

Space Weather Highlights

24-30 Aug 1998

Solar activity rose to high levels during the period. Region 8307 (N31, L = 038, class/area Dko/570 on 22 August) produced a long-duration X1/3B flare at 24/2212UT accompanied by a 2100 s.f.u. Tenflare, Types II and IV radio sweeps and a loop prominence system. Activity dropped to very low to low levels during 25 - 29 August, during which time Region 8307 gradually simplified and produced occasional C-class subflares. Region 8319 (N19, L = 008, class/area Eki/570 on 30 August) grew at a rapid pace during 30 August and produced two impulsive M-class flares, an M1/1N at 30/0541UT and an M1/1N at 30/0937UT, neither of which were impressive in radio output. Old Region 8293 rotated into view on 30 August and was numbered as new Region 8323 (S22, L = 273, class/area Ekc/780 on 30 August). This region was large with a compact sunspot distribution and moderate magnetic complexity and produced several C-class flares. The August (provisional) Brussels S.I.D.C. sunspot number was 91.7, the highest seen so far this cycle and the highest since November of 1992.

Real-time solar wind data were available from the Advanced Composition Explorer (ACE) spacecraft during most of the period. A coronal mass ejection followed the X1/3B flare mentioned above. As the ejection passed ACE solar windspeeds increased from 400 - 900 km/sec while Bz became southward at minus 10 - 15 nT (GSM). Densities were only slightly enhanced during the CME passage.

The greater than 10 MeV proton flux at geosynchronous altitude reached event levels following Monday's major flare. The event began at 24/2355UT, reached a peak flux of 600 PFU at 26/0330UT, then ended at 29/1210UT. A greater than 100 MeV proton event occurred as well. It began at 24/2245UT, reached a peak of 3.5 PFU at 23/0055UT and ended at 26/2050UT.

The greater than 2 MeV electron flux at geosynchronous altitude was at moderate to high levels.

The geomagnetic field was quiet to unsettled during 24 - 25 August. A major geomagnetic storm occurred in the wake of the X1/3B flare. It began with a 75-nanoTesla sudden impulse at 26/0651UT followed by active to minor storm levels at middle latitudes and active to (brief) severe storm levels at high latitudes. A Forbush decrease followed the sudden impulse and eventually peaked at around minus 10% at 26/1200UT. The storm intensified early on 27 August with severe storm levels observed at all latitudes (there were isolated K=9 at some high latitude stations). Activity declined to active to major storm levels during the latter half of 27 August and continued through midday 28 August. Thereafter, activity declined to mostly quiet to unsettled levels with occasional active levels recorded at all latitudes.

Space Weather Forecast

02 September-28 September 1998

Solar activity is expected to be low to moderate. Regions 8323, and to a lesser extent 8319, are expected to produce M-class flares. There is also a fair chance for a major flare from Region 8323, given its size and complexity. Region 8307, which was crossing the west limb at issue time, is expected to return to the visible disk around 15 September. Chances for major flare activity may increase upon its return.

There is a fair chance for a proton event, should Region 8307 produce another major flare while crossing the west limb. Region 8323 also poses a slight threat for a proton event as it approaches central meridian.

The greater than 2 MeV electron flux at geosynchronous altitude is expected to be at moderate to high levels until around 06 September. Fluxes may reach high levels during 19 - 21 September as well. Normal to moderate fluxes are expected for the remainder of the period.

The geomagnetic field is expected to be at quiet to unsettled levels during most of the period. However, active periods are possible through 04 September and again during 18 - 19 September due to high-speed solar wind streams.



Daily Solar Data

| Date | Radio Flux | Sun spot | Sunspot Area | X-ray Background | X-ray Flux | | | Flares | Optical | | | |
|-----------|------------|-----------------------------|--------------|------------------|------------|---|---|--------|---------|---|---|---|
| | 10.7 cm | No. (10 ⁶ hemi.) | | | C | M | X | S | 1 | 2 | 3 | 4 |
| 24 August | 121 | 99 | 640 | B4.1 | 1 | 0 | 1 | 4 | 1 | 0 | 1 | 0 |
| 25 August | 122 | 109 | 700 | C4.9 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 26 August | 127 | 146 | 650 | B2.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 27 August | 135 | 153 | 460 | B3.0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| 28 August | 139 | 167 | 530 | B5.0 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 29 August | 147 | 128 | 810 | B4.8 | 7 | 0 | 0 | 5 | 0 | 0 | 0 | 0 |
| 30 August | 163 | 136 | 1630 | B7.3 | 17 | 3 | 0 | 30 | 4 | 0 | 0 | 0 |

Daily Particle Data

| Date | Proton Fluence (protons/cm ² -day-sr) | | | Electron Fluence (electrons/cm ² -day-sr) | | |
|-----------|---|--------|---------|---|--------|-------|
| | >1MeV | >10MeV | >100MeV | >.6MeV | >2MeV | >4MeV |
| 24 August | 5.7E+6 | 1.5E+5 | 9.5E+3 | | 2.6E+7 | |
| 25 August | 6.0E+7 | 1.0E+7 | 1.3E+5 | | 3.4E+7 | |
| 26 August | 4.8E+8 | 2.9E+7 | 2.3E+4 | | 3.0E+7 | |
| 27 August | 9.0E+7 | 2.8E+6 | 2.7E+3 | | 1.7E+7 | |
| 28 August | 2.3E+7 | 1.2E+6 | 3.1E+3 | | 4.4E+8 | |
| 29 August | 6.4E+6 | 7.4E+5 | 3.0E+3 | | 4.2E+8 | |
| 30 August | 2.9E+6 | 2.6E+5 | 2.8E+3 | | 4.9E+8 | |

Daily Geomagnetic Data

| Date | Middle Latitude Fredericksburg | | High Latitude College | | Estimated Planetary | |
|-----------|-----------------------------------|-----------------|--------------------------|-----------------|------------------------|-----------------|
| | A | K-indices | A | K-indices | A | K-indices |
| 24 August | 9 | 1-2-2-2-2-4-2 | 24 | 5-3-4-5-2-4-1-2 | 11 | 1-3-3-2-3-3-2-3 |
| 25 August | 8 | 3-3-1-1-2-2-2-2 | 5 | 2-3-0-1-0-1-2-1 | 11 | 3-3-1-2-2-3-3-3 |
| 26 August | 28 | 1-2-5-5-4-4-4-4 | 70 | 4-5-4-7-6-7-5-5 | 39 | 2-3-5-6-5-5-5-5 |
| 27 August | 77 | 7-8-6-5-4-4-4-4 | * | 6-*-8-7-7-6-5-4 | 112 | 7-7-8-7-7-6-6-5 |
| 28 August | 26 | 5-4-3-2-5-4-3-3 | 47 | 3-6-5-5-5-6-5-2 | 25 | 4-5-4-3-3-4-4-3 |
| 29 August | 11 | 3-3-2-1-2-2-4-1 | 36 | 3-4-4-4-5-6-5-2 | 18 | 4-4-3-3-3-4-4-2 |
| 30 August | 11 | 3-3-2-2-3-2-3-2 | 19 | 3-4-3-5-3-3-2-2 | 15 | 3-4-3-3-3-3-3-3 |



Alerts and Warnings Issued

| Date and Time of Issue (UT) | Type of Alert or Warning | Date and Time of Event (UT) |
|-----------------------------|---|-----------------------------|
| 24 Aug 0035 | 1- 245 MHz Radio Burst | 23 Aug |
| 24 Aug 0035 | 245 MHz Radio Noise Storm | 23 Aug |
| 24 Aug 2225 | Type II Radio Emission | 24 Aug 2203 |
| 24 Aug 2241 | 2695MHz Radio Burst 2200 s.f.u. | 24 Aug 2157 |
| 24 Aug 2241 | X-ray event X1/3B/N35E09 | 24 Aug 2212 |
| 24 Aug 2314 | Type IV Radio Emission | 24 Aug 2216 |
| 24 Aug 2322 | Proton Event Warning $\geq 10\text{pfu}$ @ $\geq 10\text{MeV}$ | 24 Aug 2330 |
| 24 Aug 2322 | Proton Event Expected $>1\text{pfu}$ @ $\geq 100\text{MeV}$ | 24 Aug 2319 |
| 24 Aug 2341 | Proton Event $>1\text{pfu}$ @ $\geq 100\text{MeV}$ | 24 Aug 2310 |
| 25 Aug 0013 | Proton Event $\geq 10\text{pfu}$ @ $\geq 10\text{MeV}$ | 24 Aug 2355 |
| 25 Aug 0043 | 1-245 MHz Radio Burst | 24 Aug |
| 25 Aug 0600 | K-Index of 4 Observed | 25 Aug 03-06 |
| 25 Aug 1216 | Proton Event Warning $\geq 10\text{pfu}$ $\geq 10\text{MeV}$ | 25 Aug 1214 |
| 25 Aug 1212 | Proton Event Expected $>1\text{pfu}$ @ $\geq 100\text{MeV}$ CONTINUED | 24 Aug 2319 |
| 25 Aug 1227 | Proton Event $\geq 10\text{pfu}$ @ $\geq 10\text{MeV}$ CONTINUED | 24 Aug 2355 |
| 25 Aug 1225 | Proton Event $\geq 1\text{pfu}$ @ $\geq 100\text{MeV}$ CONTINUED | 24 Aug 2310 |
| 25 Aug 1808 | A ≥ 50 Watch | 26 Aug |
| 25 Aug 1809 | A ≥ 50 Watch | 27 Aug |
| 26 Aug 0705 | Sudden Impulse of 75 nT observed at Boulder | 26 Aug 0651 |
| 26 Aug 0930 | K-Index of 5 Observed | 26 Aug 06-09 |
| 26 Aug 1219 | Proton Event $\geq 10\text{pfu}$ @ $\geq 10\text{MeV}$ CONTINUED | 24 Aug 2355 |
| 26 Aug 1220 | Proton Event $>1\text{pfu}$ @ $\geq 100\text{MeV}$ CONTINUED | 24 Aug 2310 |
| 26 Aug 1500 | A-Index ≥ 20 Observed | 26 Aug 1500 |
| 26 Aug 1800 | K-Index of 4 Observed | 26 Aug 15-18 |
| 26 Aug 2045 | Proton Event $>1\text{pfu}$ @ $\geq 100\text{MeV}$ ENDED | 24 Aug 2310 |
| 26 Aug 2131 | A ≥ 20 Watch | 28 Aug |
| 27 Aug 0000 | A ≥ 30 Observed | 26 Aug 2359 |
| 27 Aug 0000 | K= 5 Observed | 26 Aug 21-24 |
| 27 Aug 0024 | 2-245 MHz Radio Bursts | 26 Aug |
| 27 Aug 0300 | K ≥ 6 Observed | 27 Aug 00-03 |
| 27 Aug 0604 | A ≥ 50 Observed | 27 Aug 0600 |
| 27 Aug 0604 | K ≥ 6 Observed | 27 Aug 03-06 |
| 27 Aug 1200 | Proton Event $\geq 10\text{pfu}$ @ $\geq 10\text{MeV}$ CONTINUED | 24 Aug 2355 |
| 27 Aug 2032 | A ≥ 30 Watch | 28 Aug |
| 27 Aug 2136 | $>2\text{MeV}$ Electron Event $\geq 1000\text{pfu}$ | 27 Aug 2105 |
| 28 Aug 0301 | K = 4 Observed | 28 Aug 00-03 |
| 28 Aug 0604 | K= 5 Observed | 28 Aug 03-06 |
| 28 Aug 1200 | A ≥ 30 Observed CONTINUED | 26 Aug 2359 |
| 28 Aug 1200 | $>2\text{MeV}$ Electron Event $\geq 1000\text{pfu}$ CONTINUED | 27 Aug 2105 |
| 28 Aug 1211 | Proton Event $\geq 10\text{pfu}$ @ $\geq 10\text{MeV}$ CONTINUED | 24 Aug 2355 |
| 28 Aug 0900 | A ≥ 30 Observed ENDED | 26 Aug 2359 |
| 28 Aug 0900 | A ≥ 50 Observed ENDED | 27 Aug 0600 |
| 29 Aug 0049 | 1-245 MHz Radio Burst | 28 Aug |

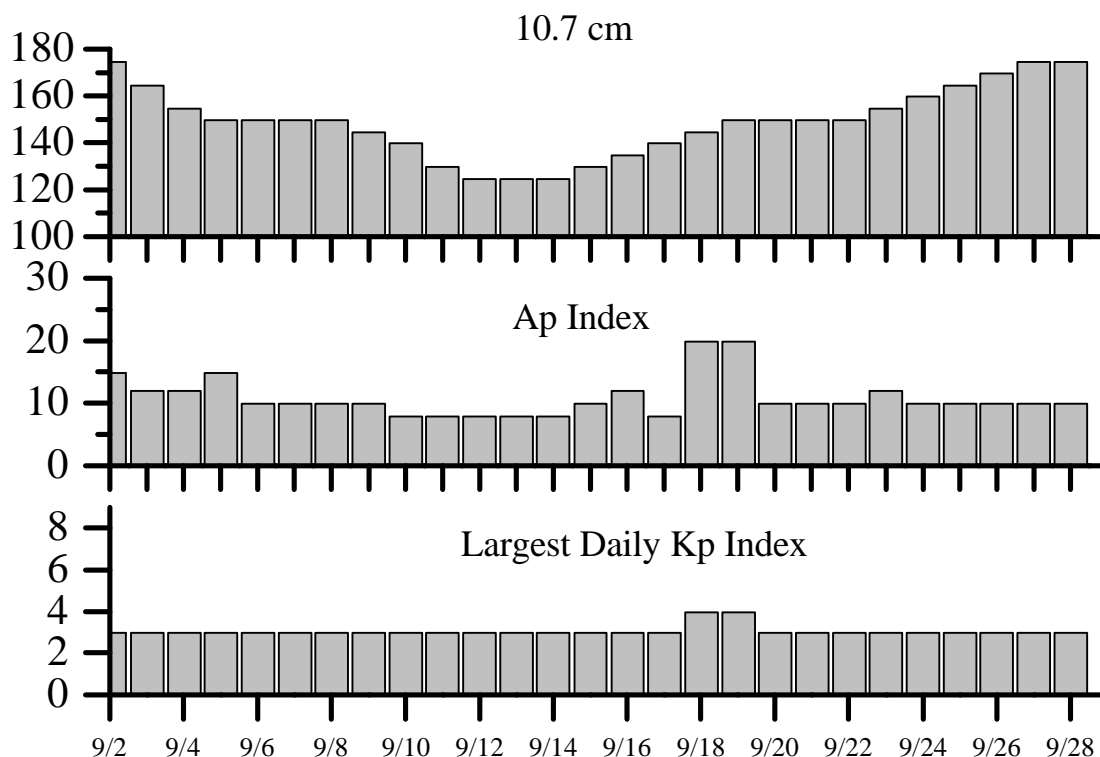


Alerts and Warnings Issued – continued.

| Date and Time of Issue (UT) | Type of Alert or Warning | Date and Time of Event (UT) |
|-----------------------------|--|-----------------------------|
| 29 Aug 0307 | K= 4 Observed | 29 Aug 00-03 |
| 29 Aug 1200 | >2MeV Electron Event ≥ 1000 pfu CONTINUED | 27 Aug 2105 |
| 29 Aug 1200 | >2MeV Electron Event ≥ 1000 pfu CONTINUED | 24 Aug 2355 |
| 29 Aug 1818 | Proton Event ≥ 10 pfu @ ≥ 10 MeV ENDED | 24 Aug 2355 |
| 30 Aug 0049 | 8-245 MHz Radio Bursts | 29 Aug |
| 30 Aug 0602 | K = 4 Observed | 30 Aug 03-06 |
| 30 Aug 1200 | >2MeV Electron Event ≥ 1000 pfu CONTINUED | 27 Aug 2105 |
| 30 Aug 1901 | Type II Radio Emission | 30 Aug 1859 |
| 31 Aug 1200 | >2MeV Electron Event ≥ 1000 pfu CONTINUED | 27 Aug 2105 |



Twenty-seven Day Outlook



| Date | Radio Flux 10.7 cm | Planetary A Index | Largest Kp Index | Date | Radio Flux 10.7 cm | Planetary A Index | Largest Kp Index |
|--------|-----------------------|----------------------|---------------------|--------|-----------------------|----------------------|---------------------|
| 02 Sep | 175 | 15 | 3 | 16 Sep | 135 | 12 | 3 |
| 03 | 165 | 12 | 3 | 17 | 140 | 8 | 3 |
| 04 | 155 | 12 | 3 | 18 | 145 | 20 | 4 |
| 05 | 150 | 15 | 3 | 19 | 150 | 20 | 4 |
| 06 | 150 | 10 | 3 | 20 | 150 | 10 | 3 |
| 07 | 150 | 10 | 3 | 21 | 150 | 10 | 3 |
| 08 | 150 | 10 | 3 | 22 | 150 | 10 | 3 |
| 09 | 145 | 10 | 3 | 23 | 155 | 12 | 3 |
| 10 | 140 | 8 | 3 | 24 | 160 | 10 | 3 |
| 11 | 130 | 8 | 3 | 25 | 165 | 10 | 3 |
| 12 | 125 | 8 | 3 | 26 | 165 | 10 | 3 |
| 13 | 125 | 8 | 3 | 27 | 175 | 10 | 3 |
| 14 | 125 | 8 | 3 | 28 | 175 | 10 | 3 |
| 15 | 130 | 10 | 3 | | | | |



Energetic Events

| Date | Time (UT) | | | X-ray | | Optical Information | | | Peak | | Sweep Freq | | |
|--------|-----------|------|------|-------|-------|---------------------|----------|-----|------------|------|------------|----|---|
| | Begin | Max | ½ | Class | Integ | Imp Brtns | Location | | Radio Flux | | Intensity | | |
| | | | Max | | Flux | | Lat | CMD | 245 | 2695 | II | IV | |
| 24 Aug | 2150 | 2212 | 2235 | X1.0 | .160 | 3B | N35E09 | | 8307 | 830 | 2100 | 3 | 2 |
| 30 Aug | 0512 | 0541 | 0551 | M1.0 | .012 | 1N | N21W33 | | 8319 | | | | |
| 30 Aug | 0929 | 0937 | 0943 | M1.0 | .006 | 1N | N21W35 | | 8319 | | | | |
| 30 Aug | 1800 | 1805 | 1809 | M1.3 | .005 | SN | N29W60 | | 8307 | 1700 | 77 | 2 | |

Flare List

| Date | Time | | | X-ray Class. | Optical | | Rgn # |
|-----------|-------|-------|-------|-----------------|----------------|---------------------|----------|
| | Begin | Max | End | | Imp / Brtns | Location Lat CMD | |
| 24 August | 0620 | 0620 | 0632 | | SF | N17W29 | 8309 |
| | B0932 | U0933 | 0941 | | SF | N32E13 | 8307 |
| | 1047 | 1051 | 1054 | B7.6 | | | |
| | 1347 | 1452 | 1515 | B7.0 | | | |
| | 1524 | 1524 | 1530 | C1.1 | SF | N33E18 | 8307 |
| | 2036 | 2037 | 2048 | B6.0 | SF | N31E07 | 8307 |
| | 2148 | 2204 | A0108 | X1.0 | 3B | N35E09 | 8307 |
| | B2312 | 2336 | 0050 | | 1F | N29W03 | 8307 |
| 25 August | 0918 | 0919 | 0925 | | SF | N16W44 | 8309 |
| 26 August | 2104 | 2110 | 2117 | B4.5 | | | |
| | 2154 | 2204 | 2218 | B9.5 | | | |
| 27 August | 0840 | 0844 | 0850 | | SF | N21E05 | 8319 |
| | 1051 | 1129 | 1208 | C3.0 | | | 8319 |
| | B1142 | U1142 | A1204 | | SF | N19E04 | 8319 |
| | 1953 | 1958 | 2003 | C1.6 | | | |
| 28 August | 2317 | 0013 | 2329 | B9.7 | | | |
| | 1056 | 1057 | 1059 | | SF | N18W09 | 8319 |
| | 1103 | 1110 | 1124 | C1.8 | | | |
| 29 August | 2211 | 2216 | 2220 | C1.6 | | | |
| | 0054 | 0103 | 0111 | C2.5 | | | |
| | 0131 | 0132 | 0140 | | SF | N21W18 | 8319 |
| | 0457 | 0500 | 0509 | C1.7 | SF | N20W16 | 8319 |
| | 0533 | 0538 | 0544 | C1.2 | | | |
| | 0646 | 0646 | 0650 | | SF | N18W18 | 8319 |
| | 1215 | 1219 | 1223 | B8.0 | | | |
| | 1249 | 1257 | 1321 | B9.5 | | | |
| 30 August | 1341 | 1345 | 1351 | C1.0 | | | |
| | 1532 | 1534 | 1547 | C2.5 | SF | N30W45 | 8307 |
| | 1830 | 1836 | 1840 | C5.3 | | | |
| | 2148 | 2153 | 2202 | C1.1 | SF | N31W49 | 8307 |
| | 0039 | 0040 | 0054 | C1.8 | SF | N19W29 | 8319 |
| | 0059 | 0059 | 0104 | | SF | N18W29 | 8319 |
| | 0116 | 0119 | 0131 | | SF | N19W30 | 8319 |
| | 0151 | 0156 | 0202 | C1.3 | | | |



Flare List-continued

| Date | Time | | | X-ray Class. | Optical | | Rgn # |
|-----------|-------|-------|-------|-----------------|----------------|---------------------|----------|
| | Begin | Max | End | | Imp / Brtns | Location Lat CMD | |
| 30 August | 0236 | 0240 | 0244 | C1.4 | | | |
| | 0336 | 0340 | 0359 | C4.3 | SF | N18W28 | 8319 |
| | 0400 | 0402 | 0410 | | SF | N19W30 | 8319 |
| | 0430 | 0431 | 0443 | | SF | N19W29 | 8319 |
| | 0500 | 0503 | 0511 | | SF | N29W68 | 8307 |
| | 0514 | 0540 | 0612 | M1.0 | 1N | N21W33 | 8319 |
| | 0618 | 0620 | 0646 | C6.8 | 1F | N21W33 | 8319 |
| | 0638 | 0640 | 0656 | | SF | N20W17 | 8322 |
| | 0643 | 0651 | 0707 | | SF | N29W69 | 8307 |
| | 0726 | 0730 | 0735 | C2.0 | | | |
| | 0736 | 0738 | 0746 | | SF | N21W34 | 8319 |
| | 0740 | 0743 | 0746 | | SF | S22E56 | 8323 |
| | 0854 | 0903 | 0907 | | SF | N21W35 | 8319 |
| | 0932 | U0935 | A0953 | M1.0 | 1N | N21W35 | 8319 |
| | 1133 | 1141 | 1200 | C2.4 | | | |
| | 1249 | 1253 | 1300 | | SF | S20E60 | 8323 |
| | 1253 | 1255 | 1310 | C3.1 | SF | N31W56 | 8307 |
| | 1316 | 1320 | 1325 | C2.5 | | | |
| | 1328 | 1359 | 1438 | C3.4 | SF | N16W38 | 8319 |
| | 1358 | 1359 | 1404 | | SF | S18E61 | 8323 |
| | 1447 | 1452 | 1457 | C2.8 | SF | N21W38 | 8319 |
| | 1507 | 1524 | 1555 | | SF | S22E51 | 8323 |
| | 1528 | 1531 | 1535 | | SF | N21W38 | 8319 |
| | 1602 | 1603 | 1611 | | SF | S22E51 | 8323 |
| | 1603 | 1612 | 1620 | | 1F | N21W39 | 8319 |
| | 1642 | 1647 | 1651 | C5.4 | | | |
| | 1726 | 1726 | 1731 | C2.3 | SF | S22E50 | 8323 |
| | 1753 | 1756 | 1800 | | SF | N21W40 | 8319 |
| | B1807 | U1808 | A1808 | M1.3 | SN | N29W60 | 8307 |
| | 1837 | 1842 | 1850 | C3.3 | | | |
| | 1904 | 1906 | 1910 | | SF | N21W40 | 8319 |
| | B1945 | U1946 | 1956 | | SF | N30W60 | 8307 |
| | B1947 | U1948 | 1951 | | SF | S21E57 | 8323 |
| | 1958 | 2000 | 2014 | | SF | N14W41 | 8319 |
| | 2017 | 2031 | 2037 | C3.6 | | | |
| | 2049 | 2052 | 2101 | | SF | S17E59 | 8323 |
| | 2151 | 2154 | 2158 | C2.8 | SF | N17W41 | 8319 |
| | 2247 | 2259 | 2304 | C3.6 | SF | S22E47 | 8323 |



Region Summary

| Date | Location | | Sunspot Characteristics | | | | Flares | | | | | | | |
|------|----------------|-------|--------------------------------|-------------------|---------------|---------------|--------------|-------|---|---|---------|---|---|---|
| | (° Lat ° CMD) | Helio | Area (10 ⁶ hemi) | Extent (helio) | Spot Class | Spot Count | Mag Class | X-ray | | | Optical | | | |
| | | Lon | | | | | | C | M | X | S | 1 | 2 | 3 |

Region 8303

| | | | | | | | | | | | | | | | | | |
|--------|--------|-----|------|----|-----|-----|---|--|--|--|--|--|--|--|--|--|--|
| 14 Aug | N20E52 | 126 | 0000 | 03 | BXO | 002 | B | | | | | | | | | | |
| 15 Aug | N20E38 | 127 | 0000 | 00 | AXX | 001 | A | | | | | | | | | | |
| 16 Aug | N20E25 | 127 | 0000 | 00 | | 000 | | | | | | | | | | | |
| 17 Aug | N20E12 | 127 | 0000 | 00 | | 000 | | | | | | | | | | | |
| 18 Aug | N21W02 | 127 | 0020 | 02 | BXO | 005 | B | | | | | | | | | | |
| 19 Aug | N20W14 | 126 | 0020 | 04 | BXO | 005 | B | | | | | | | | | | |
| 20 Aug | N20W27 | 126 | 0000 | 00 | | 000 | | | | | | | | | | | |
| 21 Aug | N20W40 | 126 | 0000 | 00 | | 000 | | | | | | | | | | | |
| 22 Aug | N20W53 | 126 | 0000 | 00 | | 000 | | | | | | | | | | | |
| 23 Aug | N20W66 | 126 | 0000 | 00 | | 000 | | | | | | | | | | | |
| 24 Aug | N20W79 | 126 | 0000 | 00 | | 000 | | | | | | | | | | | |
| 25 Aug | N20W92 | 126 | 0000 | 00 | | 000 | | | | | | | | | | | |

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 127

Region 8304

| | | | | | | | | | | | | | | | | | |
|--------|--------|-----|------|----|-----|-----|---|--|--|--|--|--|--|--|--|--|--|
| 15 Aug | S30E64 | 101 | 0090 | 02 | HSX | 001 | A | | | | | | | | | | |
| 16 Aug | S30E53 | 099 | 0100 | 11 | CSO | 002 | B | | | | | | | | | | |
| 17 Aug | S30E42 | 096 | 0110 | 11 | CAO | 004 | B | | | | | | | | | | |
| 18 Aug | S30E29 | 096 | 0110 | 09 | CSO | 005 | B | | | | | | | | | | |
| 19 Aug | S30E16 | 096 | 0090 | 12 | CSO | 004 | B | | | | | | | | | | |
| 20 Aug | S27E03 | 096 | 0070 | 10 | CSO | 005 | B | | | | | | | | | | |
| 21 Aug | S28W11 | 097 | 0050 | 10 | CSO | 004 | B | | | | | | | | | | |
| 22 Aug | S26W24 | 097 | 0040 | 08 | CSO | 005 | B | | | | | | | | | | |
| 23 Aug | S27W38 | 097 | 0030 | 06 | CSO | 002 | B | | | | | | | | | | |
| 24 Aug | S29W52 | 098 | 0030 | 01 | HSX | 001 | A | | | | | | | | | | |
| 25 Aug | S25W66 | 099 | 0040 | 01 | AXX | 001 | A | | | | | | | | | | |
| 26 Aug | S29W78 | 098 | 0020 | 00 | AXX | 001 | A | | | | | | | | | | |
| 27 Aug | S29W91 | 098 | 0000 | 00 | | 000 | | | | | | | | | | | |

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 096



Region Summary-continued

| Date | Location | | Sunspot Characteristics | | | | Flares | | | | | | | | | | |
|--------------------|----------------|-------|---------------------------------|-------------------|---------------|---------------|--------------|-------|---|---|---------|---|---|---|---|---|---|
| | (° Lat ° CMD) | Helio | Area (10 ⁻⁶ hemi) | Extent (helio) | Spot Class | Spot Count | Mag Class | X-ray | | | Optical | | | | | | |
| | | Lon | | | | | | C | M | X | S | 1 | 2 | 3 | 4 | | |
| <i>Region 8306</i> | | | | | | | | | | | | | | | | | |
| 15 Aug | N28E82 | 083 | 0010 | 02 | AXX | 002 | A | | | | | | | | | | |
| 16 Aug | N27E68 | 084 | 0060 | 02 | HSX | 001 | A | | | | | | | | | | |
| 17 Aug | N27E55 | 083 | 0050 | 02 | HSX | 001 | A | | | | | | | | | | |
| 18 Aug | N27E43 | 082 | 0050 | 02 | HSX | 001 | A | | | | | | | | | | |
| 19 Aug | N27E30 | 082 | 0050 | 02 | HSX | 002 | A | | | | | | | | | | |
| 20 Aug | N28E17 | 082 | 0030 | 02 | HSX | 002 | A | | | | | | | | | | |
| 21 Aug | N28E05 | 081 | 0010 | 05 | BXO | 005 | B | | | | | | | | | | |
| 22 Aug | N28W08 | 081 | 0000 | 00 | | 000 | | | | | | | | | | | |
| 23 Aug | N28W21 | 081 | 0000 | 00 | | 000 | | | | | | | | | | | |
| 24 Aug | N28W34 | 081 | 0000 | 00 | | 000 | | | | | | | | | | | |
| 25 Aug | N28W47 | 081 | 0000 | 00 | | 000 | | | | | | | | | | | |
| 26 Aug | N28W60 | 081 | 0000 | 00 | | 000 | | | | | | | | | | | |
| 27 Aug | N28W73 | 081 | 0000 | 00 | | 000 | | | | | | | | | | | |
| 28 Aug | N28W86 | 081 | 0000 | 00 | | 000 | | | | | | | | | | | |
| | | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Crossed West Limb.

Absolute heliographic longitude: 081

| | | | | | | | | | | | | | | | | | |
|--------------------|--------|-----|------|----|-----|-----|----|---|---|---|---|---|---|---|---|---|--|
| <i>Region 8307</i> | | | | | | | | | | | | | | | | | |
| 17 Aug | N30E90 | 048 | 0000 | 00 | | 000 | | | | | 1 | | | | | | |
| 18 Aug | N30E87 | 036 | 0000 | 00 | | 000 | | | 1 | 2 | | 1 | | | | | |
| 19 Aug | N32E72 | 040 | 0330 | 06 | DHO | 007 | B | 1 | 2 | 1 | | 1 | | | | | |
| 20 Aug | N32E59 | 040 | 0440 | 11 | EKO | 008 | BD | 1 | | | | | | | | | |
| 21 Aug | N31E47 | 039 | 0510 | 11 | EKO | 011 | B | 1 | 1 | | | 1 | 1 | | | | |
| 22 Aug | N31E34 | 039 | 0570 | 10 | DKO | 012 | BD | 1 | 1 | | | 1 | 1 | | | | |
| 23 Aug | N31E21 | 038 | 0450 | 10 | DKO | 012 | BD | 1 | 1 | | | 1 | | | | | |
| 24 Aug | N31E09 | 037 | 0370 | 09 | DKO | 017 | BG | 1 | | 1 | | 1 | | 1 | | | |
| 25 Aug | N30W01 | 034 | 0380 | 10 | DKO | 018 | BD | | | | | | | | | | |
| 26 Aug | N31W15 | 035 | 0320 | 09 | DKO | 014 | BG | | | | | | | | | | |
| 27 Aug | N31W26 | 033 | 0180 | 05 | DAO | 012 | B | | | | | | | | | | |
| 28 Aug | N32W39 | 032 | 0160 | 05 | DSO | 013 | B | | | | | | | | | | |
| 29 Aug | N32W52 | 032 | 0140 | 07 | DSO | 009 | B | 1 | 1 | | | | | | | | |
| 30 Aug | N30W65 | 032 | 0140 | 04 | DSO | 003 | B | 2 | 1 | | | 1 | | | | | |
| | | | | | | | | | 9 | 8 | 5 | 0 | 7 | 2 | 1 | 0 | |

Still on Disk.

Absolute heliographic longitude: 034



Region Summary-continued

| Date | Location | | Sunspot Characteristics | | | | Flares | | | | | | | | | | | | | | | |
|--------------------|----------------|-------|--------------------------------|-------------------|---------------|---------------|--------------|-------|---|---|---------|---|---|---|---|--|--|--|--|--|--|--|
| | (° Lat ° CMD) | Helio | Area (10 ⁶ hemi) | Extent (helio) | Spot Class | Spot Count | Mag Class | X-ray | | | Optical | | | | | | | | | | | |
| | | Lon | | | | | | C | M | X | S | 1 | 2 | 3 | 4 | | | | | | | |
| <i>Region 8308</i> | | | | | | | | | | | | | | | | | | | | | | |
| 18 Aug | S21E72 | 053 | 0060 | 02 | HSX | 001 | A | | | | | | | | | | | | | | | |
| 19 Aug | S22E58 | 054 | 0110 | 02 | HAX | 002 | A | | | | | | | | | | | | | | | |
| 20 Aug | S21E45 | 054 | 0100 | 03 | HSX | 002 | A | | | | | | | | | | | | | | | |
| 21 Aug | S21E33 | 053 | 0110 | 03 | HSX | 002 | A | | | | | | | | | | | | | | | |
| 22 Aug | S22E18 | 055 | 0110 | 02 | HSX | 001 | A | | | | | | | | | | | | | | | |
| 23 Aug | S22E07 | 052 | 0090 | 02 | HSX | 001 | A | | | | | | | | | | | | | | | |
| 24 Aug | S23W07 | 053 | 0090 | 03 | HSX | 002 | A | | | | | | | | | | | | | | | |
| 25 Aug | S21W22 | 055 | 0100 | 02 | HSX | 001 | A | | | | | | | | | | | | | | | |
| 26 Aug | S22W33 | 053 | 0090 | 02 | HSX | 001 | A | | | | | | | | | | | | | | | |
| 27 Aug | S22W46 | 053 | 0080 | 02 | HSX | 001 | A | | | | | | | | | | | | | | | |
| 28 Aug | S22W60 | 053 | 0070 | 02 | HSX | 001 | A | | | | | | | | | | | | | | | |
| 29 Aug | S22W72 | 052 | 0090 | 02 | HSX | 001 | A | | | | | | | | | | | | | | | |
| 30 Aug | S22W89 | 056 | 0030 | 01 | HSX | 001 | A | | | | | | | | | | | | | | | |

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 052

Region 8309

| | | | | | | | | | | | | | | | | | | | | | |
|--------|--------|-----|------|----|-----|-----|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| 19 Aug | N18E28 | 084 | 0000 | 02 | AXX | 002 | A | | | | | | | | | | | | | | |
| 20 Aug | N17E15 | 084 | 0030 | 05 | BXO | 009 | B | | | | | | | | | | | | | | |
| 21 Aug | N16E02 | 084 | 0050 | 07 | DSO | 008 | B | | | | | | | | | | | | | | |
| 22 Aug | N16W13 | 086 | 0060 | 09 | DAO | 008 | B | | | | | | | | | | | | | | |
| 23 Aug | N15W26 | 085 | 0070 | 11 | ESO | 013 | B | | | | | | | | | | | | | | |
| 24 Aug | N16W39 | 085 | 0070 | 12 | CAO | 013 | B | | | | | | | | | | | | | | |
| 25 Aug | N19W51 | 084 | 0130 | 12 | EAO | 011 | B | | | | | | | | | | | | | | |
| 26 Aug | N15W66 | 086 | 0090 | 12 | ESO | 006 | B | | | | | | | | | | | | | | |
| 27 Aug | N17W81 | 088 | 0050 | 12 | CSO | 003 | B | | | | | | | | | | | | | | |
| 28 Aug | N17W94 | 088 | 0000 | 00 | | 000 | | | | | | | | | | | | | | | |

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 084



Region Summary-continued

| Date | Location | | Sunspot Characteristics | | | | Flares | | | | | | | | | | |
|--------------------------------------|-------------|-------|--------------------------------|-------------------|---------------|---------------|--------------|-------|---|---|---------|---|---|---|---|---|---|
| | ° Lat ° CMD | Helio | Area (10 ⁶ hemi) | Extent (helio) | Spot Class | Spot Count | Mag Class | X-ray | | | Optical | | | | | | |
| | | Lon | | | | | | C | M | X | S | 1 | 2 | 3 | 4 | | |
| <i>Region 8310</i> | | | | | | | | | | | | | | | | | |
| 20 Aug | N23E66 | 033 | 0010 | 00 | AXX | 001 | A | | | | | | | | | | |
| 21 Aug | N22E56 | 030 | 0030 | 14 | BXO | 002 | B | | | | | | | | | | |
| 22 Aug | N24E44 | 029 | 0010 | 01 | AXX | 002 | A | 1 | | | | | | | | | |
| 23 Aug | N24E32 | 027 | 0010 | 01 | AXX | 002 | A | 1 | | | | | | | | | |
| 24 Aug | N24E19 | 027 | | | | | | | | | | | | | | | |
| 25 Aug | N24E06 | 027 | | | | | | | | | | | | | | | |
| 26 Aug | N24W07 | 027 | | | | | | | | | | | | | | | |
| 27 Aug | N24W20 | 027 | | | | | | | | | | | | | | | |
| 28 Aug | N24W33 | 027 | | | | | | | | | | | | | | | |
| 29 Aug | N24W46 | 027 | | | | | | | | | | | | | | | |
| 30 Aug | N24W59 | 027 | | | | | | | | | | | | | | | |
| | | | | | | | | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Still on Disk. | | | | | | | | | | | | | | | | | |
| Absolute heliographic longitude: 027 | | | | | | | | | | | | | | | | | |
| <i>Region 8311</i> | | | | | | | | | | | | | | | | | |
| 20 Aug | N19E01 | 098 | 0000 | 00 | AXX | 001 | A | | | | | | | | | | |
| 21 Aug | N19W12 | 098 | | | | | | | | | | | | | | | |
| | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Died on Disk. | | | | | | | | | | | | | | | | | |
| Absolute heliographic longitude: 098 | | | | | | | | | | | | | | | | | |
| <i>Region 8313</i> | | | | | | | | | | | | | | | | | |
| 21 Aug | S18E43 | 043 | 0000 | 00 | AXX | 001 | A | | | | | | | | | | |
| 22 Aug | S18E30 | 043 | | | | | | | | | | | | | | | |
| 23 Aug | S18E17 | 043 | | | | | | | | | | | | | | | |
| 24 Aug | S18E04 | 043 | | | | | | | | | | | | | | | |
| 25 Aug | S18W09 | 043 | | | | | | | | | | | | | | | |
| 26 Aug | S18W22 | 043 | | | | | | | | | | | | | | | |
| 27 Aug | S18W35 | 043 | | | | | | | | | | | | | | | |
| 28 Aug | S18W48 | 043 | | | | | | | | | | | | | | | |
| 29 Aug | S18W61 | 043 | | | | | | | | | | | | | | | |
| 30 Aug | S18W74 | 043 | | | | | | | | | | | | | | | |
| | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Still on Disk. | | | | | | | | | | | | | | | | | |
| Absolute heliographic longitude: 043 | | | | | | | | | | | | | | | | | |



Region Summary-continued

| Date | Location | | Sunspot Characteristics | | | | Flares | | | | | | | |
|------|----------------|-------|--------------------------------|-------------------|---------------|---------------|--------------|-------|---|---|---------|---|---|---|
| | (° Lat ° CMD) | Helio | Area (10 ⁶ hemi) | Extent (helio) | Spot Class | Spot Count | Mag Class | X-ray | | | Optical | | | |
| | | Lon | | | | | | C | M | X | S | 1 | 2 | 3 |

Region 8314

| | | | | | | | | | | | | | | | | | | | |
|--------|--------|-----|------|----|-----|-----|---|--|--|--|--|--|--|--|--|--|--|--|-----------------|
| 21 Aug | N17E77 | 009 | 0010 | 01 | AXX | 001 | A | | | | | | | | | | | | |
| 22 Aug | N16E67 | 006 | 0020 | 08 | BXO | 003 | B | | | | | | | | | | | | |
| 23 Aug | N17E55 | 004 | 0020 | 10 | BXO | 006 | B | | | | | | | | | | | | |
| 24 Aug | N17E41 | 005 | 0020 | 09 | BXO | 005 | B | | | | | | | | | | | | |
| 25 Aug | N14E27 | 006 | 0020 | 08 | BXO | 006 | B | | | | | | | | | | | | |
| 26 Aug | N17E15 | 005 | 0020 | 06 | BXO | 005 | B | | | | | | | | | | | | |
| 27 Aug | N16E03 | 004 | 0020 | 04 | BXO | 004 | B | | | | | | | | | | | | |
| 28 Aug | N16W11 | 004 | 0010 | 06 | BXO | 003 | B | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | 0 0 0 0 0 0 0 0 |

Died on Disk.

Absolute heliographic longitude: 004

Region 8315

| | | | | | | | | | | | | | | | | | | | |
|--------|--------|-----|------|----|-----|-----|---|--|--|--|--|--|--|--|--|--|--|--|-----------------|
| 23 Aug | N25E57 | 002 | 0000 | 00 | AXX | 001 | A | | | | | | | | | | | | |
| 24 Aug | N25E44 | 002 | 0000 | 00 | | 000 | | | | | | | | | | | | | |
| 25 Aug | N22E24 | 009 | 0000 | 00 | AXX | 001 | A | | | | | | | | | | | | |
| 26 Aug | N20E11 | 009 | 0030 | 02 | AXX | 002 | A | | | | | | | | | | | | |
| 27 Aug | N20W02 | 009 | | | | | | | | | | | | | | | | | |
| 28 Aug | N26W05 | 358 | 0010 | 01 | BXO | 003 | B | | | | | | | | | | | | |
| 29 Aug | N26W18 | 358 | | | | | | | | | | | | | | | | | |
| 30 Aug | N26W31 | 358 | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | 0 0 0 0 0 0 0 0 |

Still on Disk.

Absolute heliographic longitude: 009

Region 8316

| | | | | | | | | | | | | | | | | | | | |
|--------|--------|-----|------|----|-----|-----|---|--|--|--|--|--|--|--|--|--|--|--|-----------------|
| 24 Aug | N28E78 | 328 | 0060 | 01 | HSX | 001 | A | | | | | | | | | | | | |
| 25 Aug | N25E66 | 327 | 0030 | 01 | AXX | 001 | A | | | | | | | | | | | | |
| 26 Aug | N28E53 | 327 | 0020 | 01 | HRX | 001 | A | | | | | | | | | | | | |
| 27 Aug | N25E40 | 327 | 0000 | 00 | AXX | 001 | A | | | | | | | | | | | | |
| 28 Aug | N25E27 | 327 | | | | | | | | | | | | | | | | | |
| 29 Aug | N25E14 | 327 | | | | | | | | | | | | | | | | | |
| 30 Aug | N25E01 | 327 | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | 0 0 0 0 0 0 0 0 |

Still on Disk.

Absolute heliographic longitude: 327

Region 8317

| | | | | | | | | | | | | | | | | | | | |
|--------|--------|-----|------|----|-----|-----|---|--|--|--|--|--|--|--|--|--|--|--|-----------------|
| 26 Aug | N36W57 | 077 | 0000 | 00 | AXX | 001 | A | | | | | | | | | | | | |
| 27 Aug | N29W78 | 085 | 0000 | 00 | AXX | 001 | A | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | 0 0 0 0 0 0 0 0 |

Crossed West Limb.

Absolute heliographic longitude: 077



Region Summary-continued

| Date | Location | | Sunspot Characteristics | | | | Flares | | | | | | | |
|------|----------------|-------|--------------------------------|-------------------|---------------|---------------|--------------|-------|---|---|---------|---|---|---|
| | (° Lat ° CMD) | Helio | Area (10 ⁶ hemi) | Extent (helio) | Spot Class | Spot Count | Mag Class | X-ray | | | Optical | | | |
| | | Lon | | | | | | C | M | X | S | 1 | 2 | 3 |

Region 8318

| | | | | | | | | | | | | | | | | | | |
|--------|--------|-----|------|----|-----|-----|---|--|--|---|---|---|---|---|---|---|---|---|
| 26 Aug | S21E03 | 017 | 0020 | 03 | BXO | 004 | B | | | | | | | | | | | |
| 27 Aug | S21W13 | 020 | 0020 | 04 | BXO | 004 | B | | | | | | | | | | | |
| 28 Aug | S21W26 | 020 | | | | | | | | | | | | | | | | |
| 29 Aug | S21W39 | 020 | | | | | | | | | | | | | | | | |
| 30 Aug | S23W58 | 025 | 0010 | 00 | AXX | 002 | A | | | | | | | | | | | |
| | | | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Still on Disk.

Absolute heliographic longitude: 017

Region 8319

| | | | | | | | | | | | | | | | | | | |
|--------|--------|-----|------|----|-----|-----|----|----|---|---|---|---|---|---|---|---|---|---|
| 26 Aug | N21E10 | 010 | 0040 | 06 | BXO | 011 | B | | | | | | | | | | | |
| 27 Aug | N19W03 | 010 | 0080 | 07 | DSI | 022 | B | 1 | | | | | | | | | | |
| 28 Aug | N18W15 | 008 | 0180 | 09 | DAO | 044 | BG | 1 | | | | | | | | | | |
| 29 Aug | N19W29 | 009 | 0270 | 10 | DAI | 032 | BG | 6 | 2 | | | 4 | | | | | | |
| 30 Aug | N18W41 | 008 | 0570 | 11 | EKI | 027 | BG | 6 | 2 | | | 4 | | | | | | |
| | | | | | | | | 14 | 4 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 |

Still on Disk.

Absolute heliographic longitude: 010

Region 8320

| | | | | | | | | | | | | | | | | | | |
|--------|--------|-----|------|----|-----|-----|---|---|---|---|---|---|---|---|---|---|---|---|
| 27 Aug | N16W59 | 066 | 0010 | 04 | BXO | 004 | B | | | | | | | | | | | |
| 28 Aug | N16W74 | 067 | 0000 | 01 | BXO | 002 | B | | | | | | | | | | | |
| 29 Aug | N14W87 | 067 | 0000 | 00 | AXX | 001 | A | | | | | | | | | | | |
| | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Crossed West Limb.

Absolute heliographic longitude: 066

Region 8321

| | | | | | | | | | | | | | | | | | | |
|--------|--------|-----|------|----|-----|-----|---|---|---|---|---|---|---|---|---|---|---|---|
| 27 Aug | N33E74 | 293 | 0020 | 01 | HRX | 001 | A | | | | | | | | | | | |
| 28 Aug | N32E61 | 292 | 0020 | 01 | HSX | 001 | A | | | | | | | | | | | |
| 29 Aug | N31E50 | 290 | 0020 | 01 | HSX | 001 | A | | | | | | | | | | | |
| 30 Aug | N31E37 | 290 | 0020 | 01 | HSX | 001 | A | | | | | | | | | | | |
| | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Still on Disk.

Absolute heliographic longitude: 290

Region 8322

| | | | | | | | | | | | | | | | | | | |
|--------|--------|-----|------|----|-----|-----|---|---|---|---|---|---|---|---|---|---|---|---|
| 28 Aug | N21E02 | 351 | 0030 | 06 | BXO | 009 | B | | | | | | | | | | | |
| 29 Aug | N22W12 | 352 | 0020 | 07 | BXO | 009 | B | | | | | | | | | | | |
| 30 Aug | N22W26 | 353 | 0070 | 07 | DAO | 011 | B | | | | | | | | | | | |
| | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Still on Disk.

Absolute heliographic longitude: 351



Region Summary-continued

| Location | | Sunspot Characteristics | | | | | Flares | | | | | | | | |
|--------------------------------------|---------------|-------------------------|--------------------------------|-------------------|---------------|---------------|--------------|-------|---|---|---------|---|---|---|---|
| Date | (° Lat ° CMD) | Helio Lon | Area (10 ⁶ hemi) | Extent (helio) | Spot Class | Spot Count | Mag Class | X-ray | | | Optical | | | | |
| | | | | | | | C | M | X | S | 1 | 2 | 3 | 4 | |
| <i>Region 8323</i> | | | | | | | | | | | | | | | |
| 28 Aug | S21E82 | 271 | 0050 | 02 | HSX | 001 | A | | | | | | | | |
| 29 Aug | S23E65 | 275 | 0270 | 11 | EHO | 005 | B | 2 | | | | | | | |
| 30 Aug | S21E54 | 273 | 0780 | 13 | EKC | 009 | B | 2 | | | | | | | |
| | | | | | | | | | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| Still on Disk. | | | | | | | | | | | | | | | |
| Absolute heliographic longitude: 273 | | | | | | | | | | | | | | | |
| <i>Region 8324</i> | | | | | | | | | | | | | | | |
| 30 Aug | N22W12 | 339 | 0010 | 01 | AXX | 002 | A | | | | | | | | |
| | | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Still on Disk. | | | | | | | | | | | | | | | |
| Absolute heliographic longitude: 339 | | | | | | | | | | | | | | | |



**Recent Solar Indices (preliminary)
of the observed monthly mean values**

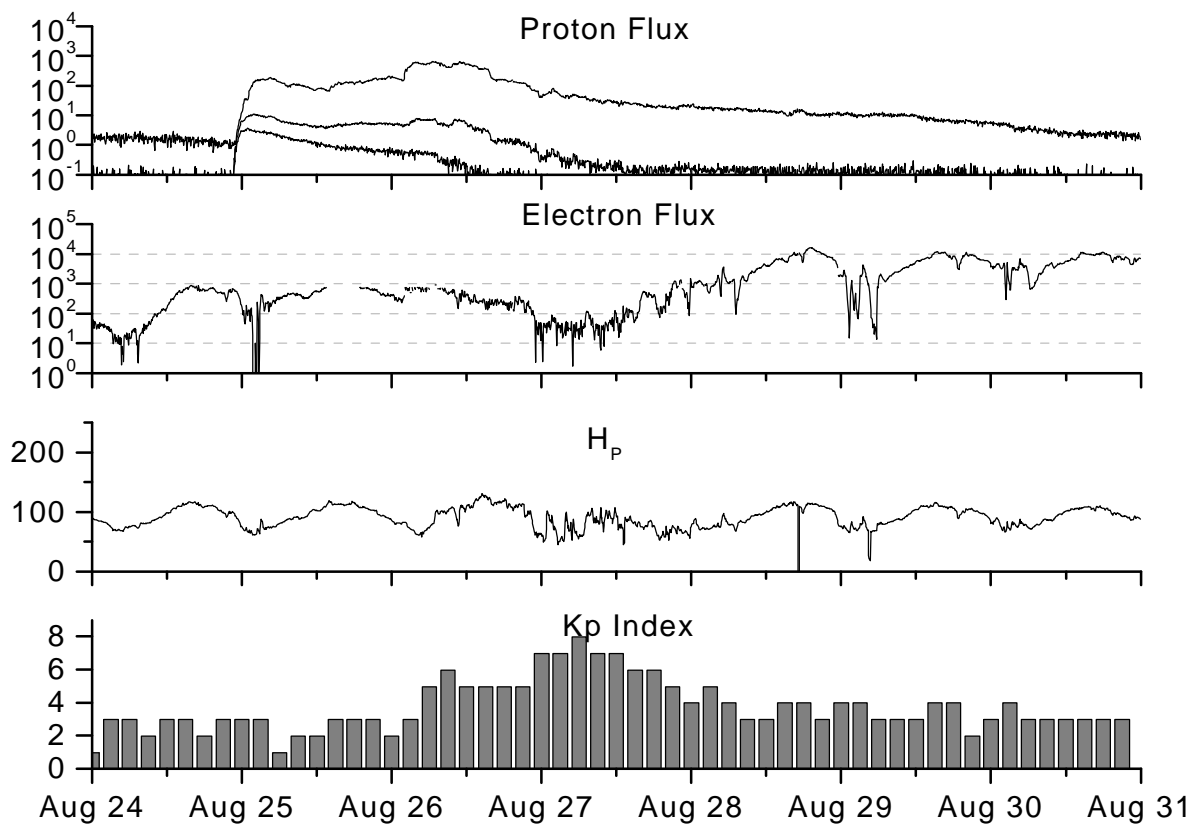
| Month | Sunspot Numbers | | | Radio Flux | | Geomagnetic | | | |
|-------------|------------------------|-------------|-----------------|----------------------|---------------------|------------------------|-----------------|-----------------|-----------------|
| | Observed values SWO | Ratio RI | Ratio RI/SWO | Smooth values SWO | Smooth values RI | **Penticton 10.7 cm | Smooth Value | Planetary Ap | Smooth Value |
| 1996 | | | | | | | | | |
| August | 20.5 | 14.4 | 0.70 | 13.1 | 08.3 | 72.4 | 72.1 | 09 | 09.4 |
| September | 02.9 | 01.6 | 0.55 | 13.3 | 08.4 | 69.4 | 72.3 | 15 | 09.3 |
| October | 02.3 | 00.9 | 0.39 | 14.0 | 08.8 | 69.2 | 72.6 | 13 | 09.1 |
| November | 26.7 | 17.9 | 0.67 | 15.4 | 09.8 | 78.7 | 73.0 | 08 | 09.1 |
| December | 21.1 | 13.3 | 0.63 | 16.2 | 10.4 | 77.8 | 73.3 | 07 | 09.3 |
| 1997 | | | | | | | | | |
| January | 09.0 | 05.7 | 0.63 | 16.5 | 10.5 | 74.0 | 73.4 | 09 | 09.3 |
| February | 11.3 | 07.6 | 0.67 | 17.4 | 11.0 | 73.8 | 73.7 | 11 | 09.2 |
| March | 14.4 | 08.7 | 0.60 | 20.4 | 13.5 | 73.5 | 75.1 | 08 | 08.9 |
| April | 24.5 | 15.5 | 0.63 | 24.0 | 16.5 | 74.5 | 76.8 | 10 | 08.6 |
| May | 28.6 | 18.5 | 0.65 | 26.4 | 18.3 | 74.6 | 78.4 | 08 | 08.6 |
| June | 22.1 | 12.7 | 0.57 | 29.0 | 20.3 | 71.7 | 80.1 | 07 | 08.6 |
| July | 17.0 | 10.4 | 0.61 | 32.4 | 22.6* | 71.1 | 81.8* | 06 | 08.5 |
| August | 36.7 | 24.4 | 0.66 | 35.9 | 25.1* | 79.0 | 83.4* | 07 | 08.3 |
| September | 52.8 | 51.3 | 0.88 | 40.5 | 28.4* | 96.2 | 85.7* | 10 | 08.4 |
| October | 33.6 | 22.8 | 0.68 | 45.4 | 31.9* | 84.9 | 88.6* | 11 | 08.6 |
| November | 53.5 | 39.0 | 0.73 | 49.3 | 35.1* | 99.5 | 91.4* | 11 | 09.0 |
| December | 57.9 | 41.2 | 0.71 | 54.2 | 39.1* | 98.8 | 94.2* | 05 | 09.6* |
| 1998 | | | | | | | | | |
| January | 51.8 | 32.3* | 0.62* | 60.6 | 43.8* | 93.5* | 97.6* | 07 | 10.0* |
| February | 54.4 | 40.7* | 0.75* | | | 93.6* | | 07 | |
| March | 81.8 | 54.8* | 0.67* | | | 109.4* | | 11 | |
| April | 73.6 | 53.3* | 0.72* | | | 108.3* | | 10 | |
| May | 74.3 | 56.9* | 0.77* | | | 106.6* | | 18 | |
| June | 93.6 | 70.5* | 0.75* | | | 108.4* | | 11* | |
| July | 98.3 | 66.2* | 0.67* | | | 114.0* | | 12* | |

*Preliminary estimates.

The lowest smoothed sunspot indices number for Cycle 22, RI = 8.0, occurred in May 1996. The highest smoothed sunspot number for Cycle 22, RI=158.5 occurred July 1989.

** From June 1991 onward, the 10.7-cm radio flux data source is Penticton, B.C. Canada. Prior to that, it was Ottawa.





*Weekly Geosynchronous Satellite Environment Summary
Week Beginning 24 August 1998*

Protons plot contains the five-minute averaged integral proton flux (protons/ cm²-sec-sr) as measured by GOES-8 (W75) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

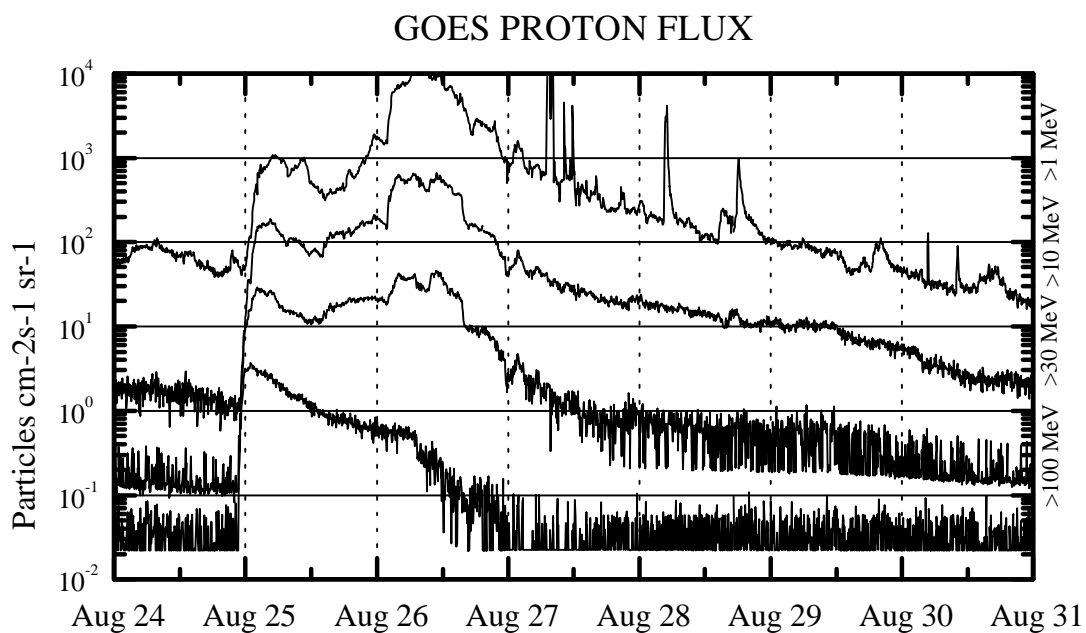
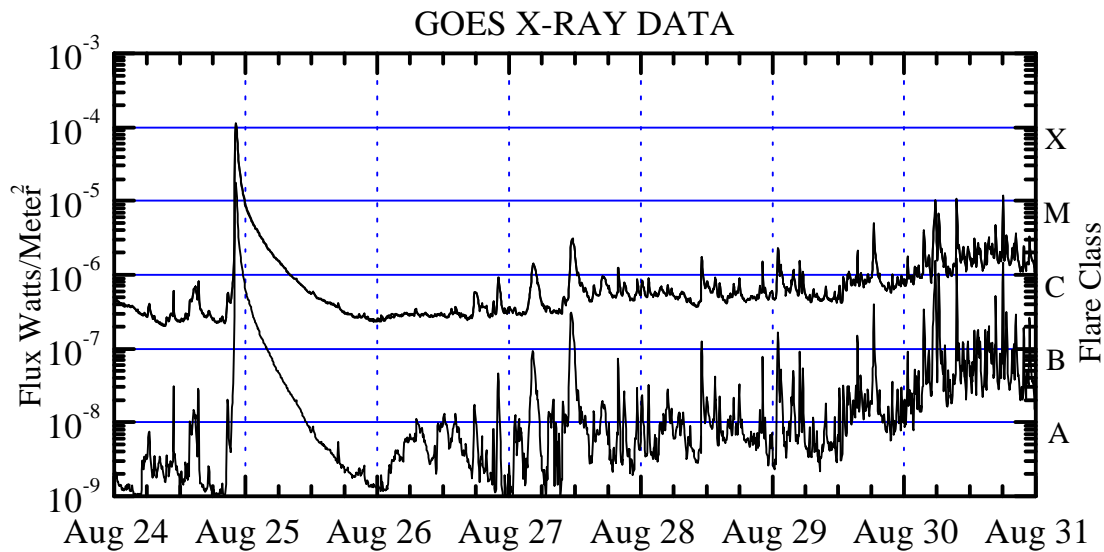
Electrons plot contains the five-minute averaged integral electron flux (electrons/ cm²-sec-sr) with energies greater than 2 MeV at GOES-8.

H_p plot contains the five minute averaged magnetic field H component in nanoteslas (nT) as measured by GOES-8. The H component is parallel to the spin axis of the satellite, which is nearly parallel to the Earth's rotation axis.

K_p plot contains the estimated planetary 3-hour K-index (derived by the USAF 55th Space Weather Squadron) in real time from magnetometers at Meanook, Canada; Sitka, AK; Glenlea, Canada; St. Johns, Canada; Ottawa, Canada; Newport, WA; Fredericksburg, VA; Boulder, CO; Fresno, CA and Heartland, UK. These data are made available through cooperation from the Geological Survey of Canada (GSC) and the US Geological Survey. These may differ from the final K_p values derived from a more extensive network of magnetometers.

The data included here are those now available in real time at the SWO and are incomplete in that they do not include the full set of parameters and energy ranges known to cause satellite operating anomalies. The proton and electron fluxes and K_p are “ global ” parameters that are applicable to a first order approximation over large areas. H_{parallel} is subject to a more localized phenomena and the measurements generally are applicable to within a few degrees of longitude of the measuring satellite.





Weekly GOES Satellite X-ray and Proton Plots

X-ray plot contains five minute averaged x-ray flux (watts/m²) as measured by GOES 8 and 10 in two wavelength bands, .05 -.4 and .1 - .8 nm. The letters A, B, C, M and X refer to x-ray event levels for the .1 - .8 nm band.

Proton plot contains the five minute averaged integral proton flux (protons/cm²-sec-sr) as measured by GOES-8 (W75) for each of the energy thresholds: >1, >10, >30 and >100 MeV. P10 event threshold is 10 pfu (protons/cm²-sec-sr) at greater than 10 MeV.



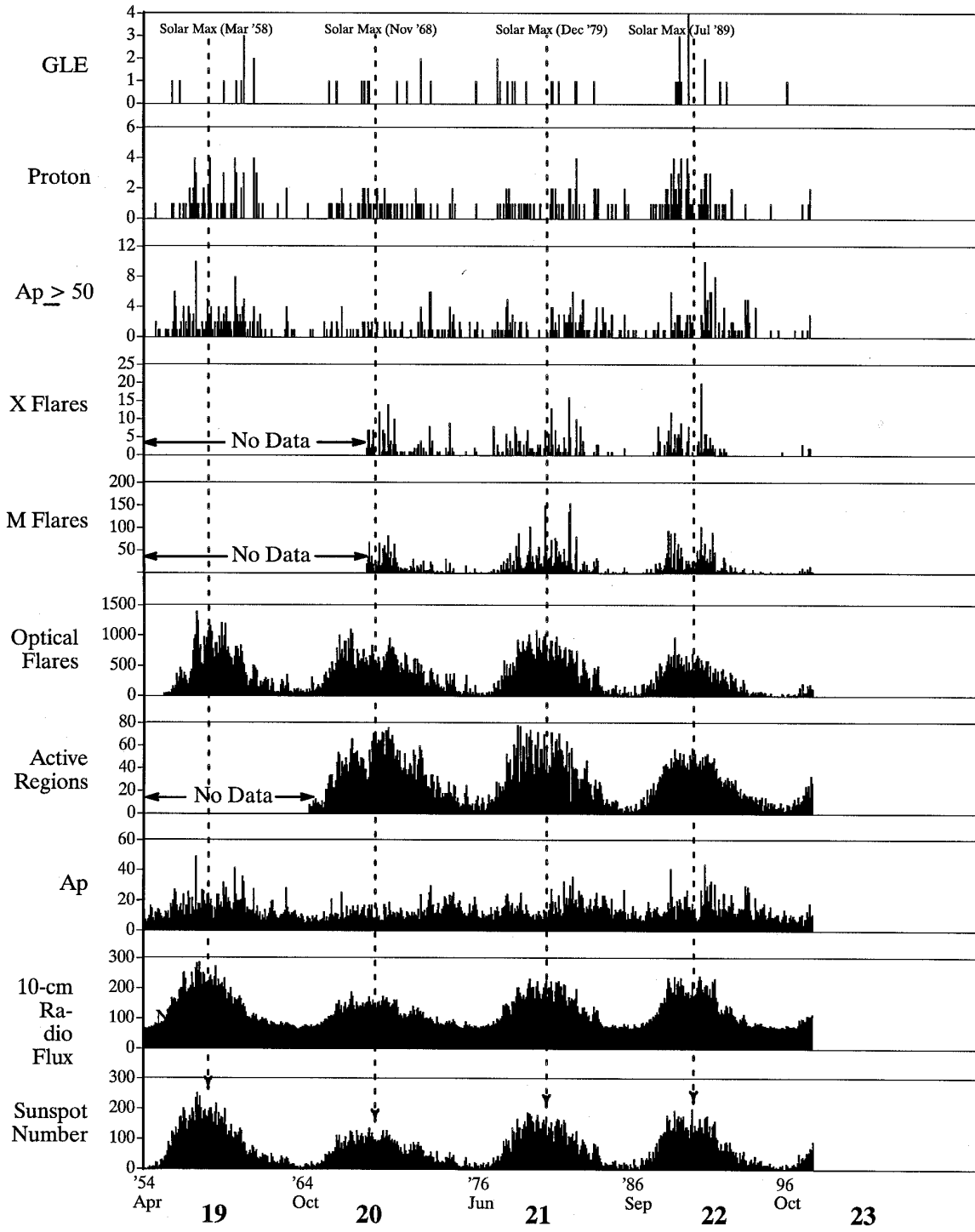


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Solar-Terrestrial Indices

Monthly Values

July 1998 Month 22



Hirman / Cohen

