CRPL-F 167 PART B

FOR OFFICIAL USE

PART B

SOLAR - GEOPHYSICAL DATA

ISSUED
JULY 1958

U. S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS
CENTRAL RADIO PROPAGATION LABORATORY
BOULDER, COLORADO

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INTRODUCTION

This monthly report series is intended to keep research workers abreast of the major particulars of solar activity and the associated ionospheric, radio propagation and other geophysical effects. It is made possible through the cooperation of many observatories, laboratories and agencies as recorded in the detailed description of the tables and graphs which follows. The report is prepared in the Sun-Earth Relationships Section, edited by Miss J. V. Lincoln and Mr. Dale B. Bucknam.

I DAILY SOLAR INDICES

Relative Sunspot Numbers -- The table includes (1) the daily American relative sunspot numbers, R_A', as compiled by the Solar Division of the American Association of Variable Star Observers, and (2) the provisional daily Zürich relative sunspot numbers, R_Z, as communicated by the Swiss Federal Observatory. Because of the time required to collect and reduce the observations, R_A' will normally appear one month later than R_Z.

The relative sunspot number is an index of the activity of the entire visible disk. It is determined each day without reference to preceding days. Each isolated cluster of sunspots is termed a sunspot group and it may consist of one or a large number of distinct spots whose size can range from 10 or more square degrees of the solar surface down to the limit of resolution (e.g. 1/8 square degrees). The relative sunspot number is defined as $R=K(10g+s)$, where g is the number of sunspot groups and s is the total number of distinct spots. The scale factor K (usually less than unity) depends on the observer and is intended to effect the conversion to the scale originated by Wolf. The observations for sunspot numbers are made by a rather small group of extraordinarily faithful observers, many of them amateurs, each with many years of experience. The counts are made visually with small, suitably protected telescopes.

Final values of R_Z appear in the IAU Quarterly Bulletin on Solar Activity, the Journal of Geophysical Research and elsewhere. They usually differ slightly from the provisional values. The American numbers, R_A', are not revised.

Solar Flux Values, 2800 Mc -- The table also lists the daily values of solar flux at 2800 Mc recorded in watts/M^2/cycle/second bandwidth ($\times 10^{-22}$) in two polarizations by the National Research Council at Ottawa, Canada. These solar radio noise indices are being published in accordance with CCIR Report 25 that a basic solar index for ionospheric propagation should be measured objectively and "preferably refer to a property of the sun such as radiation flux which has direct physical relationship to the ionosphere."

Graph of Sunspot Cycle -- The graph illustrates the recent trend of Cycle 19 of the 11-year sunspot cycle and some predictions of the future level of activity. The customary "12-month" smoothed index, R, is used throughout, the data being final R_Z numbers except for the current year. Predictions shown are those made for one year after the latest available datum by the method of A. G. McNish and J. V. Lincoln (Trans. Am. Geophys. Union, 30, 673-685, 1949) modified by the use of regression coefficients and mean cycle values recomputed for Cycles 8 through 18. Cycle 19 began April 1954, when the minimum $\bar{R}$ of 3.4 was reached.

II SOLAR CENTERS OF ACTIVITY

Calcium Plage and Sunspot Regions -- The table gives particulars of the centers of activity visible on the solar disk during the preceding month. These are based on estimates made and reported on the day of observation and are therefore of limited reliability.

The table gives the heliographic coordinates of each center (taken as the calcium plage unless two or more significantly and individually active sunspot groups are included in an extended plage) in terms of the Greenwich date of passage of the sun's central meridian (CMP) and the latitude; the serial number of the plage as assigned by McMath-Hulbert Observatory; the serial number of the center in the previous solar rotation, if it is a persisting region; particulars of the plage at CMP: area, central intensity; a summary of the development of the plage during the current transit of the disk, where b = born on disk, ℓ = passed to or from invisible hemisphere, d = died on disk, and / = increasing, - = stable, \ = decreasing; and age in solar rotations; particulars of the associated sunspot group, if any, at CMP: area and spot count and the summary of development during the current disk transit, similar to the above. The unit of area is a millionth of the area of a solar hemisphere; the central intensity of calcium plages is roughly estimated on a scale of 1 = faint to 5 = very bright.

Calcium plage data are available through the cooperation of the McMath-Hulbert Observatory of the University of Michigan and the Mt. Wilson Observatory. The sunspot data are compiled from reports from the U. S. Naval Observatory, Mt. Wilson Observatory, and from reports from Europe and Japan received through the daily Ursigram messages.

Coronal Line Emission Indices -- In the table are summarized solar coronal emission intensity indices for the green (Fe XIV at λ5303) and red (Fe X at λ6374) coronal lines. The indices are based on measurements made at 5° intervals around the periphery of the solar disk by the High Altitude Observatory at Climax, Colorado, and by Harvard University observers at Sacramento Peak (The USAF Upper Air Research Observatory at Sunspot, New Mexico, under contract AF 19(604)-146). The measurements are expressed as the number of millionths of an Angstrom of the continuum of the center of the solar disk (at the same wavelength as the line) that would contain the same energy as the observed coronal line. The indices have the following meanings:

G_6 = mean of six highest line intensities in quadrant for λ5303.

R_6 = same for λ6374.

G_1 = highest value of intensity in quadrant, for λ5303.

R_1 = same for λ6374.

The dates given in the table correspond to the approximate time of CMP of the longitude zone represented by the indices. The actual observations were made for the North East and South East quadrants 7 days before; for the South West and North West quadrants 7 days after the CMP date given.

To obtain rough measures of the integrated emission of the entire solar disk in either of the lines, assuming the coronal changes to be small in a half solar rotation, it is satisfactory to perform the following type of summation given in example for 15 October:

$$\left(\text{MEAN DISK EMISSION IN } \lambda 5303\right)_{15\text{ OCT}} = \frac{1}{N}\left[\sum_{15\text{ OCT}}^{22\text{ OCT}}\left\{(G_6)_{NE}+(G_6)_{SE}\right\}+\sum_{8\text{ OCT}}^{14\text{ OCT}}\left\{(G_6)_{SW}+(G_6)_{NW}\right\}\right]$$

where N is the number of indices entering the summation.

Such integrated disk indices as well as integrated whole-sun indices are computed for each day and are published quarterly in the "Solar Activity Summary" issued by the High Altitude Observatory at Boulder, Colorado. In the same reports are given maps of the intensity distribution of coronal emission derived from all available Climax and Sacramento Peak observations, as well as other information on solar activity, such as maps made from daily limb prominence surveys in Hα and notes regarding the history of active regions on the solar disk.

Preliminary summaries of solar activity, prepared on a fast schedule, are issued Friday of each week from High Altitude Observatory in conjunction with CRPL and include solar activity through the preceding day. These are useful to groups needing information on the current status of activity on the visible solar disk, but are not recommended for research uses unless such a prompt schedule of reporting is essential. The same information is included in the subsequent quarterly reports, with extensive additions, corrections and evaluations.

III SOLAR FLARES

Optical Observations -- The table presents the preliminary record of solar flares as reported to the CRPL on a rapid schedule at the sacrifice of detailed accuracy. Definitive and complete data are published later in the Quarterly Bulletin on Solar Activity, I.A.U., in various observatory publications and elsewhere. The present listing serves to identify and roughly describe the phenomena observed.

Reporting directly to the CRPL are the following observatories: McMath-Hulbert, Wendelstein, Sacramento Peak, Mitaka and Swedish Astrophysical Station on Capri. The remainder report through the URSIgram centers or are available through the IGY World Data Center for Solar Activity in Boulder. Observations are in the light of the center of the H-alpha line unless noted otherwise. The reports from Sacramento Peak, New Mexico (communicated to CRPL by the High Altitude Observatory at Boulder) are from observations at the USAF Upper Air Research Observatory at Sunspot, New Mexico, by Harvard University observers, under contract AF 19(604)-146.

For each flare are listed the reporting observatory, the date, beginning and ending times, time of maximum phase, the heliographic coordinates in degrees, McMath serial number of the region, duration, the flare importance on the IAU scale of 1- to 3+, observing conditions where 1 means poor, 2 fair and 3 good, time of measurement for tabulated width of Hα or tabulated area, measured (i.e. projected) maximum area in square degrees, corrected maximum area in square degrees which equals measured area times secant h where h is the heliocentric angle, maximum effective line-width in Hα expressed in Angstroms, and maximum intensity of Hα expressed in per cent of the continuous spectrum. The following symbols are used in the table:

D = Greater than	F = Approximately
E = Less than	G = Plus

A final column lists provisionally the occurrence of simultaneous ionospheric effects as observed on selected field-strength recordings of distant high-frequency radio transmissions; a more nearly definitive list of these ionospheric effects, including particulars, appears in these reports after the lapse of a month (see below). All times are Universal Time (UT or GCT). Subflares (importance 1-) are listed by date, time of beginning and their heliographic coordinates. A graph presents intervals for which there were no patrols for flare observations from the observatories whose complete data are published in the table.

Ionospheric Effects -- SID (and GID--gradual ionospheric disturbances) may be detected in a number of ways: short wave fadeouts, enhancement of low frequency atmospherics, increases in cosmic absorption, and so forth. The table lists events that have been recognized on field-strength recordings of distant high-frequency radio transmissions.

Under a coordinated program, the staffs at the following ionospheric sounding stations contribute reports that are screened and synthesized at CRPL-Boulder: Puerto Rico, Ft. Belvoir, Va., and Anchorage, Alaska (CRPL Stations: PR, BE, AN); Huancayo, Peru (CRPL-Associated Laboratory: HU); and White Sands, N. Mex., Adak, Alaska, and Okinawa (U.S. Signal Corps Stations: WS, AD, OK). McMath-Hulbert Observatory (MC) also contributes such reports. In addition, reports are volunteered by RCA Communications Inc., Marconi Wireless, Netherlands Postal and Telecommunications Services, Swedish Telecommunications, and others; these usually specify times of SID and the radio paths involved.

In the coordinated program, the abnormal fades of field strength not obviously ascribable to other causes, are described as short wave fadeouts with the following further classification:

S-SWF:	sudden drop-out and gradual recovery
Slow S-SWF:	drop-out taking 5 to 15 minutes and gradual recovery
G-SWF:	gradual disturbance; fade irregular in either drop-out or recovery or both.

When there is agreement among the various reporting stations on the time (UT) of an event, it is accepted as a widespread phenomenon and listed in the table.

The degree of confidence in identifying the event, a subjective estimate, is reported by the stations and this is summarized in an index of certainty that the event is widespread, ranging from 1 (possible) to 5 (definite). The times given in the table for the event are from the report of a station (underlined in table) that identified it with high confidence. The criteria for the subjective importance rating assigned by each station on a scale of 1- to 3+ include amplitude of the fade, duration and confidence; greater consideration is given to reports on paths near the subsolar point in arriving at the summary importance rating given in the table.
Note: The tables of SID observed at Washington included in CRPL F-reports prior to F-135 were restricted to events classed here as S-SWF.

IV SOLAR RADIO WAVES

2800 Mc Observations

The data on solar radio wave events made in Ottawa, Canada by the Radio and Electrical Engineering Division of the National Research Council (A. E. Covington) at 2800 Mc (10-cm emission) are presented. Near local noon (about 1700 UT) the sensitivity of the radiometer is determined and a mean flux for the whole day calculated. These values are given in a tabular form (see table I-1) in units of 10^{-22} watts/M^2/c/s. Burst phenomena are measured above this level and are given in terms especially suitable for the variations observed on this frequency. The basis for the classifications is described by Covington - J.R. Astro. Soc. Can. 45, 49, 1951 and Dodson, Hedeman and Covington, Ap. J. 119, 541, 1954. A modification in terminology with a view to simplification has been introduced and consists essentially of the omission of the descriptive word "Single" from the "Single-Simple" and "Single-Complex" classes; in designating the "Single", "Single-Simple" and "Rise and Fall" bursts into a single classification designated as "Simple Bursts" with an appropriate type number; in the addition of the letter "f" to indicate that the burst deviates from the basic pattern by the presence of one or more small fluctuations in intensity; and by the addition of the letter "A" to indicate that the event has another smaller duration event superimposed upon it.

Simple Burst

Any single burst which rises to one maximum and then decreases to the pre-burst level.

1 - Simple 1 -- Simple burst, type 1 (formerly "single"). Bursts of intensity less than 7 1/2 flux units and duration less than 7 1/2 minutes.

2 - Simple 2 -- Simple burst, type 2 (formerly "single-simple"). Bursts of impulsive nature with intensity greater than 7 1/2 flux units.

3 - Simple 3 -- Simple burst, type 3 (formerly "rise and fall"). Bursts of moderate intensity with duration greater than 7 1/2 minutes.

4 - Post-burst increase -- Postburst level is greater than the preburst level. The gradual return to normal flux may require as long as several hours.

5 - Absorption following burst (negative post).

6 - Complex -- (formerly "single-complex"). A single burst which shows two or more comparable maxima before the activity has declined to zero.

7 - Period of irregular activity or fluctuations -- Series of overlapping bursts of moderate intensity and duration.

8 - Group -- Series of single isolated bursts occurring in succession with intensity between the events equal to the level before and after the group.

9 - Precursor -- A small increase of intensity occurring before a larger increase.

Great Burst

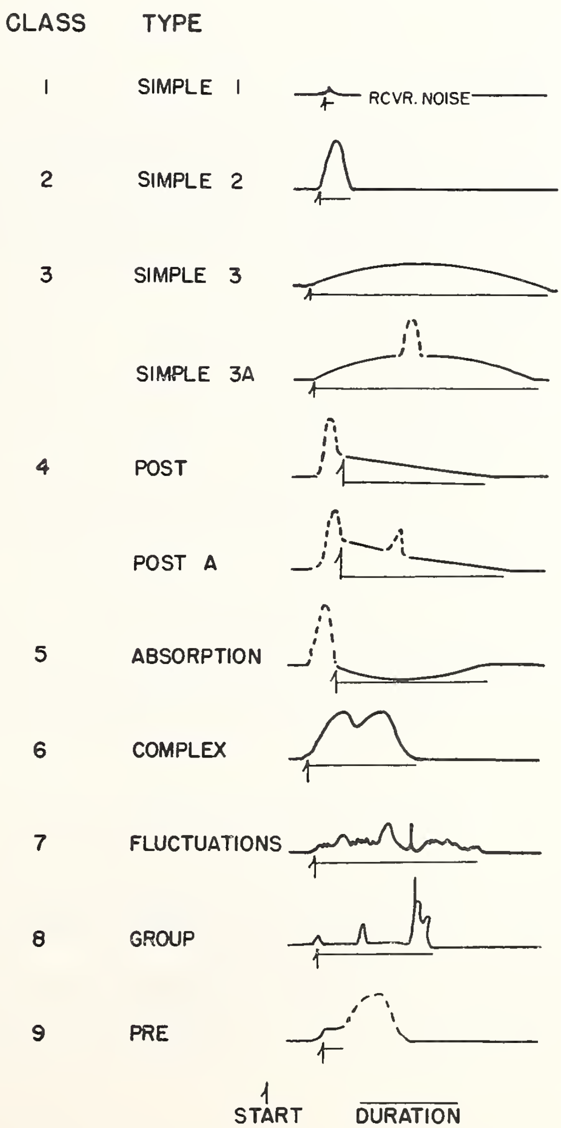
Infrequently occurring bursts of great intensity, often of complicated structure.

Letter "A"

Indicates that this event has another event superimposed upon it.

Letter "f"

Indicates that the basic form of the event is modified by secondary fluctuations.



200 Mc Observations

Data on solar radio waves made at Cornell University, Ithaca, N.Y. (Marshall Cohen) on 201.5 Mc are presented. All times are in Universal Time (UT or GCT). The antenna is linearly polarized and has a pattern appreciably broader than the solar disk. Flux is reported in units of 10^{-22} watts/m^2/cps and the tabulated numbers are twice the values observed in the one linear component.

Tables of flux and outstanding occurrences are given in general according to the systems used for the NBS 170 Mc and 450 Mc data.

170 Mc and 450 Mc Observations

Data on solar radio emission at the nominal frequencies of 170 Mc and 450 Mc recorded at the Gunbarrel Hill (Boulder) station of the National Bureau of Standards (R.S. Lawrence) are presented. The half width of the antenna lobe is appreciably greater than the solar disk. Polarization is not determined, but the dipole is oriented E-W. All times are in Universal Time (UT or GCT).

3-Hourly and Daily Flux Density and Variability -- Flux density is given in power units. These units are approximately 10^{-22} watts meter^{-2}(c/s)$^{-1}$ for both polarizations together. They will be subject to a correction factor when gain measurements of the antenna have been made. The median flux is measured for every one-hour period having at least thirty minutes of usable record and an applicable gain calibration. A three-hour value of flux is obtained by averaging the available one-hour medians (at least two required). A daily value of flux is obtained by averaging all available one-hour medians (at least four required). A dash indicates that insufficient measurements were made to meet the above requirements or that the records were not of usable quality. Flux values may be followed by the qualifying symbols D, S, and X defined subsequently.

The variability index, given for each three-hour interval, is on a scale 0 to 3 defined as follows:

0 - The instantaneous flux did not drop below one-half the median level or exceed twice the median level at any time.

1 - The instantaneous flux made from one to ten excursions

outside the range described above.

2 - The instantaneous flux made from ten to one hundred excursions outside the range described above.

3 - The instantaneous flux made more than one hundred excursions outside the range described above.

For the purpose of the variability index, an excursion whose maximum intensity is M times the median level is counted as M excursions. The variability index is omitted if measurements were made for less than one hour during the period. The variability for the day is the mean of the three-hourly values. The letter S follows variability indices which are in doubt because of atmospherics or local interference.

The observing periods are given in U. T. to the nearest 1/10 hour and they usually extend into the next Greenwich day.

Outstanding Occurrences -- A separate table lists the occurrences which are not adequately described by the three-hourly values of flux density and variability. Two classifications are given: (1) A system in general accord with that described and illustrated by Dodson, Hedeman, and Owren (Ap. J. 118, 169, 1953) and (2) the system described in the IGY Solar Activity Instruction Manual, prepared by the Radio Emission editor of the I.A.U. Quarterly Bulletin on Solar Activity.

In system (1) the occurrences are identified by numbers which do not necessarily indicate the magnitude of the event, as follows:

0 - Rise in base level -- A temporary increase in the continuum with duration of the order of tens of minutes to an hour.

1 - Series of bursts -- Bursts or groups of bursts, occurring intermittently over an interval of time of the order of minutes or hours. Such series of bursts are assigned as distinctive events only when they occur on a smooth record or show as a distinct change in the activity.

2 - Groups of bursts -- A cluster of bursts occurring in an interval of time of the order of minutes.

3 - Minor burst -- A burst of moderate or small amplitude, and duration of the order of one or two minutes.

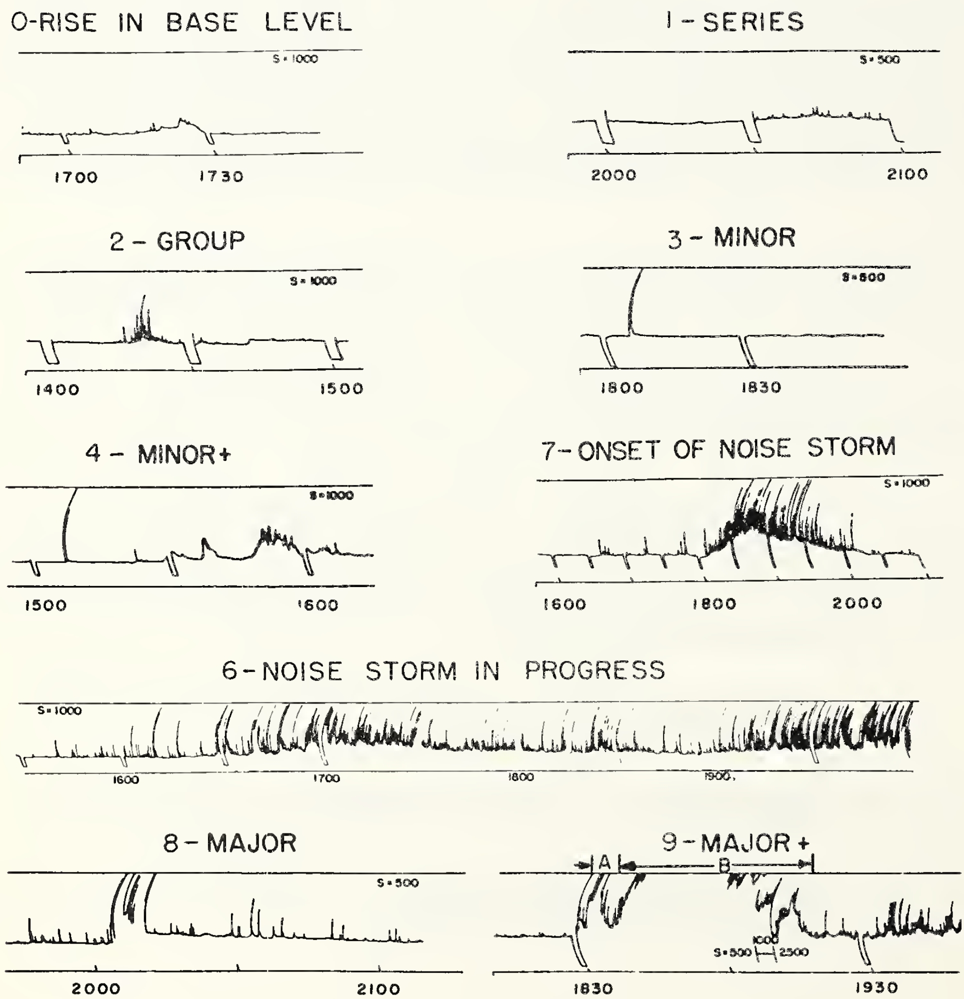
4 - Minor burst and second part -- A double rise in flux in which the early rise is a minor burst.

6 - Noise storm -- A temporary increase in radiation characterized by numerous closely spaced bursts, by an increase in the continuum, or by both. Duration is of the order of hours or days.

7 - Noise storm begins -- The onset of a noise storm occurs at some time during the observing period.

8 - Major burst -- An outburst, or other burst of large amplitude and more than average duration. A major burst is usually complex, with a duration of the order of one to ten minutes.

9A, 9B, or 9 - Major burst and second part or large event without distinct first and second parts -- If there is a double rise in flux, the first part, a major burst, is listed as 9A and the second part as 9B. The second part may consist of a rise in base level, a group or series of bursts, a noise storm. A major increase in flux with duration greater than ten minutes but without distinct first and second parts, is listed simply as 9.



In system (2) combinations of the following letters are used to describe some distinctive characteristics of the recorded disturbances:

S = simple rise and fall of intensity,
C = complex variation of intensity,
A = appears to be part of general activity,
D = distinct from (i.e. apparently superimposed upon) the general background,
M = multiple peaks separated by relatively long periods of quietness,
F = multiple peaks separated by relatively short periods of quietness,
E = sudden commencement or rise of activity.

Starting and maximum times are read to the nearest 1/10 minute if they are very definite and otnerwise to the nearest minute. If the duration is less than five minutes, it is given to the nearest 1/10 minute; otherwise to the nearest minute (see also qualifying symbols below).

Maximum flux densities are given in units of 10^{-22} watts meter^{-2}(c/s)$^{-1}$. The instantaneous maximum flux density is the highest peak in the disturbance measured above the sky level. The smoothed maximum flux density is the maximum value of a smooth curve drawn through the outstanding occurrence with a smoothing period of 20 to 50 percent of the total duration; it is measured above the estimated level in the absence of the disturbance. The intention is that (smoothed maximum) x (duration) should give a measure of the energy radiated in the disturbance.

A dash indicates missing or insignificant data. Observations are interrupted during the period from 26 to 29 minutes after each hour for calibrations. Observing periods are given in the Daily Data tables. The following qualifying symbols are used:

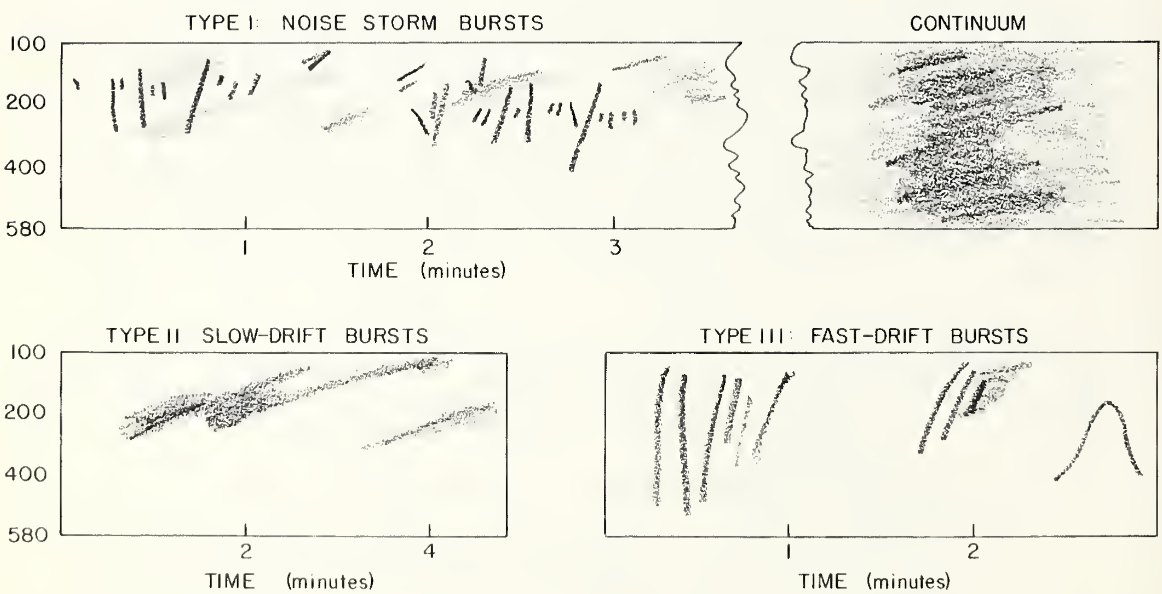
B - Event in progress before observations began.
D - Greater than.
I - Event apparently continued during an interruption of the observations. The period of the interruption may be given in the remarks.
N - See footnotes.
X - Measurement is uncertain or doubtful.
S - Measurement may be influenced by interference or atmospherics.

<u>Spectrum Observations</u>

Data on solar radio emission in the spectral range 100-580 Mc recorded at the Harvard University Radio Astronomy Station, Fort Davis, Texas (A. Maxwell) are presented. The research is sponsored by the Geophysics Research Directorate of the Air Force Cambridge Research Center, Air Research and Development Command, under contract AF19(604)-1394.

The receiving equipment consists of three separate sweep-frequency receivers covering the bands 100-180, 160-320, 300-580 Mc. These are attached to separate broad-band feeds mounted coaxially at the primary focus of an 8.55 meter diameter paraboloid, the 160-320 Mc feed being cross-polarized with the other two feeds. The effective collecting area of the antenna is 40 sq. meters at 100 Mc and 45 sq. meters at 500 Mc.

The four types of recognized spectral activity are idealized below:



Type IV continuum radiation is a steady enhancement of the background level over a wide band of the spectrum. In one form it is frequently associated with noise storms. A second form is characterized by the following properties:

(1) It is uniformly distributed over a band of frequencies often as wide as 300 Mc. The whole band may drift systematically toward higher or lower frequencies.

(2) Its intensity is essentially non-fluctuating.
(3) It is usually of high intensity, i.e., greater than 10^{-20} watts meter^{-2}(c/s)$^{-1}$.
(4) It often occurs at frequencies higher than the spectral range of noise storms, the upper limit of which rarely exceeds 250 Mc.
(5) After great radio outbursts it may last for as long as 5 hours. At the other extreme, a miniscule version, occurring after a group of fast drift bursts or an inverted U burst, may last only 10-60 seconds.

The large scale examples of this continuum are listed as "Cont. IV" in the tables. It probably corresponds to the "Type IV" radiation described by Boischot (Comptes Rendus 244, 1326, 1957) from fixed frequency observations taken at 169 Mc at Meudon, France. Photographic examples are published by Maxwell, Swarup and Thompson (Proc. IRE 46, 142, 1958). A few remaining solar radio bursts are tabulated as unclassified.

The symbols used in the tables are:

b = single burst
g = small group (<10) of bursts
G = large group (>10) of bursts
= Arrows indicate continuity of solar activity between two Greenwich days.

The minimum detectable level of solar activity is a function of frequency: approximately 5 x 10^{-22} watts meter^{-2}(c/s)$^{-1}$ at 100 Mc and 10^{-21} watts meter^{-2}(c/s)$^{-1}$ at 500 Mc. The equipment records signals over an intensity range of approximately 1000:1. There are three classes of intensity given in the tables. For 100 Mc they are:

1 = faint, 5 to 30 x 10^{-22} watts meter^{-2}(c/s)$^{-1}$

2 = moderate, 30 to 100 x 10^{-22}

3 = strong, >100 x 10^{-22}.

The times are Universal Time (UT). The accuracy is to the nearest half minute, except in the case of major outbursts which are specified to the nearest 0.1 minute.

V GEOMAGNETIC ACTIVITY INDICES

C, Kp, Ap, and Selected Quiet and Disturbed Days -- The data in the table are: (1) preliminary international character figures, C; (2) geomagnetic planetary three-hour range indices, Kp; (3) daily "equivalent amplitude," Ap; (4) magnetically selected quiet and disturbed days.

This table is made available by the Committee on Characterization of Magnetic Disturbance of IAGA, IUGG. The Meteorological Office, De Bilt, Holland collects the data from magnetic observatories distributed throughout the world, and compiles C and selected days. The Chairman of the Committee computes the planetary and equivalent amplitude indices. The same data are also published quarterly in the Journal of Geophysical Research along with data on sudden commencements (sc) and solar flare effects (sfe).

The C-figure is the arithmetic mean of the subjective classification by all observatories of each day's magnetic activity on a scale of 0 (quiet) to 2 (storm).

Kp is the mean standardized K-index from 12 observatories between geomagnetic latitudes 47 and 63 degrees. The scale is 0 (very quiet) to 9 (extremely disturbed), expressed in thirds of a unit, e.g. 5- is 4 2/3, 5o is 5 0/3, and 5+ is 5 1/3. This planetary index is designed to measure solar particle-radiation by its magnetic effects, specifically to meet the needs of research workers in the ionospheric field. A complete description of Kp has appeared in Bulletin 12b, "Geomagnetic Indices C and K, 1948" of the Association of Terrestrial Magnetism and Electricity (IATME), International Union of Geodesy and Geophysics.

Ap is a daily index of magnetic activity on a linear scale rather than on the quasi-logarithmic scale of the K-indices. It is the average of the eight values of an intermediate 3-hourly index "ap," defined as one-half the average gamma range of the most disturbed of the three force components, in the three-hour interval at standard stations; in practice, ap is computed from the Kp for the 3-hour interval. The extreme range of the scale of Ap is 0 to 400. The method is described in IATME Bulletin No. 12h (for 1953) p. viii f. Values of Ap (like Kp and Cp) have been published for the Polar Year 1932/33 and for the years 1937 onwards.

The magnetically quiet and disturbed days are selected in accordance with the general outline in Terr. Mag. (predecessor to J. Geophys. Res.) 48, pp 219-227, December 1943. The method in current use calls for ranking the days of a month by their geomagnetic activity as determined from the following three criteria with equal weight: (1) the sum of the eight Kp's; (2) the sum of the squares of the eight Kp's; and (3) the greatest Kp.

Chart of Kp by Solar Rotations -- The graph of Kp by solar rotations is furnished through the courtesy of Dr. J. Bartels, Geophysikalisches Institute, Göttingen.

VI RADIO PROPAGATION QUALITY INDICES

One can take as the definition of a radio propagation quality index: the measure of the efficiency of a medium-powered radio circuit operated under ideal conditions in all respects, except for the variable effect of the ionosphere on the propagation of the transmitted signal. The indices given here are derived from monitoring and circuit performance reports, and are the nearest practical approximation to the ideal index of propagation quality.

Quality indices are usually expressed on a scale that ranges from one to nine. Indices of four or less are generally taken to represent significant disturbance. (Note that for geomagnetic K-indices, disturbance is represented by higher numbers.) The adjectival equivalents of the integral quality indices are as follows:

1 = useless	4 = poor-to-fair	7 = good
2 = very poor	5 = fair	8 = very good
3 = poor	6 = fair-to-good	9 = excellent

CRPL forecasts are expressed on the same scale. The tables summarizing the outcome of forecasts include categories P-Perfect; S-Satisfactory; U-Unsatisfactory; F-Failure. The following conventions apply:

P - forecast quality equal to observed

U - forecast quality two or more grades different from observed when both forecast and observed were > 5, or both < 5

S - forecast quality one grade different from observed

F - other times when forecast quality two or more grades different from observed

Full discussion of the reliability of forecasts requires consideration of many factors besides the over-simplified summary given.

The quality figures represent a consensus of experience with radio propagation conditions. Since they are based entirely on monitoring or traffic reports, the reasons for low quality are not necessarily known and may not be limited to ionospheric storminess. For instance, low quality may result from improper frequency usage for the path and time of day. Although, wherever it is reported, frequency usage is included in the rating of reports, it must often be an assumption that the reports refer to optimum working frequencies. It is more difficult to eliminate from the indices conditions of low quality for reasons such as multipath or interference. These considerations should be taken into account in interpreting research correlations between the Q-figures and solar, auroral, geomagnetic or similar indices.

North Atlantic Radio Path -- The CRPL quality figures, Qa, are compiled by the North Atlantic Radio Warning Service (NARWS), the CRPL forecasting center at Ft. Belvoir, Virginia, from radio traffic data for North Atlantic transmission paths closely approximating New York-to-London. These are reported to CRPL by the Canadian Defense Research Board, Canadian Broadcasting Corporation, and the following agencies of the U. S. Government:--Coast Guard, Navy, Army Signal Corps, U. S. Information Agency. Supplementing these data are CRPL monitoring, direction-finding observations and field-strength measurements of North Atlantic transmissions made at Belvoir.

The original reports are submitted on various scales and for various time intervals. The observations for each 6-hour interval are averaged on the original scale. These 6-hour indices are then adjusted to the 1 to 9 quality-figure scale by a conversion table prepared by comparing the distribution of these indices for at least four months, usually a year, with a master distribution determined from analysis of the reports originally made on the 1 to 9 quality-figure scale. A report whose distribution is the same as the master is thereby converted linearly to the Q-figure scale. The 6-hourly quality figure is the mean of the reports available for that period.

The 6-hourly quality figures are given in this table to the nearest one-third of a unit,e.g. 5o is 5 and 0/3; 5- is 4 and 2/3; 5+ is 5 and 1/3. Other data included are:

(a) Whole-day radio quality indices, which are weighted averages of the four 6-hourly indices, with half weight given to quality grades 5 and 6. This procedure tends to give whole-day indices suitable for comparison with whole-day advance forecasts which seek to designate the days of significant disturbance or unusually quiet conditions.

(b) Short-term forecasts, issued every six hours by the North Atlantic Radio Warning Service. These are issued one hour before 00^h, 06^h, 12^h, 18^h, UT and are applicable to the period 1 to 7 hours ahead.

(c) Advance forecasts, issued twice weekly by the NARWS (CRPL-J reports) and applicable 1 to 3 or 4 days ahead, 4 or 5 to 7 days ahead, and 8 to 25 days ahead. These forecasts are scored against the whole-day quality indices.

(d) Half-day averages of the geomagnetic K indices measured by the Fredericksburg Magnetic Observatory of the U. S. Coast and Geodetic Survey.

A chart compares the short-term forecasts with Qa-figures. A second chart compares the outcome of advance forecasts (1 to 3 or 4 days ahead) with a type of "blind" forecast. For the latter, the frequency for each quality grade, as determined from the distribution of quality grades in the four most recent months of the current season, is partitioned among the grades observed in the current month in proportion to the frequencies observed in the current month.

Ranges of useful frequencies on the North Atlantic radio path are shown in a series of diagrams, one for each day. The shaded area indicates the range of frequencies for which transmissions of quality 5 or greater were observed. The blacker the diagram, the quieter the day has been; a narrow strip indicates either high LUHF, low MUF, or both. These diagrams are based on data reported to CRPL by the German Post Office through the Fermeldetechnischen Zentralamtes, Darmstadt, Germany, being observations every one and a half hours of selected transmitters located in the eastern portion of North America. Since January 6, 1958 the transmitters monitored are restricted to those located north of 39° latitude. The magnetic activity index, A_{Fr}, from Fredericksburg, Va., is also given for each day.

Note: Beginning with data for September 1955, Qa has been determined from reports that are available within a few hours or at most within a few days, including for the first time, the CRPL observations. Therefore these are the indices by which the forecasters assess every day the conditions in the recent past. Over a period of several years, they have closely paralleled the former Qa indices which excluded CRPL observations and included three additional reports received after a considerable lag. Qa was first published to the nearest one-third of a unit at the same time.

North Pacific Radio Path -- The CRPL quality figures, Qp, are compiled by the North Pacific Radio Warning Service (NPRWS), the CRPL forecasting center at Anchorage, Alaska, from radio traffic data for moderately long transmission paths in the North Pacific equivalent to Seattle-to-Anchorage or Anchorage-to-Tokyo. These include reports to CRPL by the Alaska Communications System, Aeronautical Radio, Inc., U. S. Air Force and Civil Aeronautical Administration. In addition, there are CRPL monitoring, direction finder observations and field strength measurements of suitable transmissions.

The original reports are on various scales and for various time intervals. The observations for each 8 hours or 24 hour period are averaged on the original scale. This average is compared with reports for the same period in the preceding two months and expressed as a deviation from the 3-month mean. The deviations are put on the 1 to 9 scale of quality which is assumed to have a standard deviation of 1.25 and a mean for the various periods as follows:

03-10 hours UT	5.33
11-18	5.33
19-02	6.00
00-24	5.67

The 8-hour and 24-hour indices Qp are determined separately. Each index is a weighted mean where the CRPL observations have unit weight and the others are weighted by the correlation coefficient with the CRPL observations.

The table, analagous to that for Qa, includes the 8-hourly quality figures; whole day quality figures; short-term forecasts issued by NPRWS three times daily at 02^h, 10^h, and 18^h UT, applicable to the stated 8-hour periods; advance forecasts issued twice weekly by NPRWS (CRPL-Jp report); and half-day averages of geomagnetic K indices from Sitka.

The chart compares the outcome of advance forecasts, on the same basis as the similar chart for the North Atlantic Radio Path.

Note: Beginning with November 1956 the short-term forecast formerly made at 0900 UT was changed to 1000 UT. The North Pacific quality figures used for evaluation are now 8-hourly rather than 9-hourly.

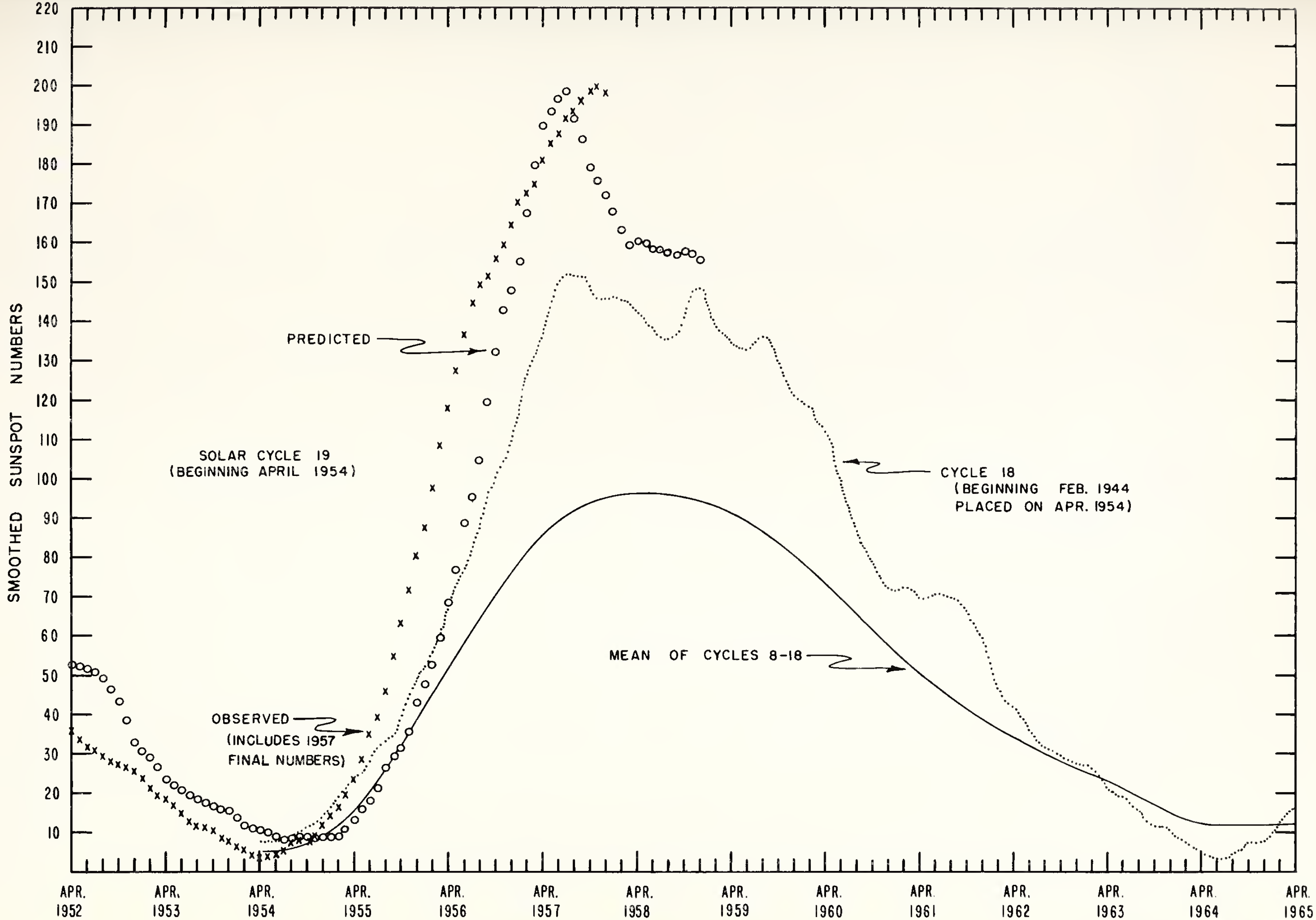
VII ALERT PERIODS AND SPECIAL WORLD INTERVALS

A table gives the Alert Periods and Special World Intervals (SWI) as designated by the IGY World Warning Agency at Ft. Belvoir, Va. For each day of the Alert or SWI are given the number of flares of importance two or greater reported promptly to the IGY World Warning Agency and the magnetic activity index A_{Be} observed at the IGY World Warning Agency.

DAILY SOLAR INDICES

May 1958	American Relative Sunspot Numbers R_A'
1	199
2	211
3	265
4	240
5	212
6	172
7	183
8	153
9	176
10	180
11	188
12	148
13	152
14	107
15	120
16	117
17	120
18	130
19	159
20	161
21	171
22	158
23	197
24	206
25	175
26	173
27	145
28	153
29	189
30	179
31	190
Mean:	171.9

June 1958	Zürich Provisional Relative Sunspot Numbers R_Z	Daily Values Solar Flux at 2800 Mc, Ottawa, Canada Flux
1	200	219
2	154	220
3	181	227
4	195	246
5	195	256
6	176	260
7	185	238
8	200	233
9	209	252
10	200	234
11	193	235
12	193	227
13	176	220
14	160	208
15	131	197
16	100	191
17	113	182
18	100	177
19	114	189
20	107	193
21	141	194
22	148	213
23	184	217
24	189	221
25	199	226
26	183	233
27	178	237
28	174	232
29	200	220
30	159	217
31		
Mean:	167.9	220.5



PREDICTED AND OBSERVED SUNSPOT NUMBERS

COMMERCE - STANDARDS - BOULDER

CALCIUM PLAGE AND SUNSPOT REGIONS
JUNE 1958

CMP June 1958	Lat	McMath Plage Number	Return of Region	Calcium Plage Data			Sunspot Data		
				CMP Values Area	Int.	History, Age	CMP Values Area	Count	History
01.5	N31	4588	+	2200	2	ℓ \ d 6			
02.6	N08	4582	4539	800	1.5	ℓ — ℓ 2	(20)	(2)	b — d
02.7	N22	4583	++	3800	3	ℓ V ℓ 2,4	320	8	ℓ ⌐V¬ ℓ
03.6	S13	4585	New	(1300)	(2.5)	ℓ \/\ ℓ 1			
04.4	N26	4587	4538	2200	2	ℓ — ℓ 4	440	1	ℓ — ℓ
04.8	N12	4586	4540	2500	2	ℓ _ ℓ 2	110	2	b — d
05.1	S22	4589	New	800	2	ℓ _ ℓ 1	100	2	ℓ ¬^ d
06.3	N18	4591	4542,43	5200	3	ℓ — ℓ 2,4	100	6	ℓ — d
09.3	S18	4592	New	4600	3.5	ℓ ¬_ ℓ 1	400	1	ℓ ⌐¬ ℓ
10.0	N28	4596	New	10,000	3.5	ℓ _/\/ ℓ 1	1870	16	ℓ ¬ ℓ
10.2	N41	4597	New	4000	3.5	ℓ ⌐ ℓ 1	930	8	ℓ Λ ℓ
10.4	N16	4599	New	1400	3	ℓ / ℓ 1	20	2	b — d
11.6	S20	4598	4548	5000	3	ℓ — ℓ 2	70	3	ℓ \ d
11.9	S11	4600	4548	2500	3	ℓ — ℓ 2	10	7	b — d
12.7	N18	4601	4552	3000	3	ℓ N ℓ 4	60	2	b — d
14.3	S14	4602	+++	800	1.5	ℓ — d 3			
14.7	N24	4603	4556	1000	2	ℓ ¬V ℓ 4	(10)	(1)	b — d
15.2	S11	4605	4555	500	1.5	ℓ V ℓ 4	(10)	(1)	b — d
15.5	N26	4611	**	500	1	b ⌐ ℓ 1			
16.6	S24	4604	++++	2700	2	ℓ — ℓ 2,3	10	1	ℓ \ d
16.7	S13	4606	4555	1200	2	ℓ — ℓ 4			
17.9	N12	4607	4563	5400	3	ℓ /\/\ ℓ 3	820	6	ℓ /_ ℓ
18.9	S24	4608	New	4000	3	ℓ — ℓ 1	290	2	ℓ ¬_ ℓ
19.6	N40	4609	New	1800	2	ℓ — ℓ 1			
19.8	N13	4610	4561	1600	2.5	ℓ V¬ ℓ 3	80	5	b V¬ ℓ
21.6	N26	4612	4560	1600	2.5	ℓ — ℓ 3			
22.1	N07	4614	4575	600	2	ℓ ¬V ℓ 2	70	3	ℓ \ ℓ
22.7	N19	4613	4568	1300	2	ℓ ¬_ ℓ 6	110	7	ℓ \ d
23.0	S18	4615	4576	1000	1	ℓ ¬V ℓ 4			
24.6	N14	4616	4574,77	5000	3.5	ℓ _/¬ ℓ 3	780	11	ℓ Λ ℓ
26.0	N25	4617	4574,77	2100	2.5	ℓ ¬_ ℓ 3			
26.4	S16	4618	*	11,000	3	ℓ — ℓ 3,4,2	190	10	ℓ \ d
27.7	N28	4619	4578,88	4500	2.5	ℓ ¬_ ℓ 3			
27.7	N18	4621	4578	2600	3	ℓ ¬_ ℓ 3	(50)	(3)	ℓ \ d
27.8	N08	4620	New	1000	2.5	ℓ ¬_ ℓ 1			
29.0	S20	4622	New	6000	3.5	ℓ — ℓ 1	1180	14	ℓ ¬_ ℓ
29.7	N11	4623	4582,83	4500	3	ℓ ¬_ ℓ 3	300	7	ℓ ⌐\ ℓ
29.9	S08	4624	New	2700	3.5	ℓ — ℓ 1	220	9	ℓ — d

\+ = Remnants of 4531.
++ = 4541 and part of 4537.
+++ = Remnant of 4553.
++++ = 4565 and part of 4553.
* = 4579, 4580, 4584.
** = In position of 4556.

CORONAL LINE EMISSION INDICES

JUNE 1958

CMP June 1958	North East Quadrant (observed 7 days earlier)				South East Quadrant (observed 7 days earlier)				South West Quadrant (observed 7 days later)				North West Quadrant (observed 7 days later)			
	G_6	G_1	R_6	R_1	G_6	G_1	R_6	R_1	G_6	G_1	R_6	R_1	G_6	G_1	R_6	R_1
1	140	178	x	x	65	89	x	x	x	x	x	x	x	x	x	x
2	x	x	31a	46a	x	x	31a	46a	57	68	x	x	140	191	x	x
3	238a	336a	x	x	x	x	x	x	x	x	x	x	x	x	x	x
4	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
5	233a	320a	x	x	77a	94a	x	x	68a	112a	x	x	161a	221a	x	x
6	x	x	x	x	x	x	x	x	82a	96a	x	x	160a	230a	x	x
7	x	x	x	x	x	x	x	x	98a	128a	x	x	180a	272a	x	x
8	x	x	x	x	x	x	x	x	126a	220a	38a	96a	160a	209a	47a	78a
9	x	x	x	x	x	x	x	x	x	x	x	x	220a	250a	75a	150a
10	100a	116a	x	x	117a	151a	x	x	112a	150a	x	x	131a	150a	x	x
11	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
12	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
14	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
15	x	x	x	x	x	x	x	x	51a	76a	22a	50a	83a	113a	28a	54a
16	71	92	x	x	100	143	x	x	92a	135a	x	x	85a	100a	x	x
17	147a	250a	x	x	204a	300a	x	x	93a	150a	x	x	150a	150a	x	x
18	x	x	x	x	x	x	x	x	72	104	x	x	125	186	29	54
19	125	200	x	x	63	80	x	x	x	x	18	24	149	194	40	60
20	113a	144a	x	x	62a	71a	x	x	x	x	x	x	129a	180a	x	x
21	173	252	x	x	72	90	x	x	x	x	x	x	x	x	x	x
22	157a	220a	42a	90a	93a	140a	20a	50a	x	x	x	x	x	x	x	x
23	107a	130a	27a	40a	70a	140a	27a	70a	x	x	x	x	x	x	x	x
24	167a	210a	x	x	85a	125a	x	x	x	x	x	x	x	x	x	x
25	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
26	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
27	x	x	x	x	x	x	x	x	95a	140a	x	x	156a	200a	x	x
28	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
29	244a	306a	45a	72a	202a	260a	37a	55a	47	72	38	74	153	210	47	81
30	152a	180a	x	x	92a	145a	x	x	77	136	42	53	226	260	58	150

\# = yellow line observed.
a = index computed from low weight data.
x = no observations.

COMMERCE - STANDARDS - BOULDER

SOLAR FLARES

JUNE 1958

OBSERVATORY	DATE 1958 JUNE	OBSERVED UNIVERSAL TIME START	END	MAX. PHASE	LOCATION APPROX. LAT.	MER. DIST.	McMATH PLAGE REGION	DURATION — MINUTES	IMPORTANCE	OBS. COND.	MEASUREMENTS TIME — U T	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Hα	MAX. INT. %	PROVISIONAL IONOSPHERIC EFFECT
GOOD HOPE	01	1037	1110	1042	N20	W10	4578	33	1		1042	2.20	2.40			
GOOD HOPE	01	1103	1146	1113	N15	W48	4577	43	1		1113	2.00	3.10			
CAPRI S	01	1107 E	1140		N15	W46	4577	33 D	1	3	1120	2.00	3.00			
ONDREJOV	01	1112 E	1126 D		N14	W51	4577	14 D	1	2	1112			2.10		
ZURICH	01	1333 L	1402		N26	E26	4587	29 D	1	2	1333		5.00			
WENDEL	01	1339 E	1400		N27	E27	4587	21 D	1&				5.00			
ZURICH	01	1353	1403 D		N20	W10	4578	10 D	1	2	1353		4.00			
WENDEL	02	1242	1309 D		N29	W37	4578	27 D	1&				6.00			
ZURICH	02	1242 E	1307		N28	W36	4578	25 D	1	2	1243		5.00			
ONDREJOV	02	1310	1321	1314	N16	E50	4594	11	1	3	1314			2.00		
ONDREJOV	02	1743	1748 D		N28	W43	4578	5 D	1	2	1745			2.10		
USNRL	02	1907 E	1932		N13	W67	4574	25 D	1	1	1913	.90	2.31		80	S-SWF
MCMATH	02	2106	2135 D	2119	N30	W47	4578	89 D	1&	1	2119	3.65	6.03		72	
SAC PEAK	02	2107	2132	2120	N31	W45	4578	25	1			2.90			18	
HAWAII	02	2112	2136	2126	N32	W44	4578	24	1	1	2126	1.60	2.70			
SYDNEY	03	0335	0430	0345	N27	W48	4578	55	2							
MITAKA	03	0400 E	0430	0405	N33	W47	4578	30 D	2	1	0404	11.40	21.40	2.10	125	G-SWF
ONDREJOV	03	0914 E	0920		S18	W39	4581	6 D	1	3	0916			2.10		
MCMATH	03	1202	1223	1210	N19	W37	4578	23	1	1	1210	2.28	3.05		64	
NEDERHORST	03	1320 E	1415		S22	E90	4595	55 D	2&							G-SWF
SAC PEAK	03	1507	1535	1512	N30	W55	4578	27	2			5.40			28	
MCMATH	03	1509	1519 D	1512	N30	W55	4578	10 D	2&	1	1512	4.22	8.44		92	
R O HERST	03	1511 E	1535	1511 U	N30	W50	4578	24 D	2&	3	1514	3.30	6.10	3.69	150	S-SWF
CAPRI S	03	1512 E	1532		N27	W48	4578	20 D	3	3	1515	7.00	14.00			
ONDREJOV	03	1512 E	1530	1514	N30	W53	4578	18 D	2&	3	1514			4.70		
MCMATH	03	1734	1750	1740	S23	E70	4589	16	1	2	1740	.89	2.61		58	
GOOD HOPE	04	0932	0946	0937	S22	E64	4592	14	1		0937	1.20	2.80			
ARCETRI	04	1143 E	1202 D		N16	W22	4583	19 D	1	4	1155	2.00	2.20			
ARCETRI	04	1228 E	1235 D		N16	W22	4583	7 D	1	4	1228	2.20	2.50			
ZURICH	04	1322 E	1345		N28	W62	4578	23 D	1	2	1322		3.00			
ZURICH	04	1410	1428		N17	W54	4578	18	1&	2	1410		5.00			
USNRL	04	1452	1541	1501	N15	W54	4578	49	1	3	1501	.62	1.09	1.00	106	
CAPRI S	04	1457 E	1518		N17	W54	4578	21 D	1	2	1504	2.00	3.40			
STOCKHOLM	04	1458 E	1513 D		N16	W50	4578	15 D	1		1500	2.50	4.00			
STOCKHOLM	04	1537 E	1543 D		S08	E90	4600	6 D	1		1537	1.50	1.50			
ZURICH	04	1629 E	1645 D		N43	E64	4597	16 D	1	2	1629		5.00			
SAC PEAK	04	2147 E	2302	2152	N15	W58	4578	75 D	1&			4.50			28	Slow S-SWF
MITAKA	05	0000 E	0007		N44	E55	4597	7 D	1	1	0000	1.84	4.97	3.54	146	
TASHKENT	05	0258	0307		N29	E17	4587	9	2							
NIZAMIAH	05	0520 E	0527 D		N46	E60	4597	7 D	1	3	0520	.91	2.60	1.90		
LOCARNO	05	0700 E	0710 D		N32	W77	4578	10 D	1	2			1.00			
CAPRI S	05	0841 E	0917 D		N14	W67	4578	36 D	1&	3	0859	2.00	4.80			
SCHAUINS	05	0849 E	0938		N16	W62	4578	49 D	2							
NIZAMIAH	05	0850 E	0913 D	0858	N15	W68	4578	23 D	1&	2	0858	1.82	5.12	2.30		
NEDERHORST	05	0853 E	0925		N26	W70	4578	32 D	2&							S-SWF
STOCKHOLM	05	0900 E	0923		N17	W62	4578	23 D	2		0905	3.60	8.60			
ZURICH	05	0900 E	0956		N15	W64	4578	56 D	2	2	0902	.	10.00			
R O HERST	05	0905 E	0920	0905 E	N18	W65	4578	15 D	1	2	0906	.90	2.30	2.45	50	

SOLAR FLARES

JUNE 1958

OBSERVATORY	DATE 1958 JUNE	OBSERVED UNIVERSAL TIME START	END	MAX. PHASE	LOCATION APPROX. LAT.	MER. DIST.	McMATH PLAGE REGION	DURATION — MINUTES	IMPORTANCE	OBS. COND.	MEASUREMENTS TIME — U T	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Hα	MAX. INT. %	PROVISIONAL IONOSPHERIC EFFECT
ZURICH	05	0940 E	0950		N27	E62	4596	10 D	1	2	0944		3.00			
STOCKHOLM	05	1458 E	1524		S10	W90	4600	26 D	1		1502	3.60	3.60			
USNRL	05	1527	1539	1530	N39	E50	4597	12	1	3	1530	.56	1.24	2.00	124	
SAC PEAK	05	1615	1815	1635	S18	E70	4598	120	2			6.70			28	
USNRL	05	1619	1658	1628	S18	E70	4598	39	2B	2	1628	2.03	5.20	2.00	120	S-SWF
USNRL	05	1656	1837	1711	S21	E70	4598	101	2B	2	1711	2.82	8.30	2.00	143	
ONDREJOV	05	1728 E	1745 D		S20	E63	4598	17 D	2B	2	1732			3.40		Slow S-SWF
USNRL	05	1811	1902	1818	N18	W70	4578	51	1B	2	1818	1.02	3.26	2.00	126	Slow S-SWF
MITAKA	05	2300	2330	2310	N46	E50	4597	30	2	2	2310	11.40	24.80	1.80	149	
MITAKA	06	0017	0025		N46	E47	4597	8	1	2	0017	.89	1.94	1.85	105	
MITAKA	06	0112 E	0124		N16	W44	4583	12 D	1	1	0112	.89	1.23	1.68	100	G-SWF
MITAKA	06	0130 E	0147		N16	W44	4583	17 D	1	1	0133	.89	1.23	2.03	107	S-SWF
SIMEIZ	06	0400			N15	W78	4578	65	2							
TASHKENT	06	0436	0518	0439	N10	W80	4578	42	2							
NIZAMIAH	06	0438	0503	0448	N16	W75	4578	25	1B	3	0448	1.21	4.83	3.00		Slow S-SWF
MITAKA	06	0452 E	0527	0503	N17	W75	4578	35 D	2	1	0452	3.68	10.70	6.34		
KODAIKNL	06	0458 E	0507 D		N17	W78	4578	9 D	2	2	0500			2.40		
WENDEL	06	0555 E	0618		N42	E45	4597	23 D	2				11.00			
WENDEL	06	0620	0648 D		N26	E49	4596	28 D	1B				8.00			
WENDEL	06	0658	0706		N41	E50	4597	8	1				3.00			
WENDEL	06	0825	0946 D		N43	E46	4597	21 D	1				4.00			
WENDEL	06	0858	0920 D		N17	W45	4583	22 D	1				3.00			
WENDEL	06	1021 E	1042 D		N43	E46	4597	21 D	1B				5.00			
WENDEL	06	1035	1049 D		S22	E27	4592	14 D	1B				5.00			
WENDEL	06	1056	1110 D		N43	E45	4597	14 D	2				9.00			
OTTAWA	06	1332	1338 D	1338	N45	E40	4597	6 D	1	3	1340	1.28	2.44			
WENDEL	06	1333 E	1358 D		N43	E45	4597	25 D	1				4.00			G-SWF
WENDEL	06	1529 E	1543 D		N10	W28	4586	14 D	1				3.00			
WENDEL	06	1529 E	1543 D		N18	W28	4586	14 D	1				3.00			
WENDEL	06	1601 E	1627		N27	E50	4596	26 D	1				3.00			
WENDEL	06	1601 E	1643 D		N42	E44	4597	42 D	2				12.00			
MCMATH	06	1616	1633	1622	N40	E40	4597	17	1	1	1622	1.63	2.85		64	S-SWF
WENDEL	06	1618 E	1642		N18	W48	4583	24 D	1				3.00			
WENDEL	06	1705	1719		N43	E41	4597	14	1				3.00			
MCMATH	06	1705	1724	1708	N41	E38	4597	19	1	1	1708	1.79	3.11		69	
USNRL	06	1835	1845	1836	S16	W73	4581	10	1	2	1845	.77	3.17		71	
MCMATH	06	2100	2129 D	2118	N42	E38	4597	29 D	1	1	2118	1.46	2.54		72	
ONDREJOV	07	0638	0645	0642	N43	E30	4597	7	1	3	0642			3.20		
ONDREJOV	07	0654	0657	0655	N27	E39	4596	3	1	3	0655			2.10		
ONDREJOV	07	0717 E	0736		N43	E30	4597	19 D	1	3	0719			2.60		
ONDREJOV	07	0819 E	0835		N43	E29	4597	16 D	1	3	0820			1.70		
ARCETRI	07	0826 E	0928 D		N29	E39	4596	62 D	1	3	0925	2.20	3.20			
ARCETRI	07	0924 E	0928 D		S16	E49	4594	4 D	1	3	0925	2.50	4.80			
GOOD HOPE	07	1019	1055		N27	E36	4596	36	1		1042	2.00	2.80			
OTTAWA	07	1019	1126	1043	N28	E34	4596	67	1	3	1043	3.42	4.70			
ONDREJOV	07	1026 E	1044		N26	E34	4596	18 D	1	3	1026			2.30		
WENDEL	07	1036 E	1133		N27	E34	4596	57 D	2				9.00			
GOOD HOPE	07	1102	1129	1112	N27	E36	4596	27	1		1112	1.50	2.10			
CAPRI S	07	1105 E	1125 D		N27	E35	4596	20 D	1	3	1115	1.40	2.50			
ONDREJOV	07	1107	1126	1109	N26	E35	4596	19	1	3	1109			2.50		
USNRL	07	1300	1316	1309	N28	E35	4596	16	1	3	1309	.82	1.13		100	
MCMATH	07	1512	1540	1521	N21	E74	4601	28	1	1	1521	1.05	3.08		65	

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ONDREJOV	07	1514 E	1538		N47	E31	4597	24 D	1	3	1515			2.30		
MCMATH	07	1550	1610	1555	N12	E74	4601	20	1	1	1555	.81	2.37		58	
ONDREJOV	07	1554	1604		.09	E70	4601	10	1	3	1556			2.30		
ONDREJOV	07	1610 E	1627		N26	E32	4596	17 D	1	3	1611			1.80		
ZURICH	07	1618 E	1635		N26	E35	4596	17 D	1	2	1618		5.00			
ZURICH	07	1653 E	1706		S17	E38	4598	13 D	1	2	1653		1.00			
CLIMAX	07	1805	1836	1823	N27	E31	4596	31	1		1823	2.40				
HAWAII	07	1812 E	1822 D		N27	E31	4596	10 D	1	1	1812	2.50	3.20			Slow S-SWF
LOCARNO	08	0845	0920 D		N44	E22	4597	35 D	1+	2			2.00			
CAPRI S	08	0850	1008		N45	E16	4597	78	2	2	0907	4.20	5.90			
GOOD HOPE	08	0850	1005	0852	N43	E20	4597	75	1		0852	1.50	2.20			S-SWF
ONDREJOV	08	0854 E	0944		N45	E17	4597	50 D	1+	1	0855			2.60		
ZURICH	08	0943 E	1032		N43	E18	4597	49 D	2	2	0943		10.00			
ZURICH	08	1015 E	1116		N26	W52	4587	61 D	1	2	1015		2.00			
ONDREJOV	08	1034 E	1110 D		N25	W53	4587	36 D	1	2	1039			3.10		
CAPRI S	08	1050 E	1103		N25	W50	4587	13 D	1	3	1054	1.20	2.20			
ONDREJOV	08	1328	1334	1329	N41	E13	4597	6	1	2	1329			2.40		
WENDEL	08	1342 E	1404 D		N43	E15	4597	22 D	1				4.00			
WENDEL	08	1444 E	1512 D		S21	E01	4592	28 D	1				4.00			
ONDREJOV	08	1445 E	1457		S21	W00	4592	8 D	1	3	1446			2.00		
WENDEL	08	1452	1502		S23	W03	4592	10	1				3.00			
ONDREJOV	08	1541 E	1547		N25	W57	4587	6 D	1	3	1543			2.50		
WENDEL	08	1544 E	1552 D		N26	W54	4587	8 D	1				3.00			
ONDREJOV	08	1633 E	1638 D		N25	W57	4587	5 D	1	3	1633			2.10		
ONDREJOV	08	1651 E	1659		N32	E23	4596	8 D	1	3	1651			2.50		
CLIMAX	08	1742	1836	1808	N40	E14	4597	54	1		1808	2.40				
SAC PEAK	08	1747	1900	1755	N42	E13	4597	72	1			2.80			25	S-SWF
ONDREJOV	08	1752 E	1804 D		N41	E12	4597	12 D	1+	1	1752			3.60		
CLIMAX	08	1815	1907	1843	S23	E00	4592	52	1		1843	2.40				S-SWF
SAC PEAK	08	1822	2022	1837	S22	E00	4592	120	1			3.20			20	
MT WILSON	08	1843	2137					175	2+							
CLIMAX	08	1912	1951	1925	S25	E00	4592	39	1		1925	2.60				
SAC PEAK	08	2305	2355 D	2330	N45	E14	4597	50 D	2			5.60			20	
HAWAII	08	2330 E	001		N43	E17	4597	40 D	2	1	2330	7.20	10.00			
ONDREJOV	09	0500 E	0511		S16	E40	4600	11 D	1	3	0503			2.20		
ONDREJOV	09	0601 E	0608		N31	E18	4596	9 D	1	3	0601			2.30		
ONDREJOV	09	0615	0625	0616	N41	E07	4597	10	1	3	0616			.10		
ONDREJOV	09	0625	0638		N24	W65	4587	13	1	3	0627			2.20		
ZURICH	09	0738 E	0800		N26	W67	4587	22 D	1	2	0738		5.00			
ZURICH	09	0804	0824		N07	W83	4582	20	1	2	0804		5.00			
ZURICH	09	0841	0902		N43	E07	4597	21	1	2	0841		4.00			
ONDREJOV	09	0859	0906 D	0900	N30	E17	4596	7 D	1	3	0900			2.40		
GOOD HOPE	09	0904	0930	0911	N42	E07	4597	26	1		0911	2.20	3.10			
CAPRI S	09	0905	0942		N44	E05	4597	37	1	1	0910	2.50	3.50			
LOCARNO	09	0905	0925 D		N43	F10	4597	20 D	1	2			1.00			
MOSCOW	09	0906	0928		N42	E07	4597	22	1+							S-SWF
ONDREJOV	09	0908 E	0926 D		N42	E10	4597	18 D	1+	3	0911			2.50		
ZURICH	09	0908	0926 D		N42	E07	4597	18 D	1+	2	0908		7.00			
STOCKHOLM	09	0915 E			N41	E08			1		0915	2.30	3.00			
LOCARNO	09	0940 E	1005 D		S26	E34	4598	25 D	1	2			3.00			
WENDEL	09	0951 E	1001 D		N26	E12	4596	10 D	1				3.00			
SCHAJIN	09	1357 E	1425		S16	E35	4598	26 D	1							

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SCHAUINS	09	1528 E	1557		N27	W72	4587	29 D	1							
ONDREJOV	09	1529 E	1536		N24	W78	4587	9 D	1	2	1535			2.40		
MT WILSON	09	1535	1552		N26	W71	4587	17	1							
ONDREJOV	09	1546 E	1552		N24	W78	4587	6 D	1	3	1546			2.60		
ONDREJOV	09	1735 E	1743		N03	W90	4582	10 D	1	3	1734			3.50		
NIZAMIAH	10	0307 E	0319	0310	N44	W04	4597	12 D	1	2	0310	1.52	2.12	2.00		G-SWF
ATHENS	10	0557 E	0630		N45	E00	4597	33 D	1+	2		3.00	4.20			
KODAIKNL	10	0602 E	0612 D		N44	W03	4597	10 D	1	2	0605			1.60		G-SWF
GOOD HOPE	10	1115	1150	1121	S26	E30	4598	35	1		1121	2.70	3.50			
ONDREJOV	10	1534 E	1550 D		N43	W07	4597	16 D	1	1						
SAC PEAK	10	1720	1735	1725	N45	W06	4597	15	1			2.10			18	
USNRL	10	1723 E	1745	1724	N46	W07	4597	22 D	1	2	1724	2.03	2.90		117	
MCMATH	10	1834	1850 D		N25	W05	4596	16 D	1	1	1838	1.86	2.07		65	
USNRL	10	1835	1910	1838	N26	W05	4596	35	1	2	1838	1.92	2.14		93	
MT WILSON	10	2354			N45	W14	4597		1							S-SWF
HAWAII	11	0030	0046		N45	W14	4597	16	1	1	0031	4.10	5.70			
HAWAII	11	0136	0150	0148	S20	W27	4592	14	1	1	0140	4.10	4.90			
KODAIKNL	11	0231 E	0240 D		N44	W17	4597	9 D	1+	2	0232	3.30	4.60	2.60	192	S-SWF
ATHENS	11	0556 E	0605		N43	W17	4597	9 D	1	3		1.80	2.50			
USNRL	11	1234 E	1305	1240	N43	W22	4597	31 D	1	2	1240	1.36	1.98		126	S-SWF
CAPRI S	11	1245 E	1320 D		N43	W22	4597	35 D	1	1	1246	1.50	2.20			
SAC PEAK	11	1245 E	1417	1308	N46	W21	4597	92 D	1+			3.80			30	
USNRL	11	1306	1336	1309	N43	W22	4597	30	1+	3	1309	1.47	2.16		113	S-SWF
NEDERHORST	11	1308	1325		N45	W19	4597	17	2							
MCMATH	11	1514 E	1545		N42	W22	4597	31 D	1	1	1530	1.63	2.31			S-SWF
MEUDON	11	1553	1645		N43	E24	4597	52	1				4.00			
MCMATH	11	1557	1650	1605	N42	W22	4597	53	1	1	1605	1.79	2.54		74	S-SWF
USNRL	11	1559	1647	1615	N43	W22	4597	48	1	3	1615	.68	.99		111	
MCMATH	11	2037	2110	2046	N42	W23	4597	33	2+	1	2046	7.47	11.20		103	
HAWAII	11	2038	2050	2042	N46	W25	4597	12	1+	2	2042	2.60	4.30			S-SWF
SAC PEAK	11	2039 E	2110	2045	N45	W25	4597	31 D	2			10.00			25	
MITAKA	12	0353 E	0409 D		S25	W06	4598	16 D	1	2	0357	1.84	2.06	1.70	120	
MITAKA	12	0418 E	0423 D		N42	W28	4597	5 D	1+	1	0418	3.80	5.93	2.03	125	
MITAKA	12	0511	0532	0518	N26	W31	4596	21	1	1	0511	3.71	4.67	1.69	131	
ONDREJOV	12	0629	0643	0631	N45	W32	4597	14	1	3	0631			2.30		
MITAKA	12	0630 E	0646	0632	N41	W31	4597	16 D	1	1	0632	1.84	2.87	2.32	115	
CAPRI S	12	0655 E	0722		N17	E77	4607	27 D	1	3	0700	.50	2.30			
SCHAUINS	12	0700 E	0812		N14	E76	4607	72 D	2							S-SWF
SCHAUINS	12	0707 E	0735		S19	W00	4598	28 D	1							
ONDREJOV	12	0702 E	0711		N42	W35	4597	9 D	1	3	0702			2.40		
SCHAUINS	12	0707 E	0812		N44	W29	4597	65 D	2							
ZURICH	12	0729 E	0741 D		N42	W26	4597	12 D	2	1	0729		8.00			
ATHENS	12	0709 E	0808 D		N04	W77	4591	59 D	2	3		1.40	5.50			
ZURICH	12	0735	0741 D		N14	E72	4607	6 D	1+	1	0735		5.00			
ZURICH	12	0817 E	0828		N26	W23	4596	11 D	1	1	0817		3.00			
STOCKHOLM	12	0900 E	0925		N11	E75	4607	25 D	2		0914	2.70	9.00			
ONDREJOV	12	0914 E	0922		N13	E76	4607	8 D	1	3	0916			2.20		
STOCKHOLM	12	0952 E			N11	E75	4607		1		0952	.90	3.00			
ONDREJOV	12	1000 E	1009		N13	E76	4607	9 D	1	3	1001			2.70		
ONDREJOV	12	1030 E	1036		N42	W29	4597	6 D	1	3	1030			2.40		
ZURICH	12	1032	1036 D		N44	W35	4597	4 D	1	1	1032		1.00			

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MCMATH	12	1419	1500	1436	N45	W27	4597	41	1	1	1436	2.19	3.42		66	
CAPRI S	12	1429 E	1528 D		N43	W28	4597	59 D	1	1	1450	1.50	2.50			
OTTAWA	12	1430 E	1444 D	1444	N44	W29	4597	14 D	1	2	1444	1.68	2.67			Slow S-SWF
DUNSINK	12	1432 E	1515	1436	N48	W23	4597	43 D	2	2	1442	2.50		3.40		
ZURICH	12	1455 E	1530		N47	W29	4597	35 D	1	3	1455		5.00			
ONDREJOV	12	1638	1653	1642	N28	W22	4596	15	1	3	1642			2.30		
ONDREJOV	13	0659	0717	0707	N26	W36	4596	18	2	3	0707			3.20		
ATHENS	13	0700	0714	0704	N27	W38	4596	14	1	3		2.00	2.70			S-SWF
CAPRI S	13	0702	0716		N28	W33	4596	14	1	3	0707	2.00	2.80			
ZURICH	13	1000 E	1015 D		N13	E60	4607	15 D	1	1	1004		5.00			
ONDREJOV	13	1448 E	1454 D		N27	W40	4596	6 D	1	2	1449			2.90		
ONDREJOV	13	1510 E	1529		N13	E56	4607	19 D	1	2	1512			2.60		
ONDREJOV	13	1656	1720 D		N18	W47	4599	24 D	1	2	1658			2.20		
WENDEL	13	1701 E			N45	W39	4597		1&							
ONDREJOV	13	1707 E	1731 D		N46	W44	4597	24 D	1&	2	1722			2.30		
ONDREJOV	13	1712 E	1736		N13	E57	4607	24 D	1&	3	1716			3.00		
WENDEL	13	1720 E			N16	E63	4607		1&							S-SWF
HAWAII	13	2322	2344	2328	N18	E50	4607	22	1	2	2328	3.10	5.20			Slow S-SWF
MT WILSON	13	2323 E			N17	E61	4607		2							
ONDREJOV	14	0525 E	0541		N14	E50	4607	16 D	1&	3	0527			2.80		
NIZAMIAH	14	0530 E	0534		N15	E50	4607	4 D	1	3	0530	1.82	2.97	1.20		
ONDREJOV	14	0830 E	0850		N15	E47	4607	20 D	1	3	0832			2.30		
OTTAWA	14	1119	1153	1125	N15	E45	4607	34	1	2	1125	3.54	5.24			
MCMATH	14	1122 E	1147		N14	E47	4607	25 D	1&	1	1123	3.01	4.45		96	Slow S-SWF
WENDEL	14	1139 E	1305 D		N13	E47	4607	86 D	2				11.00			
ONDREJOV	14	1141 E	1217 D		N12	E48	4607	36 D	2	1	1141			2.20		
WENDEL	14	1235 E	1237 D		S23	E26	4604	2 D	1				4.00			
WENDEL	14	1344 E	1424 D		N22	W16	4601	40 D	1				4.00			
WENDEL	14	1412 E	1421 D		S27	E63	4608	9 D	1				3.00			
LOCARNO	14	1515	1535 D		N12	E44	4607	20 D	1	3			1.00			
WENDEL	14	1517 E	1528		N14	E45	4607	11 D	1				3.00			
SAC PEAK	14	1652	1752	1710	N45	W55	4597	16	1			2.90			15	
MCMATH	14	1706	1759	1711	N43	W50	4597	53	2	1	1711	2.60	6.16		56	Slow S-SWF
MT WILSON	14	1707 E			N43	W60	4597		1							
ONDREJOV	14	1713 E	1721		N07	E36	4607	8 D	1&	3	1715			3.00		
MT WILSON	14	1717 E			N09	E36	4607		1							
ONDREJOV	14	1719 E	1750 D		N43	W55	4597	31 D	2	3	1719			2.70		
SAC PEAK	14	2112	2142	2117	N13	E37	4607	30	1			2.60			20	
MCMATH	14	2113	2146	2118	N13	E37	4607	23	1	1	2118	1.95	2.53		91	S-SWF
MT WILSON	14	2113	2129		N14	E40	4607	16	1							
MCMATH	14	2136	2146	2142	N44	W52	4597	10	1	1	2142	1.22	2.89		55	
MT WILSON	14	2139			N45	W58	4597		1							
MT WILSON	15	0015 E			N15	E41	4607		1							S-SWF
MT WILSON	15	0031 E			N43	W65	4597		1							
ONDREJOV	15	0712 E	0719		N43	W68	4597	7 D	1	3	0713			2.90		
AROSA	15	0947	0952		S18	W47	4600	5	1							
ZURICH	15	1226 E	1243		N14	E27	4607	17 D	1	2	1226		3.00			
OTTAWA	15	1349	1401 D	1401	N14	E29	4607	12 D	2	3	1401	4.52	5.23			
CAPRI S	15	1352 E	1439		N15	E30	4607	47 D	2	3	1412	5.00	6.00			
WENDEL	15	1354 E	1435 D		N13	E28	4607	41 D	1&				7.00			S-SWF
WENDEL	15	1354 E	1435 D		N11	E33	4607	41 D	1&				6.00			

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R O HERST	15	1354 E	1435	1405	N17	E31	4607	41 D	1+	2	1404	2.80	3.50		130	
ONDREJOV	15	1359 E	1407 D		N14	E29	4607	8 D	2	3	1359			3.90		
AROSA	15	1410 E	1448		N12	E31	4607	38 D	2							
ONDREJOV	15	1715 E	1726 D	1717	N45	W75	4597	11 D	1	3	1717			3.40		
HAWAII	15	2300	2326	2306	N14	E23	4607	26	1	2	2306	2.60	2.90			Slow S-SWF
MT WILSON	16	0037 E			N43	W65	4597		1							
MT WILSON	16	0045	0053		S15	W50	4600	8	1							
WENDEL	16	0645 E	0706 D		N13	E19	4607	21 D	1				3.00			
AROSA	16	0646	0703		N14	E20	4607	17	1							
ONDREJOV	16	0647	0655		N14	E16	4607	8	1	3	0651			2.20		
AROSA	16	0738	0740 D		N19	E15	4607	2 D	1							
ONDREJOV	16	0904 E	0927 D		N14	E17	4607	23 D	1	2	0914			2.00		
WENDEL	16	0910	0930 D		N13	E18	4607	20 D	1				4.00			
USNRL	16	1252	1345	1300	N20	E86	4613	53	1	3	1300	.48	3.38		56	
USNRL	16	1423	1447 D	1423	N20	E86	4613	24 D	1	2	1423	.45	3.30	1.00	57	
LOCARNO	16	1435	1455 D		S22	W11	4604	20 D	1	3			1.00			
WENDEL	16	1442 E	1504		S27	E01	4604	22 D	1				4.00			
MT WILSON	16	1457			S28	W08	4604		1							
USNRL	16	1528	1550	1534	N20	E86	4613	22	1	3	1534	.68	4.82		63	S-SWF
WENDEL	16	1530 E	1544 D		N18	E80	4613	14 D	1				3.00			
USNRL	16	1838	2019	1856	N20	E82	4613	101	1	3	1856	.45	2.28	1.00	61	
USNRL	16	1956	2018	1959	N29	W79	4596	22	1	3	1959	.43	2.16		64	
ONDREJOV	17	0913 E	0947	0929	N40	W90	4597	34 D	1	3	0929			2.80		
KIEV	17	0921 E	0942		N39	W90	4596	21 D	2							
ZURICH	17	0940 E	0957		N30	W90	4596	17 D	1	3	0940					
ONDREJOV	17	1058	1113		N04	E27	4610	15	1	3	1104			2.20		
USNRL	17	1557	1712	1608	N39	W90	4597	75	1	2	1608	.56		2.00	63	
MCMATH	17	1728	1751	1731	N15	E02	4607	23	1	1	1731	2.12	2.20		58	
USNRL	17	1732	1759		N15	E03	4607	27	1	1	1736	1.36	1.40	1.00	101	
MCMATH	17	2103	2134 D		S25	E15	4608	31 D	1	1	2118	1.78	2.07		64	
NIZAMIAH	18	0319 E	0321 D		N18	W06	4607	2 D	1	2	0319	2.43	2.55	1.50		
ONDREJOV	18	0432 E	0451		N16	W01	4607	19 D	1	2	0439			1.50		
NIZAMIAH	18	0538	0543	0540	N18	W07	4607	5	1	3	0540	2.43	2.54	1.90		
SAC PEAK	18	1327	1402	1345	N15	W10	4607	35	1			3.60			17	
MCMATH	18	1328	1404	1345	N15	W10	4607	36	1	2	1345	2.19	2.30		72	
CAPRI S	18	1333	1400		N14	W08	4607	27	1	3	1344	2.00	2.00			
OTTAWA	18	1341	1345 D	1345	N15	W10	4607	4 D	1	4	1345	3.77	3.93			
HAWAII	18	1824	1830 D	1830	N15	W15	4607	6 D	1	1	1830	2.50	2.70			S-SWF
HAWAII	18	2348	0008	2356	N15	W15	4607	20	1	2	2356	3.70	4.00			S-SWF
MITAKA	19	0000 E	0032	0017	N15	W17	4607	32 D	1+	2	0022	5.46	5.78	1.92	137	
KODAIKNL	19	0212 E	0237 D	0218	N15	W19	4607	25 D	2	2	0216	9.70	10.70	2.70	154	
TASHKENT	19	0218	0255	0228	N13	W19	4607	37	2							S-SWF
MT WILSON	19	0219			N15	W17	4607		1+							
MITAKA	19	0222 E	0252	0229	N15	W18	4607	30 D	3	1	0231	15.20	16.10	2.46	217	
MEUDON	19	0730	0755		N17	W17	4607	25	1				4.00			S-SWF
WENDEL	19	0733 E	0803 D		N15	W17	4607	30 D	1				4.00			
WENDEL	19	0940	1120 D		N13	W21	4607	100 D	3				25.00			
LOCARNO	19	0940	1130 D		N13	W20	4607	110 D	2+	3			12.00			
MEUDON	19	0943	1200		N17	W17	4607	137	3				100.00			
CAPRI S	19	0945 E	1118		N13	W20	4607	93 D	3	3	1020	16.00	17.60			

SOLAR FLARES

JUNE 1958

OBSERVATORY	DATE 1958 June	OBSERVED UNIVERSAL TIME START	END	MAX. PHASE	LOCATION APPROX. LAT.	MER. DIST.	McMATH PLAGE REGION	DURATION — MINUTES	IMPORTANCE	OBS. COND.	MEASUREMENTS TIME — U T	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Hα	MAX. INT. %	PROVISIONAL IONOSPHERIC EFFECT
STOCKHOLM	19	0946 E	1100 D		N14	W22	4607	74 D	2+	1	1028	9.00	9.90			G-SWF
KIEV	19	1003 E	1053		N24	W12	4607	50 D	2							
NIZAMIAH	19	1005 E	1033 D	1007	N16	W25	4607	28 D	1+	2	1007	3.65	4.15	2.70		
OTTAWA	19	1028 E			N11	W22	4607		3	2	1035	22.91	24.84			
OTTAWA	19	1128 E	1210		N14	W22	4607	42 D	1	2	1129	3.65	4.00			
USNRL	19	1256	1435	1300	N15	W22	4607	99	1	1	1319	1.13	1.23		107	
OTTAWA	19	1257	1340	1318	N14	W22	4607	43	1+	1	1318	4.35	4.75			
STOCKHOLM	19	1258 E	1329		N15	W21	4607	31 D	1		1304	2.70	3.00			Slow S-SWF
CAPRI S	19	1258	1330		N14	W21	4607	32	1	3	1313	2.20	2.40			
SAC PEAK	19	1312 E	1335 D	1315 U	N15	W23	4607	22 D	1			2.20			18	
MEUDON	19	1324	1400		N15	W17	4607	36	1				5.00			
OTTAWA	19	1328	1353	1334	N21	E44	4613	25	1	1	1334	2.15	3.12			
USNRL	19	1328	1407	1334	N22	E45	4613	39	1	3	1334	.90	1.36		101	
OTTAWA	19	1434	1442 D	1442	N13	W26	4607	8 D	2	1	1442	7.25	8.17			
SAC PEAK	19	1435	1550	1442	N15	W23	4607	75	1+			4.40			30	
USNRL	19	1437	1629	1442	N15	W24	4607	112	1+	3	1442	2.71	3.09	2.00	126	S-SWF
MEUDON	19	1438	1518		N15	W17	4607	40	2				20.00			
CAPRI S	19	1440	1518		N14	W22	4607	38	2	3	1500	4.50	5.00			
MT WILSON	19	1453			N15	W26	4607		1							
MT WILSON	19	1929	1942		S26	W12	4608	13	1							
HAWAII	20	0016	0040	0022	N15	W31	4607	24	1	2	0022	3.80	4.60			
MT WILSON	20	0021	0027		N15	W29	4607	6	1							
TASHKENT	20	0340	0433	0353	N13	W32	4607	53	1+							
MEUDON	20	0635	0656	0643	N15	W44	4607	21	1				4.00			
SCHAUINS	20	1001 E	1130		N14	W19	4607	89 D	2							
OTTAWA	20	1048	1120		N16	W33	4607	32	1	1	1051	1.86	2.29			
MEUDON	20	1050	1127		N20	W45	4607	37	1				5.00			
CAPRI S	20	1051 E	1117 D		N17	W35	4607	26 D	1	3	1102	1.70	2.20			
OTTAWA	20	1357	1401 D	1401	N12	W38	4607	4 D	1+	3	1401	2.61	3.30			
MCMATH	20	1526 E	1555 D		N14	W40	4607	29 D	1	1	1550	2.76	3.62		58	
MT WILSON	20	2152 E			S26	W29	4608		1							
WENDEL	21	1218 E	1226 D		N17	W51	4607	8 D	1				3.00			
MCMATH	21	1239 E	1252 D		N22	E75	4619	13 D	1	1	1239	.57	2.27			S-SWF
CAPRI S	21	1242 E	1255 D		N37	E80	4619	13 D	1	3	1247	1.20	4.40			
ONDREJOV	22	0854 E	0902 D		N16	W61	4607	8 D	1	2	0856			2.80		
OTTAWA	22	1108	1114 D	1114	N30	E75	4619	6 D	1	3	1125	1.16	4.99			
ONDREJOV	22	1120 E	1126 D		N29	E80	4621	6 D	1	3	1121			2.80		
MCMATH	22	1124 E	1136		N28	E74	4619	12 D	1+	1	1124	1.05	4.07		56	
SCHAUINS	22	1655 E	1722 D		S09	E90	4624	27 D	1+							
SCHAUINS	22	1713 E	1722 D		S19	E90	4622	9 D	1							
SAC PEAK	22	1755	1905	1812	S11	E43	4618	70	1+			4.60			18	G-SWF
MT WILSON	22	1805	1905		S14	E50	4618	60	1+							
MT WILSON	22	2024	2040		N20	W04	4613	16	1							
MT WILSON	22	2339	2351		N16	E22	4616	12	1							
ATHENS	23	0553 E	0606		S18	E77	4622	13 D	1+	4		1.00	4.90			
LOCARNO	23	0700	0750		N17	E61	4619	50	2	2			6.00			
SIMEIZ	23	0702	0852	0720	N27	E54	4619	108	2+							S-SWF
ATHENS	23	0707	0807	0711	N27	E54	4619	60	2+	4		6.00	10.90			
MEUDON	23	0734 E			N26	E52	4619		1				4.00			
LOCARNO	23	0755 E	0820		S19	E72	4622	25 D	1+	2			3.00			S-SWF

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OBSERVATORY	DATE 1958 JUNE	OBSERVED UNIVERSAL TIME START	END	MAX. PHASE	LOCATION APPROX. LAT.	MER. DIST.	McMATH PLAGE REGION	DURATION — MINUTES	IMPORTANCE	OBS. COND.	MEASUREMENTS TIME — U T	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Hα	MAX. INT. %	PROVISIONAL IONOSPHERIC EFFECT
SIMEIZ	23	0758	0841	0800	S12	W24		43	1＋							
ATHENS	23	0759	0814	0801	S13	E34	4618	15	1＋	4		3.00	3.80			
LOCARNO	23	1035	1115 D		N06	E65	4621	40 D	1＋	2			1.00			
STOCKHOLM	23	1043 E	1120 D		N20	E62	4621	37 D	1＋		1057	1.80	4.10			
ONDREJOV	23	1049 E	1135 D		N17	E61	4621	46 D	1	3	1118			2.60		
R O EDIN	23	1050 E	1117		N17	E60	4621	27 D	2	2	1050	6.00	12.80	1.94		
MCMATH	23	1126 E	1206 D		S20	E73	4622	40 D	2	1	1143	1.78	6.89		57	
ONDREJOV	23	1300	1307		S22	E75	4622	7	1	3	1301			2.50		
OTTAWA	23	1337	1416		S19	E72	4622	39	1	3	1357	.64	2.31			S-SWF
ONDREJOV	23	1340 E	1354 D		S22	E75	4622	14 D	1	3	1343			2.60		S-SWF
ZURICH	23	1345 E	1443		S21	E73	4622	58 D	2	2	1400		6.00			
LOCARNO	23	1355 E	1505 D		S13	E35	4618	70 D	1＋	2			3.00			
STOCKHOLM	23	1403 E	1419		S21	E74	4622	16 D	1		1405	.90	3.50			
OTTAWA	23	1445	1458 D	1458	S19	E72	4622	13 D	1	3	1458	.99	3.57			
ONDREJOV	23	1446 E	1513 D		S22	E74	4622	27 D	1＋	2						S-SWF
ZURICH	23	1451	1529		S20	E72	4622	38	1	2	1451		2.00			
ZURICH	23	1641	1657		S21	E71	4622	16	1	2	1641		5.00			
ONDREJOV	23	1711	1733	1713	S22	E72	4622	22	1	3	1713			3.00		S-SWF
MT WILSON	23	1827	1834		N20	W20	4613	7	1							
ONDREJOV	24	0910 E	0923 D		S20	E65	4622	13 D	1	2	0917			2.20		
OTTAWA	24	1153	1209	1156	S09	E18	4618	16	1	4	1156	2.03	2.16			S-SWF
OTTAWA	24	1306			N14	E04	4616		1	2	1309	2.32	2.38			
ZURICH	25	0847	0915		S10	E70	4624	28	1	2	0847		3.00			
LOCARNO	25	1300 E	1310		S10	E23	4618	10 D	1	2			1.00			
ONDREJOV	25	1557 E	1603		N17	E58	4623	6 D	1	3	1558			2.70		
ONDREJOV	25	1620	1631 D	1628	N07	E53	4623	11 D	1	2	1628			3.10		
MT WILSON	25	1625			N08	E53	4623		1							
WENDEL	25	1630 E	1644		N06	E54	4623	14 D	1				4.00			
MT WILSON	25	2315	0047		S22	E44	4622	92	1＋							
SAC PEAK	25	2315	2343	2322	S23	E42	4622	28 D	1＋			3.90			25	S-SWF
MITAKA	26	0029 E	0043		S21	E39	4622	14 D	1	1	0029	.89	1.26	1.79	96	Slow S-SWF
KODAIKNL	26	0245 E	0250 D	0246	N10	E48	4623	5 D	1	1	0247	5.30	7.90	1.60		
MITAKA	26	0246 E	0358	0305	N47	E07		12 D	2＋	1	0305	15.20	24.70	2.94	183	G-SWF
NIZAMIAH	26	0300 E	0320 D		N10	E49	4623	20 D	2＋	2	0306	1.29	11.19	2.60		
HUANCAYO	26	2057	2110	2059	N12	E45	4623	13	1	3	2059	2.20	3.10	2.10		
HAWAII	26	2240	2256	2244	N10	E41	4623	16	1	3	2244	3.70	4.90			Slow S-SWF
MITAKA	27	0133	0141		N16	E71	4628	8	1	1	0133	.89	2.14	2.16	96	G-SWF
MITAKA	27	0254 E	0306 D	0258	N07	E35	4623	12 D	1	1	0256	2.78	3.50	1.92	134	
TASHKENT	27	0304	0405	0307	N10	E37	4623	61	2							
MITAKA	27	0305	0321	0307	N11	E38	4623	16	1＋	1	0309	7.57	10.40		149	S-SWF
NIZAMIAH	27	0307	0316	0309	N12	E38	4623	11	1＋	2	0318	3.04	3.90	2.10		
SIMEIZ	27	0615	0635	0720	S17	W16	4618	20	1＋							
MCMATH	27	1121	1130	1125	N11	E38	4623	9	1	1	1125	1.63	2.08		64	
USNRL	27	1210	1341	1229	S22	E20	4622	91	1	2	1229	1.13	1.36	1.00	103	
HUANCAYO	27	1534	1547	1538	S22	E21	4622	13	1	2	1536	2.90	3.40	2.20		
CAPRI S	27	1538	1555		S24	E22	4622	17	1	3	1540	2.00	2.40			
MT WILSON	27	1539	1544		S20	E14	4622	5	1							
MT WILSON	27	1834			N10	E35	4623		1							
MT WILSON	27	2138	2154		S22	E18	4622	16	1							
LOCARND	28	0850	0920		S20	E15	4622	30	1＋	1			1.00			

SOLAR FLARES

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OBSERVATORY	DATE 1958 JUNE	OBSERVED UNIVERSAL TIME START	END	MAX. PHASE	LOCATION APPROX. LAT.	MER. DIST.	McMATH PLAGE REGION	DURATION — MINUTES	IMPORTANCE	OBS. COND.	MEASUREMENTS TIME — U T	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Hα	MAX. INT. %	PROVISIONAL IONOSPHERIC EFFECT
CAPRI S	28	0853 E	0928 D		S19	E13	4622	35 D	1	1	0913	2.00	2.20			S-SWF
MEUDON	28	1250	1320		N18	E20	4623	30	1&				6.00			
SAC PEAK	28	1305 E	1332		N16	E17	4623	27 D	1			2.30			14	
SAC PEAK	28	1305 E	1320		S40	E04		15 D	1			2.30			14	
CAPRI S	28	1437 E	1454 D		S27	W18	4618	17 D	1	1	1441	2.00	2.20			
HUANCAYO	28	1438 E	1520	1439	S24	W22	4618	42 D	1	3	1440	2.10	2.60	2.00		
SAC PEAK	28	1555	1837	1632	S23	E03	4622	162	2			7.90			22	
USNRL	28	1557	1658 D	1637	S20	E04	4622	61 D	2	2	1641	8.36	9.16	1.00	89	
SAC PEAK	28	1837	1922	1845	S22	E07	4622	45	1			2.60			25	S-SWF
SAC PEAK	28	2030	2137	2035	N17	E13	4623	67	2			5.80			22	
HAWAII	28	2034	2058	2036	N18	E12	4623	24	2	2	2036	4.30	4.70			
TASHKENT	29	0314	0338		S15	W44	4618	24	1&							
LOCARNO	29	0856	0925		N18	E11	4623	29	1	2			1.00			
WENDEL	29	0900 E	0936 D		N11	E09	4623	36 D	1				2.00			
ONDREJOV	29	1509 E	1512 D		S18	W18	4622	3 D	1	1	1510			2.80		
MT WILSON	29	1510	1519		S17	W20	4622	9	1							
MT WILSON	29	1528	1537		N09	E01	4623	9	1							
MT WILSON	29	1734	1800		S17	W19	4622	26	1							
MCMATH	29	1742	1748	1744	S14	E70	4624	6	1	2	1744	.73	2.13		54	
SAC PEAK	29	1800	1900	1805	S19	W13	4622	60	1			2.60			18	
MT WILSON	29	1802	1818		S18	W14	4622	16	1							
HAWAII	29	2024	2036	2026	N25	E80	4630	12	1	3	2026	1.00	5.00			S-SWF
MT WILSON	29	2027	2041		N22	E80	4630	14	1							
MT WILSON	29	2118	2134		S18	W22	4622	16	1							
HAWAII	29	2128 E			S15	W22	4622		1	1	2128	2.80	3.10			
MT WILSON	30	0041	0051		S20	W28	4622	10	1							
MITAKA	30	0047 E	0100		S18	W27	4622	13 D	1	1	0047	3.80	4.64	1.45	120	
MITAKA	30	0255 E	0302 D		S12	W25	4622	7 D	1&	1	0255	5.67	6.41	2.88	125	
CAPRI S	30	0609 E	0621		N29	E74	4630	12 D	1&	2	0615	1.20	4.40			
ATHENS	30	0610	0623	0615	N29	E74	4630	13	2	4		2.00	6.30			S-SWF
SIMEIZ	30	0610	0626	0614	N30	E80	4630	16	2							
WENDEL	30	0614 E	0623 D		N28	E73	4630		1&				6.00			
ZURICH	30	0722	0731		N15	W44				2	0722		1.00			
ZURICH	30	0724	0734		N26	E23				2	0724		1.00			
STOCKHOLM	30	1018 E	1044 D		S10	E02	4624	26 D	1		1024	2.30	2.30			
WENDEL	30	1018	1044		S11	E03	4624		1				4.00			
ZURICH	30	1023	1045 D		S11	E03	4624	22 D	1	2	1023		5.00			
STOCKHOLM	30	1352 E	1413		N25	E67	4630	21 D	1		1354	1.40	3.90			
SAC PEAK	30	1715	1802	1717	N28	E90	4630	47	1			3.10			14	
MT WILSON	30	2345	0030		S15	W17	4622	45	1							

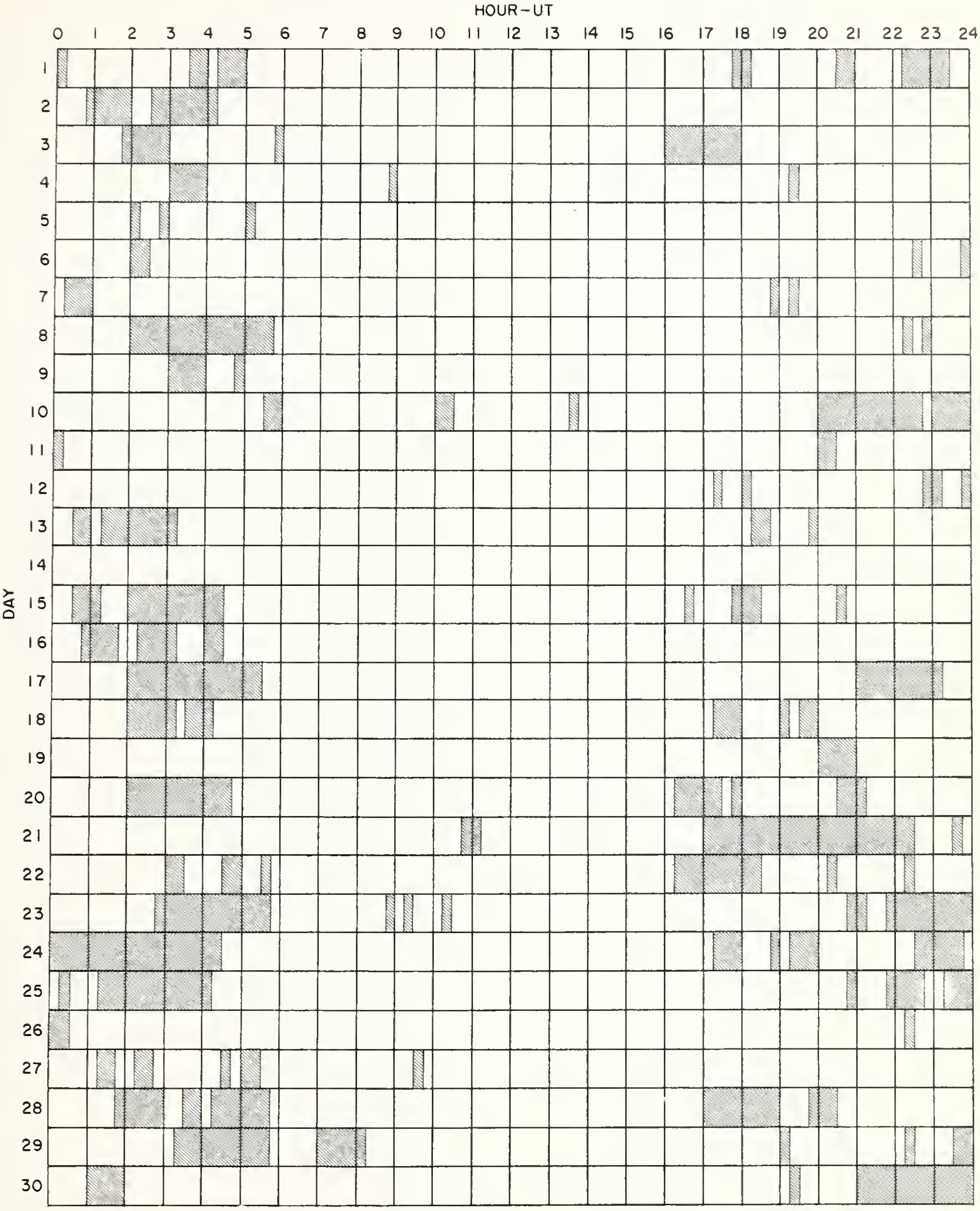
CAPRI S	ANACAPRI SWEDISH
KODAIKNL	KODAIKANAL
KRASNYA	KRASNYA PAKHRA
R O EDIN	ROYAL OBSERVATORY, EDINBURGH
R O HERST	GREENWICH ROYAL OBSERVATORY, HERSTMONCEUX
SAC PEAK	SACRAMENTO PEAK
SCHAUINS	SCHAUINSLAND
USNRL	UNITED STATES NAVAL RESEARCH LABORATORY
GOOD HOPE	ROYAL OBSERVATORY, CAPE OF GOOD HOPE

SAC PEAK: ALL VALUES IN MAX. INT. COLUMN ARE ARBITRARY UNITS (0-40), NOT PERCENT OF CONTINUOUS SPECTRUM.

E - LESS THAN
D - GREATER THAN
U - APPROXIMATE
& - PLUS
- - MINUS

INTERVALS OF NO FLARE PATROL OBSERVATIONS

JUNE 1958



COMMERCE - STANDARDS - BOULDER

Times indicated are accurate to the nearest 15 minutes.

Stations included:

Anacapri (Swedish)
Arcetri
Arosa
Athens
Climax
Dunsink
Greenwich Royal Observatory, Herstmonceux
Hawaii
Huancayo
Kodaikanal
Locarno
Meudon
Mitaka
Nizamiah
Ondrejov
Ottawa
Royal Observatory, Edinburgh
U.S. Naval Research Laboratory
Zurich

SUBFLARES NOTED AS FOLLOWS, DATE - UNIVERSAL TIME - COORDINATES

MAY 1958

SCHAUINS	01	0617	E	S14	E19
*SCHAUINS	01	0644	E	S13	E21
*CAPRI S	01	0825	E	S17	E20
UCCLE	01	0834		N19	E00
UCCLE	01	0928		S16	E20
*CAPRI S	01	1001	E	N26	E25
*NIZAMIAH	01	1007		N21	E19
*WENDELSTEIN	01	1013		S17	E20
*UCCLE	01	1013		S17	E20
*SCHAUINS	01	1015		S14	E19
*CAPRI S	01	1042	E	S17	E19
OTTAWA	01	1143		S30	E04
MCMATH	01	1144	E	S20	E05
WENDELSTEIN	01	1145		S28	E04
MCMATH	01	1216		N21	E00
MCMATH	01	1226		S16	E18
MCMATH	01	1232		S16	E23
MCMATH	01	1315		S16	E21
SAC PEAK	01	1322		S16	E17
MCMATH	01	1333		N21	W01
SCHAUINS	01	1333	E	S15	E21
MCMATH	01	1456		S17	E20
WENDELSTEIN	01	1706		N18	E12
MCMATH	01	1746		S15	E20
MCMATH	01	1750		N19	W05
MCMATH	01	1640		S18	E04
MCMATH	01	1651		N15	W02
MCMATH	01	2206	E	N37	W06
*HAWAII	01	2330		N18	E10
SAC PEAK	01	2330		N18	W04
SAC PEAK	01	2330		N09	W50
SAC PEAK	01	2335		N19	W09
ATHENS	02	0618		N14	W11
ATHENS	02	0715		S16	E08
WENDELSTEIN	02	0715		S17	E06
*WENDELSTEIN	02	0806		N31	W29
*WENDELSTEIN	02	0930		S16	E11
*MCMATH	02	1100		S17	W06
MCMATH	02	1102		N24	E07
*OTTAWA	02	1106		S18	E08
*UCCLE	02	1108		S17	E09
*UCCLE	02	1140		S17	E09
*MCMATH	02	1205		S17	E04
*MCMATH	02	1304		N33	W17
*OTTAWA	02	1305		N30	W15
*MEUDON	02	1305		N32	W16
MCMATH	02	1408		S15	E05
*OTTAWA	02	1417		N29	W35
*WENDELSTEIN	02	1417		N31	W32
MCMATH	02	1424		N33	W17
MCMATH	02	1424		N21	W01
MCMATH	02	1427		S23	W16
MCMATH	02	1438		N23	W13
MCMATH	02	1453		N19	W08
USNRL	02	1456	E	N20	W06
USNRL	02	1456	E	N23	E05
ZURICH	02	1500	E	N16	W07
*ZURICH	02	1500	E	N24	E08
MCMATH	02	1500		N13	W17
*MCMATH	02	1500		N30	W37
*WENDELSTEIN	02	1503		N31	W32
*MEUDON	02	1510		N30	W36
MCMATH	02	1558		N30	W37
*USNRL	02	1618		S16	W06
*USNRL	02	1631		S16	E03
*MCMATH	02	1654		N22	W13
*MEUDON	02	1655		N22	W16
*WENDELSTEIN	02	1655		N22	W10
MCMATH	02	1715	E	N14	W17
MCMATH	02	1715	E	S17	W47
MEUDON	02	1716		N17	W20
USNRL	02	1719		S20	W48
USNRL	02	1719		N15	W17
WENDELSTEIN	02	1720		S15	W45
MCMATH	02	1735		N30	W37
MCMATH	02	1738		N34	W19
MCMATH	02	1746		N21	W14
USNRL	02	1759		N27	W39
MCMATH	02	1807		S16	E02
MCMATH	02	1831		N21	W13
USNRL	02	1925		N23	E03
*USNRL	02	2001	E	N25	E04
MCMATH	02	2055		S17	E00
MCMATH	02	2118		N24	W17
*HAWAII	02	2154		N30	W38
*ATHENS	03	0553		N21	W22
ONDREJOV	03	0730	E	N19	W21
*MEUDON	03	0849		S16	E00
*WENDELSTEIN	03	0850		S16	E02
*WENDELSTEIN	03	0850		S14	W02
*WENDELSTEIN	03	0850		S16	E07
WENDELSTEIN	03	0853		S16	W36
ZURICH	03	0924		S16	W56
UCCLE	03	1102	E	N31	W52
WENDELSTEIN	03	1354		N30	W47
MEUDON	03	1450		N28	E62
*MEUDON	03	1615		S15	W07
*SAC PEAK	03	1615		S16	W12
SAC PEAK	03	1615		N01	E40
MEUDON	03	1629		S16	W55
SAC PEAK	03	1655		S17	W63
SAC PEAK	03	1722		S16	W11
SAC PEAK	03	1730		N24	W36
SAC PEAK	03	1730		N01	E38
SAC PEAK	03	1850		S16	W63
SAC PEAK	03	1940		N25	W58
SAC PEAK	03	1950		N20	W15
SAC PEAK	03	2030		S17	W15
SAC PEAK	03	2050		N21	W31
SAC PEAK	03	2050		N25	W56
SAC PEAK	03	2247		S22	W30
SAC PEAK	03	2247		S17	W15
SAC PEAK	03	2354	E	S16	W12
*ATHENS	04	0740		N19	W23
*SCHAUINS	04	0747	E	N19	W23
MEUDON	04	0856		S17	E70
UCCLE	04	0905		N24	W70
MEUDON	04	0913		S15	W20
UCCLE	04	0922		S16	W20
ZURICH	04	0944		S17	W24
ZURICH	04	0945		N02	E52
USNRL	04	1236		S27	W33
SAC PEAK	04	1237	E	S26	W32
SAC PEAK	04	1250		S15	W24
SAC PEAK	04	1335		S20	W20
USNRL	04	1335		S18	W18
MCMATH	04	1349	E	S07	W22
SAC PEAK	04	1345		N14	W45
SAC PEAK	04	1420		S15	W29
USNRL	04	1421		S15	W28
SAC PEAK	04	1425		S15	W14
SAC PEAK	04	1425		N02	E26
USNRL	04	1431		N02	E26
*SAC PEAK	04	1440		N22	W22
USNRL	04	1554	E	S19	W25
SAC PEAK	04	1555		S15	W28
MEUDON	04	1623		N20	W25
*SAC PEAK	04	1657		S15	W26
MEUDON	04	1750		N25	W15
SAC PEAK	04	1800		N25	W25
SAC PEAK	04	1907		S16	W17
SAC PEAK	04	1930		S16	W27
SAC PEAK	04	1947		N22	W44
HAWAII	04	2208	E	S16	W18
SAC PEAK	04	2221	E	S16	W17
SAC PEAK	04	2315		S15	W28
*SAC PEAK	04	2327		S16	W28
SAC PEAK	04	2340		S16	W28
ATHENS	05	0621		S20	W43
UCCLE	05	0642	E	S15	W32
UCCLE	05	0737		S15	W31
*UCCLE	05	0858		S17	W29
*UCCLE	05	0900		S16	W27
*UCCLE	05	0908		S12	W33
*WENDELSTEIN	05	0909		S16	W30
*UCCLE	05	0919		S16	W32
*CAPRI S	05	1021	E	S17	W30
WENDELSTEIN	05	1058		N22	W35
ARCETRI	05	1136	E	N20	W32
MCMATH	05	1255		N25	W34
*SAC PEAK	05	1255	E	S15	W27
MCMATH	05	1315		N15	E70
MCMATH	05	1324		S18	W20
SAC PEAK	05	1332		S19	W22
*CAPRI S	05	1333	E	S17	W21
MCMATH	05	1336		S15	W26
SAC PEAK	05	1337		S12	W27
*MCMATH	05	1351		S15	W36
SAC PEAK	05	1430		N22	E29
MCMATH	05	1439		S17	W47
SAC PEAK	05	1440		S19	W48
OTTAWA	05	1441	E	S20	W46
SAC PEAK	05	1500		S16	W37
MCMATH	05	1501		S16	W38
OTTAWA	05	1504		S16	W36
WENDELSTEIN	05	1505		S16	W35
SAC PEAK	05	1557		N01	E10
MCMATH	05	1559		N01	E10
SAC PEAK	05	1720		S16	W37
MCMATH	05	1804		S16	W30
*SAC PEAK	05	1815		S15	W40
*SAC PEAK	05	1912		N24	W47
OTTAWA	06	1231		N13	E59
SAC PEAK	06	2250		S15	W52
UCCLE	07	1057		N19	E45
*MCMATH	07	1214		N26	E03
MCMATH	07	1256		S26	W70
MCMATH	07	1341		S26	W70
MCMATH	07	1413		S15	W57
CAPRI S	07	1414	E	S14	W54
MCMATH	07	1612		N22	W02
MCMATH	07	1827		N11	W11
SAC PEAK	07	1827		N16	W07
HAWAII	07	2008		S13	W38
MCMATH	07	2048		N22	W07
MCMATH	07	2118		N23	W69
WENDELSTEIN	08	0746		N11	E33
ZURICH	08	0750	E	N08	E35
WENDELSTEIN	08	1102		N27	W80
MCMATH	08	1149	E	S15	W69
*MCMATH	08	1149	E	S21	E25
WENDELSTEIN	08	1153		S15	W69
*MCMATH	08	1216		N08	E04
WENDELSTEIN	08	1223		N25	W82
*MCMATH	08	1233		N05	W26
WENDELSTEIN	08	1234		N04	W26
WENDELSTEIN	08	1622		N15	E17
SAC PEAK	08	1742		N34	W80
MCMATH	08	1926		N19	E18
USNRL	08	1934		N19	E17
ONDREJOV	09	0654	E	N16	E70
MCMATH	09	1220		N16	E10
USNRL	09	1233		N18	E10
USNRL	09	1240		N10	W11
SAC PEAK	09	1245	E	N17	E10
SAC PEAK	09	1355		N16	E06
MCMATH	09	1402		N04	W41
*USNRL	09	1403		N18	E08
*MCMATH	09	1404		N16	E10
*ZURICH	09	1415	E	N16	E09
USNRL	09	1434		S23	E90
WENDELSTEIN	09	1436		S19	W69
USNRL	09	1437		S17	E70
ZURICH	09	1438		S17	E73
MCMATH	09	1446		N25	W72
SAC PEAK	09	1515		S17	E70
SAC PEAK	09	1600		S15	E69
USNRL	09	1613	E	S15	E67
MCMATH	09	1625		N08	W02
USNRL	09	1705	E	S20	E77
MCMATH	09	1725		N24	W29
USNRL	09	1905		S16	E51
SAC PEAK	09	2215		N27	W33
WENDELSTEIN	10	0719		N10	W09
WENDELSTEIN	10	0920		S17	E67
OTTAWA	10	1117		N39	W17
USNRL	10	1225		S24	E73
SAC PEAK	10	1233		N27	W37
SAC PEAK	10	1235		N12	W29
OTTAWA	10	1239		N25	W35
WENDELSTEIN	10	1241		N25	W34
WENDELSTEIN	10	1241		N11	W23
USNRL	10	1241	E	N20	W32
WENDELSTEIN	10	1243		N12	W26
SAC PEAK	10	1407		S19	E70
SAC PEAK	10	1412		N26	W37
OTTAWA	10	1415		S17	E68
WENDELSTEIN	10	1415		S19	E72
USNRL	10	1441		S19	E68
SAC PEAK	10	1502		N30	W40
USNRL	10	1509		S18	E57
SAC PEAK	10	1515		S21	E67
USNRL	10	1518		S21	E67
*SAC PEAK	10	1710		S21	E68
SAC PEAK	10	1820		S17	E53
*SAC PEAK	10	2010		S23	E66
MCMATH	10	2020		N25	W40
SAC PEAK	10	2025		N25	W41
MCMATH	10	2035		S18	E50
SAC PEAK	10	2035		S18	E63
MCMATH	10	2053		S13	E21
SAC PEAK	10	2135		S19	E50
MCMATH	10	2135		S20	E50
SAC PEAK	10	2155		N24	W47
MCMATH	10	2215		N10	W22
SAC PEAK	10	2215		N09	W22
WENDELSTEIN	11	0816		N08	W26
WENDELSTEIN	11	0937		S21	E46
MCMATH	11	1204		S08	E31
SAC PEAK	11	1350		N13	E17
WENDELSTEIN	11	1355		N11	E14
MCMATH	11	1400		N12	E19
SCHAUINS	11	1405	E	N12	E32
*SAC PEAK	11	1420		S19	E51
*SCHAUINS	11	1432	E	S16	E54
SAC PEAK	11	1830		S15	E39
SAC PEAK	11	2055		S19	E48
SAC PEAK	11	2105	O	N12	W47
SAC PEAK	11	2252		S22	E40
SAC PEAK	11	2315		S22	E69
*CAPRI S	12	0804	E	S19	E42
*WENDELSTEIN	12	0810		S19	E43
*ONDREJOV	12	0812	E	S21	E43
WENDELSTEIN	12	0915		S23	E59
*CAPRI S	12	1058	E	S19	E40
MCMATH	12	1131		S20	E32
MCMATH	12	1146		S20	E32
USNRL	12	1208		N03	W87
USNRL	12	1242		S19	E42
USNRL	12	1307		S07	E90
MCMATH	12	1334		S19	E30
USNRL	12	1339		S18	E30
OTTAWA	12	1340		S17	E30
USNRL	12	1354		N09	W44
USNRL	12	1401		S18	E30
MCMATH	12	1402		S19	E30
OTTAWA	12	1402		S17	E30
* CAPRI S	12	1405		S19	E38
* MCMATH	12	1405		S19	E40
* R O EDIN	12	1406	E	S19	E40
MCMATH	12	1437		S08	E15
USNRL	12	1439		S06	E16
USNRL	12	1450		S06	E90
MCMATH	12	1457		N22	W07
OTTAWA	12	1458		N23	W07
USNRL	12	1500		N23	W08
MCMATH	12	1545		S20	E29
USNRL	12	1548		S20	E30
USNRL	12	1639		S05	E90
USNRL	12	1701		N08	W45
USNRL	12	1711		N08	W45
MCMATH	12	1714		S08	E16
MCMATH	12	1749		S17	E30
MCMATH	12	1800		N13	W62
USNRL	12	1803		N12	W63
MCMATH	12	1943		N07	W45
USNRL	12	1945		N05	W46
MCMATH	12	2041		S08	W32
MCMATH	12	2205		S08	W47
* HAWAII	12	2352		S22	E31
CAPRI S	13	0611	E	S21	E22
ATHENS	13	0612		S19	E22
ATHENS	13	0619		S08	W40
ATHENS	13	0717		S16	E21
UCCLE	13	0826	E	S20	E37
UCCLE	13	0858		S22	E36
UCCLE	13	0921	E	S21	E36
UCCLE	13	1031	E	N13	W52
WENDELSTEIN	13	1142		S18	E17
UCCLE	13	1144	E	S16	E19
USNRL	13	1231		S05	E79
WENDELSTEIN	13	1233		S22	E18
SAC PEAK	13	1234	E	S20	E18
SAC PEAK	13	1234	E	S05	E78
SAC PEAK	13	1410		N15	W75
USNRL	13	1413		N16	W85
SAC PEAK	13	1530		S07	E78
* SAC PEAK	13	1617		S18	E16
SAC PEAK	13	1620		S08	E77
SAC PEAK	13	1745		S08	E75
SAC PEAK	13	1750		S18	W45
SAC PEAK	13	1917		S07	E73
SAC PEAK	13	1935		S06	W45
SAC PEAK	13	2037		S07	E73
SAC PEAK	13	2132		S09	E77
SAC PEAK	13	2237		N19	W45
SAC PEAK	13	2252		S09	E77
WENDELSTEIN	14	0841		S14	E05
WENDELSTEIN	14	1230		S23	E17
SAC PEAK	14	1352		S22	E17
USNRL	14	1353	E	S22	E18
SAC PEAK	14	1400		S18	E05
SAC PEAK	14	1515	U	N16	W71
SAC PEAK	14	1557	E	S07	W13
USNRL	14	1612		N37	W75
SAC PEAK	14	1615		N40	W80
MCMATH	14	1619	E	N40	W80
SAC PEAK	14	1702		S15	E02
*SAC PEAK	14	1800		N40	E85
*MCMATH	14	1800	E	N35	E90
USNRL	14	1840		S19	E03
SAC PEAK	14	1845		S17	E03
SAC PEAK	14	1907		N39	E80
*USNRL	14	1928		S08	E60
*MCMATH	14	1929		S10	E59
SAC PEAK	14	2020		S23	E15
SAC PEAK	14	2055		N40	E80
SAC PEAK	14	2152		S08	E63
SAC PEAK	14	2200		S22	E14
SAC PEAK	14	2207		N19	E32
SAC PEAK	14	2252		S23	E12
SAC PEAK	14	2340		S23	E10
CAPRI S	15	1126	E	N42	E71
SAC PEAK	15	1340	E	N38	E68
SAC PEAK	15	1415		S23	E02
SAC PEAK	15	1442		N17	W69
SAC PEAK	15	1530		N38	E68
USNRL	15	1558	E	N40	E70
SAC PEAK	15	1707		N37	E68
SAC PEAK	15	1732		S19	W06
SAC PEAK	15	1805		N39	E67
MCMATH	15	2002		S21	W07
MCMATH	15	2126		S21	W02
MCMATH	15	2130		S04	W34
CAPRI S	16	1157	E	N40	E56
MCMATH	16	1201		N38	E55
MCMATH	16	1310		N40	E54
CAPRI S	16	1319	E	N40	E5[illegible]
USNRL	16	1625		N38	E53
USNRL	16	1802		N23	E90

*Related as flare of importance ≥1 by other observatories (See CRPL-F 167 Part B).

SUBFLARES NOTED AS FOLLOWS, DATE - UNIVERSAL TIME - COORDINATES

MAY 1958

SAC PEAK	16	1825		N22	E90
*USNRL	16	1851		N24	E90
MCMATH	16	2056		S12	W28
MCMATH	17	1430		S13	W37
*SAC PEAK	17	1505		S19	W38
*MCMATH	17	1507		S13	W38
*SAC PEAK	17	1522		S18	W38
*MCMATH	17	1524		S13	W38
MCMATH	17	1554	E	S13	W38
SAC PEAK	17	1557		S19	W40
MCMATH	17	1601		S21	W38
SAC PEAK	17	1622		S21	W26
MCMATH	17	1638		S13	W38
*MCMATH	17	1652		S13	W36
*SAC PEAK	17	1740		S17	W35
*SAC PEAK	17	1852		S20	W40
MCMATH	17	1937		N38	E38
SAC PEAK	17	1940		N22	E80
MCMATH	17	2010		S14	W40
CAPRI S	18	0650	E	N38	E32
*CAPRI S	18	1140	E	N19	W31
*USNRL	18	1225		N39	E38
MCMATH	18	1239		N40	E34
*USNRL	18	1310		S16	W37
SAC PEAK	18	1402		N41	E32
USNRL	18	1515		S18	W43
SAC PEAK	18	1516		S19	W43
*SAC PEAK	18	1535		S17	W32
SAC PEAK	18	1600		S21	W76
SAC PEAK	18	1615		S14	W33
SAC PEAK	18	1620		N39	E31
SAC PEAK	18	1622		N30	W76
SAC PEAK	18	2149	E	S30	W80
SAC PEAK	18	2214	E	S18	W57
SAC PEAK	18	2234	E	N30	W80
SAC PEAK	18	2239		N25	E02
SAC PEAK	18	2254	U	N30	W80
SAC PEAK	18	2311		S07	E06
SCHAUINS	19	1028	E	S23	E16
MCMATH	19	1130		N23	W45
UCCLE	19	1258		N19	W45
UCCLE	19	1322		N19	W45
SAC PEAK	19	1322		N19	W45
SAC PEAK	19	1325		N29	W05
MEUDON	19	1327		N00	E00
SAC PEAK	19	1330		N13	E67
SAC PEAK	19	1400		N20	W46
UCCLE	19	1402		N19	W47
SAC PEAK	19	1412		N23	E47
MCMATH	19	1437		N23	W47
SCHAUINS	19	1448	E	N12	W41
MCMATH	19	1508		N23	W47
SAC PEAK	19	1510		N20	W46
UCCLE	19	1511		N19	W48
SAC PEAK	19	1540		N20	W47
UCCLE	19	1514		N19	W49
SAC PEAK	19	1620		S15	W70
UCCLE	19	1712		S19	W45
UCCLE	19	1727		S20	W55
UCCLE	19	1744		S18	W45
SAC PEAK	19	1750		S19	W71
MCMATH	19	1750		S16	W68
SAC PEAK	19	2337	U	S20	E17
SAC PEAK	19	2340		N22	E90
*WENDELSTEIN	20	0816		N20	E44
*UCCLE	20	0823		S17	W77
SAC PEAK	20	1247	E	S13	E38
SAC PEAK	20	1247		N24	W20
SAC PEAK	20	1322		S08	W90
SAC PEAK	20	1345		S13	E36
SAC PEAK	20	1350		N40	E09
USNRL	20	1743		N25	W21
USNRL	20	1800	E	N27	W20
USNRL	20	1856		N09	W21
USNRL	20	1914		N08	E20
SAC PEAK	20	1940		N22	E37
MCMATH	20	1940		N20	E36
USNRL	20	1944		N21	E37
SAC PEAK	20	2115		N25	E35
SAC PEAK	20	2137		N19	E18
SAC PEAK	20	2222		S19	E78
SAC PEAK	20	2310		N26	W25
WENDELSTEIN	21	0816		N20	W71
*CAPRI S	21	1120	E	N09	E11
*MCMATH	21	1124	E	N09	E12
SAC PEAK	21	1257		N10	E09
USNRL	21	1259		N10	E10
SAC PEAK	21	1315		N05	E05
USNRL	21	1430		N09	E09
USNRL	21	1432		N24	W32
SAC PEAK	21	1457		N17	W75
USNRL	21	1458		N15	W71
USNRL	21	1624		N10	E08
SAC PEAK	21	1625		N10	E08
SAC PEAK	21	1645		N24	E39
USNRL	21	1648		N25	E39
SAC PEAK	21	1657		N09	E08
MCMATH	21	1659		N09	E09
USNRL	21	1659		N09	E09
USNRL	21	1730		N10	E06
SAC PEAK	21	1732		N10	E07
USNRL	21	1814		S06	W27
USNRL	21	1819		N10	E08
SAC PEAK	21	1825		N09	E09
SAC PEAK	21	1917		N10	E08
MCMATH	21	1918		N10	E09
USNRL	21	1918		N10	E08
SAC PEAK	21	2030		N19	W80
MCMATH	21	2105		N25	W36
SAC PEAK	21	2135		N39	W08
SAC PEAK	21	2150		N19	W80
MCMATH	21	2153	E	N39	W07
SAC PEAK	21	2210		S08	W33
SAC PEAK	21	2252		N19	W80
UCCLE	22	1017		N27	W42
USNRL	22	1214		N08	W02
USNRL	22	1238		N08	W03
SAC PEAK	22	1257		N10	E09
*USNRL	22	1310		N09	W03
*USNRL	22	1355		N09	W03
SAC PEAK	22	1415		S13	E10
USNRL	22	1525		S22	E64
USNRL	22	1532		S13	E10
SAC PEAK	22	1535		S23	E67
USNRL	22	1545		N09	W04
USNRL	22	1608		N25	W50
SAC PEAK	22	1642		S15	E09
USNRL	22	1645		S15	E10
SAC PEAK	22	1710		N22	E12
USNRL	22	1713		N22	E12
USNRL	22	1746		N24	E11
SAC PEAK	22	1835		N21	E11
USNRL	22	1839	E	N22	E12
SAC PEAK	22	1842		N22	E12
USNRL	22	1923		N26	E90
USNRL	22	1931		N27	W47
SAC PEAK	22	1932		N26	E90
SAC PEAK	22	1942		N12	E05
USNRL	22	1945		N12	E05
USNRL	22	1948		N20	E90
SAC PEAK	22	2002		N27	E89
SAC PEAK	22	2005		S25	E70
SAC PEAK	22	2057		N21	E09
SAC PEAK	22	2102		N05	E37
MCMATH	22	2104		N05	E37
*SAC PEAK	22	2137		N22	E89
MCMATH	22	2139		N10	W06
SAC PEAK	22	2140		N09	W06
MCMATH	22	2144		S23	W34
SAC PEAK	22	2145		S25	W35
SAC PEAK	22	2200		N34	E66
SAC PEAK	22	2235		S25	W36
MCMATH	22	2235		S23	W34
SAC PEAK	22	2242		N22	E89
SAC PEAK	22	2242		N09	W07
MCMATH	22	2243	E	N10	W06
SAC PEAK	22	2302		N22	E89
MCMATH	23	1130		S25	W51
*SAC PEAK	23	1300		S24	W44
SAC PEAK	23	1305		S16	E89
MCMATH	23	1310		S22	W43
WENDELSTEIN	23	1345		S24	W43
*SAC PEAK	23	1407		S22	W48
SAC PEAK	23	1410		N22	E75
SAC PEAK	23	1425		S13	E89
SAC PEAK	23	1430		S24	W44
MCMATH	23	1607		S22	W48
OTTAWA	23	1607		S24	W45
SAC PEAK	23	1607		S24	W47
SAC PEAK	23	1720		N23	E80
SAC PEAK	23	1722		S14	E88
OTTAWA	23	1725		S14	E78
SAC PEAK	23	1840		N20	E69
USNRL	23	1841		S25	W47
USNRL	23	1842		N21	E69
*SAC PEAK	23	1852		N20	W07
SAC PEAK	23	1915		S26	W57
USNRL	23	1917		S26	W55
MCMATH	23	1920		S24	W56
SAC PEAK	23	2150		N26	E80
SAC PEAK	23	2150	E	S25	W50
MCMATH	23	2230		S22	W50
SAC PEAK	23	2231	E	S25	W50
*SAC PEAK	23	2305		N23	E72
SAC PEAK	23	2325		N09	E45
WENDELSTEIN	24	1020		N10	E38
OTTAWA	24	1158	E	S26	W55
*OTTAWA	24	1204	E	N13	W16
*AROSA	24	1205		N13	W18
SAC PEAK	24	1407		N20	E57
MCMATH	24	1450		S16	E35
*SAC PEAK	24	1455		S15	E35
*AROSA	24	1502		S15	E35
*SAC PEAK	24	1532		N20	W14
SAC PEAK	24	1540		N09	W32
MCMATH	24	1545		N10	W31
SAC PEAK	24	1547		N20	E57
*SAC PEAK	24	1602		N20	W14
MCMATH	24	1640		S22	W57
SAC PEAK	24	1852		S24	W60
MCMATH	24	1856		S22	W58
SAC PEAK	24	1907		S13	W19
MCMATH	24	1908		S11	W19
MCMATH	24	1933		S11	W19
MCMATH	24	2005		S16	E50
SAC PEAK	24	2042	E	S24	W63
SAC PEAK	24	2047		S15	E30
SAC PEAK	24	2117		N08	E13
WENDELSTEIN	25	0538		N08	E09
*WENDELSTEIN	25	0636		S15	E59
ONDREJOV	25	0651	E	N10	W28
WENDELSTEIN	25	0654		N12	W27
WENDELSTEIN	25	0822		N24	E20
WENDELSTEIN	25	0824		S22	W65
ONDREJOV	25	0946	E	S28	E01
ONDREJOV	25	0957	E	N06	E04
SAC PEAK	25	1347		S13	E56
SAC PEAK	25	1430		S23	W70
SAC PEAK	25	1447		S13	E73
SAC PEAK	25	1505		N07	E05
MCMATH	25	1507		N06	E05
MCMATH	25	1716		N13	W32
SAC PEAK	25	1720		N10	W45
MCMATH	25	1721		N10	W44
SAC PEAK	25	1815		S22	E63
SAC PEAK	25	1922	E	N12	W49
*WENDELSTEIN	26	0739		S15	E41
*ONDREJOV	26	0745	E	S15	E39
WENDELSTEIN	26	0827		N19	E39
*WENDELSTEIN	26	0913		N11	W52
MCMATH	26	1130		S27	W46
OTTAWA	26	1133		S30	W44
OTTAWA	26	1155		N07	W56
USNRL	26	1250	E	N09	W58
ONDREJOV	26	1449		N13	W58
*MCMATH	26	1500		N12	W57
*WENDELSTEIN	26	1501		N11	W54
SAC PEAK	26	1532		N12	W58
CAPRI S	26	1535		N09	W60
SAC PEAK	26	1607		N11	W59
MCMATH	26	1613		N12	W57
USNRL	26	1616		N10	W57
MCMATH	26	1712		N12	W57
*SAC PEAK	26	1730		N42	W77
USNRL	26	1811		N10	W58
MCMATH	26	1907		N14	W60
USNRL	26	1907		N11	W60
MCMATH	26	1945		S35	E62
MCMATH	26	1950		S17	E32
MCMATH	26	2145		N10	W66
UCCLE	27	1055	E	N11	W71
USNRL	27	1201	E	N18	E18
USNRL	27	1244		N18	E17
USNRL	27	1303		S16	W06
OTTAWA	27	1409		S15	W05
*SAC PEAK	27	1410		N19	E15
*USNRL	27	1413		N19	E15
SAC PEAK	27	1437		N18	E16
USNRL	27	1437		N19	E05
OTTAWA	27	1439		N15	E15
SAC PEAK	27	1535		N19	E15
USNRL	27	1538		N20	E14
SAC PEAK	27	1705		N17	E38
SAC PEAK	27	1712		N18	E15
SAC PEAK	27	1950		N09	W73
USNPL	27	1951		N10	W80
SAC PEAK	27	2100		N18	E35
SAC PEAK	27	2320		N28	W46
SAC PEAK	27	2342		N18	E34
HAWAII	27	2346		N19	E32
UCCLE	28	0833		S13	E60
*USNRL	28	1507		S17	E13
*SAC PEAK	28	1510	U	S17	E14
USNRL	28	1637		N25	E28
MCMATH	28	1643		S16	E27
SAC PEAK	28	1825		S16	E27
MCMATH	28	1829	E	N26	E27
SAC PEAK	28	1830		N28	E27
UCCLE	29	0946	E	N23	E20
SCHAUINS	29	0954		S14	E41
CAPRI S	29	1000		N25	E39
*SCHAUINS	29	1023		S14	E06
*ONDREJOV	29	1046	E	S16	E04
SAC PEAK	29	1415		N27	E38
SAC PEAK	29	1417		N47	E33
SAC PEAK	29	1447		S14	E38
*USNRL	29	1453		S14	E39
*ARCETRI	29	1456	E	S15	E39
*SAC PEAK	29	1502		N23	E33
*ONDREJOV	29	1514		S15	E31
*SAC PEAK	29	1520		S15	E39
*USNRL	29	1522		S15	E39
*ONDREJOV	29	1524		S15	E30
*CAPRI S	29	1532	E	S18	E01
*CAPRI S	29	1532		N20	E01
MCMATH	29	1547		S16	E37
SAC PEAK	29	1732		S17	E37
SAC PEAK	29	1736		S15	E36
USNRL	29	1737	E	S15	E38
CLIMAX	29	1745		S16	E01
SAC PEAK	29	1817		S16	E36
SAC PEAK	29	1817		S15	E33
USNRL	29	1930		S15	E39
SAC PEAK	29	1931		S22	E07
USNRL	29	2002		S15	E27
SAC PEAK	29	2050		S15	E37
SAC PEAK	29	2132	U	N23	W07
SAC PEAK	29	2205		N16	W10
*CAPRI S	30	1059		S14	E28
MEUDON	30	1132		N22	E18
USNRL	30	1340		S11	W09
SAC PEAK	30	1340		S12	W08
OTTAWA	30	1341	E	S11	W07
UCCLE	30	1447	E	S13	W03
*SAC PEAK	30	1512		S16	W13
*CAPRI S	30	1513		S15	W09
*FRO HERST	30	1531		S15	W10
SAC PEAK	30	1707	E	N17	W21
CLIMAX	30	1729		N19	E14
*CAPRI S	31	0600	E	N14	W30
MEUDON	31	0755		N22	W35
UCCLE	31	0857	E	N24	W22
UCCLE	31	0924	E	S28	W22
UCCLE	31	0953	E	S13	W31
WENDELSTEIN	31	1057	E	S13	W23
*CAPRI S	31	1245		N18	W40
SAC PEAK	31	1311		N18	W33
SAC PEAK	31	1335		N16	W35
*USNRL	31	1355		N30	E24
USNRL	31	1426		N23	W31
SAC PEAK	31	1427		N28	W08
CAPRI S	31	1450		N28	W10
SAC PEAK	31	1453		N25	W20
SAC PEAK	31	1547		N16	W36
SAC PEAK	31	1935		N20	W34
SAC PEAK	31	2135		N22	W34
SAC PEAK	31	2342		N22	W30

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OBSERVATORY	DATE 1957 AUG	OBSERVED UNIVERSAL TIME START	END	MAX. PHASE	LOCATION APPROX. LAT.	MER. DIST.	McMATH PLAGE REGION	DURATION — MINUTES	IMPORTANCE	OBS. COND.	MEASUREMENTS TIME — U T	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Hα	MAX. INT. %	PROVISIONAL IONOSPHERIC EFFECT
KYOTO	01	0209 E	0225 D	0212	S32	E16	4082	16 D	1		0212				120	Slow S-SWF
KYOTO	01	0210 E	0300 D	0218	S30	E11	4082	50 D	1		0218				120	
TASHKENT	01	0302 E	0447		N34	W04	4086	105 D	1+			8.50		2.80	310	
TASHKENT	01	0424	0456	0434 U	N13	W72	4075	32	1			2.12		3.60	300	
ABASTUMANI	01	0516 E	0818 D	0545 U	N10	W84	4075	182 D	1+			.87		1.70	280	
ABASTUMANI	01	0516 E	0818 D	0607 U	N34	W07	4086	182 D	2+			4.80			500	
ABASTUMANI	01	0525 E	0818 D	0747 U	S31	E12	4082	173 D	1			1.30		1.60	250	
TASHKENT	01	0542	0604 D	0543 U	N13	W73	4075	22 D	1			1.42		1.50	290	
SIMEIZ	01	0600 E	0700 D		N28	E46	4083	60 D	1+			4.48		2.20		
CAPRI G	01	0602	0639		N34	W05	4086	37	1+				4.00			
KYOTO	01	0609 E	0620 D		N32	W03	4086	11 D	1		0609	3.40			100	
CAPRI G	01	0749	0757		S31	E14	4082	8	1				4.00			
MEUDON	01	0945	1045		S30	E08	4082	60	1+							
CAPRI G	01	0958 E	1025 D		S30	E08	4082	27 D	2				8.00			
KYOTO	01	2158 E			N34	W12	4086		1		2158	3.40				
SYDNEY	02	0057	0115	0102	N19	W92				3	0102	.50				S-SWF
SYDNEY	02	0238	0247	0239	S25	W12	4082	9	1	3	0239	2.00	2.00			
SYDNEY	02	0348	0402	0355	N19	W92				3	0355	.50				
TASHKENT	02	0455	0510		S30	EC1	4082	15	1			3.19		2.80	280	
SIMEIZ	02	0724	0730	0726	S31	E03	4082	6	1			1.68				
CAPRI G	02	0844	0855		S25	W15	4082	11	1				3.00			
CAPRI G	02	1056	1109		S31	W03	4082	13	1				4.00			
KIEV	02	1101 E	1120	1109 U	S33	W02	4082	19 D	1			1.44			260	
KIEV	02	1208	1215 D	1209 U	N27	E34	4083	7 D	1+			.90			300	
CAPRI G	02	1220 E			S33	W04	4082		1				4.00			
MEUDON	02	1327	1400 D		N33	W18	4086	33 D	1							
KIEV	02	1341 E	1411	1341 U	N34	W19	4086	30 D	1			.90			250	
KIEV	02	1359	1410	1402 U	N08	E60	4089	11	2-			1.60			370	S-SWF G-SWF
MEUDON	02	1637	1715		N32	W20	4086	38	1							
TASHKENT	03	0308 E	0344 D	0325 U	N09	E49	4089	36 D	1			3.20		2.80	270	
KYOTO	03	0332 E	0336		N09	E53	4089	4 D	1		0332				120	
TASHKENT	03	0455	0512	0501 U	S29	W10	4082	17	1			3.54		3.30	300	
CAPRI G	03	0500 E	0534		S31	W15	4082	34 D	2				9.00			
ABASTUMANI	03	0502 E	0632 D	0512	S32	W11	4082	90 D	1+			3.49		1.70	240	
ABASTUMANI	03	0512	0632 D	0600	N12	E50	4089	80 D	1+			2.62				
CAPRI G	03	0530 E	0636		N10	E47	4089	66 D	2				7.00			
KRASNYA	03	0604 E	0630	0607 U	N08	E50	4089	26 D	1	2	0607	2.25	1.74		56	
NIZMIR	03	0604 E	0630 D	0607 U	N06	E50	4089	26 D	1			2.30			160	
MEUDON	03	0817	0935		S33	W17	4082	78	1+							
CAPRI G	03	0818	0907	0835	S29	W13	4082	49	1+				4.00			
NIZMIR	03	0834	0920 D	0919	S30	W19	4082	46 D	1			1.50			180	
MOSCOW	03	1007 E	1255 D	1119 U	N08	E50	4089	168 D	1+			6.11		2.41	200	
CAPRI G	03	1008 E	1018 .		N28	E14	4083	10 D	1				4.00			
CAPRI G	03	1008 E	1020 D		S25	W25	4082	12 D	1+				4.00			
KIEV	03	1138	1145 D	1140 U	N28	E06	4083	7 D	1+			2.00			330	
MEUDON	03	1155	1300		S17	W13	4088	65	2							
KIEV	03	1157	1222 D	1205 U	S16	W13	4088	25 D	2			3.60			330	
CAPRI G	03	1158 E	1239		S15	W10	4088	41 D	2				8.00			
KIEV*	03	1159 E	1210 D		S18	W17	4088	11 D	1			1.50				
KIEV	03	1204 E	1217	1241 U	S13	W16	4088	13 D	1			1.80			220	

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CAPRI G	03	1207	1229		S31	W14	4082	22	1+				5.00			
KIEV	03	1207	1222 D	1215 U	S31	W18	4082	15 D	2			3.60			430	
MEUDON	03	1210	1245		S30	W18	4082	35	2-							
MEUDON	03	1310	1340		N26	E13	4083	30	1							
CAPRI G	03	1328 E	1342		N27	E19	4083	14 D	2				7.00			
CAPRI G	03	1433 E	1442		S31	W15	4082	9 D	1+				5.00			
CAPRI G	03	1435	1451		N34	W30	4086	16	1				4.00			
CAPRI G	03	1436	1446		N09	E48	4089	10	1				4.00			
KYOTO	03	2312 E			S21	W33	4082		1		2312	1.70				
KYOTO	03	2312 E			N33	E32	4085		1		2312	5.80				
ABASTUMANI	04	0537 E	0804 D		N09	E37	4089	147 D	1+			2.62		1.70	380	
SIMEIZ	04	0631	0740	0734 U	N28	E35	4096	69	1			2.18		1.20	180	
MEUDON	04	0730	0750		N28	E34	4085	20	1							
CAPRI G	04	0731	0751		N28	E37	4085	20	1+				5.00			
ABASTUMANI	04	0734 F	0804	0734	N30	E37	4085	30 D	2-			2.62			360	
ABASTUMANI	04	0738	0804	0743	S33	W27	4082	26	1			.87		1.80	380	
CAPRI G	04	0920 E	1003		S26	E67	4090	43 D	1+				5.00			
CAPRI G	04	1410 E	1416		N34	W46	4086	6 D	1				4.00			
CAPRI G	04	1546 E	1552		S34	W26	4082	6 D	1				4.00			
CAPRI G	04	1620 E	1628		S28	W49	4082	8 D	1				3.00			G-SWF
CAPRI G	04	1635 E	1640 D		N26	E03	4083	5 D	1				4.00			
SYDNEY	05	0340	0352	0342	S30	W48	4082	12	1	3	0342	1.00	2.00			
CAPRI G	05	0804	0817		S27	W59	4082	13	1				2.00			
CAPRI G	05	1617 E	1628		S27	W62	4082	11 D	1				3.00			
CAPRI G	06	0603	0612		S23	W61	4082	9	1				4.00			
CAPRI G	06	0613	0621		S11	E07		14	1				2.00			
CAPRI G	06	0656	0704		N26	W18	4083	8	1				3.00			
NIZMIR	06	0657 E	0701	0658	N27	W18	4083	4 D	1			1.10			200	
CAPRI G	06	1053	1059		S31	W48	4082	6	1				3.00			
KIEV	06	1054 E	1058	1056 U	S32	W48	4082	4 D	1+			2.00			280	
CAPRI G	06	1132	1147		S39	E77	4094	15	1				3.00			
CAPRI G	06	1411 L	1422		S39	E75	4094	11 D	1				3.00			
CAPRI G	07	0657	0724	0704	N28	W38	4083	27	1+				5.00			
SIMEIZ	07	0700 E	0809 D		N27	W41	4083	69 D	1+			6.11		2.40	150	
MOSCOW	07	0738 L	1159 D	0759 U	N28	W42	4083	-61 D	2			7.64		2.00	150	
CAPRI G	07	0741	0757	0749	N26	W40	4083	16	1				4.00			
KIEV	07	1110 E	1119	1110 U	N14	W04	4089	9 D	1			1.70			210	
MOSCOW	07	1111 E	1116 D		N14	W02	4089	5 D	1			3.57		1.90	130	G-SWF
CAPRI G	07	1112	1122		N13	W04	4089	10	1				4.00			
KIEV	07	1118	1125	1120 U	N28	W41	4083	7 D	1			1.20			220	
CAPRI G	07	1406	1441		N28	W46	4083	35	1				4.00			
CAPRI G	07	1550 E	1607 D		S14	E51	4090	17 D	1				4.00			
TASHKENT	08	0519	0557	0524 U	N27	W54	4083	38	1+			4.25		4.10	270	
CAPRI G	08	0533 L	0604		N25	W55	4083	31 D	1+				5.00			
SIMEIZ	08	0611	0633	0614	N12	W16	4089	22	1+			4.80		2.00	200	
ABASTUMANI	08	0611 E	0648 D	0616 U	N12	W16	4089	37 D	2			4.36			480	
CAPRI G	08	0613	0644	0621	N13	W15	4089	31	2				11.00			
CAPRI G	08	0641	0711		N29	W43	4083	30	1				4.00			
CAPRI G	08	0803	0816		S08	E90	4099	13	1				3.00			

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ABASTUMANI	08	0802 E	0816	0805 U	S14	E46	4093	14 D	1			1.75			180	
CAPRI G	08	0803	0817		S13	E44	4093	14	1&				5.00			
CAPRI G	08	1121	1211	1135	N29	W54	4083	50	2&				12.00			Slow S-SWF
CAPRI G	08	1327 E	1337		N26	W56	4083	10 D	1				2.00			
SYDNEY	09	0204	0215 D	0208	N34	W56	4083	11 D	1	2	0208	.75	2.50			S-SWF
SYDNEY	09	0210	0215 D	0213	N26	W62	4083	5 D	1	2	0213	1.00	2.50			
TASHKENT	09	0212 E	0237	0214 U	N27	W64	4083	25 D	1&			4.60		3.50	460	
ABASTUMANI	09	0619	0720	0629 U	S09	E75	4099	61	2			1.75		2.30	350	Slow S-SWF
CAPRI G	09	0621	0652	0629	S08	E75	4099	31	2	2	0630		10.00			
CAPRI G	09	0913	0924		S04	E71	4099	14	1	1	0915		5.00			
MOSCOW	09	1115 E	1122 D		N23	W68	4083	7 D	1			2.04		2.20	140	
ABASTUMANI	10	0642	0705 D	0645	N24	W81	4083	23 D	1&			.87		2.10	350	
KRASNYA	10	0643 E	0646 D		N20	W84	4083	3 D	1&	2	0646	.78	3.84		59	
SIMEIZ	10	0645 E	0656 D	0647 U	N24	W72	4083	11 D	1			1.68		3.30		Slow S-SWF
MOSCOW	10	0655 E	0719 D		N23	W80	4083	24 D	1			2.55		2.20	250	
CAPRI G	10	0655 E	0718		N27	W77	4083	23 D	1&	1	0655		5.00			
CAPRI G	10	1056	1123	1102	S12	E58	4099	27	2	2	1101		11.00			S-SWF
KIEV*	10	1113 E	1117 D		S11	E59	4099	4 D	1			3.60				
KHARKOV	10	1115 E	1127 D		S18	E64	4099	12 D	1							
KHARKOV	10	1128 E	1155 D	1133 U	S11	E63	4099	27 D	1							
CAPRI G	11	1037	1102		S15	E08	4093	25	1	1	1039		5.00			
SYDNEY	12	0154	0226	0155	S28	E86	4106	32	1	3	0155	2.00				
ABASTUMANI	12	0514 E	0817 D	0521 U	S18	E88	4105	183 D	1			.87		1.30	130	
ABASTUMANI	12	0524	0815 D	0611 U	N16	E12	4100	171 D	1&			.87		1.70	250	
CAPRI G	12	0606	0621		N14	E12	4100	15	1	3	0609		3.00			
IZMIR	12	0608 E	0613		N17	E12	4100	5 D	1			1.50			170	
CAPRI G	12	0656	0711		N11	W68	4089	15	1	3	0701		4.00			
SIMEIZ	12	0657	0715	0703	N08	W70	4089	18	1			1.30		1.80	140	
ABASTUMANI	12	0658	0716	0703	N12	W69	4089	16	1			.87		2.00	200	
CAPRI G	12	0952	1009		S22	E90	4106	17	1&	2						
CAPRI G	12	1032	1045		S26	E71	4106	13	1	2	1033		5.00			
MOSCOW	12	1033	1042 D		S29	E82	4106	9 D	1			2.04		3.40	140	
KIEV	12	1131	1143	1132 U	S12	E30	4090	12	1&			3.00			220	
KIEV*	12	1235 E	1250 D		N16	E26	4098	15 D	1			.80				
KIEV	12	1237	1310	1240 U	N15	E28	4098	33	1&			2.50			240	
CAPRI G	12	1250 E	1303 D		N13	E30	4096	13 D	1	2	1252		4.00			
KIEV*	12	1341 E	1343 D		S30	E42	4106	2 D	1			1.30				
KIEV	12	1341	1347	1342 U	S12	E26	4099	6	1&			1.10			340	
CAPRI G	12	1500 E	1620	1530	N13	E26	4096	80 D	2	3	1530		11.00			G-SWF
CAPRI G	13	0636	0642		S09	E19	4099	6	1	1	0638		3.00			
KHARKOV	13	1013 E	1035 D		N16	E07	4098	22 D	1							
MOSCOW	13	1024 E	1200 D		N17	E08	4098	96 D	1			4.08		1.20	130	
KIEV	13	1141	1147	1143 U	S20	W50	4090	6	1&			1.30			280	
MOSCOW	13	1245	1301	1254 U	S30	W18	4094	16	1&			5.10		2.30	250	
KIEV	13	1248	1319	1253 U	S35	W21	4094	31	2			4.30			350	
KIEV*	13	1253 E	1302 D		S35	W30	4094	9 D	1&			3.50				
CAPRI G	13	1258 E	1306		S33	W23	4094	8 D	1&	2	1259		5.00			
CAPRI G	13	1357	1411		N15	E06	4098	14	1	2	1359		4.00			
ABASTUMANI	13	1404 E	1416 D		N17	E04	4098	12 D	2			3.93			230	

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CAPRI G	14	0611	0624		N15	W04	4098	13	1	2	0612		4.00			
CAPRI G	14	0820 E	0841		N15	W05	4098	21 D	1	2	0822		4.00			
SIMEIZ	14	0821	0902	0823	N16	W07	4098	41	1			.87		.00	150	
CAPRI G	14	1057 E	1104		S31	W11	4107	7 D	1	1	1059		5.00			
KHARKOV	14	1131 E	1151 D		N15	W05	4098	20 D	1							
KHARKOV	14	1151 E	1233 D	1204 U	N16	W06	4098	42 D	2							
KIEV*	14	1204 E	1212 D		N15	W09	4098	8 D	1							
SIMEIZ	15	0600 E	0700 D		N28	E46	4083	60 D	1&			4.48		.20		
SIMEIZ	15	0600 E	0700 D		N35	W02	4086	60 D	2			6.40		.20		
ABASTUMANI	15	0525 E	0706 D	0613 U	N16	W17	4098	101 D	1			2.62		1.90	320	
CAPRI G	15	0606	0623 D		N17	W16	4098	17 D	1&	2	0610		5.00			
SIMEIZ	15	0611	0633	0614	N12	W16	4089	22	1&			4.80		.00	200	
SIMEIZ	15	0628		0632 U	N08	E37						1.30			130	
SIMEIZ	15	0631	0740	0734 U	N28	E35	4065	69	1			2.18		1.20	180	
SIMEIZ	15	0645 E	0656 D	0647 U	N24	W72	4083	11 D	1			1.66		.30		
SIMEIZ	15	0657	0715	0703	N08	W70	4089	18	1			1.30		1.80	140	
SIMEIZ	15	0700 E	0809 D		N27	W41	4083	69 D	1&			6.11		1.40	150	
SIMEIZ	15	0703 E	0714 D	0709	S28	W90	4062	11 D	1&			4.46		1.00		
SIMEIZ	15	0724	0730	0726	S31	E03	4082	6	1			1.68				
SIMEIZ	15	0740 E	0744	0740 U	S32	W28						.87			170	
SIMEIZ	15	0821	0902	0823	N16	W07	4100	41	1			.87		.00	150	
SIMEIZ	15	0830	0845	0834	N15	W15	4098	15	1			1.30		.00	130	
CAPRI G	15	0911 E	0937		N17	W18	4098	26 D	1	1	0915		4.00			
KHARKOV	15	0913 E	0945 D	0917 U	N17	W20	4098	32 D	2							
KIEV	15	1204	1214 D	1205 U	N16	W23	4098	10 D	2			4.90			270	
ABASTUMANI	16	0611	0640 D	0615	N15	E44	4100	29 D	1			.87		.80	160	
ABASTUMANI	16	0612	0812 D	0623 U	N17	E39	4104	120 D	1			.87		1.90	150	
CAPRI G	16	0719 E	0722 D		S15	W57	4093	3 D	1	1	0720		4.00			
SIMEIZ	16	0719 E	0728 D	0722	S16	W58	4093	9 D	1&			1.30		.30	160	
MOSCOW	16	0815 E	0817 D		S16	W60	4093	2 D	1			1.53		.20	150	
KHARKOV	16	0959	1015		S18	W63	4093	16	1							
MOSCOW	16	1002 E	1006 D		S16	W59	4093	4 D	1			2.04		1.90	150	
CAPRI G	16	1003	1035		N12	E73	4112	32	1	1	1005		3.00			
KIEV	16	1116	1118	1117 U	S23	E23	4105	2	1&			1.10			340	
KIEV	16	1347	1410 D	1206 U	S16	W65	4093	23 D	1&			1.00			370	
TASHKENT	17	0326 E	0332		N20	E69	4112	6 D	1			4.25		.50	200	
TASHKENT	17	0522 E	0558	0533 U	S47	E31	4106	36 D	1			9.56		.10	210	
ABASTUMANI	17	0531	0602 D	0544 U	S47	E38	4106	31 D	2&			3.93		.00	250	
ABASTUMANI	17	0532	0536	0545	S21	E13	4105	4	1&			2.62		1.40	220	
CAPRI G	17	0734	0746		N17	W40	4098	12	1	3	0738		4.00			
CAPRI G	17	1022 E	1028		S32	E15	4106	6 D	1	2	1022		4.00			
CAPRI G	17	1252 E	1310		S22	E06	4105	18 D	2	1	1252		6.00			
CAPRI G	18	0644	0702		S22	W04	4105	18	1	1	0647		5.00			
ABASTUMANI	18	0645 E	0710 D	0649	S21	W03	4105	25 D	2-			2.62			250	
ABASTUMANI	18	0741 E	0810	0749 U	N07	E51	4112	29 D	1&			2.18		1.70	290	
CAPRI G	18	0745	0756		N19	E50	4112	11	1	1	0747		4.00			
SIMEIZ	18	0815 E	0831	0815	S18	W90	4093		1&			2.18		.30		
MOSCOW	18	0850 E	0856 D		N17	E49	4112	6 D	1			1.55		.10	140	
KIEV	18	1133	1202	1134 U	N16	E47	4112	29	1&			4.20			190	
CAPRI G	18	1256	1351		S13	W90	4093	55	2	1						

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KIEV	18	1325 E	1336	1226 U	S22	W08	4105	11 D	1+			2.70			220	
KIEV*	18	1330 E	1334 D		S21	W10	4105	4 D	1			5.40				
KIEV*	18	1339 E	1348 D	1340 U	S21	W88	4093	9 D	1							
CAPRI G	18	1452 E			S13	W90	4093		1+	1						
SYDNEY	18	2327 E	0006 D	2332	S21	E01	4105	39 D	1	3	2332	2.00	2.00			
SYDNEY	19	0340	0406	0348	N18	W72	4100	26	1	3	0348	1.00	5.00			
SIMEIZ	19	0753	0811	0753	N22	E48	4112	18	1+			3.49		2.40	210	
ABASTUMANI	19	0754	0816	0755 U	N23	E46	4112	22	1+			6.98		1.80	500	
MOSCOW	19	0757 E	0806 D		N20	E46	4112	9 D	1+			3.06		2.40	150	
KRASNYA	19	0803	0820	0806	N20	E48	4112	17	1	2	0806	3.83	2.93		77	
NIZMIR	19	0803	0820	0806	N20	E48	4112	17	1+			3.90			220	
KHARKOV	19	0930 E	0944		N08	E48	4112	14 D	1							
KRASNYA	19	0931 E	0942 D		N14	E45	4112	11 D	1	2	0931	2.25	1.61		63	
MOSCOW	19	1025 E	1139 D		N20	W35	4101	74 D	1+			7.13		2.30	180	
MEUDON	19	1100	1155	1105	N17	W27	4101	55	1				6.00			
KHARKOV	19	1103 E	1130		N22	W25	4101	27 D	2							
CAPRI G	20	0954	1016		S20	W35	4105	22	1	2	1000		5.00			
KHARKOV	20	0958 E	1014		S22	W35	4105	16 D	1							
CAPRI G	20	1027	1044		N21	E33	4112	17	1+	2	1031		5.00			
CAPRI G	20	1414	1431		N12	E12	4112	17	1	2	1420		3.00			
CAPRI G	20	1450 E	1501		N16	E19	4112	11 D	1	2	1450		5.00			
ABASTUMANI	21	0731 E	0851 D	0850 U	S31	W10	4106	80 D	2			4.36		2.00	240	
KRASNYA	21	0748	0843	0758	N21	E20	4112	55	1+	2	0758	2.34	1.56		112	
SIMEIZ	21	0748	0839	0749 U	N26	E24	4112	51	2			8.20		2.20	160	
ABASTUMANI	21	0749 E	0840	0759 U	N25	E25	4112	55 D	3			11.35		1.90	340	
CAPRI G	21	0750	0839	0805	N22	E14	4112	49	2	3	0807		8.00			
KRASNYA	21	0823 E		0823	N22	E24	4112		2	2	0823	8.12	4.39		105	
SIMEIZ	21	0806	0820 D	0808 U	S24	E88	4117	14 D	1			1.75		3.20	160	
SIMEIZ	21	0829 E	0909 D	0830 U	S32	W12	4106	40 D	1+			4.36		2.20	130	
CAPRI G	21	0837 E	0855 D		S24	W11	4105	18 D	1	1	0840		3.00			
NIZMIR	21	0837	0911	0839	S28	W19	4106	34	1			1.50			220	
MOSCOW	21	0904 E	1001 D		S30	W11	4106	57 D	1+			5.10		2.10	120	
NIZMIR	21	0952	1024 D	1007	S32	E88	4117	32 D	1			1.50			250	
KRASNYA	21	0952	1024 D	1007	S32	E88	4117	32 D	1+	2	1007	1.47	2.70		87	
CAPRI G	21	1007 E	1030 D		S30	E90	4117	23 D	1	1	1008		4.00			
KIEV	21	1130	1139	1135 U	N16	E14	4112	9	1			1.10			70	
KIEV	21	1156 E	1200	1158 U	N25	W52	4101	4 D	1+			1.50			280	
CAPRI G	22	0834	0844		N22	W01	4112	10	1	1	0835		3.00			
KRASNYA	22	0927	0930	0928	S26	E71	4117	3	1+	2	0928	2.16	3.95		59	
KHARKOV	22	1017 E	1125		S40	W56	4106	68 D	1							
KHARKOV	22	1037 E	1112 D		S18	E25	4120	35 D	1							
KIEV	22	1116	1130 D	1018 U	N22	W02	4112	14 D	1			1.00			170	
ABASTUMANI	23	0552	0808	0621 U	N18	W12	4112	136	1			1.31		1.80	310	
CAPRI G	23	0618 E	0638		N18	W10	4112	20 D	1	1	0620		4.00			
CAPRI G	23	1126	1240	1152	N16	W18	4112	74	2	2	1150		8.00			
CAPRI G	23	1244	1253		N18	W15	4112	9	1	2	1249		3.00			
CAPRI G	23	1204	1214		N21	W77	4101	10	1	2	1206		5.00			
NEDERHORST	23	1402 E	1406		N19	W10	4112	4 D	1	2						S-SWF
CAPRI G	23	1406	1413 D		N18	W16	4112	7 D	1	1	1408		3.00			

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CAPRI G	24	0839 E	0850 D		N18	W24	4112	19 D	1	2	0840		3.00			
CAPRI G	24	1007 E			N24	E90	4124		1	2						
CAPRI G	24	1107 E	1120 D		N18	W27	4112	13 D	1	2	1108		4.00			
KIEV	24	1109	1117	1114 U	N18	W25	4112	8	1			1.35			200	
KIEV	24	1135	1138	1137 U	S13	E17	4121	3	1			1.35			130	
KIEV	24	1240	1246	1244 U	N20	W26	4112	6	1B			1.55			320	
KIEV	24	1245	1317	1305 U	N20	W26	4112	22	1			1.50			230	
CAPRI G	24	1343	1353		N20	W29	4112	10	1	2	1345		3.00			
ABASTUMANI	25	0503 E	0824 D	0515 U	N13	E54	4122	201 D	2			2.62		2.10	360	
ABASTUMANI	25	0503 E	0824 D	0535 U	N21	W37	4112	201 D	1			1.13			170	
ABASTUMANI	25	0503 E	0824 D	0606 U	S22	E40	4117	201 D	2			1.31		2.00	300	
CAPRI G	25	0550 E	0609		N10	E50	4122	19 D	1B	2	0550		5.00			
CAPRI G	25	0605	0613		N13	E87	4124	8	1	2	0609		4.00			
CAPRI G	25	0755 E			S28	E24	4117		1	1	0756		5.00			
MOSCOW	25	0834 E	1114 D		N24	W37	4112	160 D	1B			3.57		2.60	220	
KHARKOV	25	0903 E	0941	0915	N24	W36	4112	38 D	2			5.00				
KRASNYA	25	0905 E	0937 D		N21	W39	4112	32 D	1	2	0912	3.43	2.28		73	S-SWF
NIZMIR	25	0905 E	0937 D		N21	W39	4112	32 D	1B			3.50			210	
CAPRI G	25	0912	0938		N19	W37	4112	26	1B	2	0916		4.00			
KHARKOV	25	0922 E	0947		N06	E53	4122	25 D	1			4.00				
TASHKENT	26	0230 E	0334		N12	E39	4122	34 D	1			5.31		3.00	260	
TASHKENT	26	0324	0350	0328 U	S29	E66	4125	26	1			1.77		2.20	280	
TASHKENT	26	0510	0528	0513 U	S29	E65	4125	18	1			1.42		2.30	280	
ABASTUMANI	26	0551 E	0834	0555 U	S35	E68	4125	163 D	1B			.87			170	
ABASTUMANI	26	0602	0614	0606	S30	E53	4125	12	1			1.31		1.90		
KYOTO	26	0605 E	0610 D		S25	E65	4125	5 D	1		0606				100	
KRASNYA	26	0650 E	0701	0658 U	S30	E70	4125	11 D	1	2	0658	1.18	2.15		77	
NIZMIR	26	0650 E	0701	0658 U	S30	E70	4125	11 D	1			1.20			220	
KRASNYA	26	0758 E	0833 D	0812	S25	E06	4117	35 D	1	2	0812	3.43	2.02		66	
ABASTUMANI	26	0802	0850	0804	S24	E06	4117	48	2-			3.06		1.70	205	
CAPRI G	26	0810 E	0815 D		S25	E11	4117	5 D	1B	1	0815		5.00			
CAPRI G	26	0901 E	0942		N23	E72	4124	41 D	1	2	0905		4.00			
CAPRI G	26	0909	0938		S10	E43	4121	29	1	2	0911		3.00			
KRASNYA	26	0909 E	0919 D	0909 U	S12	E48	4125	10 D	1	2	0909	3.43	2.70		59	
NIZMIR	26	0909 E	0918 D	0909 U	S12	E48	4121	9 D	1			3.50			170	
KHARKOV	26	0910 E	0928 D		S10	E47	4121	18 D								
STOCKHOLM	26	0915 E	0930 D		S15	E45	4121	15 D	1	2						
SIMEIZ	26	0911 E	0930 D	0914 U	N22	E67	4124	19 D	1			2.80		2.30	130	
KHARKOV	26	0915 E	0954 D	0917 U	N24	E70	4124	39 D								
STOCKHOLM	26	0923 E	0941 D		N25	E60	4124	18 D	1	2						
STOCKHOLM	26	0934 E	0955 D		S25	E20	4125	21 D	1	1						
MOSCOW	26	1106 E	1127 D		S27	E61	4125	21 D	1			2.55		2.40	140	
CAPRI G	26	1500	1511		N25	E81	4124	11	1	2	1502		3.00			
TASHKENT	27	0315 E	0332		N26	E57	4124	17 D	1			2.12		1.60	210	
NIZMIR	27	0745 E	0830 D	0813 U	S27	W01	4117	45 D	1			1.50			230	
SIMEIZ	27	0752	0815	0756	N27	E61	4124	23	1			2.62		2.10	180	
ABASTUMANI	27	0806 E	0815 D	0810 U	N27	E58	4124	9 D	1			2.18			180	
KRASNYA	27	0934	0957	0940	S31	W46	4120	23	1	2	0940	1.57	1.43		84	
NIZMIR	27	0935	0957	0940 U	S31	W46	4120	22	1			1.60			240	
CAPRI G	27	1048	1059		N23	E51	4124	11	1	2	1051		3.00			
CAPRI G	27	1302	1322		S32	E36	4125	20	1	2	1307		4.00			

SOLAR FLARES
AUGUST 1957

OBSERVATORY	DATE 1957 AUG	OBSERVED UNIVERSAL TIME START	END	MAX. PHASE	LOCATION APPROX. LAT.	MER. DIST.	McMATH PLAGE REGION	DURATION — MINUTES	IMPORTANCE	OBS. COND.	MEASUREMENTS TIME — U T	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Hα	MAX. INT. %	PROVISIONAL IONOSPHERIC EFFECT
TASHKENT	28	0250 E	0300	0251 U	S27	E28	4125	10 D	1			1.77		1.80		
TASHKENT	28	0313 E	0332		N23	E49	4124	19 D	1			1.42		1.10	240	
TASHKENT	28	0425	0450	0436 U	S28	E40	4125	25	1			4.96		1.50	250	
KYOTO	28	0435	0450 D		S27	E47	4125	15 D	1		0435				100	G-SWF
CAPRI G	28	0703	0728	0718	S29	E34	4125	25	1&	3			5.00			S-SWF
ABASTUMANI	28	0707	0729 D	0720 U	S26	E38	4125	22 D	2			2.18		.20	350	
UTRECHT	28	0715	0718 D		S00	E00	4125	3 D	2-							
SIMEIZ	28	0822 E	0832 D	0824 U	N15	E50	4124	10 D	1			1.75		.60	190	
CAPRI G	28	0847	1240	0925				233	3	2	0920		23.00			
STOCKHOLM	28	0931 E	1115 D		S30	E32	4125	104 D	3&	2						S-SWF
UTRECHT	28	0940	0942 D		S00	E00	4125	2 D	3							
NEDERHORST	28	0950	1018		S32	E36	4125	28	3							
SIMEIZ	28	0951 E	1013 D	1002 U	N23	W80	4112	22 D	1			1.75		2.30	150	
STOCKHOLM	28	1005 E	1016 D		N15	W85	4112	11 D	1	2						
NEDERHORST	28	1038	1046		S32	E36	4125	220 D	3	2						
STOCKHOLM	28	1110 E	1115 D		S25	W15	4117	5 D	1&	2						
KIEV	28	1110 E	1250	1137 U	S31	E30	4125	100 D	1&			2.70			230	
KIEV	28	1110 E	1250	1123 U	S34	E24	4125	100 D	3			11.70			200	
NEDERHORST	28	1143	1300		S32	E36	4125									
KIEV	28	1201 E	1317	1219 U	S37	E35	4125	76 D	1&			3.60			180	
NEDERHORST	28	1315	1330 D		S32	E36	4125									
KYOTO	29	0123	0144 D		N43	W90										
CAPRI G	29	0550 E	0629		N23	E37	4124	39 D	2	3	0552		7.00			
KHARKOV	29	0550	0650 D	0551 U	N20	E37	4124	60 D	2			3.00				
ABASTUMANI	29	0550	0701 D	0556	N26	E35	4124	71 D	2&			3.49		.20	350	S-SWF
KYOTO	29	0551 E	0632 D	0557	N27	E38	4124	41 D	1		0557				130	
SIMEIZ	29	0556 E	0900 D	0556 U	N25	E36	4124		1&			4.80		2.40	230	
CAPRI G	29	0632	0648		N11	W03	4122	16	1	1	0636		2.00			
ABASTUMANI	29	0632 E	0700	0641 U	N13	W02	4122	28 D	2-			3.93		1.80	270	
SIMEIZ	29	0635 E		0637 U	N13	W02	4122		1&			5.24		.50	170	
ABASTUMANI	29	0632	0710	0641 U	S32	E29	4125	38	2			1.31		1.00	280	
CAPRI G	29	0634	0650		S34	E24	4125	16	1	1	0636		2.00			
SIMEIZ	29	0637 E		0638	S33	E30	4125		1			.87		1.80	180	
KYOTO	29	0640 E	0653 D		S26	E30	4125	13 D	1		0645			1.17		
KYOTO	29	0705 E	0721 D	0709	N27	E35	4124	16 D	1		0709			1.17	110	
ABASTUMANI	29	0740 E	0810 D	0804 U	N24	E36	4124	30 D	1			2.18		1.70	260	
CAPRI G	29	0753	0806		N17	E38	4124	13	1	1	0755		3.00			
MEUDON	29	0807 E	0915	0900	N24	E34	4124	68 D	1				8.00			
KHARKOV	29	0859 E	1031 D		N22	E36	4124	92 D	1							
STOCKHOLM	29	0910 E	0958 D		N20	E35	4124	48 D	2	2						
CAPRI G	29	0955 E	1012 D		N18	E36	4124	17 D	1	1	0955		3.00			
CAPRI G	29	1037	1054		S25	E18	4125	17	1&	1	1040		5.00			
MEUDON	29	1038 E	1052	1041	S26	E20	4125	14 D	1&				5.00			
UTRECHT	29	1038	1040		S00	E00	4125	2 D	2-							S-SWF
MOSCOW	29	1039 E	1049 D	1039 U	S23	E18	4125	10 D	2			7.13		4.50	250	
KIEV	29	1105	1201	1129 U	S37	E23	4125	56	1			1.80			170	
KIEV	29	1219	1302	1223 U	S35	E26	4125	41	1&			3.15			200	
CAPRI G	29	1225 E	1246		S34	E17	4125	21 D	1	2	1227		3.00			
KIEV	29	1335 E	1342	1337 U	S28	E17	4125	7 D	2&			3.40			650	
KYOTO	29	2338	2347 D		S25	E16	4125	9 D	1		2339				120	
SYDNEY	29	2350	0023 D	2358	S33	E07	4125	33 D	1	1	2358	1.50	2.00			
KYOTO	29	2356 E	0016 D		N12	W90	4112	20 D	1		2356				100	
KYOTO	29	2356 E	0032		S28	E16	4125	36 D	1		2356				120	

SOLAR FLARES
AUGUST 1957

OBSERVATORY	DATE 1957 AUG	OBSERVED UNIVERSAL TIME START	END	MAX. PHASE	LOCATION APPROX. LAT.	MER. DIST.	McMATH PLAGE REGION	DURATION — MINUTES	IMPORTANCE	OBS. COND.	MEASUREMENTS TIME — U T	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Hα	MAX. INT. %	PROVISIONAL IONOSPHERIC EFFECT
KYOTO	30	0025	0037 D		S28	E28	4125	12 D	1		0025				100	S-SWF
KYOTO	30	0143 E	0150 D	0145	S28	E28	4125	7 D	1		0145	1.00			90	
SYDNEY	30	0252	0413 D	0313	S25	W34	4117	81 D	1	1	0313	2.00	3.00			
SYDNEY	30	0345	0412	0352	S25	E11	4125	27	1	2	0352	3.00	4.00			
TASHKENT	30	0346	0406	0349 U	S25	E13	4125	20	1B			4.25		4.00	440	S-SWF
TASHKENT	30	0350 E	0355 D		S26	E09	4125	5 D	1			1.77		3.20	260	
TASHKENT	30	0358	0424		N25	E22	4124	26 D	1			3.19		2.30	220	
SIMEIZ	30	0620	0659	0625 U	N27	E23	4124	39	2			5.24		4.30	190	
CAPRI G	30	0622	0651	0627	N26	E24	4124	29	1B	3	0627		5.00			
TASHKENT	30	0628 E	0705 D	0629 U	N25	E24	4124	37 D	2			18.41		1.90	380	S-SWF
ABASTUMANI	30	0628	0804 D	0738 U	N28	E22	4124	96 D	2B			7.42		2.10	270	
KYOTO	30	0629	0654 D		N28	E26	4124	25 D	1		0629				130	
SIMEIZ	30	0758	0804	0801	S26	W38	4117	6	1B			1.30		4.30	210	
CAPRI G	30	0856	0902		S29	E05	4125	6	1	3	0858		2.00			
SIMEIZ	30	0856	0901	0857	S28	E07	4125	5	1B			1.30		4.30	190	
MEUDON	30	0927	1006 D		S27	E13	4125	39	1							
KIEV	30	1314 E	1316	1314 U	S30	E08	4125	2 D	1			1.00			310	
MEUDON	30	1336	1344 D	1341	N17	E25	4124	8 D	1				3.00			
CAPRI G	30	1339	1352		N25	E19	4124	13	1	2	1340		2.00			
KIEV	30	1339	1354	1345 U	N24	E16	4124	15	2			3.10			570	S-SWF
CAPRI G	30	1338	1701		N14	E14	4124	23	1B	2	1340		4.00			
KIEV	30	1339	1359	1344 U	N14	E12	4124	20	1B			1.80			250	
CAPRI G	30	1515 E	1535 D		N09	E14	4124	20 D	1	2	1515		2.00			
SYDNEY	31	0127 E	0153 D		S32	E06	4125	26 D	2	3	0127	5.00	6.00			
SYDNEY	31	0242	0303	0254	N13	E04	4124	21	1	2	0254	3.00	3.00			
KYOTO	31	0251 L	0310 D	0258	N13	E05	4124	19 D	1B		0258			2.34	120	S-SWF
TASHKENT	31	0302	0312		N14	E04	4124	10 D	1			3.54		2.40	230	
TASHKENT	31	0521	0645	0552 U	S27	W07	4125	84	2			7.79		2.60	290	
TASHKENT	31	0544	0616	0549 U	N13	E02	4124	32	2			6.23		2.80	460	S-SWF
SIMEIZ	31	0553		0610 U	N13	E03	4124		1B			4.36		1.90	230	
SIMEIZ	31	0556	0900 D	0556 U	N25	E36	4124		1B			4.80		1.40	230	
MOSCOW	31	0612 E	0811 D	0727 U	S33	W02	4125	119 D	3			10.48		2.30	420	
SIMEIZ	31	0615		0615 U	S32	W02	4125		2			11.35		3.60	170	
SIMEIZ	31	0620	0659	0625 U	N27	E23	4124	39	2			5.24		4.30	190	
KRASNYA	31	0634 E	0811	0634 U	S33	W07	4125	97 D	2	2	0634	6.85	4.76		144	
NIZMIR	31	0634 E	0811 D	0634 U	S33	W07	4125	97 D	2B			7.00			410	
SIMEIZ	31	0635		0637 U	N13	W02	4122		1B			5.24		2.50	170	
SIMEIZ	31	0637		0638	S33	E30	4125		1			.87		1.80	180	
SIMEIZ	31	0705	0735	0715	S26	E38	4125	29	1B			3.50		3.00	300	
KRASNYA	31	0717	0752	0733	S28	W49	4117	35	1	2	0733	1.47	1.36		98	
SIMEIZ	31	0719	0728 D	0722 U	S16	W58	4093	9 D	1B			1.30		4.30	160	
MEUDON	31	0711	0933 D	0717	S34	W09	4125	142 D	2B				21.00			
MOSCOW	31	0723 E	0941 D	0733 U	S33	W06	4125	138 D	2B			15.29		2.30	300	
KRASNYA	31	0726	0811 D	0735 U	N12	E04	4124	45 D	1	2	0735	1.75	.96		91	
NIZMIR	31	0726	0811	0735 U	N12	E04	4124	45	1			1.50			280	
ABASTUMANI	31	0750	0807	0756	N12	E03	4124	17	2-			2.62		2.20	380	
MOSCOW	31	0744 E	1140 D	1031 U	S27	W53	4117	236 D	1B			5.10		1.50	200	
SIMEIZ	31	0748	0839	0749 U	N26	E24	4112	51	2			8.20		2.20	160	
SIMEIZ	31	0752	0815	0756	N27	E61	4124	23	1			2.62		1.15	180	
SIMEIZ	31	0753	0811	0755	N22	E48	4112	18	1B			3.49		2.40	210	
SIMEIZ	31	0758	0804	0801	S26	W38	4117	6	1B			1.30		4.30	210	
SIMEIZ	31	0805	0820 D	0808 U	S24	E88	4117	14 D	1			1.75		3.20	160	
SIMEIZ	31	0810	1339	0955 U	S30	E32	4125	329	3			36.00		3.00	300	

SOLAR FLARES
AUGUST 1957

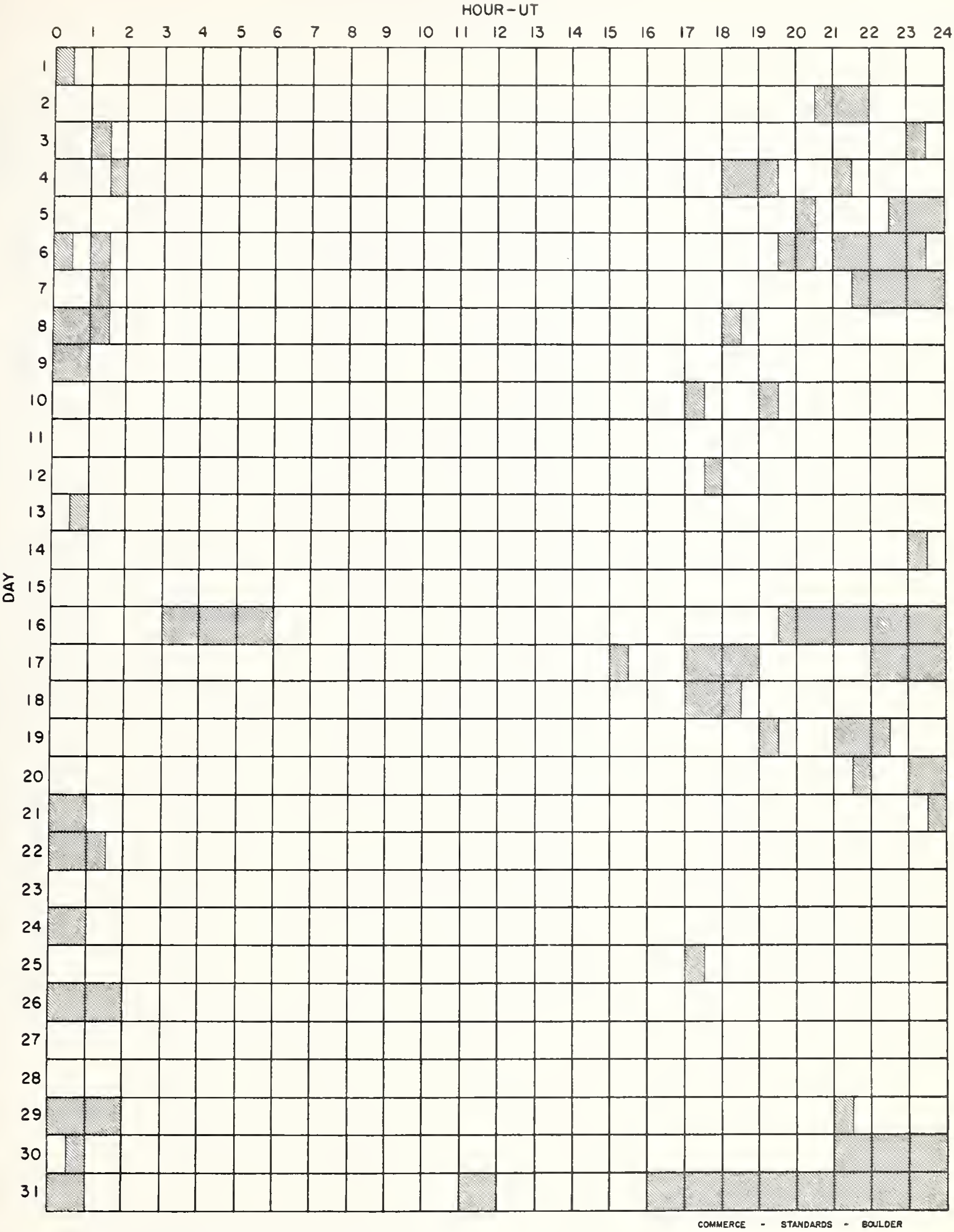
OBSERVATORY	DATE 1957 AUG	OBSERVED UNIVERSAL TIME START	END	MAX. PHASE	LOCATION APPROX. LAT.	MER. DIST.	McMATH PLAGE REGION	DURATION — MINUTES	IMPORTANCE	OBS. COND.	MEASUREMENTS TIME — U T	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Hα	MAX. INT. %	PROVISIONAL IONOSPHERIC EFFECT
SIMEIZ	31	0815 E	0831	0815	S18	W90	4093		1&			2.18		4.30		
SIMEIZ	31	0822 E	0832 D	0824 U	N15	E50	4124	10 D	1			1.75		2.60	190	
SIMEIZ	31	0829 E	0909 D	0830 U	S32	W12	4106	40 D	1&			4.36		2.20	130	
SIMEIZ	31	0856	0901	0857	S28	E07	4125	5	1&			1.30		4.30	190	
SIMEIZ	31	0911 E	0930 D	0914 U	N22	E67	4124	19 D	1			2.80		2.26	130	
{KRASNYA	31	0915 E	0938 D	0930 U	S27	W51	4117	23 D	1	2	0930	1.27	1.27		77	
{NIZMIR	31	0915 E	0939 D	0930 U	S27	W51	4117	24 D	1			1.30			220	
KHARKOV	31	0931 E	1048 D		S37	W11	4125	77 D	1			2.00				
KHARKOV	31	0931 E	1048 D		S27	W56	4117	77 D	1			3.00				
SIMEIZ	31	0951 E	1013 D	1002 U	N23	W80	4112	22 D	1			1.75		2.30	150	
{NIZMIR	31	0952	1010 D	0956	N14	E03	4124	18 D	1			1.60			230	
{KRASNYA	31	0952	1010 D		N14	E03	4124	18 D	1&	2	0956	.48	2.49		91	
{KHARKOV	31	1005 E	1024 D		N13	W05	4124	19 D	1			2.00				
{MOSCOW	31	1013 E	1147 D	1031 U	N12	W32	4122	94 D	1&			5.10		2.50	200	
{KHARKOV	31	1119 E	1200 D		N11	W34	4122	41 D	1			1.00				
KIEV	31	1056 E	1058 D	1050 U	N09	W03	4124	2 D	1&			1.00			280	
{KHARKOV	31	1202 E	1212 D		S31	W09	4125	10 D	1			1.00				
{KIEV	31	1239	1313 D	1254 U	S32	W09	4125	34 D	2			8.20			240	
{KIEV	31	1302 E	1313 D	1311 U	N25	W04	4124	11 D	3&			11.70			750	
{NEDERHORST	31	1306	1405 D		N25	W00	4124	59 D	3	2						S-SWF
{KIEV*	31	1314 E	1320 D		N25	W02	4124	6 D	2&			10.60				
NEDERHORST	31	1350	1405 D		N14	W05	4124	15 D	2&	2						
CAPRI G	31	1436 E	1555 D		N25	W02	4124	79 D	1&	3	1438		5.00			
CAPRI G	31	1521	1538	1527	S25	W59	4117	17	1	3	1527		3.00			
CAPRI G	31	1536	1552		N14	W04	4124	16	1	3	1540		4.00			
CAPRI G	31	1547	1555 D		N12	W35	4122	8 D	1	3	1550		3.00			

E - LESS THAN
D - GREATER THAN
U - APPROXIMATE
& - PLUS
- - MINUS

These flare reports are addenda to the August 1957 flares published in CRPL-F 157 part B, September 1957.

INTERVALS OF NO FLARE PATROL OBSERVATIONS

AUGUST 1957



Times indicated are accurate to the nearest half hour.

Stations included:

Anacapri (Swedish)
Arcetri
Athens
Climax
Dunsink
Greenwich Royal Observatory, Herstmonceux
Hawaii
Huancayo
Kodaikanal
Krasnaya Pakhra
Meudon
Mitaka
Nederhorst
Nizamiah
Ondrejov
Ottawa
Royal Observatory, Edinburgh
Sacramento Peak
Simeis
Sydney
Uccle
U.S. Naval Research Laboratory
Utrecht
Zurich

IONOSPHERIC EFFECTS OF SOLAR FLARES

(SHORT-WAVE RADIO FADEOUTS)

MAY 1958

May 1958	Start UT	End UT	Type	Wide Spread Index	Impor-tance	Observation Stations	Known Flare, UT CRPL-F 166 B
1	0826	0901	S-SWF	1	2	PU	0821
1	1006	1021	S-SWF	3	1+	KU, NE	0954
1	1410	1455	Slow S-SWF	5	2-	BE, CR, HU, MC, NE PR, WS	1353
1	1815	1850	S-SWF	5	3-	AD, BE, CR, HU, MC, PR	1806
1	2130	2155	Slow S-SWF	5	1+	AD, BE, MC, PR, WS	2115
1	2331	2341	S-SWF	3	1+	AN, TO	2327
2	0543	0621	S-SWF	4	1	KO, OK	0546E
2	0755	0818	S-SWF	1	1	NE	0754
2	0830	0850	S-SWF	1	1	NE	0819
3	1035	1140	S-SWF	1	3	JU	1015E
3	1306	1400	Slow S-SWF	5	2+	BE, HU, MC, NE, PR	1300
3	1611	1635	Slow S-SWF	4	2	JU, MC, WS	1617E
4	0328	0430	S-SWF	5	2	AD, OK, TO, CW+	
4	0743	0801	S-SWF	3	2-	NE, PU	0743E
4	1643	1707	S-SWF	5	2+	BE, CR, HU, MC, NE, PR, WS	1643
5	0011	0030	S-SWF	3	2	AD, OK	0012
5	0203	0234	Slow S-SWF	1	3	OK	0221E
5	0407	0500	S-SWF	5	3	AD, OK, TO, RCA+, CW‡+	0407
5	0911	1002	S-SWF	4	2	NE, SW, CW***	0856
5	1019	1045	Slow S-SWF	1	2	NE	0945
5	1218	1242	G-SWF	5	1	BE, MC, NE, PR, CW***	1205
5	1326	1405	G-SWF	2	1	MC, PR	1315
5	1928	2012	S-SWF	5	2	BE, CR, HU, MC, PR	1925
5	2032	2110	S-SWF	5	2+	AD, BE, CR, HU, MC, PR, TO, RCA+	2032
6	0210	0233	G-SWF	4	1	AD, OK, TO	0210E
6	0340	0419	S-SWF	4	2-	AD, OK, TO, CW+	0325
8	0645	0657	S-SWF	1	2	KO	0650E
8	0740	0800	Slow S-SWF	1	1	KO	0837
8	0912	0923	S-SWF	1	3	JU	0910
10	0844	0920	S-SWF	5	2	DA, JU, NE, PU	0844E
17	1355	1422	Slow S-SWF	5	2-	BE, HU, MC, NE, PR, PU	1340
17	2135	2205	G-SWF	4	1	AD, BE, MC, WS	2136
19	0425	0507	Slow S-SWF	3	2-	OK, TO	0425E
27	1653	1740	Slow S-SWF	4	1+	HU, MC, PR, WS	
29	0035	0110	Slow S-SWF	3	1	AD, OK	
31	0556	0615	S-SWF	5	1+	NE, OK, PU	0557E

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES
JUNE 1958

OTTAWA 2800 MC

June 1958	Type*	Start UT Hrs:Mins	Duration Hrs:Mins	Maximum Time UT Hrs:Mins	Maximum Peak Flux	Remarks
2	6 Complex	19 48.3	5	19 50	8	
2	1 Simple 1	22 51.5	2.5	22 52.5	6	
3	3 Simple 3 A	15 09	35	15 22	9	
	2 Simple 2	15 09.3	6	15 10.5	215	
3	2 Simple 2	19 33.9	1	19 34.1	11	
3	1 Simple 1	21 32.7	1	21 33.2	4	
4	2 Simple 2	11 04.5	8	11 05.1	45	
4	Rise**	14 52				
4	3 Simple 3 A	21 25	1 55	indet.	20	
	6 Complex f	21 38	47	21 56	570	
5	3 Simple 3 A	16 14	3	indet.	25	
	8 Group (2)	16 14	1 28			
	2 Simple 2 f	16 14	18		380	
	4 Post increase f		23		25	
	6 Complex f	16 55	47	17 10	330	
	2 Simple 2	18 09	4	18 10	12	
7	6 Complex	10 07.5	10	10 12.5	70	
8	6 Complex	16 49.2	2	16 49.9	7	
8	1 Simple 1	16 57.5	2	16 58.2	3	
8	1 Simple 1	21 04.5	1	21 04.8	4	
10	1 Simple 1	12 56.5	1.5	12 57.2	6	
10	1 Simple 1	18 36	3	18 37.5	3	
11	2 Simple 2	11 37.5	3	11 38	30	
11	2 Simple 2 f	13 06	3.5	13 07.5	145	
	4 Post Increase		2 15		20	
11	8 Group (2)	16 35.2	4.4			
	1 Simple 1	16 35.2	1.2	16 35.5	6	
	2 Simple 2 f	16 37.6	2	16 38.7	11	
11	1 Simple 1	17 48.7	1.5	17 49	7	
11	6 Complex	20 38	4.5	20 40.9	50	
	4 Post Increase		35		15	
12	2 Simple 2	12 38	4	12 39.5	11	
12	3 Simple 3 A	14 33	30	indet.	11	
	6 Complex	14 34.3	4	14 35	16	
12	1 Simple 1	22 32	3	22 33.3	7	
13	6 Complex	14 46	5	14 48.6	27	
13	2 Simple 2	17 12.8	3	17 14	16	
13	6 Complex f	23 21.5	18	23 22.9	34	
14	6 Complex	11 19.5	4	11 20.5	27	
	4 Post Increase		25		10	
14	1 Simple 1 A	14 07.5	3	14 08.5	7	
	2 Simple 2	14 07.7	0.3	14 07.8	22	
14	1 Simple 1	15 15	2.5	15 16	7	
14	3 Simple 3	17 06	20	17 09	7	
14	8 Group (2)	21 15.8	5.2			
	2 Simple 2	21 15.8	3	21 17.2	70	
	2 Simple 2	21 20	1	21 20.7	8	
15	3 Simple 3	13 49	1 10	14 00	8	
15	3 Simple 3 A	18 25	3 45	18 48	9	
	6 Complex	20 45.5	8	20 47.8	34	
15	3 Simple 3 A	23 02	1	indet.	5	
	1 Simple 1	23 14.5	2.5	23 15	7	
18	2 Simple 2	18 29.3	3.5	18 30.2	43	
18	2 Simple 2	23 47.5	2.5	23 48	9	In interference
19	2 Simple 2	9 42.8	5	9 44.2	140	
19	2 Simple 2	11 27	3	11 28	10	

**Level rose and remained at a higher level than previously throughout the balance of the observing period.

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES
JUNE 1958

OTTAWA

2800 MC

June 1958	Type*		Start UT Hrs:Mins	Duration Hrs:Mins	Maximum Time UT Hrs:Mins	Maximum Peak Flux	Remarks
19	8	Group (2)	12 57.1	7.9			
	1	Simple 1	12 57.1	1.5	12 57.5	7	
	1	Simple 1	13 02.5	2.5	13 03.4	6	
19	2	Simple 2	13 30	3	13 31	23	
19	6	Complex	14 37.9	4	14 39.5	48	
	4	Post Increase f		40		10	
19	1	Simple 1	18 43.5	5	18 45	6	
19	1	Simple 1	20 34	2.5	20 35	3	
19	1	Simple 1	21 29	3	21 30.5	4	
20	8	Group (2)	10 50	4			
	1	Simple 1	10 50	2	10 50.8	6	
	1	Simple 1	10 53	1	10 53.5	5	
20	2	Simple 2	17 59.5	6	18 02	12	
21	3	Simple 3 A	12 35	1	indet.	6	
	1	Simple 1	12 35	8	12 38	7	
22	3	Simple 3 f	17 55	1 40	18 15	12	
23	1	Simple 1	13 14	5	13 16	7	
25	2	Simple 2 f	16 26	17	16 27.4	200	
26	1	Simple 1	16 45	4	16 46.5	4	
26	1	Simple 1	22 42	3	22 44	6	
27	2	Simple 2	21 43.3	1	21 43.6	15	
28	3	Simple 3 A	15 00	5 20	17 45	23	
	6	Complex	17 02.5	1.5	17 02.7	5	
	8	Group (2)	18 39	9			
	2	Simple 2	18 39	2	18 39.4	12	
	2	Simple 2	18 43	5	18 45.2	8	
29	2	Simple 2	9 36.3	1	9 36.8	35	In sunrise osc.
29	2	Simple 2	13 18.5	4	13 20.5	8	
29	1	Simple 1	15 09.5	0.5	15 09.7	4	
29	1	Simple 1	18 02.5	2	18 03.2	5	
29	2	Simple 2 f	20 25	3.5	20 25.8	145	
	4	Post Increase		7		10	
29	8	Group (2)	21 29	7			
	1	Simple 1	21 29	1	21 29.5	7	
	1	Simple 1	21 35	1	21 35.5	3	

COMMERCE - STANDARDS - BOULDER

HOURS OF OBSERVATIONS: APRIL, MAY, JUNE 1958

OBSERVING PERIOD:
April 1055 UT - 2315 UT (approx.)
May 1005 UT - 2355 UT (approx.)
June 1000 UT - 2400 UT (approx.)

with the following exceptions:

(1) No observations:
April 18 1405-1545

(2) Observations commenced:
May 7 at 1140
June 24 at 1035
25 1035
26 1035
30 1035

(3) Periods of interference obscuring the records on:
April 3, 5, 11, 15, 16, 24.
May 3, 5, 6, 12, 13, 14, 15, 16, 17, 19, 20, 22.
June 20, 23, 24, 28.

SOLAR RADIO EMISSION

DAILY DATA
MAY 1958

CORNELL 200 MC

May 1958	Flux Density $10^{-22} w\ m^{-2} (c/s)^{-1}$ Hours UT			Variability 0 to 3 Hours UT			Observing Periods Hours UT
	12 15	15 18	18 21	12 15	15 18	18 21	
1	[[22	21	22]	[[1	2	2]	1420-2000
2	32	32	20]	2	1	1]	1235-2005
3	[18]	15]]		[1]	1]]		1255-1415,1455-1600
4	[14	13]]		[1	1]]		1255-1330,1350-1610
5	[15	33	69]]	[1	2	2]]	1245-1925
6	[13	15	15]	[0	1	1]	1245-2000
7							
8	[12	13	12]]	[1	1	1]]	1240-1830
9							
10	[12	11]]		[0	0]]		1245-1610
11	11	11]]		0	0]]		1205-1600
12	[11	11	11]]	[1	1	0]]	1250-1850
13	[11	12	12]]	[0	1	1]]	1245-1425,1455-200
14	[12	11	11]	[0	0	0]	1255-1835,1845-2010
15	[11	11	11]	[0	0	0]	1250-1520,1555-2015
16	11	11	11]	0	0	0	1240-2010
17	17	14]]		2	2]]		1235-1600
18	[11	11]]		[1	0]]		1250-1605
19	11	11	11]	[0	0	0]	1240-2010
20	[11	11	11]	[0	0	0]	1240-2000
21	[[12	12	12]	[[0	0	0]	1415-2010
22	12	12	12]	0	0	0]	1235-2020
23	[12	12	12]	[1	0	1]	1325-2020
24	12	12]]		0	0]]		1220-1600
25	[12	12]]		[1	0]]		1250-1600
26	[12	12	12]	[0	0	0]	1245-2020
27	[12	12	12]]	[0	1	1]]	1250-1835
28	12	12	12]	0	1	1]	1240-2010
29	12	12	12]	0	0	1]	1240-1935
30	[12	12	12]	[1	1	0]	1245-2010
31	12	12]]		0	0]]		1230-1600

COMMERCE - STANDARDS - BOULDER

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SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES
MAY 1958

CORNELL 200 MC

May 1958	Type Ap.J	Start UT	Time of Maximum	Duration Minutes	Type IAU	Max. Flux Density $10^{-22}w\ m^{-2}(c/s)^{-1}$ Inst.	Smooth	Remarks
1	3	1750.5*	1751*	1.5*	SA*	630*	450*	
2	7,4	1335		183	F			
3	3	1538	1539*	1.5	CA	72*	41*	
5	3	1534		.5	CA	180*	120*	
	7	1703.5		> 160	F			
6	2	1605		33	F			
	3	1927.5	1928	3	CA	73	47	
8	3	1507.5		.5	CD	880*	630*	
10	3	1459		1	CD	44	23	
12	3	1341		.5	SD	550*	450*	
	2	1545	1548.5*	6.5	E	91*	72*	
13	8	1618	1620*	4.5	CD	13,000*	11,000*	
	3	1809.5		.5	CD	400*	280*	
15	3	1301		< .25	CD	91*	72*	
17	9	1349.5	1351*	7	ECD	320*	210*	
	9	1435		52	F			
19	8	1825	1829*	4.5	CD	210*	180*	
	3	1851		.5	CD	n65		off-scale on linear record
	3	1854		.5	CD	n65		off-scale on linear record
21	3	1647		1	CD	45	27	
23	3	1339		< .25	CD	260*	210*	
	2	1437	1445.5*	14	F	450*	320*	
	3	1725.5		1	CD	n65		
	2	1842	1844*	11	F	91*	72*	
	3	1940		1	CD	n65		
25	2	1346.5	1349*	3.5	CD	140*	95*	
27	3	1537.5		.5	CD	120*	72*	
	3	1651.5		.5	CD	36	23	
28	2	1506.5		9	CD	n65		
	3	1641.5	1642.5	1.5	CA	n65		
	3	1823.5	1824.5*	1.5	CA	120*	91*	
	3	1832	1832.5	1	CA	n65		
	2	1905	1905.5	3	CA	n65		
	3	1932	1932*	1	CA	37	22	
29	2	1816	1819*	9	CD	3600*	2800*	
30	2	1338	1340.5*	4.5	CD			
	3	1442.5		.5	CD	29	16	
	8	1510	1513.5*	10	CD	91*	72*	

COMMERCE - STANDARDS - BOULDER

* = Logarithmetic Recorder

SOLAR RADIO EMISSION

DAILY DATA

JUNE 1958

CORNELL 200 MC

June 1958	Flux Density $10^{-22} w\ m^{-2} (c/s)^{-1}$ Hours UT 12-15	15-18	18-21	Variability 0 to 3 Hours UT 12-15	15-18	18-21	Observing Periods Hours UT
1	12	12]]		0	1]]		1220-1600
2	15	15	16]	1	1	1]	1230-2005
3	13	13	13]	1	1	1]	1235-2000
4	12	13	13]	0	1	1]	1230-2010
5	[[14	14	15]	[[1	1	1]	1315-2010
6	16	17	24]	2	2	3]	1230-1330,1335-2000
7	31	22]]		2	2]]		1235-1605
8	[16	15]]		[1	1]]		1255-1615
9	15]	16	13]	1]	0	1]	1240-1415,1500-2005
10	12	13	13	1	1	1	1235-2035
11	12	11		0	0		1240-1900
12		12	12]		0	0]	1240-2005
13		[12	12]		[0	0]	1550-1940
14	[[12	12]]		[[0	1]]		1230-1600
15	[12	12]]		[0	0]]		1245-1610
16	12	12	12]	0	0	0]	1240-2005
17	12	12	12]	1	0	0]	1235-2010
18	[12	12	12]	[0	0	1]	1310-2020
19	[12	11	11]	[1	1	1]	1240-2000
20	[11	11	11]	[0	0	0]	1245-2000
21	11	11]]		0	0]]		1230-1600
22	12	12]]		1	0]]		1240-1600
23	[11	11		[0	0		1240-1810
24	[11	11	11]	[0	0	0]	1245-2000
25	[18	15		[2	2		1240-1805
26	19	15		2	1		1240-1800
27	12	12		0	1		1235-1800
28	11	12]]		1	2]]		1230-1600
29	11	11]]		1	0]]		1235-1600
30	11	11	11]	0	1	1]	1235-2005

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SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES
JUNE 1958

CORNELL 200 MC

June 1958	Type Ap.J	Start UT	Time of Maximum	Duration Minutes	Type IAU	Max. Flux Density $10^{-22} w\ m^{-2}(c/s)^{-1}$ Inst.	Smooth	Remarks
2	2	1418	1419	1.5	CD	530	450	
	3	1548.5	1550	2	CD	91	72	
	3	1850	1850.5	1	CD	~ 65		
3	3	1339		< .25	SD	120	91	
	3	1814		.5	CD	~ 65		
4	2	1721		13.5	CD	~ 65		
	2	1810.5	1810.5	4.5	CD	~ 65		
5	8	1617		18	ECD	~ 65		off-scale on linear record-1622.5-24.5 UT
	8	1702		33	ECD	~ 65		off-scale on linear record-1708.5-23 UT
6	6	b1228		> 452	F			
7	3	1556.5		1.5	CA	~ 65		
8	2	1451		4	CD	~ 65		
14	2	1518.5		6	CD			
17	3	1647.5		.25	CD	48	32	
18	2	1923		2	CD	48	34	
19	3	1703.5		< .25	CD	72	41	
20	3	1517		1	CD	48	35	
22	1	1242		108	M			
25	2	1410		82	F			
28	2	1516.5	1517.5	5	F	60	36	
29	2	1237.5		15	F			
29	3	1251.5		.5	CD	82	66	
30	3	1653	1653.5	2	CD	30	15	

SOLAR RADIO EMISSION

DAILY DATA

APRIL 1958

BOULDER 167 MC

Apr. 1958	Flux Density $10^{-22}w\ m^{-2}(c/s)^{-1}$ Hours UT 0-3	12-15	15-18	18-21	21-24	Day	Variability 0 to 3 Hours UT 0-3	12-15	15-18	18-21	21-24	Day	Observing Periods Hours UT
1	-	-	47	57	54	52	-	2	2	2	2	2	13.5-01.1
2	-	-	28	34	142	64	-	-	3	3	2	3	14.5-18.0,18.3-01.2
3	-	-	21	25	18	21	-	1	2	2S	2	2	12.8-01.2
4	-	-	24	18	16	21	-	2	2	2S	2	2	12.8-23.4
5	-	-	22	20	18	21	-	1	1	2	1	1	12.7-01.2
6	-	-	19	26	26	23	-	2	2	2	2	2	12.7-01.2
7	-	-	21	17	17	19	-	1	2	1S	2	2	12.7-01.2
8	-	-	18	18	23	20	-	2	1	2S	2	2	12.6-01.3
9	-	-	16	20	18	18	-	2	1	2	2	2	13.7-01.3
10	-	-	18	17	17	17	-	0	2	2S	2S	2S	13.8-01.3
11	-	-	16	15	16	16	-	-	1S	2S	2S	2S	15.8-01.3
12	-	-	-	17	16	17	-	-	0S	1S	1	1S	17.8-01.3
13	-	-	17	17	16	17	-	2	2	2	1S	2	12.5-01.3
14	-	-	16	18	17	17	-	1	1	2	1S	1	12.5-15.5,16.3-01.3
15	-	-	17	18	17	17	-	1	1	1S	1S	1S	12.4-20.6,21.8-01.3
16	-	-	17	17	16	17	-	2	1S	2S	2S	2S	12.4-01.3
17	-	-	21	20	18	20	-	2	2	1S	1S	1S	12.4-01.3
18	-	-	19	21	16	19	-	1	1	2S	2S	2S	12.4-01.4
19	-	-	18	18	17	18	-	0S	1	1S	1S	1S	12.3-01.4
20	-	-	17	17	16	17	-	1	1	1	2	1	12.3-15.8,16.5-01.4
21	-	-	16	16	14	15	-	1S	1	1	1S	1S	12.3-13.5,14.3-01.4
22	-	-	19	18	-	20	-	2S	2	1	1	1	12.3-01.4
23	-	-	18	-	-	17	-	1	1S	1S	0S	1S	12.3-01.4
24	-	-	17	16	13	16	-	-	0S	1	0S	0S	14.3-23.5
25	-	-	19	19	17	18	-	0S	2	2S	1S	1S	13.8-01.5
26	-	-	18	17	15	17	-	1	1	1	1S	1	12.2-01.5
27	-	-	21	21	22	21	-	1	1S	1S	1S	1S	12.2-01.5
28	-	-	21	22	24	22	-	1	2	2S	2S	2S	12.2-01.6
29	-	-	37	47	45	41	-	2	2S	2S	1S	2S	12.1-01.6
30	-	-	34	35	33	35	-	1S	2	2	2	2	13.8-01.6
31													

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES
JUNE 1958

CORNELL 200 MC

June 1958	Type Ap.J	Start UT	Time of Maximum	Duration Minutes	Type IAU	Max. Flux Density $10^{-22}w\ m^{-2}(c/s)^{-1}$ Inst.	Smooth	Remarks
2	2	1418	1419	1.5	CD	530	450	
	3	1548.5	1550	2	CD	91	72	
	3	1850	1850.5	1	CD	~ 65		
3	3	1339		< .25	SD	120	91	
	3	1814		.5	CD	~ 65		
4	2	1721		13.5	CD	~ 65		
	2	1810.5	1810.5	4.5	CD	~ 65		
5	8	1617		18	ECD	~ 65		off-scale on linear record-1622.5-24.5 UT
	8	1702		33	ECD	~ 65		off-scale on linear record-1708.5-23 UT
6	6	b1228		> 452	F			
7	3	1556.5		1.5	CA	~ 65		
8	2	1451		4	CD	~ 65		
14	2	1518.5		6	CD			
17	3	1647.5		.25	CD	48	32	
18	2	1923		2	CD	48	34	
19	3	1703.5		< .25	CD	72	41	
20	3	1517		1	CD	48	35	
22	1	1242		108	M			
25	2	1410		82	F			
28	2	1516.5	1517.5	5	F	60	36	
29	2	1237.5		15	F			
29	3	1251.5		.5	CD	82	66	
30	3	1653	1653.5	2	CD	30	15	

SOLAR RADIO EMISSION

DAILY DATA

APRIL 1958

BOULDER

167 MC

Apr. 1958	Flux Density $10^{-22} w\ m^{-2} (c/s)^{-1}$ Hours UT 0-3	12-15	15-18	18-21	21-24	Day	Variability 0 to 3 Hours UT 0-3	12-15	15-18	18-21	21-24	Day	Observing Periods Hours UT
1	-	-	47	57	54	52	-	2	2	2	2	2	13.5-01.1
2	-	-	28	34	142	64	-	-	3	3	2	3	14.5-18.0,18.3-01.2
3	-	-	21	25	18	21	-	1	2	2S	2	2	12.8-01.2
4	-	-	24	18	16	21	-	2	2	2S	2	2	12.8-23.4
5	-	-	22	20	18	21	-	1	1	2	1	1	12.7-01.2
6	-	-	19	26	26	23	-	2	2	2	2	2	12.7-01.2
7	-	-	21	17	17	19	-	1	2	1S	2	2	12.7-01.2
8	-	-	18	18	23	20	-	2	1	2S	2	2	12.6-01.3
9	-	-	16	20	18	18	-	2	1	2	2	2	13.7-01.3
10	-	-	18	17	17	17	-	0	2	2S	2S	2S	13.8-01.3
11	-	-	16	15	16	16	-	-	1S	2S	2S	2S	15.8-01.3
12	-	-	-	17	16	17	-	-	0S	1S	1	1S	17.8-01.3
13	-	-	17	17	16	17	-	2	2	2	1S	2	12.5-01.3
14	-	-	16	18	17	17	-	1	1	2	1S	1	12.5-15.5,16.3-01.3
15	-	-	17	18	17	17	-	1	1	1S	1S	1S	12.4-20.6,21.8-01.3
16	-	-	17	17	16	17	-	2	1S	2S	2S	2S	12.4-01.3
17	-	-	21	20	18	20	-	2	2	1S	1S	1S	12.4-01.3
18	-	-	19	21	16	19	-	1	1	2S	2S	2S	12.4-01.4
19	-	-	18	18	17	18	-	0S	1	1S	1S	1S	12.3-01.4
20	-	-	17	17	16	17	-	1	1	1	2	1	12.3-15.8,16.5-01.4
21	-	-	16	16	14	15	-	1S	1	1	1S	1S	12.3-13.5,14.3-01.4
22	-	-	19	18	-	20	-	2S	2	1	1	1	12.3-01.4
23	-	-	18	-	-	17	-	1	1S	1S	0S	1S	12.3-01.4
24	-	-	17	16	13	16	-	-	0S	1	0S	0S	14.3-23.5
25	-	-	19	19	17	18	-	0S	2	2S	1S	1S	13.8-01.5
26	-	-	18	17	15	17	-	1	1	1	1S	1	12.2-01.5
27	-	-	21	21	22	21	-	1	1S	1S	1S	1S	12.2-01.5
28	-	-	21	22	24	22	-	1	2	2S	2S	2S	12.2-01.6
29	-	-	37	47	45	41	-	2	2S	2S	1S	2S	12.1-01.6
30	-	-	34	35	33	35	-	1S	2	2	2	2	13.8-01.6
31													

SOLAR RADIO EMISSION
SPECTRUM OBSERVATIONS
JUNE 1958

FORT DAVIS — 100-580 Mc

DATE and OBSERVING TIMES (U.T.) 1958	TYPE I (NOISE STORMS and CONTINUUM)	TYPE II (SLOW DRIFT BURSTS) & UNCLASSIFIED	TYPE III (FAST DRIFT BURSTS)	REMARKS
June 1				
0000-0145		Uncl. 0024 3	b 0022 1	
1233-2400		Uncl. b 1745 1	g 0024 1	
		Uncl. b 1757 1	b 1331 1-	
		Uncl. g 1808 1-	g 1730 2	
		Uncl. b 1819 1-	g 1743 2	
		Uncl. b 1827 1	b 1934 1-	
		Uncl. b 2132 2	b 1941 3	
		Uncl. g 2325 1	g 1948-50 1	
		Uncl. g 2330-31 2	g 1951 2	
			g 2126-27 2	
			b 2135 2	
			g 2251-52 2	
June 2				
0000-0145		Uncl. g 0021 1	g 0042-0046 1	
1232-2400		Uncl. g 1550 1	b 0135 2	
		Uncl. g 1704 1	g 1418-19 2	
		Uncl. b 2252 1-	g 1549-50 1	
			b 2251 1	
June 3				
0000-0144		Uncl. b 1815 1-		
1218-2400				
June 4				
0000-0145	Cont. IV 0047-48 1	Uncl. g 1324 1-	G 1811-12 1	
1218-2400	Cont. IV 2037 2	Uncl. g 1835 1-	b 2144 2	
	Cont. IV 2142-43 1-	Uncl. g 1842 1	G 2147-51 2	
	Cont. IV 2143-45 2	Uncl. 2149 3	b 2152 3	
	Cont. IV 2148-53 3	Uncl. b 2152 3		
	Cont. IV 2153-59 2			
	Cont. IV 2159-2203 3			
	Cont. IV 2203-2205 2			
	Cont. IV 2205-2209 1			
June 5				
0000-0145			b 0101 1-	
1218-2400			g 1256 2	
		Uncl. 1621.2-29 3	g 1357 1	
			g 2127-28 2	
June 6				
0000-0145	1222 1	Uncl. g 0011 1	g 0130-0132 2	
1218-2400		Uncl. g 0051-53 2		
		Uncl. b 1707 3		
June 7				
0000-0004	0004 1-			
0006-0145	0007-0139 1			
1220-2400	1220-1432 1	Uncl. 1816 2		
	1503-1802 1-			
	2034 1-			
	2311 1-			
	2346-47 1			
June 8				
0000-0145	2345 1-	Uncl. 1453-54 1-	g 1232 2	
1218-2400		Uncl. 1455 1-	g 1452-53 3	
		Uncl. b 1603 1-	g 1649-50 3	
			g 2041 2	
			b 2104 3	
			b 2131 2	
			g 2253-55 3	
June 9				
0000-0145	2102-03 1-	Uncl. 2135 1-	b 1311 3	
1220-2400	2301 1-			
	2349 1-			
June 10				
0000-0150	0046 1-			
1219-2400	1845 1-	Uncl. g 1224 1-	b 1543 1-	
	2009-14 1			
	2151 1-			
	2356 2			

SOLAR RADIO EMISSION
SPECTRUM OBSERVATIONS
JUNE 1958

FORT DAVIS — **100-580 Mc**

DATE and OBSERVING TIMES (U.T.) 1958	TYPE I (NOISE STORMS and CONTINUUM)	TYPE II (SLOW DRIFT BURSTS) & UNCLASSIFIED	TYPE III (FAST DRIFT BURSTS)	REMARKS
June 11				
0000-0148	2101-2114 1-	Uncl. 0135-38 1-		
1219-1538	2231-44 1-			
1551-2400				
June 12				
0000-0150		Uncl. g 1227 1-	g 1220 3	
1218-1600		Uncl. b 1523 1-	g 1225 1	
1800-2400		Uncl. g 1558 1	b 1327 1-	
		Uncl. b 2027 2	g 1333 2	
		Uncl. 2204 1-	b 1552 3	
June 13				
0000-0147	Cont. 1449 2		g 1448-49 2	
1220-2400				
June 14				
0000-0150	Cont. 1520 3	Uncl. 0030 3	b 1422 2	
1219-2400		Uncl. b 1709 1-	b 1431 2	
		Uncl. 2117 1-	g 1518 2	
			g 1520 3	
		II 2120.5-25 3	g 1522-23 3	
			b 1525 1-	
			b 1709 3	
			g 1741-42 2	
			g 1743-44 1	
			g 2121 2	
			b 2205 1-	
June 15				
0000-0150		Uncl. 2047 2	g 0012 3	
1219-2400		Uncl. 2048 3	b 1226 2	
			b 1931 1-	
			b 2042 1-	
			g 2046 1-	
			b 2048 3	
June 16				
0000-0150			g 0026 3	
1219-2400			b 1258 1-	
			g 1300 2	
			b 1605 1-	
			g 1807-08 3	
June 17				
0000-0150		Uncl. b 1248 1-	b 1349 1-	
1218-2400		Uncl. b 1549 1-	b 1420 1	
		Uncl. b 1648 1-	b 1943 3	
		Uncl. b 1842 1-	g 2202-03 1-	
		Uncl. b 2329 1-	b 2206 1-	
June 18				
0000-0150		Uncl. b 1657 1-	b 0055 1	
1218-2400		Uncl. g 1719 1-	g 1225 1	
		Uncl. g 2148 1-	g 1341 2	
			b 1343 2	
			b 2005 3	
			b 2039 2	
June 19				
0000-0149	Cont. 0131 2		g 0130-31 1	1331 Inverted
1218-2400	1307 1		g 1331 1	U burst.
	1954 1			
June 20				
0000-0150	0050 1	Uncl. b 1520 1-	b 1518 3	
1218-2400	1	Uncl. b 2317 1-		
		Uncl. b 2319 1-		
		Uncl. 2321-23 1-		
June 21				
0000-0130	Cont. 2320-21 3	Uncl. g 2224-26 1	b 1805 1-	
1444-2400		Uncl. g 2231 1	b 1809 1-	
		Uncl. b 2249 1	g 2204-05 3	
		Uncl. 1841 1-	b 2321 1	

SOLAR RADIO EMISSION
SPECTRUM OBSERVATIONS
JUNE 1958

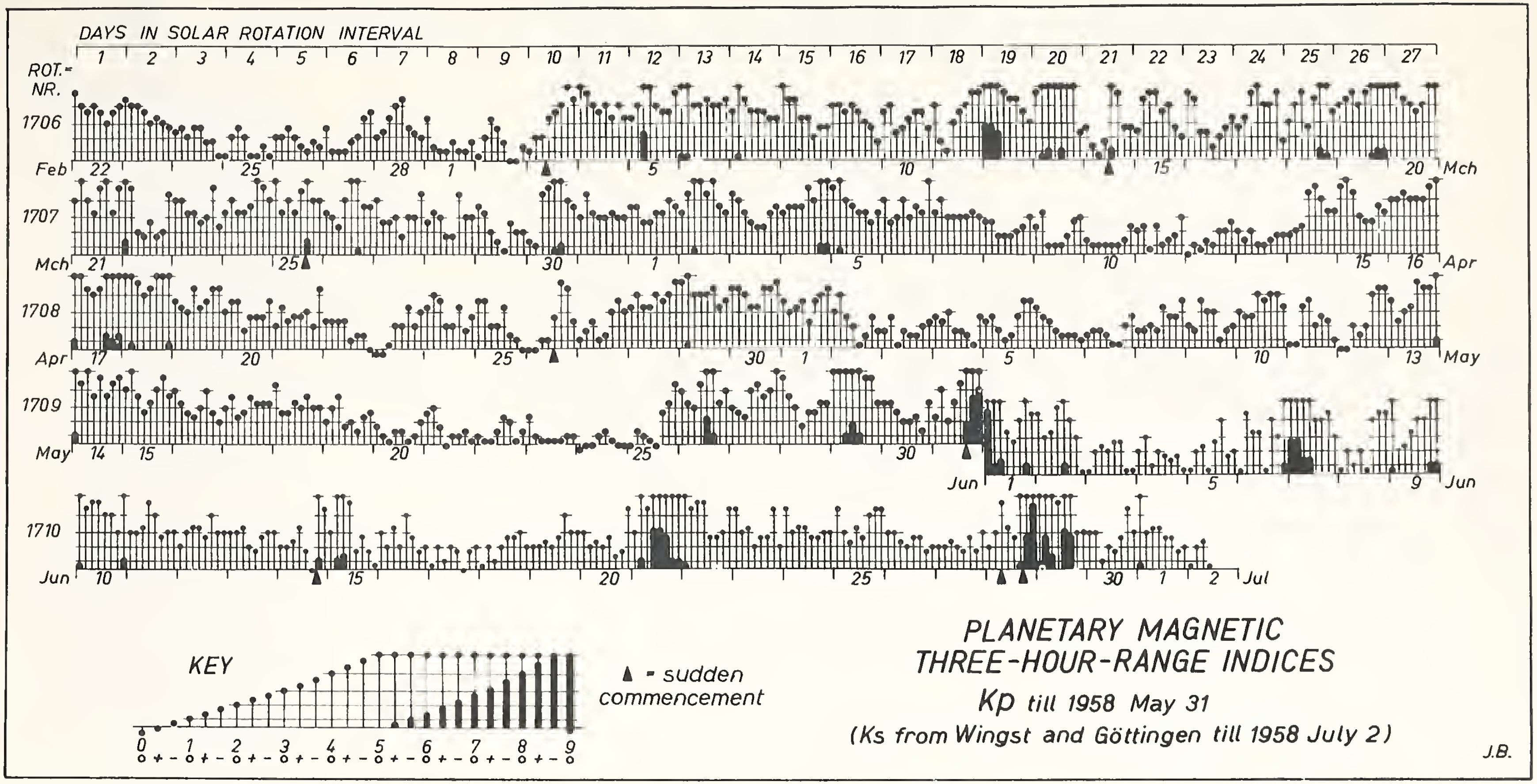
FORT DAVIS — 100-580 Mc

DATE and OBSERVING TIMES (U.T.) 1958	TYPE I (NOISE STORMS and CONTINUUM)	TYPE II (SLOW DRIFT BURSTS) & UNCLASSIFIED	TYPE III (FAST DRIFT BURSTS)	REMARKS
June 22	1238-1301 1-	Uncl. b 1555 2	g 1221 1	
0000-0150			b 1543 1	
1219-2144				
2145-2400				
June 23				
0000-0149		Uncl. b 0029 2		
1219-2400		Uncl. g 0053 1		
June 24				
0000-0150	2154-2335 1-	Uncl. b 0007 2		
1219-2400				
June 25				
0000-0149	0003-04 1-			
1220-2400	0041-54 1-			
	0132-35 1-			
	1243-1446 1	Uncl. g 2227 2	b 2133 1-	
	1446-1449 2			
	1449-1737 1			
	1737-1804 2			
	1804-2007 1			
	2007-2023 2			
	2023-28 3			
	2028-47 2			
	Cont. 2034 3			
	2047-2108 3			
	2108-23 2			
	2152-2204 1			
	2248-2334 1			
	2334 2			
June 26				
0000-0150	0143 2			
1219-2400	1221-49 1	Uncl. b 1825 1	b 2020 1-	
	1357 1			
	1425-49 1-			
	1449-1506 2			
	1710 1-			
	1807 1-			
	1939-49 1-			
	2010 1			
June 27				
0000-0150	0146 1		b 0006 3	
1220-2400	1623-1719 1-	Uncl. g 1818 3	b 1818 3	
	2132 1-		g 2055 3	
	2202-2347 1-		g 2143 3	
June 28				
0000-0149	1755-1913 1	Uncl. 1703 1-	b 1659 1-	
1220-2325	1942-2020 1-		b 1744 1-	
2326-2400	2042-2313 1		g 1845-46 3	
	2313-2325 2			
	2326-41 2			
	2341-53 1			
	2353 2			
June 29				
0000-0149	0017 2		g 0029 3	
1219-2400	0017-0143 1		b 0133 1-	
	Cont. 2025 2	Uncl. 1733 1	g 1510 3	
			g 1750 1	
			g 1751-52 2	
			b 1754 2	
			g 2016 2	2016 Inverted
			g 2024-25 3	U burst.
			g 2127 1	
			b 2129 1	
June 30				
0000-0150		Uncl. g 1732 1	b 0014 1-	
1213-2400			g 1227 2	
			b 1237 1-	
			b 1435 1	
			b 1451 3	
			g 1654-55 1-	
			b 2054 3	

GEOMAGNETIC ACTIVITY INDICES

May 1958

May 1958	C	Values Kp Three hour Gr. interval 1 2 3 4	5 6 7 8	Sum	Ap	Final Selected Days
1	1.0	4- 3o 3+ 4-	2+ 4- 4o 4+	28o	21	Five
2	0.7	3o 4o 3- 2o	1- 1+ 3- 2-	18o	11	Quiet
3	0.2	2- 3- 1- 2-	1+ 1+ 2o 2+	14-	7	
4	0.3	3- 2+ 3o 2-	2- 1+ 1- 3-	16o	8	7
5	0.7	2+ 3- 2- 1o	1+ 3- 4- 4-	19o	12	20
						22
6	0.3	3+ 3- 2+ 2-	1+ 1+ 1+ 1o	15o	8	23
7	0.2	1+ 2- 2- 1+	1- 1- 2o 3-	12o	6	24
8	0.8	2- 2- 2o 2-	3+ 3- 3- 4-	19+	11	
9	0.7	2o 2- 4- 3o	3o 1o 2- 2o	18o	10	
10	1.0	3o 3- 3- 4o	4- 4o 4o 3+	27+	20	
11	0.5	1- 1- 3+ 4-	2o 3- 2+ 1o	16+	10	Five
12	0.8	0+ 0+ 2o 1+	2o 4o 4+ 4+	19-	14	Disturbed
13	1.3	4- 2+ 3o 3+	5- 4+ 4+ 6-	31+	29	
14	1.4	6- 4+ 5o 4-	5- 4- 4+ 5-	36o	38	13
15	1.2	4o 5o 4- 3-	3+ 4o 5- 4-	31o	27	14
						26
16	0.9	4o 3+ 3- 2+	3o 4o 3- 2o	24o	16	29
17	0.9	3o 4- 2+ 3-	4- 3+ 3+ 3+	25+	17	31
18	1.0	4+ 3- 3- 3+	3o 4- 3o 3o	26-	18	
19	0.6	2o 3o 4- 2-	2o 1+ 2+ 3-	19-	10	
20	0.2	2- 1o 1- 1+	1+ 1- 1o 2o	10-	5	
21	0.2	3- 3o 2- 0+	1o 1o 1+ 1-	12-	6	Ten
22	0.1	1o 1- 1- 1+	2+ 2o 1- 1+	10o	5	Quiet
23	0.1	2+ 1o 1- 1-	1- 1- 1o 1o	8o	4	
24	0.1	0o 0+ 0+ 1o	1+ 1- 0+ 0+	4+	2	3
25	0.6	0+ 1+ 1o 1-	0+ 3- 3+ 4+	14o	10	4
						6
26	1.3	4o 3+ 3o 4+	7- 6- 3+ 4o	34+	39	7
27	1.1	3o 3- 2+ 4o	4+ 4- 4o 5o	29o	24	20
28	1.0	5- 4- 3o 2-	3- 3- 3+ 3+	25o	18	21
29	1.6	5o 5o 6- 6+	6- 5- 5- 3+	40+	52	22
30	0.8	3+ 3+ 3- 2o	2o 2+ 1+ 3+	20+	12	23
31	1.7	2+ 4o 2o 3+	4+ 6+ 8- 8o	38o	72	24
						25
Mean:	0.75			Mean:	17	



PLANETARY MAGNETIC THREE-HOUR-RANGE INDICES

Kp till 1958 May 31

(Ks from Wingst and Göttingen till 1958 July 2)

CRPL RADIO PROPAGATION QUALITY FIGURES AND FORECASTS
NORTH ATLANTIC
MAY 1958

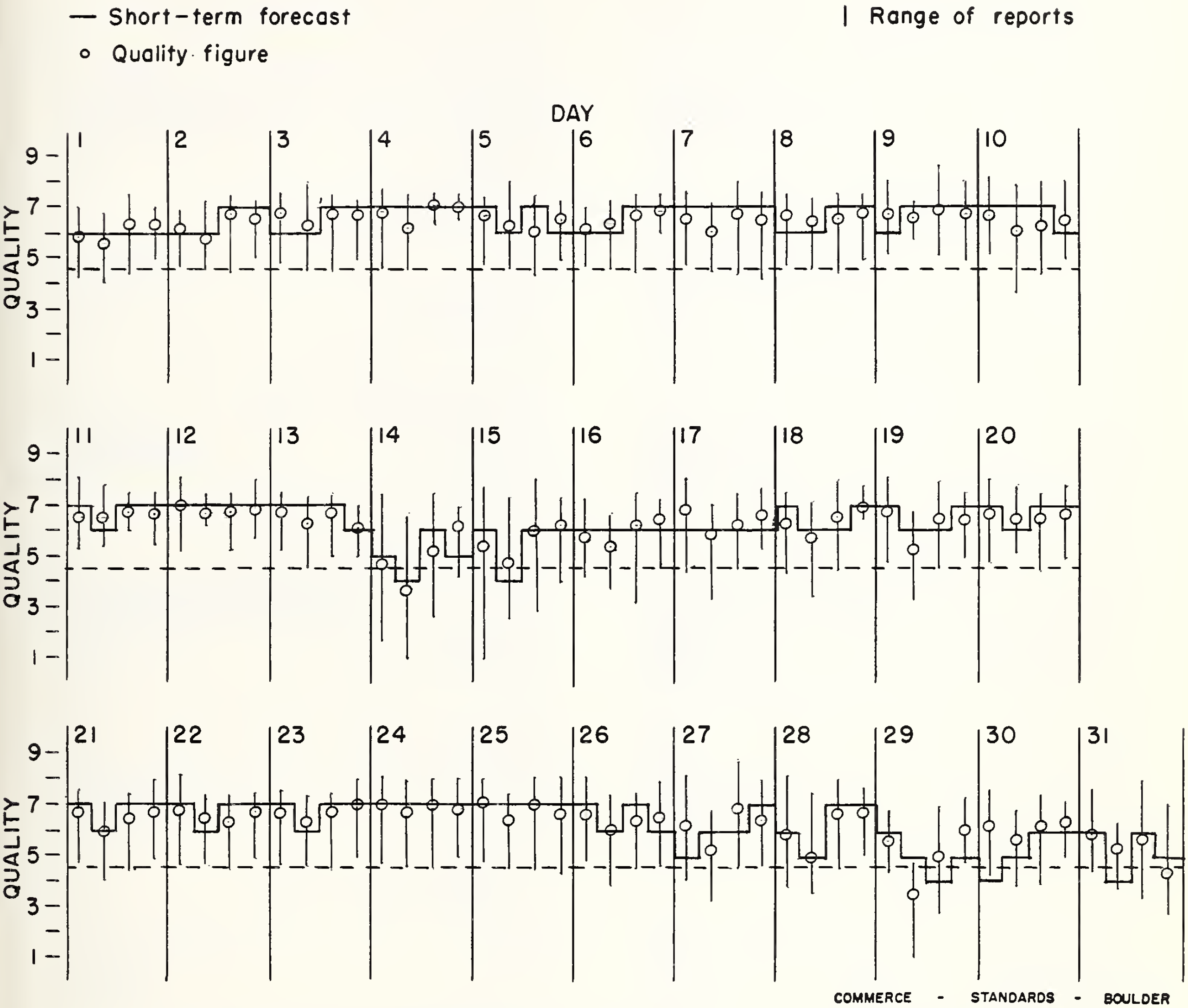
May 1958	North Atlantic 6-hourly quality figures				Short-term forecasts issued about one hour in advance of:				Whole day index	Advance forecasts (J-reports) for whole day; issued in advance by:			Geomagnetic K_{Fr}	
	00 to 06	06 to 12	12 to 18	18 to 24	00	06	12	18		1-4 days	4-7 days	8-25 days	Half (1)	Day (2)
1	6o	6-	6+	6+	6	6	6	6	6o	7	7		3	3
2	6+	6o	7-	7-	6	6	7	7	6+	6	7		3	1
3	7-	6+	7-	7-	6	6	7	7	7-	6	7		2	2
4	7o	6+	7o	7o	7	7	7	7	7-	6	7		2	2
5	7-	6+	6o	7-	7	6	7	6	6+	5	7		2	3
6	6+	6+	7-	7o	6	6	7	7	7-	6	5		2	2
7	7-	6+	7o	7-	7	7	7	7	7-	6	6		2	2
8	7-	7-	7-	7-	6	6	7	7	7-	6	6		2	(4)
9	7-	7-	7o	7-	6	7	7	7	7-	7	6		3	2
10	7-	6o	6+	7-	7	7	7	6	6+	7	6		3	(4)
11	7-	7-	7-	7-	7	6	7	7	7-	7	6		2	2
12	7o	7-	7-	7o	7	7	7	7	7o	7	6		1	3
13	7-	6+	7-	6o	7	7	7	6	6+	7	7		3	(4)
14	5-	4-	5+	6+	5	4	6	5	5-	7	7		(4)	3
15	5+	5-	6o	6+	6	4	6	6	6-	7	7		(4)	3
16	6-	5+	6+	7-	6	6	6	6	6o	6	7		3	2
17	7o	6o	6+	7-	6	6	6	6	6+	6	7		3	3
18	6+	6-	7-	7o	7	6	6	7	6+	7	7		3	3
19	7o	5+	7-	7-	7	6	6	7	6+	7	7		3	2
20	7-	7-	7-	7-	7	6	7	7	7-	6	7		1	2
21	7-	6o	7-	7-	7	6	7	7	7-	6	7		2	2
22	7o	7-	6+	7-	7	6	7	7	7-	6	7		1	2
23	7-	6+	7-	7o	7	6	7	7	7-	7	7		1	1
24	7o	7-	7o	7o	7	7	7	7	7o	7	7		1	1
25	7o	7-	7o	7-	7	7	7	7	7-	7	7		2	3
26	7-	6o	6+	7-	7	6	7	6	6+	7	7		(4)	(4)
27	6+	5+	7o	7-	5	6	6	7	6+	5	7		3	3
28	6o	5o	7-	7-	6	5	7	7	6o	6	7		3	3
29	6-	3+	5o	6o	6	5	4	5	5-	6	7		(5)	(4)
30	6+	6-	6+	6+	4	5	6	6	6+	5	7		3	2
31	6o	5+	6-	4+	6	4	6	5	5+	6	7		3	(5)
Score: Quiet Periods				P	23	15	22	23		10	9			
				S	7	14	9	7		20	18			
				U	0	0	0	0		1	4			
				F	1	0	0	0		0	0			
Disturbed Periods				P	0	1	0	0		0	0			
				S	0	0	0	1		0	0			
				U	0	1	0	0		0	0			
				F	0	0	0	0		0	0			

( ) represent disturbed values.

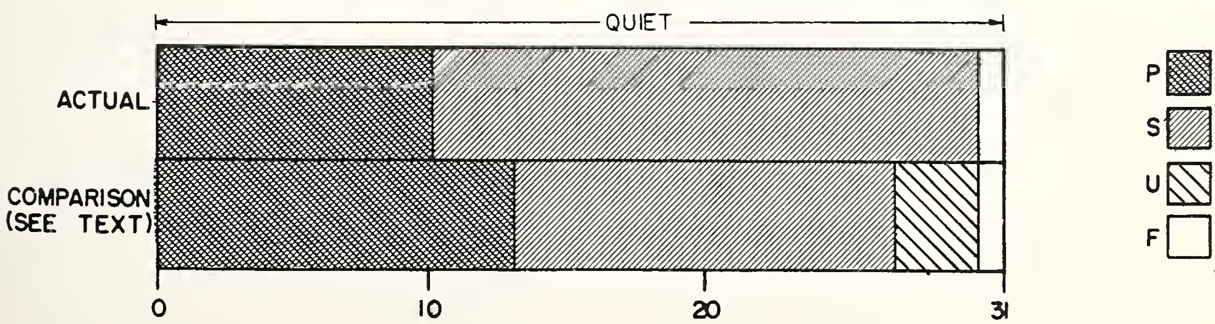
CRPL RADIO PROPAGATION QUALITY FIGURES AND FORECASTS

NORTH ATLANTIC

MAY 1958

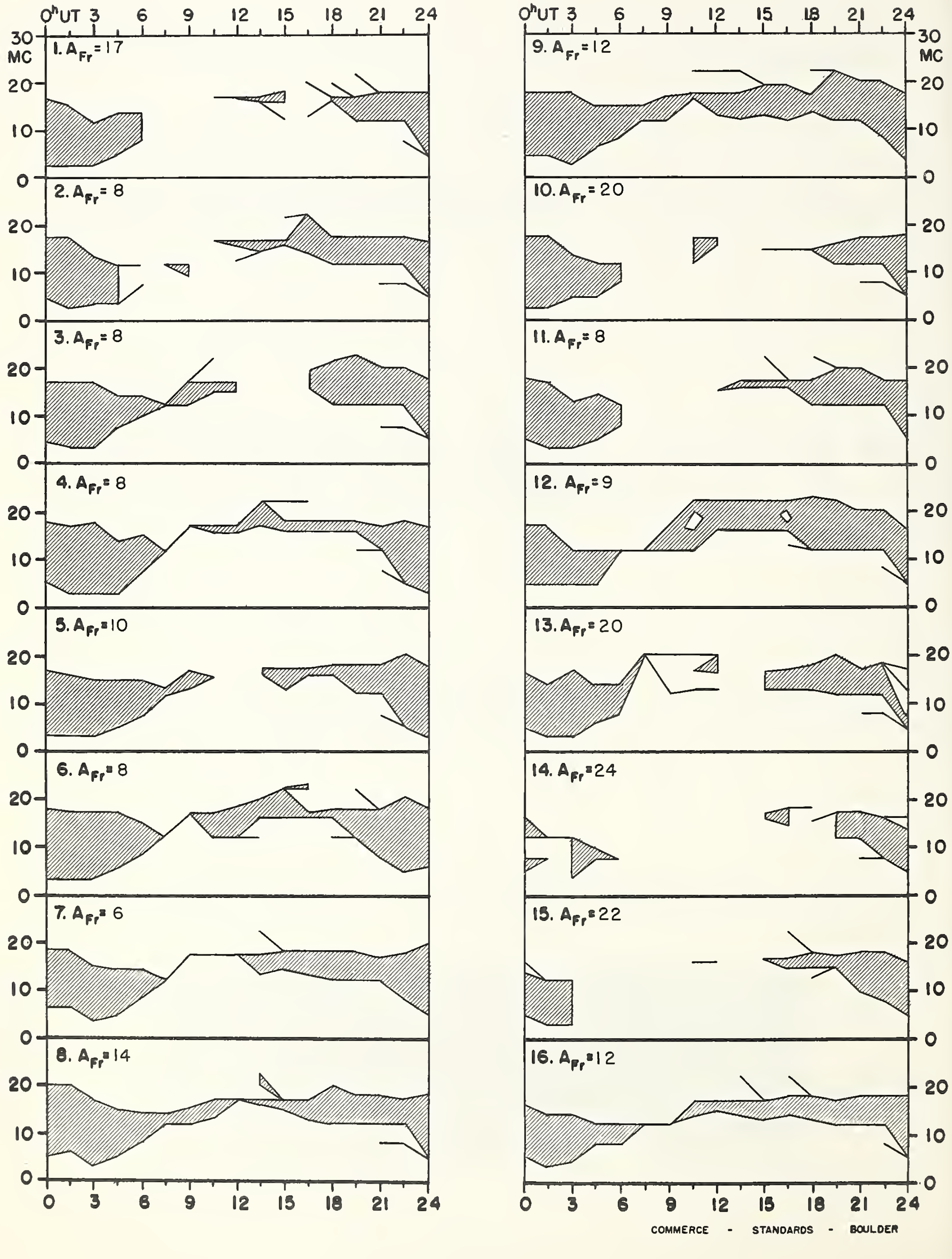


OUTCOME OF ADVANCED FORECASTS 1 TO 4 DAYS AHEAD

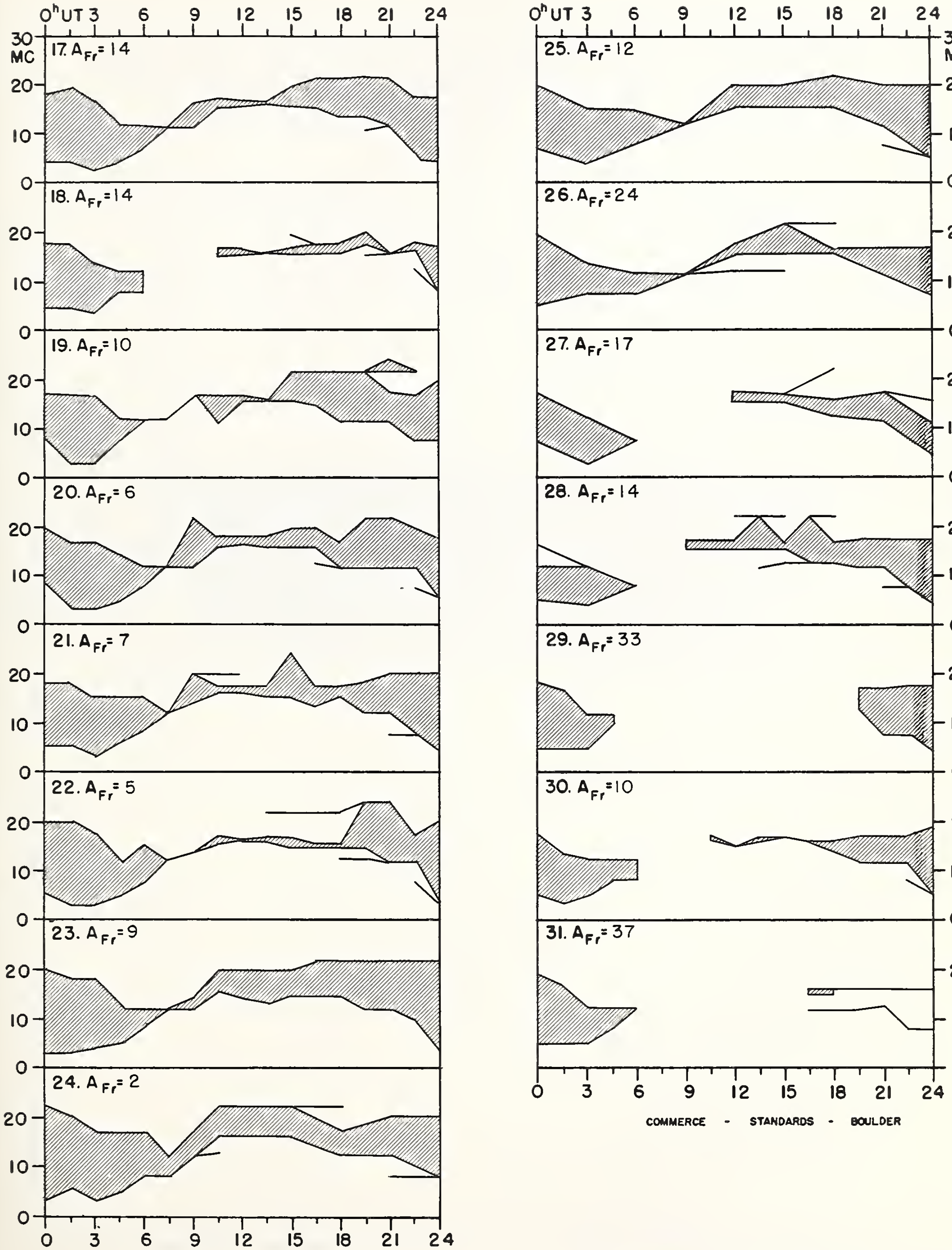


USEFUL FREQUENCY RANGES -- NORTH ATLANTIC PATH

MAY 1958



MAY 1958



Adapted from Observations by Deutscbes Bundespost

CRPL RADIO PROPAGATION QUALITY FIGURES AND FORECASTS

NORTH PACIFIC

MAY 1958

May 1958	North Pacific 8-hourly quality figures			Short-term forecasts issued at			Whole day index	Advance forecasts (Jp reports) for whole day; issued in advance by:			Geomagnetic K_{Si}	
	03 to 11	11 to 19	19 to 03	02	10	18		1-4 days	4-7 days	8-25 days	Half (1)	Day (2)
1	4	6	6	6	6	6	5	4	7		3	2
2	5	6	6	5	5	6	6	5	7		3	1
3	4	5	7	6	6	6	5	5	5		2	1
4	5	6	6	5	6	6	5	4	5		2	1
5	4	6	6	5	5	6	5	4	5		2	2
6	6	6	7	5	6	6	7	5	5		2	1
7	6	6	6	6	6	6	6	6	6		1	2
8	5	6	6	6	6	6	6	6	6		2	2
9	6	7	6	6	6	6	7	6	6		2	2
10	6	6	5	6	6	6	6	7	6		3	3
11	6	6	6	6	6	6	6	7	6		2	2
12	6	6	6	5	6	6	6	7	7		1	(4)
13	5	5	6	5	6	6	6	7	7		(4)	(4)
14	4	4	5	5	4	5	(4)	5	7		(6)	(4)
15	5	5	6	4	5	6	5	6	7		(4)	(4)
16	5	6	6	5	5	6	6	6	7		3	3
17	6	6	6	6	6	6	6	6	6		3	3
18	5	5	6	6	6	6	6	6	6		(4)	3
19	6	6	6	6	6	6	6	6	6		3	2
20	6	5	6	6	7	7	6	6	6		1	1
21	6	6	6	6	6	6	6	6	6		2	1
22	6	6	7	6	7	6	6	7	6		1	2
23	6	6	7	7	7	7	7	7	6		1	1
24	6	6	7	7	6	7	7	7	7		0	1
25	7	6	8	6	7	7	7	6	6		1	2
26	6	4	5	7	6	5	6	6	6		(4)	(5)
27	6	5	6	5	5	6	6	6	6		(4)	(4)
28	6	6	6	5	5	6	6	6	7		(4)	3
29	4	2	5	5	3	4	(4)	6	7		(6)	(4)
30	6	6	6	5	5	6	6	7	7		(4)	3
31	6	6	5	6	6	6	6	6	7		(4)	(6)

Score:		Short-term 02	10	18	Advance 1-4 days	4-7 days
Quiet Periods	P	14	15	23	15	16
	S	12	12	8	13	10
	U	0	1	0	1	3
	F	0	0	0	0	0
Disturbed Periods	P	0	1	0	0	0
	S	3	1	0	1	0
	U	0	0	0	0	0
	F	2	1	0	1	2

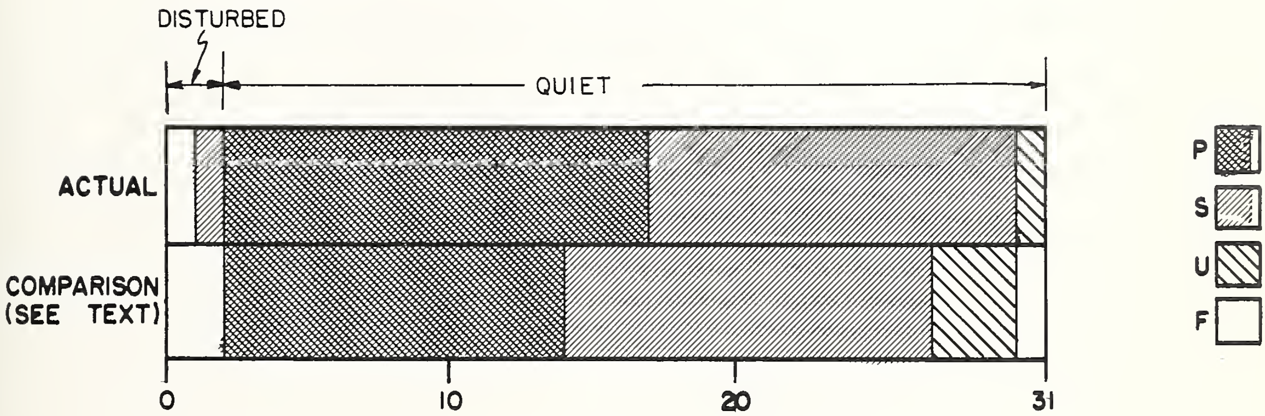
( ) represent disturbed values.

CRPL RADIO PROPAGATION QUALITY FIGURES AND FORECASTS

NORTH PACIFIC

MAY 1958

OUTCOME OF ADVANCED FORECASTS 1 TO 4 DAYS AHEAD



ALERT PERIODS AND SPECIAL WORLD INTERVALS

Alert Issued Ends 1600 UT 1600 UT	SWI 0001 UT 2400 UT	A_{Be} On Days of Alert Period (SWI Underlined)	Number of Flares of IMP ≥ 2 Reported Promptly on Days of Alert Period
1958			
June 03-June 08	June 06-June 08	07-06-06-<u>17</u>-<u>42</u>-08	3-0-4-2-0-3
June 19-June 23	June 20-June 22	10-09-<u>39</u>-<u>27</u>-12	6-1-0-0-1

COMMERCE - STANDARDS - BOULDER