISTURBED BY BAD WEATHER

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

JUNE 1934

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

JUNE 1934

DAY	*	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	DAILY RANGE
1	X	X	X	377	395	403	382	345	406	244	238	216	⌈228	165	148	148	194	219⌋	231	238	246	252	276	300	278	276	292	271	1
2	X	X	X	374	416	451	469	496	454	(355	350)	318	289	281	268	⌈225	216	221	238	244	219	241	254⌋	225	244	329	359	314	1
3	X			353	353	307	382	411	433	461	358	268	244	244	236	219	238	236	214	216	221	233	199	199	292	329	334	291	1
4	X	X	X	353	387	408	436	411	454	393	345	353	252	238	270	⌈254	231	214	231	238	249	268	292	249⌋	268	323	363	312	1
5	X			355	393	431	416	451	428	379	268	244	238	228	219	219	236	246	219	216	219	224	231	233	244	294	359	291	1
6	X	X	X	315	377	426	413	418	428	382	297	273	225	⌈185	173	170	158	165	168⌋	219	244	238	168	85	97	185	148	248	1
7				...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0
8				...	...	...	...	...	...	...	...	...	...	244	225	⌈268	156	168	233	219	224	221	170	173⌋	194	326	334	...	1
9	X			292	423	441	401	474	454	491	401	363	318	281	244	238	244	204	170	221	224	219	219	257	273	315	300	311	.
10	X	X	X	300	377	431	444	456	456	469	358	326	294	276	268	244	233	170	160	170	216	268	265	262	270	307	350	307	0
11	X	X		292	321	307	334	371	401	401	318	294	260	219	190	168	170	197	199	219	216	233	276	233	197	246	289	265	1
12	X	X	X	276	300	355	377	406	377	401	334	323	297	268	209	190	168	192	199	207	216	241	278	202	192	219	302	272	1
13	X			329	342	347	339	353	355	403	326	300	292	268	221	194	177	173	100	78	122	175	216	257	302	219	307	258	2
14	X	X		302	318	371	374	413	403	428	345	300	276	244	⌈180	141	129	122	143	190	211⌋	216	228	244	260	284	262	266	1
15				286	297	323	323	310	355	385	284	244	221	199	⌈173	190⌋	...	...	...	...	...	...	...	...	...	...	...	...	1
16				...	...	...	...	...	...	...	300	270	260	231	190	192	190	165	192	216	233	249	292	236	236	260	270	...	0
17	X	X	X	310	347	347	323	377	329	423	350	297	268	249	197	202	190	175	146	146	175	216	231	244	225	273	238	262	0
18	X			270	307	292	294	403	385	403	329	260	204	119	102	109	⌈146	175	119	146	146	170⌋	177	219	228	265	300	232	1
19	X			329	347	305	302	323	398	395	284	244	233	211	148	143	⌈197	175	160	197⌋	216	221	249	238	265	302	323	259	1
20	X	X	X	371	401	377	398	433	413	393	286	268	231	221	194	⌈219	214	197	199	207	219⌋	231	268	292	238	300	350	268	1
21	X			377	350	379	408	456	532	512	334	289	268	265	254	224	214	168	202	219	207	284	209	168	146	224	268	290	1
22	X			315	363	371	393	454	353	323	294	270	244	148	⌈160	207	194	194	175	192	194	194	185	180	148	151	199⌋	246	1
23	X			249	297	326	310	329	326	371	276	238	⌇219	199	44	87	109	238	146	221	228	194	53	194	194	244⌇	252	223	2
24	X	X	X	190	219	221	211	231	219	233	139	75	68	97	122	100	122	136	160	151	170	173	216	244	192	265	329	178	0
25	X	X	X	326	305	323	374	387	390	393	323	276	148	75	73	73	148	182	185	192	209	225	244	165	254	294	292	244	1
26	X	X	X	265	334	339	403	428	431	418	268	231	221	197	197	122	119	122	151	221	238	244	257	273	224	216	276	258	1
27	X			300	307	323	377	377	377	403	366	300	270	225	190	102	122	131	165	⌈175	190⌋	219	238	257	265	221	273	257	1
28	X	X	X	329	377	350	416	451	499	418	377	313	249	194	170	160	168	170	165	170	175	192	219	238	265	244	276	274	1
29	X			254	270	302	313	353	329	329	310	268	249	170	158	190	⌈190	160	190	146	175	190	136⌋	168	158	170	185	223	1
30	X			197	209	221	268	249	244	[illegible]	197	173	190	170	148	119	⌇ 92	92	66	97	100	73⌇	78	175	177	199	219	168	.
31																													
MEANS *				308	340	352	368	394	395	388	310	272	241	209	184	172	178	180	173	190	202	217	218	223	227	257	286	262	
MEANS †				313	348	365	382	402	404	382	309	276	236	208	190	173	176	177	184	201	214	231	248	233	229	269	294	268	
MEANS ‡				316	353	369	387	403	405	377	305	272	231	204	191	176	180	180	186	200	215	232	247	232	229	269	297	269	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES

†=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT

‡=SELECTED DAYS

( )=INTERPOLATED

[ ]=APPROXIMATE

⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION

⌇=DISTURBED BY BAD WEATHER

NEGATIVE CONDUCTIVITY AT [illegible] MAGNETIC OBSERVATORY

[illegible]

[illegible] IN VOLTS PER METER

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

[illegible]	#	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	[illegible]	[illegible]
1	[illegible]	[illegible]	[illegible]	370	401	430	397	350	410	308	216	266	[288	154	349	154	213	240]	252	252	264	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2	[illegible]	[illegible]	[illegible]	379	406	447	458	479	432	(335	345)	290	257	276	285	[245	226	230	266	250	223	233	230]	213	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3	[illegible]	[illegible]	[illegible]	338	389	298	356	399	441	419	308	266	247	252	247	254	257	252	[illegible]	258	252	252	201	199	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4	X	X	X	343	398	417	432	410	477	381	340	329	233	233	274	[266	233	228	242	247	252	297	266	290]	271	207	[illegible]	[illegible]	[illegible]
5	X			334	386	412	412	436	417	354	257	247	235	247	252	233	235	247	240	228	228	228	228	221	211	264	[illegible]	[illegible]	[illegible]
6	X	X	X	330	354	374	368	390	419	345	278	257	208	[169	177	167	157	154	181]	228	280	299	301	297	290	274	235	[illegible]	1
7				204	292	264	301	390	322	343	280	268	201	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0
8				...	...	...	...	...	...	...	...	...	...	252	247	[301	179	[illegible]	254	242	233	228	152	132]	154	343	301	...	1
9	X			294	397	414	390	458	456	462	392	352	320	299	261	252	268	233	186	250	233	226	208	280	287	299	272	[illegible]	.
10	X	X	X	[illegible]	345	417	430	454	477	425	308	301	274	276	266	271	250	157	149	179	230	299	278	259	266	324	356	305	0
11	X	X		297	324	299	338	390	410	408	290	280	252	208	167	139	177	211	247	252	257	271	304	221	184	235	276	268	1
12	X	X	X	283	280	363	381	412	406	397	327	322	297	264	204	181	181	228	233	247	252	264	276	181	152	216	330	277	1
13	X			365	370	377	388	408	412	414	334	283	299	292	271	261	208	201	132	104	114	184	191	292	301	230	313	281	2
14	X	X		308	299	361	377	412	414	419	345	285	264	228	[159	132	129	124	147	201	228]	228	257	259	252	276	240	264	1
15				259	280	317	315	299	356	365	257	204	194	177	[157	184]	...	...	...	...	...	...	...	...	...	...	...	...	1
16				...	...	...	...	...	...	...	259	240	208	174	179	181	169	184	204	221	250	294	228	213	254	252	252	...	0
17	X	X	X	274	317	324	306	345	310	388	315	278	242	228	199	208	179	159	129	132	154	211	228	276	226	271	228	247	0
18	X			274	304	285	299	390	388	392	317	259	206	132	127	109	[154	199	179	152	154	164]	159	240	247	274	292	237	1
19	X			324	334	297	306	304	392	368	230	228	204	179	129	129	[218	213	201	223]	226	233	257	252	276	320	299	256	1
20	X	X	X	368	388	377	390	432	434	386	252	228	204	199	181	[216	226	206	221	226	228]	230	237	276	254	285	338	283	1
21	X			359	345	372	408	454	552	519	274	252	237	257	271	261	268	204	250	266	268	278	228	159	129	242	287	298	1
22	X			322	388	377	412	477	370	347	299	304	233	152	[189	257	233	228	213	204	228	235	228	201	179	201	218]	271	1
23	X			276	308	343	322	334	363	381	271	233	{247	242	114	122	109	252	96	245	252	228	201	199	242	240}	247	244	2
24	X	X	X	184	204	230	226	252	240	235	127	75	71	94	129	104	127	149	164	167	177	184	237	264	206	278	345	186	0
25	X	X	X	365	317	324	377	390	395	381	320	280	149	89	83	106	144	179	186	189	208	228	233	169	280	294	276	248	1
26	X	X	X	271	322	334	412	436	449	410	257	204	218	181	181	114	111	129	152	242	268	276	280	297	204	194	285	259	1
27	X			299	324	343	368	372	399	412	372	299	261	228	174	106	129	129	159	[213	226]	240	261	278	235	221	285	264	1
28	X	X	X	345	390	370	430	471	519	430	345	299	257	181	172	174	181	179	181	179	189	204	223	252	271	257	297	283	1
29	X			285	283	317	322	350	343	324	276	247	221	129	114	201	[181	204	206	157	179	206	132]	179	179	177	181	225	1
30	X			204	204	213	250	252	230	252	206	172	181	154	142	101	{86	81	78	96	101	152}	106	177	179	208	226	169	.
31																													
MEANS #				309	335	350	368	394	406	376	292	263	232	206	189	183	188	193	190	207	218	235	233	238	236	259	285	266	
MEANS †				311	338	362	380	402	414	366	290	264	225	199	188	177	181	184	196	214	229	248	261	251	240	267	297	270	
MEANS ‡				313	343	367	384	402	414	358	286	261	220	195	192	184	186	186	196	212	227	248	258	253	244	269	303	271	

DESIGNATIONS AND REMARKS:

= ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES † = ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡ = SELECTED DAYS

( ) = INTERPOLATED [ ] = APPROXIMATE [ ] = APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION { } = DISTURBED BY BAD WEATHER

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN VOLTS PER METER

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED (120TH WEST MERIDIAN MEAN TIME)

Date	✱	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Means
1	X	X	X	24	25	16	19	20	28	49	69	64	[N75	N67	62	64	N61	N65]	61	52	47	35	40	50	33	44	44	0
2	X	X	X	24	22	22	17	17	17	[60	63]	66	73	72	70	[N69	N62	N75	68	N56	N50	N41	45]	34	51	34	39	2
3				40	23	13	27	27	26	34	49	N51	N47	N36	N37	Z	N54	53	Z	Z	N40	47	58	58	40	35	37	..
4	X	X	X	15	24	23	16	23	21	40	50	49	69	72	70	[N69	N65	N60	59	N48	47	53	54	N46]	48	42	33	44	2
5				25	23	25	19	18	17	30	48	50	N57	58	Z	Z	58	N51	Z	Z	N33	47	54	64	67	43	36	..
6	X	X	X	23	29	27	20	23	22	48	60	74	86	[104	N80	95	N86	N82	67]	60	57	50	47	44	43	34	39	54	1
7	X			42	32	31	23	20	34	41	45	61	83	78	83	86	92	78	78	71	64	58	51	57	58	37	40	56	0
8	X			45	30	21	27	24	20	30	39	51	65	64	67	[N58	N54	N64	70	68	64	66	N68	64]	39	32	46	49	1
9				46	26	22	20	19	16	23	32	..	..	..	..	..	69	N60	69	N61	N67	55	66	47	39	53	63	..	.
10	X	X	X	58	34	17	11	27	32	47	62	75	75	80	86	81	87	71	82	65	56	42	40	43	33	20	22	54	0
11	X	X		44	31	27	23	21	27	37	49	58	62	76	91	101	88	N71	N45	47	55	57	42	51	65	50	39	52	1
12	X	X	X	33	26	18	20	14	17	25	38	47	51	69	82	87	69	62	N63	59	57	58	45	51	58	33	44	47	1
13				17	10	21	22	22	24	36	43	53	54	61	Z	Z	Z	Z	Z-	Z-	Z	27	33	34	34	23	10	..	2
14	X	X		19	27	22	20	15	22	24	38	50	52	53	[N59	58	N57	N40	N28	47	N44]	43	42	33	37	36	44	39	1
15	X			46	38	30	25	17	20	33	54	58	71	82	[N71	N68	66	N64	N50	49	50]	49	47	40	46	49	40	48	1
16	X			30	29	29	23	20	20	33	43	58	58	63	66	64	68	61	59	56	54	46	38	34	47	47	44	45	0
17	X	X	X	44	31	23	20	19	19	26	45	50	52	64	72	65	75	66	66	65	63	50	44	41	31	33	31	46	0
18				23	24	13	15	14	16	20	30	41	50	68	65	73	[N47	Z	Z-	Z	Z	N22]	50	48	44	37	25	..	1
19				23	26	24	20	20	21	34	55	58	71	80	91	65	[N47	Z	Z	Z]	44	46	47	44	44	40	34	..	1
20	X	X	X	31	22	19	17	17	17	29	47	61	67	61	60	[N61	N59	N47	N42	N51	N46]	51	52	49	40	40	34	42	1
21				25	26	25	23	25	20	30	58	62	65	N68	N71	74	N69	N56	N64	N34	Z-	50	30	37	58	31	33	..	1
22				26	N21	24	20	20	27	30	39	44	51	64	[Z	Z	Z	N51	N28	N45	43	N43	N44	41	Z	Z	N12]	..	1
23				27	22	23	18	13	16	11	41	57	Z	Z	Z-	Z	Z	Z	Z+	58	52	Z	Z-	Z+	Z-	N47	38	..	1
24	X	X	X	54	63	47	37	26	41	43	65	108	97	93	71	71	73	60	65	58	57	51	39	29	27	20	17	55	0
25	X	X	X	20	20	20	24	34	23	40	49	44	65	79	79	N69	73	N65	N61	61	57	54	47	57	37	44	50	49	1
26	X	X	X	51	47	27	27	31	21	34	57	76	75	89	81	85	N86	72	N68	N61	52	51	50	44	52	45	23	54	1
27				25	21	28	26	18	20	19	37	61	68	65	73	88	82	72	60	[Z	Z]	37	44	42	40	43	26	..	1
28	X	X	X	27	24	17	20	16	17	31	35	44	54	67	68	67	54	N61	N51	51	47	47	43	40	24	24	23	40	1
29				30	41	27	19	24	25	37	48	66	72	108	104	72	[77	Z	N48	58	64	59	N43]	46	34	44	47	..	1
30				38	47	41	36	34	31	40	71	76	75	84	83	94	≷N51	90	Z	Z	Z	Z ≷	..	..	..	..	..	..	.
31																													
MEANS ✱				37	31	25	24	24	25	37	50	61	68	74	73	73	71	65	60	57	54	50	46	45	43	36	34	48	
MEANS †				36	30	25	24	24	26	38	52	62	68	75	74	74	71	64	59	56	52	49	45	44	41	34	31	48	
MEANS ‡				35	30	25	24	26	26	39	53	63	70	76	73	74	71	66	63	57	53	49	46	45	40	33	30	49	

DESIGNATIONS AND REMARKS:

✱=ALL COMPLETE DAYS

†=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT

‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE

[ ]=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER

≷=DISTURBED BY BAD WEATHER

N=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT

Z=INDETERMINATE IN MAGNITUDE AND SIGN

Z+=INDETERMINATE POSITIVE VALUE

Z-=INDETERMINATE NEGATIVE VALUE

TABLE XII

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

JULY 1934

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

JULY 1934

DAY	✱	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	DESIGNATIONS
1	X			212	167	209	214	244	239	265	200	205	167	162	159	{ 152	43	112	67	114	69	169 }	162	214	239	233	262	178	2
2	X			265	270	256	312	283	314	270	239	219	212	190	143	140	138	{ 117	67	117	217 }	226	219	214	239	231	212	213	1
3				{ 148	148	195	226	214 }	256	252	209	219	193	148	143	152	162	188	193	195	214	233	{ 202	67 }	...	...	...	...	.
4				...	138	{ 155	186 }	239	214	200	219	214	214	195	143	79	193	190	214	212	226	246	267	288	265	348	335	...	.
5	X	X	X	166	164	138	156	117	169	169	262	228	219	145	143	162	181	186	193	212	224	249	267	314	312	291	273	264	1
6	X	X	X	291	274	274	280	420	445	432	338	296	259	171	190	186	195	209	207	214	214	239	270	280	306	262	286	285	1
7	X	X	X	278	291	341	314	317	338	335	283	265	190	129	150	140	119	119	107	117	133	148	188	190	241	195	270	217	1
8	X	X	X	283	312	361	369	348	369	385	415	340	262	226	219	214	193	195	183	145	162	188	214	207	217	312	314	268	1
9	X			369	347	341	395	400	410	393	317	219	195	193	188	183	176	171	164	[164	107	69	150]	198	219	233	278	244	1
10	X	X	X	275	262	280	299	340	338	333	267	265	239	239	[217	190	209	205	193	212]	219	236	270	267	291	288	296	260	1
11	X	X		317	343	347	340	317	317	320	283	233	209	209	193	162	167	183	209	214	239	214	214	188	171	252	286	246	1
12	X	X	X	283	314	322	317	320	343	374	293	283	239	231	195	193	190	190	190	188	176	188	190	228	265	239	267	251	0
13	X			265	322	343	385	395	395	395	346	288	224	162	195	[190	190	167	167	167	167	167	178]	198	219	239	259	251	1
14	X			320	322	335	343	343	343	296	267	265	233	[212	190	181	167	148	162	133	138	174]	190	193	224	252	259	237	2
15	X			265	286	299	317	333	374	369	291	214	239	[217	195	190	181	176	188	169	188]	193	{ 209	241	291	226	174 }	243	2
16	X			273	312	{ 317	119	348 }	346	340	286	259	143	138	152	[167	169	190	190	190	74]	86	136	95	265	195	228	209	.
17	X			219	219	233	193	209	195	269	214	214	198	205	100	98	117	143	167	176	188	195	221	239	265	296	233	200	.
18				270	320	398	425	432	447	369	265	265	214	148	{ 186	145	24	273	233 }	217	217	239	288	351	366	348	372	...	1
19				259	265	{ 267	95	169	259	320	262 }	239	233	217	195	186	148	150	200	193	231	212	219	236	317	322	343	...	1
20	X	X		340	343	348	395	395	372	343	361	239	233	193	181	148	143	140	193	186	249	265	330	283	317	320	338	277	1
21	X	X		340	327	317	380	395	408	395	343	317	288	224	190	145	145	167	236	265	280	296	320	293	320	317	343	294	1
22	X			198	417	420	385	393	380	450	333	312	304	267	224	171	105	155	195	267	320	233	288	346	372	320	343	308	.
23	X			314	317	351	405	464	420	398	317	275	265	233	219	143	131	119	167	209	233	244	265	278	293	330	296	279	.
24	X			290	346	380	340	351	359	366	275	239	239	195	200	190	171	114	109	145	195	239	252	217	228	217	119	241	1
25	X			340	286	267	317	348	356	330	275	209	205	167	193	164	143	145	148	{ 145	98	167	193	228 }	219	296	239	228	1
26	X			267	314	343	343	369	395	372	317	265	219	{ 202	186	186	188	188	193	190	155 }	167	377	239	239	265	265	260	.
27	X			244	244	254	259	239	239	121	133	167	172	202	224	239	254	254	252	262	259	278	291	270	244	283	330	238	.
28	X			24	150	309	293	320	278	390	231	176	140	143	148	169	162	200	169	167	133	81	214	322	181	167	212	199	.
29	X			212	190	280	259	293	286	330	246	239	207	193	214	214	[214	190	205	193	209	233	257	239	286	262]	335	241	1
30	X			369	359	393	420	422	469	467	374	291	214	207	209	{ 214	202	171	190	48	50 }	214	129	262	254	226	167	263	.
31	X			265	288	286	288	293	314	322	309	278	239	167	124	[171	186	186	164	145	67	200	190	60	129	200	309]	216	.
MEANS ✱				285	299	319	324	341	349	347	289	252	220	193	183	174	166	168	173	176	176	198	229	233	254	257	266	245	
MEANS †				304	325	335	354	356	369	368	319	275	236	193	187	173	173	176	188	192	206	219	244	245	266	272	293	261	
MEANS ‡				296	320	336	339	344	367	371	310	280	235	190	186	181	181	184	179	181	188	208	233	248	272	264	284	257	

DESIGNATIONS AND REMARKS:

✱=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 12

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

JULY 1934

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

JULY 1934

DAY	*	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X			212	167	209	214	244	239	265	200	205	167	162	159	152	43	112	67	114	69	169	162	214	239	233	262	178	2
2	X			265	270	254	312	283	314	270	239	219	212	190	143	140	138	117	67	117	217	226	219	214	239	231	212	213	1
3				148	148	195	226	214	236	252	209	219	193	148	143	152	162	188	193	195	214	233	202	67	...	...	...	...	.
4				...	138	155	186	239	214	200	219	214	214	195	143	79	193	190	214	212	226	246	267	288	265	348	335	...	.
5	X	X	X	366	364	338	356	317	369	369	262	228	219	145	143	162	181	186	193	212	224	249	267	314	312	291	273	264	1
6	X	X	X	291	374	374	380	420	445	432	338	296	259	171	190	186	195	209	207	214	214	239	270	280	306	262	286	285	1
7	X	X	X	278	291	343	314	317	338	335	283	265	190	129	150	140	119	119	107	117	133	148	188	190	241	195	270	217	1
8	X	X	X	281	312	361	369	348	369	385	415	340	262	226	219	214	193	195	183	145	162	188	214	207	217	312	314	268	1
9	X			369	327	343	395	400	410	393	317	219	195	193	188	183	176	171	164	164	107	69	150	198	219	233	278	244	1
10	X	X	X	275	262	280	299	340	338	333	267	265	239	239	217	190	209	205	193	212	219	236	270	267	291	288	296	260	1
11	X	X		317	340	327	340	317	317	320	283	233	209	209	193	162	167	183	209	214	239	214	214	188	171	252	286	246	1
12	X	X	X	283	314	322	317	320	343	374	293	283	239	231	195	193	190	190	190	188	176	188	190	228	265	239	267	251	0
13	X	X		265	322	343	385	395	395	395	346	288	224	162	195	190	190	167	167	167	167	167	178	198	219	239	259	251	1
14	X			320	322	335	343	343	343	296	267	265	233	212	190	181	167	148	162	133	138	174	190	193	224	252	259	237	2
15	X			265	286	299	317	333	374	369	291	214	239	217	195	190	181	176	188	169	188	193	209	241	291	226	174	243	2
16	X			273	312	317	119	348	346	340	286	259	143	138	152	167	169	190	190	190	74	86	136	95	265	195	228	209	.
17	X			219	219	233	193	209	195	219	214	214	198	205	100	98	117	143	167	176	188	195	221	239	265	296	233	200	.
18				270	320	198	425	432	447	369	265	265	214	148	186	145	24	273	233	217	217	239	288	351	366	348	372	...	1
19				259	265	267	95	169	259	320	262	239	233	217	195	186	148	150	200	193	231	212	219	236	317	322	343	...	1
20	X	X		340	343	348	395	395	372	343	361	239	233	193	181	148	143	140	193	186	249	265	330	283	317	320	338	277	1
21	X	X		340	327	317	380	395	408	395	343	317	288	224	190	145	145	167	236	265	280	296	320	293	320	317	343	294	1
22	X			398	417	420	385	393	380	450	333	312	304	267	224	171	105	155	195	267	320	233	288	346	372	320	343	308	.
23	X			314	317	351	405	464	420	398	317	275	265	233	219	143	131	119	167	209	233	244	265	278	293	330	296	279	.
24	X			290	346	380	340	351	359	366	275	239	239	195	200	190	171	114	109	145	195	239	252	217	228	217	119	241	1
25	X			340	286	267	317	348	356	330	275	209	205	167	193	164	143	145	148	145	98	167	193	228	219	296	239	228	1
26	X			267	314	343	343	369	395	372	317	265	219	202	186	186	188	188	193	190	155	167	377	239	239	265	265	260	.
27	X			244	244	254	259	239	239	121	133	167	172	202	224	239	254	254	252	262	259	278	291	270	244	283	330	238	.
28	X			24	150	309	293	320	278	390	231	176	140	143	148	169	162	200	169	167	133	81	214	322	181	167	212	199	.
29	X			212	190	280	259	293	286	330	246	239	207	193	214	214	214	190	205	193	209	233	257	239	286	262	335	241	1
30	X			369	359	393	420	422	469	467	374	291	214	207	209	214	202	171	190	48	50	214	129	262	254	226	167	263	.
31	X			265	288	286	288	293	314	322	309	278	239	167	124	171	186	186	164	145	67	200	190	60	129	200	309	216	.
MEANS *				285	299	319	324	341	349	347	289	252	220	193	183	174	166	168	173	176	176	196	229	233	254	257	266	245	
MEANS †				304	325	335	354	356	369	368	329	275	236	193	187	173	173	176	188	192	206	219	244	245	266	272	293	261	
MEANS ‡				296	320	330	339	344	367	371	310	280	235	190	186	181	181	184	179	181	188	208	233	248	272	264	284	257	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

JULY 1934

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

JULY 1934

DAY	*	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X			201	175	196	223	228	250	259	199	177	155	150	152	182	177	155	150	152	155	179	179	216	230	235	257	193	2
2	X			250	273	250	302	283	297	273	221	179	177	152	115	130	127	102	150	152	182	221	204	201	221	223	199	204	1
3				177	162	189	221	132	273	245	206	199	152	127	127	142	152	179	196	213	218	201	199	226	...	...	...	...	.
4				...	252	215	196	238	223	199	199	189	201	155	135	82	201	199	221	226	250	273	283	254	254	320	313	...	.
5	X	X	X	332	329	292	346	325	367	320	252	211	201	152	155	177	201	204	204	226	245	262	273	323	304	316	278	262	1
6	X	X	X	292	367	369	371	394	445	425	316	273	226	137	182	182	199	216	221	226	228	250	280	306	302	280	299	283	1
7	X	X	X	297	297	325	297	320	337	334	257	235	192	125	147	150	127	127	104	102	122	152	179	199	254	201	264	214	1
8	X	X	X	269	295	344	348	344	364	376	367	311	250	226	226	206	209	199	177	152	157	177	211	199	201	295	278	258	1
9	X			344	302	320	367	371	389	378	297	204	177	184	179	179	177	175	162	157	179	179	165	223	238	233	276	244	1
10	X	X	X	278	254	257	278	323	339	316	273	230	221	226	250	226	223	199	201	221	223	235	273	276	299	276	288	258	1
11		X		313	325	323	327	313	318	339	297	266	201	199	187	160	172	189	201	221	226	206	204	199	189	250	295	247	1
12	X	X	X	273	309	297	295	309	339	344	285	266	228	226	206	204	199	201	201	199	199	199	199	245	266	221	259	249	0
13	X	X		273	318	346	362	389	364	367	325	273	218	152	206	226	213	201	199	201	201	201	201	226	250	250	250	259	1
14	X			302	330	337	357	344	344	273	252	254	226	226	206	221	221	216	201	182	189	201	201	221	238	266	245	252	2
15	X			259	262	273	302	316	330	316	262	201	213	233	235	230	226	226	221	201	201	206	223	271	302	250	206	249	2
16	X			250	273	283	226	367	341	306	250	252	150	137	167	177	152	187	204	155	100	152	117	104	254	209	245	211	.
17	X			230	233	223	199	192	196	223	182	199	182	192	104	107	127	152	177	196	206	226	250	257	278	297	223	202	.
18				273	318	389	412	432	459	357	254	269	221	160	182	223	...	...	...	...	...	...	...	...	...	...	...	...	.
19				...	...	...	...	...	...	...	...	228	228	177	172	155	127	142	201	182	226	206	213	211	273	304	320	...	1
20	X	X		318	316	320	339	344	344	320	344	226	206	196	184	157	155	155	211	187	247	259	297	250	299	302	320	262	1
21	X	X		348	325	309	346	353	367	367	320	273	250	221	187	152	165	179	245	254	297	276	288	299	341	339	341	285	1
22	X			367	392	387	364	371	364	392	309	276	257	242	204	162	122	157	223	145	297	213	271	348	339	302	309	284	.
23	X			297	295	306	367	437	403	367	269	226	216	206	206	155	204	160	182	223	245	254	276	295	302	316	292	271	1
24	X			273	325	344	330	337	353	302	254	204	199	201	199	179	182	127	122	165	213	250	252	230	250	223	125	235	1
25	X			339	278	271	299	344	344	297	283	177	192	172	194	177	155	152	155	172	137	155	177	235	223	292	230	227	1
26	X			252	299	318	325	337	371	344	288	273	223	201	199	201	201	196	187	182	127	120	434	235	230	250	250	252	.
27	X			240	245	250	250	250	242	177	167	196	209	226	245	250	269	259	250	250	250	259	269	295	250	257	252	242	.
28	X			226	223	297	302	341	320	380	184	132	104	127	152	162	242	233	189	201	152	196	115	323	201	177	223	217	.
29	X			206	199	264	238	285	276	320	240	211	189	177	196	211	221	196	199	189	211	250	276	259	292	292	325	238	1
30	X			344	344	367	389	412	434	423	344	283	199	201	187	216	230	187	201	204	201	250	262	262	245	226	230	277	.
31	X			242	271	278	292	278	297	304	278	250	223	152	130	204	221	206	206	221	213	216	245	230	92	211	295	231	.
MEANS *				282	291	302	313	330	338	327	271	232	203	187	185	185	190	184	190	190	200	213	234	249	255	259	271	245	
MEANS †				299	313	318	331	341	358	351	304	256	219	186	193	184	186	187	196	199	214	222	240	252	270	273	287	257	
MEANS ‡				290	307	314	322	336	365	352	292	254	220	182	194	191	193	191	185	188	196	212	236	258	271	265	278	254	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 136

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

AUGUST 1934 — AUGUST 1934

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY	*	+	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	x			190	149	198	198	190	177	379	323	313	281	228	[194	197	197	194	163	190	182]	199	221	{126	165	246	321}	260	2
2	x			{294	273}	219	147	318	323	318	265	244	221	[219	216	221	204	194	180	190]	146	273	24	273	276	244	284}	240	·
3	x			194	192	337	300	292	300	297	281	270	270	(273	244)	180	{151	146	194	194	126	24	185}	244	209	199	216	232	·
4	x			{198	194	197	252	219	233}	249	194	224	{221	126}	143	151	146	185	225	273	300	297	289	219	265	307	350	227	1
5	x	x	x	126	355	343	374	408	401	387	297	268	246	231	244	219	170	102	194	249	278	294	300	334	294	278	313	287	0
6	x			355	401	387	426	449	451	449	345	321	281	238	194	173	170	192	231	254	270	292	321	329	[270	119	97]	292	1
7	x			[244	244	270]	119	363	198	321	294	270	238	219	194	194	148	[124	141	44	122	131	224	302	270	302	278]	236	1
8	x			300	318	[313	46	197	81	190]	345	244	219	199	194	197	194	202	175	170	148	219	185	244	244	260	265	211	1
9	x			254	249	291	277	273	302	278	233	214	194	177	146	153	146	141	[146	126	148	175	231]	260	326	350	377	228	1
10	x			411	411	190	150	179	177	411	350	326	273	238	199	165	{117	97	143	173	175	190	249	254	24	109	87}	247	2
11	x			{118}	129	132	232	115	118	300	292	254	231	216	219	182	153	165	175	197	{219	156	85	204	46	187	270}	226	2
12	x			276	292	132	129	137	141	371	292	270	244	221	192	173	173	197	204	211	224	{246	265	100	49	146	112}	230	1
13	x			473	300	268	233	244	244	238	270	224	233	228	122	97	73	{104	49	124	268	246	276}	345	323	339	353	234	1
14	x	x	x	150	151	142	150	345	174	401	294	276	270	270	268	219	197	170	143	233	257	273	300	326	350	273	273	288	0
15	x			379	428	433	461	454	466	451	374	334	318	276	244	214	199	{214	221	244	262	185	185	117	97	350}	292	300	1
16	x			270	270	281	277	270	292	297	286	270	270	270	244	244	238	225	219	221	[249	268]	329	318	350	377	403	282	1
17	x			129	150	382	137	150	323	249	209	216	238	202	146	126	129	160	{129	24	102	199	173	238	294	246	249}	225	1
18				254	284	270	265	297	297	321	254	224	197	199	194	165	[197	214	246	66	114]	260	221	219	117	...	...	...	·
19	x			{27	165}	292	292	270	270	246	246	231	224	199	194	170	143	141	175	190	221	224	244	249	244	268	276	217	1
20	x			123	155	150	153	177	353	379	329	323	294	268	254	219	221	146	156	173	{146	66	73	146	270}	244	231	252	1
21	x			257	271	273	270	292	300	318	[249	170	165	221	260	172	199	175	146	148]	199	199	224	270	321	318	323	239	1
22				318	129	345	326	355	408	441	323	337	268	170	{122	112	124	224	219	219}	...	...	...	{122	284	270	199}	...	·
23	x	x		{207	175	137	132	197	214}	246	265	270	231	194	214	199	199	170	192	221	238	246	238	270	300	315	379	232	1
24	x	x	x	401	377	382	379	393	423	411	377	300	337	302	225	170	197	219	219	219	236	238	249	297	284	260	337	301	0
25	x			326	281	276	323	323	300	300	270	241	199	221	221	221	219	238	221	{141	194}	292	297	297	276	238	292	259	1
26	x			228	286	244	270	300	294	300	270	238	260	268	257	270	{194	107	224	204	194}	197	194	197	197	199	219	234	1
27	x			216	219	199	204	199	211	180	216	168	92	114	122	92	95	{122	75	51	160	241	254	177	246}	204	221	170	1
28				244	233	216	265	289	300	323	297	270	246	197	170	170	170	{158	95	24}	...	...	244	221	260	273	225	...	·
29				281	192	173	{199	209	238}	270	197	190	197	146	136	...	...	...	...	...	{148}	170	209	216	194	221	249	...	·
30	x			254	278	249	326	294	318	294	257	148	143	126	[122	146	146	170	194	216	246	297	300	379]	323	350	377	248	1
31	x	x	x	403	428	454	431	408	413	403	342	318	292	249	246	124	146	192	233	246	246	273	265	289	321	347	379	310	0
MEANS *				298	305	[illegible]	314	313	322	321	288	257	240	222	204	181	169	166	177	182	206	220	229	252	246	262	281	248	
MEANS +				337	338	338	345	350	365	370	315	286	275	249	239	186	182	171	196	234	251	265	270	303	310	295	336	264	
MEANS ‡				370	378	375	364	388	403	400	328	290	286	263	246	183	178	171	197	237	254	270	278	312	312	290	326	297	

DESIGNATIONS AND REMARKS:

* = ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES + = ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡ = SELECTED DAYS

( ) = INTERPOLATED [ ] = APPROXIMATE [ ] = APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION { } = DISTURBED BY BAD WEATHER

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

[illegible] 1934

EXPRESSED IN VOLTS PER METER

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED [illegible] WEST [illegible] MEAN TIME)

[illegible]	[illegible]			0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	[illegible]	[illegible]
1	X			[illegible]	[illegible]	333	[illegible]	312	346	355	[illegible]	290	[illegible]	[illegible]	⌈[illegible]	[illegible]	[illegible]	[illegible]	219	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2	X			[illegible]	294}	263	333	309	309	307	294	209	244	⌈244	226	233	240	240	221	198]	179	217	196	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3	X			316	312	316	274	[illegible]	285	267	267	267	267	(258	233}	170	{[illegible]	51	46	51	160	198	114}	244	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4	X			[illegible]	170	231	198	203	227}	233	170	179	{181	148}	129	158	165	196	249	290	265	276	278	219	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
5	X	X	X	312	324	296	344	376	370	359	[illegible]	198	283	203	227	200	158	114	193	265	278	285	294	314	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
6	X			385	357	355	376	395	399	384	274	[illegible]	284	210	193	167	174	193	238	263	285	294	314	336	⌈226	186	133]	[illegible]	1
7	X			⌈249	186	263]	292	290	329	267	256	240	207	198	198	177	150	⌈141	150	150	174	141	146	249	260	256	244]	[illegible]	1
8	X			276	272	⌈198	221	141	146	200]	307	244	200	179	172	177	198	170	160	150	141	200	170	224	233	244	228	[illegible]	1
9	X			235	244	267	278	272	290	276	198	177	167	162	162	150	150	150	⌈150	148	172	198	240]	267	312	329	322	222	1
10	X			399	355	357	327	355	357	366	314	309	247	224	189	162	{116	77	126	162	170	221	240	189	170	146	186}	[illegible]	2
11	X			{184}	298	267	258	269	269	258	267	224	226	221	198	174	150	162	170	196	{224	193	189	119	221	186	267}	216	2
12	X			244	244	267	290	278	298	333	290	244	226	198	177	174	177	203	219	219	221	{228	174	174	238	124	174}	226	1
13	X			378	290	244	200	200	200	198	219	193	198	198	121	79	77	{126	203	153	26	312	150}	314	292	301	312	208	1
14	X	X	X	312	314	307	312	312	320	355	290	267	249	235	226	198	186	150	126	221	244	249	267	305	309	221	221	258	0
15	X			357	397	397	418	397	399	418	314	329	290	263	221	177	193	{200	186	240	198	131	138	167	148	333}	254	274	1
16	X			226	228	238	240	240	240	247	244	226	238	240	226	214	221	216	198	196	⌈203	258]	292	312	338	342	370	290	1
17	X			322	333	355	374	303	314	263	200	200	238	189	148	129	131	153	{200	131	162	212	89	254	290	267	240}	229	1
18				244	290	267	265	287	290	312	221	198	198	179	174	174	⌈217	77	177	240	150]	235	217	217	207	...	...	...	.
19	X			{219	224}	254	263	256	238	244	212	212	198	193	174	153	141	141	174	179	219	224	240	240	226	240	242	213	1
20	X			294	331	325	338	355	333	346	292	312	287	244	221	203	198	146	170	196	{203	226	177	153	285}	244	221	254	1
21	X			240	244	249	224	267	269	267	⌈193	167	162	265	249	170	198	198	196	174]	210	200	221	263	309	292	303	230	1
22				309	331	314	325	336	386	413	298	287	240	133	{84	99	165	207	198	219}	...	...	...	<131	298	251	174}	...	.
23	X	X		{174	174	133	150	141	193}	177	240	231	205	174	172	193	198	162	184	221	221	221	217	240	267	307	346	206	1
24	X	X	X	357	351	359	357	361	376	359	333	269	294	267	219	170	205	224	238	221	233	238	244	290	278	263	316	284	0
25	X			307	263	254	301	294	283	285	265	240	200	203	221	200	200	196	193	{158	263}	272	267	267	247	217	244	243	1
26	X			272	267	228	244	274	272	267	189	189	217	228	221	217	{196	221	210	177	131}	221	221	198	186	203	198	219	1
27	X			177	198	196	189	174	196	153	172	129	82	99	114	102	99	{94	102	126	51	174	221	172	244}	219	219	154	1
28				221	212	210	247	265	272	267	247	221	217	174	148	165	167	{150	102	121}	...	...	221	221	244	263	224	...	.
29				278	203	177	{193	200	238}	285	198	189	160	150	126	...	...	...	...	...	{153}	174	177	198	196	219	244	...	.
30	X			247	272	240	333	287	333	290	200	126	124	106	⌈106	126	153	177	174	198	200	179	217	333]	290	312	333	223	1
31	X	X	X	359	374	401	397	384	370	368	292	267	235	226	224	126	143	179	231	244	247	267	254	285	276	314	355	284	0
MEANS #				281	279	281	291	286	294	290	251	232	217	207	191	171	170	167	182	191	196	224	214	244	254	251	261	234	
MEANS †				303	305	299	312	315	326	324	277	246	237	221	212	177	178	166	194	234	245	252	255	287	276	269	301	259	
MEANS ‡				335	338	340	352	358	359	360	286	250	245	233	222	174	173	167	197	238	250	260	265	298	278	260	290	272	

DESIGNATIONS AND REMARKS:

= ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES † = ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡ = SELECTED DAYS

( ) = INTERPOLATED [ ] = APPROXIMATE ⌈ ⌋ = APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION { } = DISTURBED BY BAD WEATHER

TABLE 137

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN VOLTS PER METER

AUGUST 1934

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY	✱	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1				47	29	24	21	16	16	22	35	43	59	59	⌈ 57	z	z	z	z	z	z ⌋	38	39	≷ z	z	N33	N13 ≷	..	2
2				≷ z	z ≷	..	..	..	..	..	46	56	49	⌈ N48	56	N62	N37	z	z	z ⌋	..	..	..	..	..	..	..	..	2
3				..	..	..	..	..	..	..	56	61	62	(63	65)	66	≷ z	z+	z+	z+	z	z-	z ≷	38	50	59	61	..	.
4				≷ z	z	z	71	57	75 ≷	55	66	71	≷ 79	70 ≷	94	88	65	66	50	47	53	50	47	55	38	38	38	..	.
5	▲	▲	▲	59	46	19	20	29	22	34	55	62	65	75	79	84	91	111	84	69	63	60	60	51	52	61	53	58	0
6				35	30	31	21	25	29	32	54	63	72	82	81	72	82	80	74	66	58	50	44	35	⌈ z	z	z ⌋	..	1
7				⌈ z	z	z ⌋	32	25	22	38	52	50	60	60	66	69	83	⌈ N58	N55	z-	z	z	z	89	54	57	51 ⌋	..	1
8				29	55	⌈ 137	z-	z	z	z ⌋	32	48	60	76	88	91	77	83	71	72	55	47	54	56	45	32	37	..	1
9				31	21	19	22	14	25	31	51	57	62	72	74	79	78	67	⌈ N38	54	N 3	z	z ⌋	53	31	19	23	..	1
10				22	19	34	40	31	22	31	38	41	49	46	57	63	≷ 113	z	136	168	135	-22	47	z	z-	z	z ≷	..	2
11				≷ z+	≷ 32	31	30	31	34	44	55	63	62	67	78	88	92	82	79	63	≷ 47	z-	z-	z+	z-	z	z ≷	..	2
12				44	35	19	19	29	19	37	43	51	54	66	66	63	N66	47	N44	44	41	≷ 68	z+	z	z-	z	z ≷	..	1
13				25	28	37	46	47	53	55	55	59	63	74	99	130	148	≷ z	z-	z	z+	z	z+ ≷	23	25	22	27	..	1
14	▲	▲	▲	24	28	28	25	35	26	28	49	56	60	75	81	84	72	83	80	55	60	53	45	44	41	49	35	51	0
15				31	38	32	29	29	25	30	46	47	60	63	82	85	73	≷ N56	z+	75	102	z	z	z	z	25 ≷	47	..	1
16				52	53	51	48	44	46	48	59	62	58	57	63	68	61	63	61	64	⌈ 77	z ⌋	25	19	25	24	19	..	1
17				31	26	22	27	38	34	43	53	53	43	76	88	85	86	70	≷ z-	z-	z-	z+	z+	26	16	z	z ≷	..	1
18				67	22	31	30	21	20	28	47	58	63	64	77	68	⌈ z	z+	z+	z-	z ⌋	31	40	37	..	..	..	..	.
19				≷ z-	z- ≷	34	35	35	38	42	60	53	59	59	63	69	75	79	70	61	41	36	37	35	42	36	23	..	1
20				26	22	19	26	19	22	22	31	35	41	48	59	54	58	69	75	55	≷ z	z-	z	z	N35 ≷	38	38	..	1
21				60	47	41	36	32	31	34	⌈ 100	80	68	22	64	68	63	z	z	z ⌋	39	46	42	36	31	32	35	..	1
22				35	22	22	22	25	22	28	38	50	54	64	≷ 171	z	z	z	N24	z ≷	..	..	..	≷ z	z	51	98 ≷	..	.
23	▲	▲	≷	88	N59	71	71	73	N68 ≷	105	25	43	57	69	79	75	84	94	80	63	54	44	44	35	24	20	19	60	1
24	▲	▲	▲	24	26	21	23	23	20	23	37	41	45	64	68	79	65	60	54	48	47	44	40	31	29	38	29	41	0
25				28	44	43	36	36	32	38	48	53	61	57	57	60	63	71	50	≷ z	z- ≷	35	36	45	52	66	41	..	1
26				z-	26	41	38	40	50	50	64	68	66	71	77	86	≷ z	z	z	z	z+ ≷	37	34	34	37	35	44	..	1
27				49	41	44	43	48	47	69	66	87	163	132	107	101	93	≷ z	z	z-	z+	z+	41	64	N14 ≷	16	35	..	1
28				35	34	23	36	29	28	28	39	47	50	54	68	72	72	≷ N91	z	z ≷	..	..	25	22	20	22	25	..	.
29				23	32	57	≷ z+	z+	z+ ≷	38	47	60	72	76	100	..	..	..	..	..	≷ z	63	35	34	44	40	22	..	.
30				22	25	19	19	22	25	27	47	72	83	95	⌈ 153	z+	z	z	82	80	z	z	z+	25 ⌋	47	29	24	..	1
31	▲	▲	▲	20	25	21	25	23	23	34	47	60	76	79	93	94	85	75	63	60	53	47	48	44	21	18	20	48	0
MEANS ✱				39	40	34	33	36	32	44	43	52	61	72	80	83	79	85	72	59	55	50	47	41	33	37	31	52	
MEANS †				39	40	34	33	36	32	44	43	52	61	72	80	83	79	85	72	59	55	50	47	41	33	37	31	52	
MEANS ‡				27	30	22	23	27	23	30	47	55	62	73	80	85	78	82	70	58	56	51	48	42	30	42	34	49	

DESIGNATIONS AND REMARKS:

✱=ALL COMPLETE DAYS †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER ≷=DISTURBED BY BAD WEATHER

N=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT • Z=INDETERMINATE IN MAGNITUDE AND SIGN Z+=INDETERMINATE POSITIVE VALUE Z-=INDETERMINATE NEGATIVE VALUE

TABLE 138

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN VOLTS PER METER

SEPTEMBER 1934

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY	✱	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X	X	32	19	18	16	20	18	19	43	51	68	80	83	83	79	83	74	62	54	45	38	30	24	23	20	45	0
2				17	16	17	22	19	19	24	34	52	56	57	61	[N49	N50	z	z	N42	37]	48	41	26	23	16	16	..	1
3	X	X		19	19	20	20	17	19	21	38	41	48	51	56	57	56	[N48	N36	N32	N23]	33	31	19	17	14	20	31	1
4				16	20	22	19	22	23	32	45	80	90	80	82	96	78	[52	N30	z	z]	41	45	38	31	27	21	..	1
5				21	22	22	21	22	25	25	45	51	59	64	77	Z-	Z-	Z-	z	Z	[N41	N35]	45	42	42	29	21	21	..	1
6				24	31	25	25	32	26	26	42	61	61	64	73	N88	N34	z	N43	Z	[N44	N35]	47	38	21	33	29	29	..	1
7				[44	Z-]	22	44	40	31	38	50	60	71	80	79	87	97	81	71	56	48	35	34	[N53	Z	Z]	50	..	1
8	X			35	35	35	61	50	33	41	53	55	124	115	[N105	N79	N64	N41	N58	51	N38]	47	56	54	27	35	29	57	1
9	X			25	25	21	23	22	26	23	41	59	70	73	77	N57	N72	71	65	63	N61	48	54	38	28	32	26	46	1
10	X	X	X	29	34	28	25	19	19	26	37	48	57	68	74	65	68	62	N57	51	46	44	38	26	21	19	22	41	1
11				18	22	17	19	16	19	19	31	44	48	65	73	75	83	73	70	Z	Z	41	37	28	22	19	22	..	1
12	X	X	X	19	26	21	18	16	19	22	37	44	52	54	66	70	73	67	60	52	48	44	38	36	40	27	26	41	0
13	X			36	26	29	22	26	32	29	48	58	72	74	70	83	84	[N65	N63	N51	N47]	48	31	19	25	19	16	45	1
14				26	19	17	16	14	17	16	37	48	55	58	70	62	[Z	Z	Z-	Z-	N17	38]	36	37	27	19	19	..	1
15				15	19	13	13	16	16	18	40	51	54	62	[N51	N48	N50	58	55	N41	35	Z	Z	24]	29	22	19	..	1
16				22	21	18	16	19	21	30	38	48	50	[N53	43	Z	Z	Z-	Z-	Z-	Z-	34	32	19	34]	29	26	..	2
17	X	X	X	19	23	22	22	16	17	23	34	45	48	62	73	83	83	66	58	52	51	47	41	41	22	19	23	42	0
18	X	X	X	21	16	16	15	16	19	19	32	50	67	82	77	74	N81	73	57	51	48	40	27	17	12	16	17	39	1
19	X	X	X	13	13	13	14	16	17	28	38	49	61	76	73	62	51	N44	44	38	38	27	20	16	12	19	16	33	1
20	X	X		19	15	16	16	13	15	16	30	40	49	56	64	64	N51	N45	38	43	46	39	33	32	29	33	29	35	1
21	X	X		19	19	13	13	13	16	18	38	45	59	62	70	[N52	N59	N54	51]	48	49	52	53	36	30	25	26	38	1
22				22	19	16	16	20	N21	22	35	Z	z	z	z-	z	z	z	z	z	54	z	z	- 2	N16	41	41	..	2
23				[81	51	26]	32	35	39	52	70	73	68	[z	z-	z	z	z	z	z	N49]	49	41	35	36	29	19	..	2
24	X	X	X	26	22	19	19	23	19	19	54	64	85	80	73	73	77	79	74	66	58	63	51	34	19	21	19	47	0
25	X	X	X	20	22	19	19	22	23	25	45	59	76	78	87	84	N67	N62	55	N56	54	39	48	48	48	48	36	46	1
26	X	X	X	30	35	28	21	26	23	36	48	67	80	85	104	102	88	92	N77	77	55	48	45	45	27	23	22	54	1
27	X	X	X	19	21	19	19	18	23	28	37	51	67	74	81	85	92	77	52	51	46	41	41	28	19	28	31	44	0
28	X	X	X	25	23	19	22	16	16	21	35	57	70	76	80	86	87	70	64	57	54	49	47	31	26	21	25	45	0
29	X	X	X	22	22	24	22	19	18	19	30	42	61	68	86	95	92	71	51	45	39	23	23	19	23	27	19	40	0
30				25	25	21	26	27	26	39	46	Z	48	48	N51	64	70	64	50	48	43	N38	29	33	23	26	21	..	1
31																													
MEANS ✱				24	24	22	22	20	21	24	40	51	67	73	78	75	74	65	57	53	48	43	40	32	25	25	23	43	
MEANS †				22	22	20	19	18	19	23	38	50	63	70	76	76	74	66	57	52	47	42	38	31	25	24	23	41	
MEANS ‡				23	23	20	19	19	19	24	39	52	66	74	80	80	78	70	60	55	49	42	38	31	24	24	23	43	

DESIGNATIONS AND REMARKS:

✱=ALL COMPLETE DAYS †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE [ ]=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER ≷=DISTURBED BY BAD WEATHER

N=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT Z=INDETERMINATE IN MAGNITUDE AND SIGN Z+=INDETERMINATE POSITIVE VALUE Z-=INDETERMINATE NEGATIVE VALUE

TABLE 139

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

SEPTEMBER 1934

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

SEPTEMBER 1934

DAY	*	+	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1		X	X	374	320	366	372	437	469	506	398	343	286	257	219	188	186	169	162	167	188	217	265	286	262	320	395	298	0
2	X			415	393	408	417	412	400	415	383	314	265	262	212	⌈190	188	188	190	193	202⌋	209	239	252	239	312	333	293	1
3	X	X	/	333	340	327	369	393	372	420	369	348	317	267	265	212	190	⌈190	195	214	219⌋	214	265	270	301	343	338	295	1
4	X			301	320	296	322	364	343	317	291	190	121	212	155	119	126	⌈167	169	171	195⌋	231	217	239	267	286	244	236	1
5				280	312	296	317	398	372	420	364	335	291	265	186	{188	164	10	167}	⌈190	202⌋	212	...	...	...	...	...	...	1
6				...	...	...	...	...	...	...	...	...	...	...	143	{148	171	124	178}	⌈195	190⌋	209	219	262	265	278	288	...	1
7				⌈257	140⌋	291	288	309	301	306	265	239	217	167	164	159	...	...	152	190	212	239	257	⌈249	162	209⌋	262	...	1
8				293	239	244	214	254	257	288	224	159	119	114	⌈133	181	193	205	212	233	219⌋	233	...	...	...	...	...	...	1
9				...	...	...	...	...	...	...	346	291	259	241	219	217	219	241	241	219	262	265	265	369	296	286	306	...	1
10	X	X	X	317	390	372	385	442	469	482	343	351	299	244	233	226	198	169	190	209	209	246	224	254	348	325	420	306	1
11	X			387	440	469	494	516	531	521	420	348	346	314	280	239	217	188	133	{193	155}	249	231	270	299	322	312	328	1
12	X	X	X	320	346	317	343	385	374	372	346	320	301	286	262	221	207	205	224	228	231	265	296	296	262	270	325	292	0
13				320	369	390	369	369	393	369	322	312	283	259	249	214	190	⌈209	202	198	226⌋	236	267	...	...	333	356	...	1
14	X			343	343	369	390	415	447	445	395	330	286	254	174	167	⌈145	148	140	162	190	219⌋	262	249	262	293	340	282	1
15	X			343	364	366	420	422	442	445	374	327	270	219	⌈193	190	167	164	169	167	129	155	178	214⌋	217	219	259	267	1
16	X			267	252	262	293	364	340	338	312	291	267	⌈217	214	207	174	169	50	188	193	239	244	265	270⌋	262	296	249	2
17	X	X	X	291	312	314	301	340	395	415	356	317	270	239	205	169	167	164	178	188	188	217	249	244	278	312	322	268	0
18	X	X	X	320	374	412	440	415	445	469	395	317	259	212	193	193	159	176	178	188	209	224	214	288	348	420	417	303	1
19	X	X	X	387	398	398	395	417	445	400	385	312	267	267	246	214	209	219	219	224	241	270	219	301	374	430	415	319	1
20	X	X		364	343	372	398	374	415	467	374	346	330	286	209	140	119	186	209	217	236	265	259	273	286	273	340	295	1
21	X	X		366	387	400	445	425	472	467	395	322	296	252	219	⌈140	143	207	214⌋	233	217	188	183	241	317	343	372	302	1
22	X			369	343	348	408	437	395	372	372	{304	133	239	143	183	239	233	241	190	265	209	214	265	346}	262	262	282	2
23	X			⌈265	267	270⌋	286	293	293	286	209	171	239	⌈202	129	193	209	188	162	167	212⌋	195	270	291	312	366	395	245	2
24	X	X	X	440	445	430	422	422	442	487	320	270	193	214	214	214	200	169	167	219	221	217	259	193	267	420	425	303	0
25	X	X	X	494	509	472	462	494	494	454	369	330	293	278	221	193	167	193	190	212	233	296	259	301	309	320	338	328	1
26	X	X	X	372	366	398	380	405	422	440	383	317	291	239	265	267	265	254	249	148	176	241	244	265	296	312	286	303	1
27	X	X	X	317	412	445	440	489	482	450	435	361	301	288	278	257	217	169	209	228	262	262	270	275	320	286	322	324	0
28	X	X	X	293	351	374	395	425	452	464	422	343	330	301	267	214	231	217	193	219	219	239	267	265	291	320	343	310	0
29	X	X	X	340	385	395	430	454	492	474	445	398	322	265	190	167	190	190	188	205	249	212	262	273	320	338	291	311	0
30	X			267	366	390	420	430	420	340	312	286	293	286	265	167	143	159	167	145	164	167	219	207	190	202	214	259	1
31																													
MEANS *				345	365	374	393	415	427	427	367	315	274	254	219	195	186	187	183	195	208	227	242	262	291	315	334	294	
MEANS +				355	379	386	398	421	443	451	382	333	290	260	232	201	190	192	198	207	220	238	249	268	305	335	357	304	
MEANS ‡				355	384	391	397	427	448	451	383	332	284	258	233	210	200	191	196	203	219	242	252	270	306	339	358	305	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES +=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 140

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

SEPTEMBER 1934

DAY	●	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	A	A	A	369	303	346	367	421	438	475	364	305	254	225	208	181	176	156	156	161	186	237	291	282	277	330	406	288	0
2	A			408	393	399	410	412	408	412	371	299	277	259	225	⌈215	228	232	232	230	230⌋	230	254	263	254	324	337	304	1
3	A	A		333	337	324	369	390	373	412	383	364	344	301	277	232	208	⌈228	242	249	254⌋	254	280	303	324	377	348	313	1
4	A			321	335	319	346	373	380	346	268	181	136	225	203	126	136	⌈181	208	232	235⌋	232	230	277	294	280	259	255	1
5				305	324	319	342	410	393	450	335	326	301	275	198	≷230	232	230	230≶	⌈230	235⌋	230	...	...	...	...	...	...	1
6				...	...	...	...	...	...	...	...	...	...	...	203	≷154	208	225	206≶	⌈225	218⌋	230	249	273	254	284	301	...	1
7				⌈256	251⌋	282	296	305	301	301	239	225	206	169	156	154	128	134	156	206	223	254	239	⌈261	186	225⌋	254	...	1
8				301	242	244	223	232	259	277	213	156	111	105	⌈131	179	201	213	220	225	210⌋	228	...	...	...	...	...	...	1
9				...	...	...	...	...	...	...	328	273	230	235	215	218	230	213	223	220	228	230	273	346	303	275	273	...	1
10	A	A	A	301	366	342	366	416	452	454	319	324	273	251	218	208	223	179	201	208	225	259	254	256	364	344	386	300	1
11	A			369	416	434	471	479	512	475	369	326	319	277	256	206	206	161	131	≷186	184≶	249	232	275	280	324	324	311	1
12	A	A	A	324	348	303	333	351	364	371	328	299	296	259	232	208	203	206	239	259	273	299	324	277	230	259	330	288	0
13				326	360	371	364	373	390	346	284	275	251	228	230	196	184	⌈208	225	228	247⌋	254	277	...	...	...	344	...	1
14	A			335	333	348	369	390	434	416	369	301	277	254	169	181	⌈176	156	181	206	215	249⌋	270	256	254	303	335	282	1
15	A			348	364	328	416	419	412	440	348	294	256	228	⌈206	206	169	156	156	154	131	159	184	210⌋	225	230	270	263	1
16	A			361	337	256	291	346	324	321	299	303	275	⌈225	232	235	230	228	159	230	228	247	251	275	277⌋	275	305	263	2
17	A	A	A	301	328	328	299	342	404	386	321	296	256	218	208	156	181	179	206	203	206	230	249	273	280	301	321	270	0
18	A	A	A	319	357	399	434	401	438	475	388	299	235	181	181	186	156	179	184	193	225	254	230	299	346	412	410	299	1
19	A	A	A	390	390	388	386	390	431	399	351	273	254	235	230	210	230	251	251	270	284	301	242	301	388	434	401	320	1
20	A	A		351	328	366	395	369	395	452	346	324	303	277	220	156	136	208	235	249	256	296	[illegible]	266	266	277	344	296	1
21	A	A		366	393	416	442	429	475	475	369	296	256	230	225	⌈154	156	220	228⌋	247	225	196	171	235	305	330	364	300	1
22	A			346	344	346	393	408	395	388	364	≷301	232	230	220	230	184	230	181	223	254	247	256	277	242≶	254	254	283	2
23	A			⌈230	244	268⌋	282	294	296	254	186	156	230	⌈235	210	223	232	228	193	201	228⌋	201	277	289	299	346	346	248	2
24	A	A	A	412	408	414	410	388	406	475	266	242	159	181	186	203	201	181	161	208	225	208	230	201	261	390	401	284	0
25	A	A	A	475	479	454	452	477	463	436	342	289	235	249	191	179	156	201	203	213	228	289	249	282	296	294	321	311	1
26	A	A	A	353	346	373	369	388	408	414	321	282	232	213	232	228	242	220	230	156	186	254	254	259	282	310	280	285	1
27	A	A	A	301	401	438	434	461	454	423	410	324	277	254	254	230	203	179	225	254	277	273	261	282	326	294	308	314	0
28	A	A	A	301	344	369	388	410	448	446	395	305	291	263	259	215	230	230	203	235	235	251	261	254	280	305	335	302	0
29	A	A	A	324	372	377	429	434	481	479	390	366	296	235	188	156	161	179	203	203	277	249	277	282	344	328	301	306	0
30	A			299	369	390	414	416	431	333	328	321	319	301	299	181	156	176	179	156	176	203	242	206	208	210	230	273	1
31																													
MEANS ●				339	356	364	386	400	418	415	342	295	262	242	222	196	191	198	199	214	227	244	252	266	288	314	330	290	
MEANS †				345	367	376	392	404	429	438	353	306	264	238	221	193	191	200	211	221	237	257	257	270	305	332	350	298	
MEANS ‡				348	371	378	389	407	432	436	350	300	255	230	216	197	197	195	205	214	236	259	260	271	306	333	350	297	

DESIGNATIONS AND REMARKS:

●=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION ≷=DISTURBED BY BAD WEATHER

TABLE 141

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

OCTOBER 1934

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

OCTOBER 1934

DAY	*	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1		X	X	310	304	278	332	314	362	365	296	301	233	184	161	166	140	161	156	179	209	214	207	281	294	306	304	249	1
2	X			306	337	365	334	367	406	382	337	291	266	233	240	214	159	[184]	184	207]	243	230	189	189	207	332	276	270	1
3	X	X		332	362	406	402	411	430	454	454	387	304	281	255	250	207	216	202	243	255	306	319	296	321	344	402	327	1
4	X	X	X	360	406	454	466	476	464	478	464	406	311	281	260	250	245	202	138	166	216	138	163	260	332	357	344	318	1
5	X	X	X	382	433	468	502	473	497	507	449	344	314	301	273	214	193	191	184	230	221	225	253	286	283	281	253	323	0
6	X	X	X	306	314	360	399	404	409	411	372	319	286	276	243	207	189	198	186	209	225	212	233	233	212	205	243	278	1
7	X	X		253	298	276	311	347	360	406	357	286	223	156	189	193	[172	138	136	136]	161	179	202	175	228	218	235	233	1
8	X	X		281	268	329	332	372	357	382	344	306	243	245	205	163	159	184	184	186	202	248	230	209	245	319	276	261	1
9	X			281	311	314	357	385	372	394	402	349	278	212	240	207	189	[184	184	196	186	179	233	253	230	156	138]	260	2
10	X			[214	240	218	205	138	133	120	92	48	69	69	74	99	110	99	150	182	198	207	218	115	255	233	207]	154	2
11	X			[230	210	230	230	230	225	221	238	255	186	193	191	207	233]	230	230	225	221	216	212	218	230	245	255	224	2
12	X	X		283	281	268	243	243	294	258	193	97	71	85	124	156	136	131	138	140	150	161	189	212	196	233	207	187	0
13	X	X	X	255	278	306	283	332	360	301	281	286	235	202	193	189	122	175	212	230	238	253	202	306	380	329	339	262	0
14	X	X		337	352	382	387	382	404	430	440	390	337	288	253	248	[212	207	214	212]	243	276	357	332	337	347	365	322	1
15	X			362	402	402	394	402	390	406	377	334	281	[273	233	207	225	225	216	243]	255	235	230	221	304	390	409	309	1
16	X	X	X	411	410	490	488	502	468	449	387	382	329	286	288	281	283	255	258	306	362	286	225	273	329	392	409	357	0
17	X	X	X	385	425	352	449	478	473	478	478	327	228	161	189	136	122	161	225	230	268	209	255	263	304	344	352	304	1
18	X	X	X	362	409	421	430	449	454	442	430	385	357	311	276	250	250	255	248	230	230	255	301	309	367	332	332	337	0
19	X	X		334	357	354	344	382	454	461	327	255	268	182	140	161	150	168	184	225	189	225	223	255	263	263	230	266	0
20	X	X	X	286	299	329	357	380	387	423	416	357	311	255	255	255	230	200	120	184	253	230	205	170	212	245	273	276	0
21	X	X	X	316	306	362	411	413	430	454	452	357	342	309	216	184	166	198	161	166	198	202	182	186	205	209	266	279	0
22	X	X	X	286	321	352	390	394	404	411	394	377	306	276	230	230	230	138	166	253	258	276	271	240	255	283	344	295	1
23	X	X	X	385	418	418	411	397	478	483	500	449	404	375	304	230	209	225	235	255	276	245	260	233	281	321	329	338	0
24	X	X	X	357	385	418	406	454	435	433	411	394	337	255	207	207	218	225	202	189	243	212	170	255	255	296	268	301	0
25	X	X	X	337	402	416	406	382	377	428	406	402	354	319	278	301	304	268	276	276	205	225	281	327	286	207	263	322	0
26	X	X	X	309	382	387	430	425	466	449	406	375	255	230	238	258	235	238	228	230	212	250	304	306	329	314	245	313	1
27	X	X		281	357	362	362	362	362	357	360	332	304	286	281	276	255	138	120	156	161	235	268	306	301	260	311	283	0
28	X	X	X	337	365	357	372	354	357	342	362	342	327	306	301	278	243	230	212	230	193	143	179	281	207	205	281	264	0
29	X	X	X	357	357	387	411	411	413	394	416	372	334	316	266	202	156	207	230	255	225	253	260	255	276	281	299	306	0
30	X	X	X	319	357	406	425	435	478	442	402	357	334	301	281	255	233	189	225	230	250	253	253	260	271	278	309	314	0
31	X			357	382	421	430	447	437	418	385	382	329	316	304	[212	198	177	186	207]	250	228	189	258	332	286	306	310	1
MEANS *				317	348	364	377	386	398	399	375	330	282	250	232	216	199	193	193	213	226	226	234	250	275	284	293	266	
MEANS †				323	354	374	390	400	415	418	391	343	294	259	236	222	202	196	194	214	226	228	240	260	279	287	299	294	
MEANS ‡				332	367	387	409	416	428	427	406	363	311	275	248	227	209	206	203	225	238	227	234	262	282	288	303	303	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES

†=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT

‡=SELECTED DAYS

( )=INTERPOLATED

[ ]=APPROXIMATE

⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION

}=DISTURBED BY BAD WEATHER

TABLE 142

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

OCTOBER 1934

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

OCTOBER 1934

Day	‡	†	*	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X	X	231	303	288	318	329	356	361	282	258	196	155	104	124	124	148	155	192	228	231	194	288	295	306	303	240	1
2	X			299	327	350	327	371	389	373	325	262	235	213	199	215	173	⌈213	208	237⌋	262	228	171	173	194	325	262	264	1
3	X	X		314	367	384	389	407	425	449	413	367	284	246	253	240	199	240	222	244	244	275	306	284	310	329	389	316	1
4	X	X	X	367	389	429	427	451	449	466	449	391	286	269	244	240	235	210	148	171	217	145	145	260	327	346	342	308	1
5	X	X	X	373	415	445	487	445	470	502	415	331	280	271	242	217	192	192	194	219	231	240	253	306	282	280	240	313	0
6	X	X	X	299	308	346	373	385	389	387	369	297	297	244	217	208	194	176	190	203	213	219	262	258	246	228	260	274	1
7	X	X		264	260	275	327	346	348	409	350	280	215	150	178	194	194	162	152	150	176	194	194	176	242	244	258	239	1
8	X	X		297	286	329	346	377	369	371	327	262	228	228	199	140	⌈173	222	228	224⌋	235	271	240	217	240	306	273	266	1
9	X			282	308	318	348	369	354	389	369	303	242	201	222	196	183	⌈215	217	206	206	196	240	260	244	210	190⌋	261	2
10	X			⌈240	244	242	233	190	194	176	190	148	138	148	143	173	171	166	213	215	219	235	242	192	284	260	240⌋	204	2
11	X			⌈242	240	240	240	222	226	235	240	246	219	219	217	224	249⌋	242	240	235	210	215	213	217	222	240	249	231	2
12	X	X		282	284	269	240	269	286	240	180	100	75	65	92	138	133	124	124	128	145	138	171	199	194	235	201	180	0
13	X	X	X	240	282	303	284	321	350	258	251	266	213	171	150	192	128	171	201	217	208	262	196	306	369	329	344	250	0
14	X	X		331	354	389	387	365	389	401	409	371	344	284	255	242	⌈219	217	217	222⌋	240	262	346	301	321	329	348	314	1
15	X			344	371	369	387	373	369	401	358	301	277	⌈275	273	240	251	244	255	260⌋	255	217	228	213	282	373	389	304	1
16	X	X	X	399	425	468	468	487	451	449	369	344	286	280	264	264	260	242	240	282	310	240	203	255	312	385	409	337	0
17	X	X	X	387	389	433	433	466	449	477	415	282	173	128	171	128	119	166	228	222	262	171	240	262	282	344	333	290	1
18	X	X	X	379	403	423	431	449	445	413	393	367	331	295	240	235	240	255	233	260	240	264	310	308	356	331	321	330	0
19	X	X		306	325	308	327	344	449	433	299	208	237	148	124	145	148	171	192	240	199	217	206	242	282	262	235	252	0
20	X	X	X	286	284	303	348	379	369	429	377	327	271	235	222	240	228	190	112	173	242	213	173	152	217	255	282	263	0
21	X	X		312	303	352	409	413	435	449	425	338	329	303	206	171	166	194	157	171	215	208	185	194	217	240	282	278	0
22	X	X	X	301	321	367	391	397	409	407	393	327	273	282	224	217	222	128	217	266	269	264	288	246	240	280	314	293	1
23	X	X	X	356	409	425	411	389	466	468	468	397	367	348	286	219	194	201	240	244	260	213	240	203	264	310	306	320	0
24	X	X	X	329	373	409	385	429	409	397	369	331	303	217	187	159	176	192	194	196	240	215	169	262	240	286	266	281	0
25	X	X	X	342	393	425	409	393	369	417	391	344	310	271	224	273	262	240	228	262	194	210	269	333	282	222	262	305	0
26	X	X	X	306	373	391	445	405	456	449	352	325	233	213	235	242	233	215	208	217	217	253	306	308	310	288	240	301	1
27	X	X		303	348	367	371	369	371	348	348	314	295	269	246	242	231	148	124	155	176	264	260	327	301	277	327	283	0
28	X	X	X	348	369	358	352	335	350	333	333	325	321	308	293	264	235	219	196	217	171	128	178	284	213	199	299	276	0
29	X	X	X	375	377	387	411	407	405	379	377	338	288	284	244	190	145	185	258	269	237	242	222	264	290	284	306	298	0
30	X	X	X	318	348	397	409	411	468	421	389	327	310	275	249	246	217	196	244	260	260	244	246	264	282	280	327	308	0
31	X			369	407	431	431	462	449	431	405	373	325	306	275	⌈203	213	213	222	240⌋	262	213	194	271	346	284	308	318	1
MEANS *				317	342	362	372	379	391	391	356	305	264	236	215	207	197	197	202	219	227	222	229	252	274	286	294	281	
MEANS †				322	346	372	383	392	405	405	366	313	270	238	214	207	195	192	196	216	225	223	232	260	277	287	299	285	
MEANS ‡				330	359	386	400	405	416	415	379	329	282	253	222	213	198	196	202	224	234	220	227	264	279	288	302	293	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES †=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION ≷=DISTURBED BY BAD WEATHER

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

OCTOBER 1934

EXPRESSED IN VOLTS PER METER

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

OCTOBER 1934

DAY	*	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	DIST. HOURS
1	X	X	X	22	26	23	29	20	24	25	41	52	72	92	124	124	114	N84	72	65	54	33	23	26	22	23	29	51	8
2				31	32	24	23	23	26	19	36	58	69	78	82	73	51	⌈ Z	Z	N38 ⌋	52	46	46	34	23	27	27	..	19
3	X	X		26	26	20	21	22	24	23	32	51	56	70	74	73	N67	63	N56	50	49	40	31	24	22	20	21	40	3
4	X	X	X	23	23	20	19	23	17	20	30	42	60	64	82	N82	77	63	69	N55	45	52	54	29	25	21	23	42	1
5	X	X	X	23	20	17	19	20	20	26	39	54	61	72	87	88	88	76	67	58	42	39	29	22	31	31	20	44	0
6	X	X	X	20	17	21	20	23	23	22	34	42	47	58	66	N63	68	66	49	43	42	22	19	25	23	22	22	36	1
7	X	X		20	20	20	19	21	26	23	36	46	65	89	74	59	N61	61	58	N33	42	39	37	39	24	24	20	40	1
8	X	X		19	16	16	16	17	19	19	29	45	58	56	70	78	⌈ N72	N23	N26	N36 ⌋	44	39	33	29	20	29	24	35	1
9				21	23	22	22	23	23	26	37	59	78	73	82	91	82	⌈ Z	Z	46	34	27	20	20	Z-	Z-	Z- ⌋	..	2
10			⌈	Z-	Z-	Z-	Z-	Z-	Z-	Z-	Z-	Z-	Z-	Z-	Z-	Z-	Z-	Z-	Z-	Z-	Z-	Z-	Z-	Z-	Z-	Z-	Z- ⌋	..	2
11			⌈	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z-	Z-	Z-	Z	39 ⌋	46	39	37	72	46	47	47	52	49	46	..	2
12	X	X		39	36	31	27	27	36	36	66	133	158	160	140	82	72	73	67	65	56	54	38	23	23	22	23	62	0
13	X	X	X	22	19	18	24	34	28	30	51	50	63	83	100	79	88	69	62	58	30	20	36	26	29	29	22	45	0
14	X	X		27	26	23	26	26	26	23	29	43	52	56	57	55	⌈ N45	N47	N46	36 ⌋	46	39	29	22	20	21	27	35	1
15				23	23	25	23	27	26	26	38	49	64	⌈ N53	Z	N63	68	N42	N37	47 ⌋	49	49	34	26	26	19	21	..	1
16	X	X	X	19	19	17	15	20	26	28	35	46	67	60	64	61	58	54	54	39	20	21	20	36	21	20	16	35	0
17	X	X	X	18	28	23	20	21	23	24	34	71	107	148	124	110	106	81	N57	57	48	52	49	36	29	28	17	55	1
18	X	X	X	20	16	19	16	16	17	21	32	43	49	55	70	61	57	59	62	42	51	46	41	42	30	42	41	40	0
19	X	X		42	40	39	42	23	27	32	48	85	93	112	158	120	99	84	66	54	59	55	55	33	32	29	29	61	0
20	X	X	X	31	31	29	21	26	23	25	32	52	67	75	80	70	66	77	88	68	45	47	49	35	24	26	24	46	0
21	X	X	X	29	20	16	18	20	19	20	36	48	51	59	77	99	91	72	73	65	49	43	39	26	24	22	24	43	0
22	X	X	X	27	27	18	23	19	22	30	34	42	55	62	69	68	65	72	N52	42	46	30	32	37	23	26	28	40	1
23	X	X	X	21	24	29	23	29	30	27	33	48	59	62	75	62	71	74	62	62	57	56	55	36	27	29	26	45	0
24	X	X	X	30	33	26	26	26	25	33	49	61	75	108	119	106	92	84	77	61	50	51	33	32	33	26	26	53	0
25	X	X	X	33	29	28	23	26	32	27	42	62	78	94	94	82	68	66	59	49	29	23	24	24	32	22	27	45	0
26	X	X	X	23	22	23	21	23	-22	28	39	52	77	82	81	75	68	68	N59	49	33	24	27	32	36	35	35	43	1
27	X	X		22	20	23	20	32	35	30	31	48	52	56	59	68	61	87	105	75	58	29	36	30	28	26	28	44	0
28	X	X	X	23	20	23	29	34	35	40	44	49	52	55	54	55	53	52	49	52	33	43	24	19	25	23	17	38	0
29	X	X	X	16	19	16	16	19	19	26	31	44	55	55	72	82	87	65	49	43	47	44	39	22	21	20	23	39	0
30	X	X	X	20	21	20	20	21	25	26	38	49	53	55	69	68	72	64	49	42	39	36	29	19	21	22	21	37	0
31				16	13	16	22	19	23	22	28	40	44	50	65	⌈ 68	N52	Z	Z	N46 ⌋	41	45	26	27	27	36	35	..	1
MEANS *				25	24	22	22	24	25	27	38	54	67	78	85	79	75	67	61	52	45	39	35	29	26	26	25	44	
MEANS †				25	24	22	22	24	25	27	38	54	67	78	85	79	75	67	61	52	45	39	35	29	26	26	25	44	
MEANS ‡				23	23	21	21	23	24	27	37	50	64	74	84	80	77	69	62	53	42	38	35	29	26	26	24	43	

DESIGNATIONS AND REMARKS:

*=ALL COMPLETE DAYS

†=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT

‡=SELECTED DAYS

( )=INTERPOLATED

[ ]=APPROXIMATE

⌈ ⌋=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER

X=DISTURBED BY BAD WEATHER

N=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT

Z=INDETERMINATE IN MAGNITUDE AND SIGN

Z+=INDETERMINATE POSITIVE VALUE

Z-=INDETERMINATE NEGATIVE VALUE

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN VOLTS PER METER

NOVEMBER 1934

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DAY	*	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1				47	49	51	46	47	28	26	25	37	49	49	56	N49	Z	N109	Z	Z	N34	81	49	47	41	54	43	..	1
2				45	47	37	42	46	29	28	42	59	69	81	87	N86	75	N59	Z	49	48	36	54	43	50	36	35	..	1
3	A	A	A	46	37	51	49	50	24	25	36	51	65	55	56	N60	68	N63	53	47	N37	21	22	17	13	20	27	40	1
4	A	A	A	43	43	49	21	43	23	20	29	40	49	49	54	52	62	N46	49	39	46	44	32	20	23	23	20	34	1
5	A	A	A	49	49	20	49	19	20	19	27	39	45	54	55	52	51	45	49	36	36	22	23	22	24	19	20	32	0
6	A	A	A	47	47	41	49	49	41	49	56	52	62	64	69	72	76	67	76	60	36	46	23	22	34	27	24	44	0
7	A	A	A	44	49	20	21	23	23	23	26	36	46	62	72	69	85	54	46	46	30	23	22	20	26	20	20	36	0
8	A	A	A	19	23	22	17	16	16	20	23	39	46	53	63	59	60	62	52	44	48	30	19	26	26	27	23	35	0
9	A	A	A	20	19	17	16	16	15	16	24	35	47	53	66	66	69	90	70	55	43	31	24	16	16	14	16	36	0
10	A	A		24	20	19	25	22	20	23	35	53	72	84	89	82	[69	N39	N36	N30]	41	37	31	36	37	32	40	42	1
11				[Z	Z	34	N40]	47	52	53	54	50	61	66	64	68	53	46	43	33	33	32	34	23	20	20	20	..	1
12	A	A	A	20	17	17	20	21	23	22	32	39	62	66	79	88	76	62	46	N33	42	34	53	46	33	27	25	41	1
13	A	A	A	23	22	21	20	23	24	23	30	46	63	56	66	64	85	69	59	53	46	50	30	32	36	42	30	42	0
14	A	A		23	26	20	23	26	33	26	42	56	63	60	55	N40	N50	52	49	42	23	17	26	32	33	20	27	36	1
15	A	A	A	26	26	21	24	26	30	30	43	47	49	55	59	55	N61	51	N46	43	30	24	18	16	20	20	23	35	1
16				21	19	18	17	16	20	18	20	26	35	37	[42	Z	Z	Z	Z	46	Z+	Z	Z	Z	Z-	[43	49	..	1
17	A	A	A	49	41	47	51	46	58	64	71	82	86	71	84	77	69	60	63	53	30	37	42	43	56	35	33	56	0
18	A	A		25	29	30	48	44	53	46	48	65	90	122	109	68	68	61	56	43	48	41	24	41	56	36	45	54	0
19				30	31	29	40	41	42	45	38	51	[N30	39	N55	N36	N40	N16	37	N 6	28	Z	Z	24	[43	39	27	..	1
20				[36	Z	Z	Z	Z	36]	66	159	152	109	75	82	82	82	72	68	66	58	39	76	139	132	66	36	..	1
21	A	A	A	37	33	36	33	36	40	36	66	65	89	147	127	104	101	79	72	60	49	36	46	46	46	37	36	61	0
22	A	A	A	32	39	36	34	39	44	48	67	99	126	119	102	88	82	87	82	72	60	37	36	33	38	32	40	61	0
23	A	A	A	36	37	33	28	28	32	30	50	59	69	99	102	86	80	78	78	70	44	36	33	31	27	23	29	51	0
24	A	A	A	24	23	27	24	26	23	33	40	59	N84	89	89	N85	69	59	66	60	59	70	46	26	31	42	33	49	1
25	A	A	A	30	22	20	24	25	26	24	33	50	79	105	106	95	80	75	66	59	63	49	36	46	32	26	32	50	0
26	A	A		26	30	32	28	36	37	35	63	70	107	171	191	202	128	N118	N92	86	93	104	92	59	38	49	46	61	1
27	A	A	A	39	47	42	40	48	41	42	59	63	76	90	106	89	112	117	100	82	62	46	49	46	35	37	36	63	0
28				27	30	23	23	18	18	20	33	58	[90	Z	Z-	Z	Z	Z	N21]	45	39	44	66	59	32	32	25	..	1
29				21	34	31	33	34	37	45	36	56	62	75	81	97	102	[N55	N21	Z]	64	49	34	36	36	39	33	..	1
30	A	A	A	35	32	34	32	36	41	37	45	64	103	102	128	123	135	128	92	69	43	34	32	30	20	20	22	60	0
31																													
MEANS *				28	28	28	28	29	31	31	43	55	72	83	88	81	79	71	64	54	46	40	34	32	32	29	29	47	
MEANS †				28	28	28	28	29	31	31	43	55	72	83	88	81	79	71	64	54	46	40	34	32	32	29	29	47	
MEANS ‡				29	28	29	27	28	30	30	42	54	69	77	82	77	79	72	65	54	45	37	33	30	30	27	27	46	

DESIGNATIONS AND REMARKS:

*=ALL COMPLETE DAYS

†=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT

‡=SELECTED DAYS

( )=INTERPOLATED

[ ]=APPROXIMATE

[ ]=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER

}=DISTURBED BY BAD WEATHER

N=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT

Z=INDETERMINATE IN MAGNITUDE AND SIGN

Z+=INDETERMINATE POSITIVE VALUE

Z-=INDETERMINATE NEGATIVE VALUE

TABLE 146.

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

NOVEMBER 1934

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

NOVEMBER 1934

DAY	#	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X			309	288	338	366	375	379	401	404	379	321	328	295	262	178	241	191	234	172	155	211	239	262	215	211	281	1
2	X			298	326	375	338	342	379	384	363	312	307	272	220	144	172	202	196	220	251	244	181	185	172	239	276	265	1
3	X	X	X	260	262	279	293	352	375	356	379	328	291	316	286	244	150	116	198	232	269	234	333	397	401	379	335	294	1
4	X	X	X	375	401	390	354	442	419	424	457	390	338	309	291	262	194	194	178	202	196	202	172	220	237	288	281	301	1
5	X	X	X	241	347	384	428	406	446	486	372	335	328	283	241	237	239	239	260	255	227	239	241	321	342	309	307	310	0
6	X	X	X	359	384	366	361	370	379	359	300	309	276	265	262	229	196	189	144	172	155	146	178	220	239	215	258	264	0
7	X	X	X	253	267	331	361	366	368	359	388	372	328	248	239	234	133	159	178	189	178	218	272	265	335	288	309	277	0
8	X	X	X	314	333	338	356	381	421	421	442	379	328	302	281	258	258	234	133	194	116	181	215	253	298	359	333	297	0
9	X	X	X	314	342	384	392	433	450	446	446	356	335	291	265	244	220	172	194	194	157	150	178	239	262	300	314	295	0
10	X	X		291	328	347	366	381	379	384	401	309	234	215	218	213	198	234	215	176	211	253	291	265	229	272	286	279	1
11	X			237	237	276	286	286	286	286	286	272	262	262	258	255	239	241	244	262	239	262	267	286	291	298	323	268	1
12	X	X	X	366	397	408	424	424	435	446	399	372	321	291	276	172	168	150	198	215	227	265	163	176	155	272	248	290	1
13	X	X	X	305	286	335	397	419	421	404	424	359	312	312	274	265	189	196	215	239	241	194	215	234	211	215	225	267	0
14	X	X		241	265	307	307	307	347	356	316	295	276	241	234	204	194	198	194	196	234	239	237	241	262	307	314	263	1
15	X			307	339	412	319	354	356	356	272	262	298	269	227	155	146	170	234	265	229	220	281	291	328	401	406	282	1
16	X			426	419	426	446	475	484	504	410	415	328	288	244	129	64	99	183	262	248	176	161	196	172	198	206	290	1
17	X	X	X	198	239	239	234	239	239	204	189	172	172	176	150	133	150	142	146	140	155	150	129	172	133	215	155	178	0
18	X	X		211	227	241	194	196	196	220	244	239	153	129	129	200	189	189	191	229	198	215	253	155	150	155	155	194	0
19	X			174	198	262	241	239	262	283	295	281	262	258	237	267	267	220	215	211	189	194	239	267	286	286	298	247	1
20	X			331	209	103	86	181	262	211	64	60	120	168	170	168	174	176	176	194	194	204	155	92	133	215	262	172	1
21	X	X	X	312	286	244	258	262	291	312	286	281	251	135	114	140	120	127	129	150	138	138	108	125	150	133	172	194	0
22	X	X	X	191	237	215	218	251	246	260	174	204	176	194	241	239	239	194	189	183	163	189	220	222	239	253	241	226	0
23	X	X	X	239	241	307	333	368	377	379	309	333	309	241	239	276	241	211	191	194	196	241	229	265	307	286	314	276	0
24	X	X	X	333	366	340	384	401	399	446	379	260	215	194	222	191	194	227	234	237	185	163	198	239	194	170	262	266	1
25	X	X	X	333	356	335	338	379	401	401	435	370	286	215	194	198	198	198	191	191	170	150	157	198	176	218	272	265	0
26	X	X		305	262	309	305	338	333	366	309	286	258	148	129	108	131	172	155	172	133	133	153	194	185	168	198	219	1
27	X	X	X	215	213	198	258	222	326	321	309	338	300	239	225	258	194	161	172	215	172	178	194	215	309	286	267	241	0
28	X			291	331	390	375	392	415	399	419	381	222	157	189	215	237	189	172	194	220	146	112	153	172	218	215	258	1
29	X			286	305	288	267	286	281	307	347	319	309	281	260	172	108	155	131	153	150	215	220	150	129	246	237	233	1
30	X	X	X	262	286	319	309	328	335	326	309	316	227	209	170	129	131	110	140	194	194	112	191	286	286	309	309	241	0
31																													
MEANS #				285	298	313	322	340	356	358	338	309	271	241	226	207	184	184	186	205	194	194	205	225	235	257	266	258	
MEANS †				283	302	315	327	346	361	361	343	312	273	237	223	209	185	181	185	202	188	191	209	236	247	264	271	260	
MEANS ‡				288	308	318	334	355	371	368	346	319	283	249	233	215	187	177	185	203	187	187	204	241	256	272	278	265	

DESIGNATIONS AND REMARKS:

#=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES

†=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT

‡=SELECTED DAYS

( )=INTERPOLATED

[ ]=APPROXIMATE

⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION

}=DISTURBED BY BAD WEATHER

TABLE 146

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

NOVEMBER 1934

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

NOVEMBER 1934

DAY	✱	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1				297	279	333	345	358	356	382	380	362	297	283	279	{ 220	178	218	216	277	172	136 }	193	197	237	187	195	266	1
2				228	297	339	317	335	360	374	339	271	249	224	193	[132	186	216	218	232]	257	253	164	172	353	237	263	250	1
3	✱	✱	✱	239	257	273	281	325	355	345	376	315	261	297	277	241	149	112	212	251	285	237	323	380	393	380	297	286	1
4	✱	✱	✱	256	297	278	260	431	403	404	412	358	325	279	277	257	176	195	183	210	185	178	155	243	237	293	267	290	1
5	✱	✱	✱	239	333	374	399	399	435	395	366	317	297	273	241	237	249	241	237	257	237	257	257	325	347	311	307	305	0
6	✱	✱	✱	349	340	358	360	360	347	368	241	277	281	269	237	220	174	174	123	153	151	134	193	228	220	216	232	251	0
7	✱	✱	✱	257	277	335	353	349	374	356	358	319	295	210	195	183	119	155	185	191	183	195	261	275	337	283	307	265	0
8	✱	✱	✱	315	329	339	360	378	420	416	429	356	299	259	235	245	237	212	134	176	123	172	249	255	297	337	315	287	0
9	✱	✱	✱	313	335	370	378	433	451	451	433	315	281	257	239	195	199	132	174	185	162	157	189	243	259	301	317	282	0
10	✱	✱		279	317	353	358	382	356	376	385	277	216	178	174	178	[191	239	216	195]	220	245	269	261	218	275	277	268	1
11	✱			[257	255	257	273]	261	257	257	275	277	257	253	239	218	237	220	220	257	237	267	265	283	295	293	315	259	1
12	✱		✱	356	380	393	404	395	406	433	410	339	283	257	174	153	180	149	195	222	241	257	149	153	155	255	239	274	1
13	✱	✱	✱	277	265	337	385	391	395	414	403	297	259	273	239	241	172	174	191	216	191	159	193	220	195	199	216	263	0
14	✱	✱		239	257	283	305	281	319	325	277	253	216	216	226	232	216	216	199	199	237	255	351	253	265	303	301	259	1
15	✱	✱	✱	297	303	301	301	321	287	317	249	228	255	253	235	153	130	151	216	251	232	228	277	299	333	401	408	268	1
16	✱			414	418	433	438	468	455	486	376	376	297	281	{ 277	142	153	86	155	239	195	201	183	197	239 }	187	193	287	1
17	✱	✱	✱	195	228	232	216	224	226	189	170	159	149	162	132	132	132	127	132	127	151	134	134	162	132	212	153	167	0
18	✱	✱		212	228	216	191	191	183	197	201	195	149	110	112	191	176	174	178	237	191	216	224	157	134	149	134	181	0
19	✱			164	178	220	218	218	237	263	67	245	{ 253	235	218	241	257	210	195	216	185	112	253	253 }	237	257	273	217	1
20	✱			{ 293	216	134	162	255	239 }	162	49	47	112	164	170	159	174	183	185	195	195	204	170	69	112	170	235	169	1
21	✱	✱	✱	295	259	228	237	259	295	311	216	249	216	125	110	134	112	110	108	132	125	127	95	123	151	115	166	179	0
22	✱	✱	✱	174	208	191	189	216	216	195	174	164	132	142	187	193	208	178	170	174	157	183	237	216	216	232	237	191	0
23	✱	✱	✱	216	235	287	293	339	353	358	259	275	257	178	201	232	216	174	170	174	189	243	218	257	301	279	305	250	0
24	✱	✱	✱	321	337	317	364	378	376	414	353	216	199	178	216	191	195	237	232	220	176	153	174	220	191	155	230	252	1
25	✱	✱	✱	313	341	313	321	372	376	376	387	313	255	178	153	174	157	174	164	174	149	127	140	191	172	199	257	241	0
26	✱	✱		283	259	277	277	333	297	339	281	249	191	140	89	279	123	155	153	149	110	110	132	185	172	138	172	204	1
27	✱	✱	✱	189	174	183	232	201	301	283	283	311	237	193	172	191	174	145	153	191	153	174	174	178	281	265	245	212	0
28	✱			269	313	358	366	380	410	372	378	319	[199	208	241	257	273	197	176]	180	216	132	91	153	168	216	212	254	1
29	✱			277	297	273	263	251	257	277	313	267	257	216	195	153	108	[170	193	176]	162	232	235	170	136	259	228	224	1
30	✱	✱	✱	269	257	297	281	301	313	313	289	261	174	189	159	110	123	99	119	176	195	104	155	287	265	295	297	222	0
31																													
MEANS ✱				273	286	299	308	326	335	338	304	274	238	216	203	196	178	174	180	201	189	186	203	220	228	247	253	244	
MEANS †				272	288	302	311	330	340	344	316	275	238	210	195	198	173	169	175	194	184	184	207	232	240	254	258	245	
MEANS ‡				276	293	306	317	337	352	352	323	282	247	221	204	193	172	163	172	193	182	179	198	236	249	263	266	249	

DESIGNATIONS AND REMARKS:

✱=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES

†=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT

‡=SELECTED DAYS

( )=INTERPOLATED

[ ]=APPROXIMATE

⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION

}=DISTURBED BY BAD WEATHER

TABLE 147

POSITIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

[redacted] 1934

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DECEMBER 1934

DAY	*	+	‡	0	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X		294	349	339	347	364	387	353	316	294	285	257	233	202	204	261	272	288	233	222	133	182	184	143	246	265	0
2	X	X	X	199	448	288	307	226	226	244	272	244	141	101	103	125	141	145	182	231	162	147	154	137	182	162	170	196	0
3	X	X		182	224	272	226	314	376	285	274	264	224	220	101	121	141	162	178	182	139	121	113	209	270	272	318	216	1
4	X	X	X	224	190	292	222	277	353	368	312	393	355	339	331	312	264	248	266	285	198	224	255	268	307	318	294	284	0
5	X	X	X	307	492	341	339	351	397	345	336	253	246	204	158	166	180	204	224	226	228	222	231	246	277	316	334	266	0
6	X	X	X	351	351	355	355	355	347	320	299	331	336	277	268	270	270	248	242	292	272	288	272	290	294	312	296	304	1
7	X			228	329	343	290	312	325	[296]	320	339	[307]	237	255	224	224	209	224	231	246	246]	264	288	272	307	290	275	2
8	X	X	X	270	272	253	266	243	244	145	226	226	248	268	268	288	272	288	281	320	292	290	285	290	290	228	246	263	0
9	X	X	X	266	277	290	321	268	270	310	307	292	283	264	244	202	178	143	162	145	207	215	213	224	188	235	228	238	0
10				202	198	209	228	[illegible]	204	228	228	226	184	168	121	123	123	113	...	...	...	...	...	...	...	...	...	...	0
11				...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0
12				...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0
13				198	266	211	141	162	145	121	...	...	...	...	...	...	274	235	220	202	202	202	149	145	99	121	121	...	1
14	X	X		164	178	178	134	162	207	224	213	250	244	172	186	160	220	170	180	182	137	113	143	202	184	162	162	...	1
15	X	X	X	202	224	231	261	266	272	261	277	290	228	202	198	182	103	89	101	121	190	224	224	81	152	202	186	176	1
16	X	X		149	160	162	115	123	137	147	158	99	180	182	143	160	141	143	145	101	121	129	141	141	141	170	145	191	0
17				87	79	81	109	121	101	101	101	101	119	137	121	97	79	93	113	119	93	103	97	83	79	81	61	119	0
18	X	X		137	141	215	237	168	215	290	202	242	147	101	121	...	...	...	...	...	...	...	...	...	...	...	...	...	0
19	X	X	X	259	242	288	309	314	334	341	281	250	272	246	170	121	123	119	141	123	[121	113	147	160	178]	220	189	165	1
20	X	X	X	244	351	355	320	395	318	345	310	290	270	257	242	182	154	176	162	180	160	186	224	204	224	182	202	231	C
21	X	X	X	222	250	246	264	290	285	270	299	268	283	228	178	202	160	123	141	160	137	121	143	162	182	250	224	238	0
22	X	X	X	281	399	345	359	399	431	414	397	336	141	101	81	145	224	290	274	288	288	162	162	226	316	320	264	252	0
23	X	X	X	307	310	334	334	334	336	355	339	336	341	233	202	81	119	158	129	198	182	158	160	125	164	224	246	234	0
24	X	X	X	299	336	310	351	376	376	395	364	380	246	209	211	224	209	250	264	194	137	147	180	202	242	228	277	263	0
25	X	X	X	288	268	331	372	376	368	401	368	376	331	334	290	268	224	242	268	246	182	139	202	207	224	244	264	274	0
26	X	X		339	331	412	393	397	393	393	389	359	307	180	222	182	182	178	174	248	143	137	154	192	248	336	334	289	0
27	X	X	X	351	374	334	366	355	368	376	387	364	343	314	325	312	270	283	290	290	303	198	207	244	268	272	310	280	1
28	X			339	372	378	395	359	270	294	290	224	123	101	141	40	87	222	158	143	160	268	202	215	237	285	318	314	2
29	X			218	158	182	215	202	139	162	111	103	137	160	166	184	213	117	83	65	67	73	141	164	141	198	270	212	0
30	X			61	63	81	89	145	222	218	194	215	220	207	202	198	145	103	145	162	170	65	61	79	81	63	53	126	0
31				63	57	103	105	63	103	143	97	87	81	235	224	...	...	...	...	...	...	123	127	123	121	101	137	149	0
MEANS *				253	267	283	289	295	302	302	290	281	250	216	202	188	182	190	196	204	184	173	180	190	210	227	236	233	
MEANS +				261	275	290	297	303	314	313	301	292	260	223	204	194	185	196	204	214	188	182	186	195	221	238	245	241	
MEANS ‡				282	294	300	315	323	326	326	318	309	271	238	218	211	204	214	220	228	202	189	199	209	234	254	256	256	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES +=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT ‡=SELECTED DAYS

( )=INTERPOLATED [ ]=APPROXIMATE ⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION }=DISTURBED BY BAD WEATHER

TABLE 148

NEGATIVE CONDUCTIVITY AT TUCSON MAGNETIC OBSERVATORY

DECEMBER 1934

EXPRESSED IN MILLIONTHS OF AN ELECTROSTATIC UNIT

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DECEMBER 1934

DAY	*	†	‡	0-	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X		291	320	355	358	359	374	343	297	262	221	204	194	188	200	262	280	282	223	206	138	164	182	128	233	253	0
2	X	X	X	346	258	268	297	225	204	227	233	217	124	83	83	103	124	134	166	204	144	132	164	116	166	144	164	180	0
3	X	X		166	204	249	223	303	343	264	266	216	170	184	67	83	116	144	164	166	144	122	101	200	251	247	303	196	1
4	X	X	X	208	186	184	200	264	339	346	282	376	358	350	312	301	266	243	239	282	208	219	258	264	297	324	301	275	0
5	X	X	X	301	289	344	352	361	346	343	310	262	223	182	144	128	168	196	208	223	235	225	204	241	274	316	331	259	0
6	X	X	X	324	315	359	356	358	337	320	305	320	318	282	278	262	262	251	243	301	278	284	280	284	293	301	297	301	1
7	X			239	329	350	297	303	322	[253]	320	350	[320	260	280	247	245	225	255	258	262	260]	260	299	282	326	318	286	2
8	X	X	X	286	303	282	280	282	282	258	268	245	262	264	280	287	270	278	282	322	316	295	297	286	282	237	262	279	0
9	X	X	X	282	286	299	320	274	291	318	320	289	293	237	227	184	142	116	134	124	217	214	223	243	208	245	241	239	0
10				223	223	239	266	237	239	258	235	223	164	160	120	124	105	120	126	146	148	186	204	223	258	262	251	...	0
11				233	243	260	257	299	301	310	301	305	289	243	190	200	200	166	166	231	243	239	258	257	194	262	308	...	0
12				305	287	264	308	312	318	308	301	268	243	262	297	274	231	235	235	235	239	241	204	182	219	266	208	...	0
13				206	316	247	162	168	140	124	162	...	...	...	...	124	196	162	164	162	107	105	184	196	170	144	140	...	1
14	X	X		142	142	180	164	124	184	202	164	221	208	144	160	144	83	67	81	107	168	188	168	71	124	162	164	148	1
15	X	X	X	154	202	200	214	214	241	223	225	233	184	148	144	105	103	107	124	85	109	105	118	105	124	148	124	156	0
16	X	X		130	128	142	87	93	103	124	126	85	164	158	128	83	64	81	103	101	79	99	81	75	60	64	58	101	0
17				81	62	64	83	89	83	83	83	67	75	83	93	81	101	103	99	128	178	164	105	142	132	156	144	...	0
18	X	X		120	120	172	196	140	174	241	164	184	126	81	107	95	93	93	105	99	[103	112	134	144	164]	202	164	139	1
19	X	X	X	241	216	251	282	284	301	312	255	206	225	190	146	146	132	144	144	154	130	162	196	186	219	166	188	203	0
20	X	X	X	206	318	314	297	343	282	314	284	225	221	208	184	148	122	103	122	128	105	107	122	142	164	223	204	204	0
21	X	X	X	186	223	206	243	262	245	239	251	221	243	204	162	126	184	262	258	262	257	144	148	204	297	299	255	224	0
22	X	X	X	258	356	303	335	369	395	369	361	284	126	85	64	62	93	142	124	184	164	128	124	114	144	198	210	208	0
23	X	X	X	262	255	301	287	320	301	310	308	282	262	192	164	184	166	206	227	184	116	124	148	190	223	208	258	228	0
24	X	X	X	274	320	284	320	339	348	346	289	303	204	162	152	166	180	196	229	264	140	112	166	184	204	212	239	235	0
25	X	X	X	262	255	280	339	358	344	373	333	320	264	258	227	206	184	225	223	208	162	112	128	178	221	303	318	253	0
26	X	X		312	305	359	359	363	361	358	337	308	243	126	160	124	124	132	142	196	112	168	184	204	227	247	274	239	1
27	X	X	X	308	320	286	322	324	339	343	316	297	282	223	239	245	227	247	245	241	247	225	184	186	190	239	280	265	2
28	X			299	341	327	356	339	282	258	243	282	160	164	386	200	142	176	144	180	164	105	184	184	156	174	229	228	0
29	X			166	128	180	168	168	103	103	85	54	87	81	89	114	126	60	44	42	25	29	21	35	40	23	21	83	0
30	X			23	25	38	42	103	168	170	148	164	180	168	164	148	124	83	122	148	148	89	204	101	89	54	83	116	0
31				44	38	67	81	58	69	75	71	58	58	164	170	103	103	105	140	172	160	130	116	103	107	124	180	...	
MEANS *				231	247	261	268	275	280	278	260	248	219	186	182	163	158	167	176	190	170	159	169	176	195	208	221	212	
MEANS †				241	254	268	278	284	292	294	271	255	225	189	172	160	157	173	183	196	174	166	170	180	205	220	232	218	
MEANS ‡				260	275	277	296	305	306	309	289	272	239	205	187	177	175	190	198	211	189	173	184	195	220	238	245	234	

DESIGNATIONS AND REMARKS:

*=ALL DAYS COMPLETE IN BOTH POSITIVE AND NEGATIVE CONDUCTIVITIES

†=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT

‡=SELECTED DAYS

( )=INTERPOLATED

[ ]=APPROXIMATE

⌈ ⌋=APPEARS CONSPICUOUSLY DISTURBED BY POLLUTION

}=DISTURBED BY BAD WEATHER

POTENTIAL GRADIENT AT TUCSON MAGNETIC OBSERVATORY

EXPRESSED IN VOLTS PER METER

(THE TABULAR VALUES ARE AVERAGES FOR SUCCESSIVE PERIODS OF ONE HOUR AS INDICATED 105° WEST MERIDIAN MEAN TIME)

DECEMBER 1934

DAY	*	†	‡	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	MEAN	CHARACTER
1	X	X		19	24	21	21	30	31	35	39	58	74	83	92	83	73	63	60	53	53	56	67	69	60	74	59	54	0
2	X	X	X	33	47	50	46	66	73	44	36	63	107	154	147	117	87	71	53	46	33	37	43	41	36	54	24	63	0
3	X	X		27	30	26	27	32	27	40	36	63	98	105	194	148	119	86	73	62	50	56	N41	50	30	34	20	61	1
4	X	X	X	42	39	33	31	45	53	56	61	50	59	62	61	61	66	48	43	23	33	19	17	19	20	20	22	41	0
5	X	X	X	19	20	20	23	30	25	29	34	52	62	73	100	97	84	69	51	31	23	25	23	20	23	22	22	41	0
6	X	X	X	27	30	30	37	39	48	57	56	55	53	66	N59	57	57	57	53	27	38	33	34	36	34	37	34	44	1
7				27	33	30	36	45	43	Z+	46	27	42	Z	Z	Z	Z	Z-	Z	Z	Z	N28	44	36	39	31	40	..	2
8	X	X	X	43	43	46	47	50	50	57	56	63	66	67	64	62	59	52	46	29	20	33	30	29	27	29	37	46	0
9	X	X	X	33	35	33	33	42	34	37	27	35	48	63	63	63	78	80	53	37	23	39	29	21	14	18	17	40	0
10	X			21	26	22	25	46	47	46	47	53	78	84	105	92	87	64	57	30	29	24	23	24	20	23	20	46	0
11	X			20	34	32	22	36	35	27	40	40	50	66	71	69	63	64	53	34	26	26	26	17	17	19	17	38	0
12				20	21	20	21	25	20	24	34	43	46	40	11	N23	N45	N32	25	33	35	N40	N15	18	Z	Z	Z	..	1
13		X		Z	18	24	50	56	74	N83	68	Z	Z	73	59	49	N40	54	54	46	Z	Z	Z	Z	44	50	53	..	1
14	X	X		46	44	N23	50	65	55	58	58	56	61	100	100	101	113	105	87	66	56	35	48	88	51	37	40	64	1
15	X	X	X	40	40	44	43	37	45	48	48	52	64	78	73	100	96	93	85	82	69	71	58	43	47	30	29	59	0
16	X	X		36	43	39	46	53	40	40	49	83	56	60	64	83	100	86	70	57	43	46	49	39	39	43	58	55	0
17	X			42	40	44	49	50	51	52	83	103	99	103	100	110	91	85	86	59	49	46	60	56	63	40	38	67	0
18	X	X		51	37	42	43	43	46	43	45	59	102	146	87	93	83	63	60	56	32	N25	26	30	27	37	30	54	1
19	X	X	X	28	30	26	27	23	24	27	31	43	43	60	78	70	70	63	61	53	43	27	29	30	27	33	19	40	0
20	X	X	X	22	20	27	23	26	37	33	37	56	61	67	76	84	102	100	78	62	40	44	24	23	30	23	23	47	0
21	X	X	X	29	31	28	33	31	33	28	38	55	66	87	104	110	73	53	46	42	39	44	41	23	22	23	24	46	0
22	X	X	X	24	17	20	18	23	20	20	30	40	107	114	147	150	110	75	69	46	56	56	36	34	30	32	29	54	0
23	X	X	X	27	25	26	22	28	22	23	24	27	50	76	81	70	63	47	40	38	46	60	35	22	23	25	30	39	0
24	X	X	X	24	23	27	23	27	27	27	32	41	75	86	92	82	83	69	63	43	51	60	42	37	30	30	28	47	0
25	X	X	X	33	30	24	23	20	27	27	27	43	53	63	70	76	80	56	45	50	43	60	32	24	23	17	24	40	0
26	X	X		27	27	21	23	36	30	27	30	46	63	122	83	92	97	82	73	50	50	47	64	47	37	41	36	52	0
27	X	X	X	34	32	37	33	51	40	43	43	59	61	74	70	70	66	N63	63	60	53	38	28	44	46	35	34	49	1
28				18	19	24	N25	-12	-20	N23	N24	-33	Z-	Z-	Z-	Z	Z-	N35	Z	Z	Z	Z	Z-	Z-	Z-	N37	41	..	2
29		X		66	60	42	60	61	Z+	Z+	Z+	Z+	Z+	Z+	Z+	93	93	113	139	153	158	148	184	Z+	Z+	Z+	Z+	..	0
30		X		Z+	Z+	Z+	Z+	Z+	Z+	Z+	Z+	Z+	Z+	Z+	Z+	73	76	93	79	66	64	72	62	63	82	94	71	..	0
31		X		Z+	Z+	Z+	Z+	Z+	Z+	Z+	Z+	Z+	Z+	85	82	113	121	109	92	70	74	81	70	77	65	73	78	..	0
MEANS *				31	32	31	32	39	38	38	42	54	69	86	91	89	83	71	61	47	42	42	38	36	32	32	30	49	
MEANS †				32	32	31	32	38	37	38	40	52	68	86	91	89	84	71	61	48	43	43	38	37	32	33	30	49	
MEANS ‡				31	31	31	31	36	37	37	39	49	65	79	86	85	78	66	57	45	41	43	33	30	29	29	26	46	

DESIGNATIONS AND REMARKS:

*=ALL COMPLETE DAYS

†=ALL DAYS COMPLETE IN BOTH CONDUCTIVITIES AND IN POTENTIAL GRADIENT

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( )=INTERPOLATED

[ ]=APPROXIMATE

⌈ ⌋=DISTURBED CONSPICUOUSLY BY EFFECTS OTHER THAN BAD WEATHER

≷=DISTURBED BY BAD WEATHER

N=VALUES WHICH, THOUGH POSITIVE, INCLUDE SOME NEGATIVE POTENTIAL-GRADIENT

Z=INDETERMINATE IN MAGNITUDE AND SIGN

Z+=INDETERMINATE POSITIVE VALUE

Z-=INDETERMINATE NEGATIVE VALUE