

Space Weather Highlights 04 - 10 July 2005

SWO PRF 1558
12 July 2005

Solar activity ranged from low to moderate. At 05/1526 UTC, Region 588 (S05, L=049, class/area, Hsx/120 on 08 July) produced a C1.3/Sf flare with an associated asymmetric, full halo CME. Region 786 (N12, L=56, class/area, Dhi/420 on 07 July) remained the largest and most active region on the visible disk. Since rotating on the disk 01 July, the region has shown steady growth and produced numerous C and M-class flares. Activity levels increased to moderate when at 07/1629 UTC, the region produced the largest flare of the summary period, an M4.9/Sn with associated 180 sfu Tenflare. Just prior to this flare, at about 1100 UTC, a large filament erupted just to the south of Region 786. LASCO imagery observed an asymmetric, full halo CME associated with these events. Late in the period, Region 786 produced an M2.8/1n at 09/2206 UTC with moderate radio bursts including a 1500 sfu Tenflare. LASCO imagery observed another asymmetric, full halo CME.

Solar wind data were available from the NASA Advanced Composition Explorer (ACE) spacecraft during most of the summary period. Solar wind speed ranged from a high of near 575 km/s early on 04 July to a low of near 300 km/s early on 09 July. The period began with the wind speed in decline as effects from a coronal hole high speed stream waned. The IMF Bz was very weak from the beginning of the period to early on 09 July, not varying much beyond +/- 5 nT. By early on 09 July, solar wind data indicated the onset of a weak shock from CME activity on 05 July. Wind speed increased slightly from a low of about 300 km/s to about 360 km/s, while the Bz component of the IMF responded with a southward turning to about -10 nT. These conditions were maintained through early on 10 July. At about 10/0100 UTC, a discontinuity in the solar wind parameters, all indicated the arrival of a shock from CME activity that occurred late on the 7th. Wind speed jumped to near 500 km/s and maintained this speed through the remainder of the summary period, while the Bz component of the IMF oscillated through +19 to -23 nT for about four hours and remained south through the end of the summary period.

There was a greater than 10 MeV proton enhancement on 10 and 11 July with a peak of 2.95 pfu observed midday on the 10th. The enhancement was associated with the M2.8 flare on 09 July.

The greater than 2 MeV electron flux at geosynchronous orbit reached high levels on 04, 06, and 10 July.

The geomagnetic field ranged from quiet to severe storm levels. The field was mostly quiet from the beginning of the period through early on 09 July. By about 09/0900 UTC, levels increased to unsettled at the middle latitudes and unsettled to active at higher latitudes, as transient flow from the full halo CME on 05 July arrived at Earth. By early on 10 July, activity further increased to active to minor storm levels at the middle latitudes, while major to severe storm periods were observed at the higher latitudes, as transient flow from the full halo CME of 07 July arrived at Earth.

Space Weather Outlook 13 July - 08 August 2005

Solar activity is expected to be at low to moderate levels with a chance for M-class activity from Region 786 through 14 July. From 14 to 28 July, very low to low levels are expected. Isolated M-class activity is possible after 28 July due to the return of old Region 786 (N10, L=055).

A greater than 10 MeV proton event is possible with significant flare activity from Region 786 through 15 July.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at high levels on 13 - 19 July, 23 - 27 July, and 07 - 08 August.

The geomagnetic field is expected to range from quiet to major storm levels. Transient flow from CME activity is expected to produce unsettled to active conditions on 13 July. A large, recurrent coronal hole high speed wind stream is expected to produce active to major levels on 20 - 21 July, while a smaller coronal hole wind stream is expected to produce unsettled to active conditions on 28 - 29 July. Otherwise, expect quiet to unsettled conditions.



Daily Solar Data

| Date | Radio Flux 10.7 cm | Sun spot No. | Sunspot Area (10 ⁻⁶ hemi.) | X-ray Background | Flares | | | | | | | |
|---------|-----------------------|-----------------|--|------------------|------------|---|---|---------|---|---|---|---|
| | | | | | X-ray Flux | | | Optical | | | | |
| | | | | | C | M | X | S | 1 | 2 | 3 | 4 |
| 04 July | 124 | 192 | 1150 | B2.8 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 05 July | 127 | 181 | 1310 | B2.9 | 3 | 0 | 0 | 5 | 0 | 0 | 0 | 0 |
| 06 July | 123 | 143 | 1130 | B2.9 | 9 | 0 | 0 | 11 | 0 | 0 | 0 | 0 |
| 07 July | 125 | 149 | 1150 | B3.0 | 5 | 1 | 0 | 5 | 0 | 0 | 0 | 0 |
| 08 July | 110 | 111 | 1090 | B2.3 | 2 | 0 | 0 | 5 | 0 | 0 | 0 | 0 |
| 09 July | 107 | 126 | 810 | B2.1 | 2 | 1 | 0 | 2 | 1 | 0 | 0 | 0 |
| 10 July | 102 | 78 | 550 | B1.9 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 |

Daily Particle Data

| Date | Proton Fluence (protons/cm ² -day-sr) | | | Electron Fluence (electrons/cm ² -day-sr) | | |
|---------|---|---------|----------|---|--------|--------|
| | >1 MeV | >10 MeV | >100 MeV | >.6 MeV | >2MeV | >4 MeV |
| 04 July | 5.2E+5 | 1.4E+4 | 3.3E+3 | | 4.3E+7 | |
| 05 July | 6.8E+5 | 1.6E+4 | 3.4E+3 | | 4.1E+7 | |
| 06 July | 8.8E+5 | 1.5E+4 | 3.6E+3 | | 4.8E+7 | |
| 07 July | 5.2E+5 | 1.6E+4 | 3.6E+3 | | 2.8E+7 | |
| 08 July | 5.9E+5 | 1.5E+4 | 3.2E+3 | | 1.2E+6 | |
| 09 July | 4.8E+5 | 1.4E+4 | 3.2E+3 | | 7.4E+5 | |
| 10 July | 4.4E+6 | 8.5E+4 | 3.0E+3 | | 2.7E+6 | |

Daily Geomagnetic Data

| Date | Middle Latitude Fredericksburg | | High Latitude College | | Estimated Planetary | |
|---------|-----------------------------------|-----------------|--------------------------|-----------------|------------------------|-----------------|
| | A | K-indices | A | K-indices | A | K-indices |
| | 04 July | 5 | 2-2-1-1-1-1-1-2 | 3 | 2-2-1-0-1-1-0-1 | 7 |
| 05 July | 3 | 1-1-1-1-2-1-0-1 | 4 | 1-2-1-1-3-0-0-0 | 5 | 1-1-1-2-2-1-1-1 |
| 06 July | 3 | 1-1-1-0-1-1-1-1 | 3 | 1-2-1-1-0-1-1-1 | 5 | 1-1-1-1-2-2-2-2 |
| 07 July | 6 | 1-1-2-1-2-2-1-3 | 6 | 1-2-1-1-3-2-1-2 | 8 | 2-1-2-1-2-2-2-3 |
| 08 July | 5 | 2-1-1-1-2-1-1-2 | 3 | 2-2-1-0-0-1-1-1 | 5 | 2-2-1-1-1-2-2-2 |
| 09 July | 13 | 2-2-3-3-3-3-3-3 | 33 | 2-2-4-4-4-7-3-3 | 19 | 3-3-3-3-4-4-3-4 |
| 10 July | 28 | 4-4-4-4-4-3-4-5 | 67 | 3-5-5-5-7-7-6-3 | 47 | 4-4-5-5-6-5-5-5 |

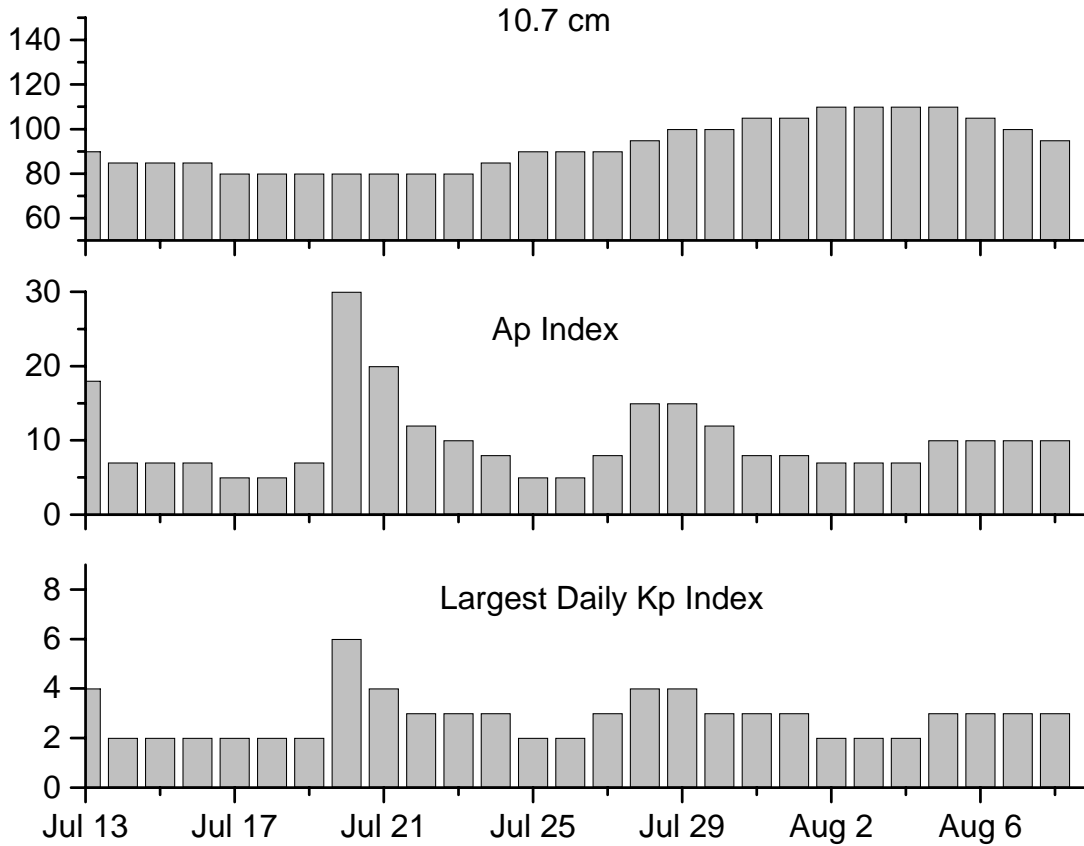


Alerts and Warnings Issued

| <u>Date & Time of Issue</u> | <u>Type of Alert or Warning</u> | <u>Date & Time of Event UTC</u> |
|---------------------------------|--|-------------------------------------|
| 04 Jul 0005 | 5 – 245 MHz Radio Bursts | 03 Jul |
| 04 Jul 0005 | 1 – 245 MHz Radio Noise Storm | 03 Jul |
| 04 Jul 1705 | ALERT: Electron 2MeV Integral Flux > 1000pfu | 04 Jul 1645 |
| 06 Jul 0004 | 1 – 245 MHz Radio Noise Storm | 05 Jul |
| 06 Jul 1509 | ALERT: Electron 2MeV Integral Flux > 1000pfu | 06 Jul 1450 |
| 07 Jul 1335 | ALERT: Type IV Radio Emission | 07 Jul 1310 |
| 07 Jul 1659 | SUMMARY: 10cm Radio Burst | 07 Jul 1615 |
| 07 Jul 2047 | WATCH: Geomagnetic $A \geq 20$ | 09 Jul |
| 07 Jul 2050 | WATCH: Geomagnetic $A \geq 20$ | 10 Jul |
| 08 Jul 0019 | 3 – 245 MHz Radio Bursts | 07 Jul |
| 08 Jul 0019 | 1 – 245 MHz Radio Noise Storm | 07 Jul |
| 08 Jul 0731 | ALERT: Type II Radio Emission | 08 Jul 0634 |
| 08 Jul 1639 | ALERT: Type IV Radio Emission | 08 Jul 1602 |
| 09 Jul 1607 | WARNING: Geomagnetic K=4 | 09 Jul 1610 -Jul 09 2359 |
| 09 Jul 1643 | ALERT: Geomagnetic K= 4 | 09 Jul 1644 |
| 09 Jul 2217 | ALERT: Type IV Radio Emission | 09 Jul 2158 |
| 09 Jul 2304 | SUMMARY: 10cm Radio Burst | 09 Jul 2155 |
| 09 Jul 2347 | EXTENDED WARNING: Geomagnetic K=4 | 09 Jul 1610 -Jul 10 1500 |
| 10 Jul 0010 | 6 - 245 MHz Radio Bursts | 09 Jul |
| 10 Jul 0319 | WARNING: Geomagnetic Sudden Impulse | 10 Jul 0345 -Jul 10 0430 |
| 10 Jul 0408 | SUMMARY: Geomagnetic Sudden Impulse | 10 Jul 0342 |
| 10 Jul 0715 | WARNING: Geomagnetic K = 5 | 10 Jul 0717 - Jul 10 1600 |
| 10 Jul 0722 | ALERT: Geomagnetic K=5 | 10 Jul 0723 |
| 10 Jul 1544 | ALERT: Type II Radio Emission | 10 Jul 1519 |
| 10 Jul 1556 | EXTENDED WARNING: Geomagnetic K=5 | 10 Jul 0717 - 2359 |
| 10 Jul 2131 | WATCH: Geomagnetic $A \geq 20$ | 11 Jul |
| 10 Jul 2133 | WATCH: Geomagnetic $A \geq 20$ | 12 Jul |
| 10 Jul 2340 | EXTENDED WARNING: Geomagnetic K=5 | 10 Jul 0717 – 11 Jul 1500 |



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 |
|--------|-----------------------|----------------------|---------------------|--------|-----------------------|----------------------|---------------------|
| 13 Jul | 90 | 18 | 4 | 27 Jul | 90 | 8 | 3 |
| 14 | 85 | 7 | 2 | 28 | 95 | 15 | 4 |
| 15 | 85 | 7 | 2 | 29 | 100 | 15 | 4 |
| 16 | 85 | 7 | 2 | 30 | 100 | 12 | 3 |
| 17 | 80 | 5 | 2 | 31 | 105 | 8 | 3 |
| 18 | 80 | 5 | 2 | 01 Aug | 105 | 8 | 3 |
| 19 | 80 | 7 | 2 | 02 | 110 | 7 | 2 |
| 20 | 80 | 30 | 6 | 03 | 110 | 7 | 2 |
| 21 | 80 | 20 | 4 | 04 | 110 | 7 | 2 |
| 22 | 80 | 12 | 3 | 05 | 110 | 10 | 3 |
| 23 | 80 | 10 | 3 | 06 | 105 | 10 | 3 |
| 24 | 85 | 8 | 3 | 07 | 100 | 10 | 3 |
| 25 | 90 | 5 | 2 | 08 | 95 | 10 | 3 |
| 26 | 90 | 5 | 2 | | | | |



Energetic Events

| Date | Time | | | X-ray | | Optical Information | | | Peak | | Sweep Freq | |
|--------|-------|------|------|-------|------|---------------------|---------------------|----------|------------|------|------------|----|
| | Begin | Max | Max | Class | Flux | Imp/ Brtns | Location Lat CMD | Rgn # | Radio Flux | | Intensity | |
| | | | | | | | | | 245 | 2695 | II | IV |
| 07 Jul | 1607 | 1629 | 1640 | M4.9 | .053 | Sn | N09E03 | 786 | 1400 | 180 | | |
| 09 Jul | 2147 | 2206 | 2219 | M2.8 | .029 | ln | N11W27 | 786 | 1200 | 1500 | | 2 |

Flare List

| Date | Time | | | Optical X-ray Class. | Imp / Brtns | Location Lat CMD | Rgn |
|---------|-------|------|------|----------------------------|----------------|---------------------|-----|
| | Begin | Max | End | | | | |
| 04 July | 0249 | 0256 | 0302 | B5.6 | | | 789 |
| | 0532 | 0536 | 0541 | B5.4 | | | 789 |
| | 0721 | 0724 | 0727 | B5.9 | | | 789 |
| | 0813 | 0816 | 0818 | B6.0 | | | 789 |
| | 1058 | 1102 | 1106 | B6.1 | | | 789 |
| | 1213 | 1217 | 1221 | B7.2 | | | 789 |
| | 1554 | 1557 | 1614 | B8.9 | | | 782 |
| | 1957 | 2002 | 2009 | B4.7 | | | |
| | 2028 | 2037 | 2044 | C1.0 | | | 782 |
| 05 July | 2219 | 2221 | 2229 | C1.1 | Sf | S11W63 | 787 |
| | 0055 | 0101 | 0112 | B6.2 | | | 786 |
| | B0129 | 0130 | 0134 | C1.8 | Sf | N13E31 | 786 |
| | 0518 | 0518 | 0521 | | Sf | N15E31 | 786 |
| | 0607 | 0610 | 0613 | | Sf | N15E30 | 786 |
| | 0954 | 0959 | 1005 | C1.2 | | | 787 |
| | 1212 | 1215 | 1218 | B4.4 | | | 787 |
| | 1500 | 1505 | 1545 | C1.3 | Sf | S08E34 | 788 |
| | 1516 | 1520 | 1524 | | Sf | S06E38 | 788 |
| 06 July | 1836 | 1840 | 1855 | B7.1 | | | 789 |
| | 0125 | 0126 | 0134 | B8.5 | Sf | N15E61 | 789 |
| | 0307 | 0307 | 0315 | B8.4 | Sf | N13E20 | 786 |
| | 0619 | 0631 | 0640 | B6.8 | | | 783 |
| | 0814 | 0819 | 0824 | B6.9 | | | 786 |
| | 0837 | 0840 | 0843 | B5.4 | | | 786 |
| | 0846 | 0848 | 0855 | C2.5 | Sf | N11E20 | 786 |
| | 0847 | 0847 | 0853 | | Sf | N13E16 | 786 |
| | 0906 | 0928 | 0934 | C1.0 | | | 786 |
| | 1301 | 1302 | 1304 | | Sf | N10E17 | 786 |
| | 1305 | 1306 | 1311 | C1.4 | Sf | N10E17 | 786 |
| | 1317 | 1318 | 1324 | C1.0 | Sf | N10E17 | 786 |
| | 1438 | 1441 | 1443 | B7.1 | | | 786 |
| | 1529 | 1532 | 1536 | B6.9 | Sf | N10E16 | 786 |
| | 1605 | 1607 | 1610 | C1.4 | Sf | N09E15 | 786 |
| | 1728 | 1731 | 1735 | B7.4 | | | |
| 1746 | 1749 | 1755 | C5.9 | Sf | N10E14 | 786 | |
| 1841 | 1846 | 1857 | C1.4 | | | 786 | |
| 2008 | 2012 | 2015 | B7.2 | | | 786 | |



Flare List - continued.

| Date | Time | | | Optical | Imp / Brtns | Location Lat CMD | Rgn | |
|---------|---------|------|------|-----------------|----------------|---------------------|-----|-----|
| | Begin | Max | End | X-ray Class. | | | | |
| 06 July | 2018 | 2022 | 2024 | C1.0 | | | 786 | |
| | 2123 | 2123 | 2132 | C1.0 | Sf | N10E12 | 786 | |
| 07 July | 0053 | 0057 | 0107 | B4.7 | | | 787 | |
| | 0800 | 0801 | 0811 | C1.6 | Sf | N13E04 | 786 | |
| | 0840 | 0840 | 0851 | C1.2 | Sf | N15E43 | 789 | |
| | 1005 | 1012 | 1018 | B8.6 | | | 789 | |
| | 1218 | 1229 | 1255 | C2.6 | | | 789 | |
| | 1327 | 1329 | 1343 | C3.8 | Sf | N09E03 | 786 | |
| | 1516 | 1516 | 1525 | C2.7 | Sf | N17E44 | 789 | |
| | 1610 | 1627 | 1722 | M4.9 | Sn | N09E03 | 786 | |
| 08 July | 0315 | 0316 | 0333 | B8.4 | Sf | S02W50 | 783 | |
| | 0411 | 0414 | 0416 | B4.2 | | | 786 | |
| | 0518 | 0518 | 0529 | C1.9 | Sf | S02W52 | 783 | |
| | 0628 | 0631 | 0633 | B5.5 | | | 789 | |
| | 0631 | 0631 | 0633 | | Sf | N15E31 | 789 | |
| | 0858 | 0858 | 0904 | B5.8 | Sf | S02W54 | 783 | |
| | 1540 | 1618 | 1719 | C1.6 | | | 786 | |
| | 1646 | 1648 | 1652 | | Sf | S03W56 | 783 | |
| | 09 July | 2243 | 2249 | 2255 | B3.7 | | | |
| | | 0310 | 0318 | 0329 | B6.7 | | | 786 |
| 0409 | | 0412 | 0414 | B4.1 | | | | |
| 0447 | | 0454 | 0458 | B3.4 | | | 786 | |
| 0504 | | 0507 | 0512 | B3.4 | | | 786 | |
| 0924 | | 1027 | 1045 | C2.1 | | | 786 | |
| 1315 | | 1318 | 1320 | B5.4 | | | 789 | |
| 1339 | | 1343 | 1346 | B4.2 | | | 789 | |
| 1610 | | 1616 | 1622 | B5.9 | | | 786 | |
| 1934 | | 1938 | 1940 | B5.8 | | | 789 | |
| 2028 | | 2028 | 2034 | | Sf | N18E16 | 789 | |
| 2036 | | 2040 | 2051 | C1.5 | Sf | N18E18 | 789 | |
| 2156 | | 2204 | 2238 | M2.8 | ln | N11W27 | 786 | |
| 10 July | | 0411 | 0414 | 0416 | B3.2 | | | 783 |
| | 0509 | 0520 | 0536 | C1.6 | | | 786 | |
| | 1253 | 1256 | 1301 | B3.1 | | | | |
| | 1515 | 1516 | 1519 | C9.9 | Sf | S02W83 | 783 | |
| | 1918 | 1919 | 1923 | | Sf | N08W43 | 786 | |
| | 2015 | 2015 | 2018 | | Sf | N10W42 | 786 | |
| | 2139 | 2142 | 2144 | C1.4 | | | | |



Region Summary

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

Region 781

| | | | | | | | | | | | | | | | | | | |
|--------|--------|-----|------|----|-----|-----|---|--|--|---|---|---|---|---|---|---|---|---|
| 27 Jun | N16E76 | 108 | 0060 | 01 | Hsx | 001 | A | | | | | | | | | | | |
| 28 Jun | N15E65 | 106 | 0090 | 11 | Eao | 010 | B | | | | | | | | | | | |
| 29 Jun | N15E53 | 105 | 0080 | 08 | Cao | 005 | B | | | | | | | | | | | |
| 30 Jun | N14E37 | 108 | 0050 | 02 | Hrx | 004 | A | | | | | | | | | | | |
| 01 Jul | N14E24 | 108 | 0030 | 02 | Hsx | 002 | A | | | | | | | | | | | |
| 02 Jul | N13E10 | 108 | 0050 | 01 | Hsx | 001 | A | | | | | | | | | | | |
| 03 Jul | N13W03 | 108 | 0030 | 02 | Hsx | 002 | A | | | | | | | | | | | |
| 04 Jul | N13W15 | 106 | 0020 | 04 | Cso | 004 | B | | | | | | | | | | | |
| 05 Jul | N14W26 | 104 | 0030 | 08 | Dso | 007 | B | | | | | | | | | | | |
| 06 Jul | N14W39 | 104 | 0020 | 07 | Cso | 005 | B | | | | | | | | | | | |
| 07 Jul | N14W51 | 104 | 0010 | 02 | Bxo | 003 | B | | | | | | | | | | | |
| 08 Jul | N18W58 | 097 | | | | | | | | | | | | | | | | |
| 09 Jul | N18W71 | 097 | | | | | | | | | | | | | | | | |
| 10 Jul | N18W84 | 097 | | | | | | | | | | | | | | | | |
| | | | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Still on Disk.

Absolute heliographic longitude:108

Region 782

| | | | | | | | | | | | | | | | | | | |
|--------|--------|-----|------|----|-----|-----|---|---|--|---|---|---|---|---|---|---|---|---|
| 29 Jun | S17E09 | 149 | 0010 | 03 | Bxo | 003 | B | | | | | | | | | | | |
| 30 Jun | S17W04 | 149 | 0090 | 07 | Dai | 017 | B | | | | | | | | | | | |
| 01 Jul | S17W18 | 150 | 0160 | 09 | Dao | 014 | B | 1 | | | | | | | | | | |
| 02 Jul | S18W32 | 150 | 0220 | 09 | Dao | 016 | B | | | | | | | | | | | |
| 03 Jul | S17W45 | 150 | 0230 | 09 | Dao | 014 | B | 2 | | | 1 | | | | | | | |
| 04 Jul | S18W57 | 148 | 0150 | 09 | Cao | 010 | B | 1 | | | | | | | | | | |
| 05 Jul | S17W71 | 149 | 0100 | 10 | Dso | 007 | B | | | | | | | | | | | |
| 06 Jul | S17W85 | 150 | 0060 | 03 | Axx | 001 | A | | | | | | | | | | | |
| | | | | | | | | | | 4 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |

Crossed West Limb.

Absolute heliographic longitude:149



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 783</i> | | | | | | | | | | | | | | | | | | |
| 29 Jun | S01E59 | 099 | 0040 | 03 | Cso | 004 | B | | | | | | | | | | | |
| 30 Jun | S02E46 | 099 | 0170 | 06 | Dso | 016 | B | | | | | | | | | | | |
| 01 Jul | S03E33 | 099 | 0250 | 07 | Dao | 014 | B | | | | | | | | | | | |
| 02 Jul | S03E20 | 098 | 0500 | 08 | Dki | 030 | Bg | | | | | | | | | | | |
| 03 Jul | S03E04 | 101 | 0600 | 11 | Ekc | 031 | Bg | | | | | | | | | | | |
| 04 Jul | S03W07 | 098 | 0420 | 12 | Eki | 036 | B | | | | | | | | | | | |
| 05 Jul | S03W22 | 100 | 0530 | 12 | Ekc | 037 | Bg | | | | | | | | | | | |
| 06 Jul | S03W36 | 101 | 0410 | 13 | Ehc | 024 | Bg | | | | | | | | | | | |
| 07 Jul | S03W49 | 101 | 0430 | 13 | Eai | 030 | Bg | | | | | | | | | | | |
| 08 Jul | S02W63 | 101 | 0370 | 13 | Eki | 024 | Bg | 1 | | | | 4 | | | | | | |
| 09 Jul | S03W75 | 100 | 0230 | 12 | Eki | 013 | B | | | | | | | | | | | |
| 10 Jul | S03W88 | 100 | | | | | | 1 | | | | 1 | | | | | | |
| | | | | | | | | 2 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 |

Still on Disk.

Absolute heliographic longitude: 101

| | | | | | | | | | | | | | | | | | | |
|-------------------|--------|-----|------|----|-----|-----|---|---|---|---|---|---|---|---|---|---|---|---|
| <i>Region 784</i> | | | | | | | | | | | | | | | | | | |
| 29 Jun | N16E70 | 088 | 0050 | 05 | Bxo | 005 | B | | | | | | | | | | | |
| 30 Jun | N16E57 | 088 | 0070 | 07 | Dso | 006 | B | | | | | | | | | | | |
| 01 Jul | N16E44 | 088 | 0050 | 09 | Dso | 004 | B | 1 | | | | | | | | | | |
| 02 Jul | N18E30 | 088 | 0040 | 08 | Cso | 005 | B | | | | | | | | | | | |
| 03 Jul | N16E14 | 091 | 0020 | 04 | Cso | 004 | B | | | | | | | | | | | |
| 04 Jul | N14E00 | 091 | 0010 | 00 | Hax | 001 | A | | | | | | | | | | | |
| 05 Jul | N15W13 | 091 | 0020 | 01 | Axx | 001 | A | | | | | | | | | | | |
| 06 Jul | N15W26 | 091 | 0010 | 01 | Hsx | 001 | A | | | | | | | | | | | |
| 07 Jul | N16W38 | 090 | 0010 | 03 | Bxo | 004 | B | | | | | | | | | | | |
| 08 Jul | N16W51 | 090 | | | | | | | | | | | | | | | | |
| 09 Jul | N16W64 | 090 | | | | | | | | | | | | | | | | |
| 10 Jul | N16W77 | 090 | | | | | | | | | | | | | | | | |
| | | | | | | | | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Still on Disk.

Absolute heliographic longitude: 091



Region Summary - continued.

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

Region 785

| | | | | | | | | | | | | | | | | | |
|--------|--------|-----|------|----|-----|-----|---|---|---|---|---|---|---|---|---|---|--|
| 30 Jun | S18E21 | 124 | 0020 | 03 | Cao | 003 | B | | | | | | | | | | |
| 01 Jul | S19E07 | 125 | 0010 | 04 | Bxo | 006 | B | | | | | | | | | | |
| 02 Jul | S19W06 | 124 | 0070 | 06 | Dsi | 017 | B | 5 | | | 4 | | | | | | |
| 03 Jul | S18W20 | 125 | 0130 | 07 | Dai | 012 | B | | | | | | | | | | |
| 04 Jul | S19W33 | 124 | 0040 | 07 | Dso | 010 | B | | | | | | | | | | |
| 05 Jul | S19W46 | 124 | 0020 | 07 | Bxo | 003 | B | | | | | | | | | | |
| 06 Jul | S19W59 | 124 | | | | | | | | | | | | | | | |
| 07 Jul | S19W72 | 124 | | | | | | | | | | | | | | | |
| 08 Jul | S19W85 | 124 | | | | | | | | | | | | | | | |
| 09 Jul | S19W98 | 124 | | | | | | | | | | | | | | | |
| | | | | | | | | 5 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | |

Crossed West Limb.

Absolute heliographic longitude: 124

Region 786

| | | | | | | | | | | | | | | | | | |
|--------|--------|-----|------|----|-----|-----|-----|----|---|---|----|---|---|---|---|---|--|
| 01 Jul | N13E76 | 056 | 0120 | 08 | Cso | 005 | B | 1 | | | | | | | | | |
| 02 Jul | N12E62 | 056 | 0370 | 08 | Dao | 011 | Bg | 1 | | | 3 | | | | | | |
| 03 Jul | N12E48 | 057 | 0310 | 07 | Dai | 026 | Bg | | | | | | | | | | |
| 04 Jul | N12E35 | 056 | 0350 | 08 | Dac | 034 | Bgd | | | | | | | | | | |
| 05 Jul | N12E23 | 055 | 0360 | 09 | Dac | 027 | Bg | 1 | | | 3 | | | | | | |
| 06 Jul | N11E10 | 055 | 0370 | 09 | Dkc | 025 | Bgd | 9 | | | 10 | | | | | | |
| 07 Jul | N12W04 | 056 | 0420 | 09 | Dhi | 040 | Bgd | 2 | 1 | | 3 | | | | | | |
| 08 Jul | N12W17 | 055 | 0410 | 09 | Dkc | 034 | Bgd | 1 | | | | | | | | | |
| 09 Jul | N11W31 | 056 | 0310 | 08 | Dkc | 045 | Bgd | 1 | 1 | | | | 1 | | | | |
| 10 Jul | N10W43 | 055 | 0330 | 09 | Dac | 027 | Bg | 1 | | | 2 | | | | | | |
| | | | | | | | | 17 | 2 | 0 | 21 | 1 | 0 | 0 | 0 | 0 | |

Still on Disk.

Absolute heliographic longitude: 056

Region 787

| | | | | | | | | | | | | | | | | | |
|--------|--------|-----|------|----|-----|-----|---|---|---|---|---|---|---|---|---|---|--|
| 01 Jul | S09W22 | 154 | 0010 | 06 | Bxo | 007 | B | | | | | | | | | | |
| 02 Jul | S11W34 | 152 | 0030 | 06 | Dso | 007 | B | | | | | | | | | | |
| 03 Jul | S10W48 | 153 | 0040 | 07 | Dro | 007 | B | 2 | | | 2 | | | | | | |
| 04 Jul | S11W58 | 149 | 0030 | 03 | Hsx | 002 | A | 1 | | | 1 | | | | | | |
| 05 Jul | S12W71 | 149 | 0020 | 02 | Bxo | 002 | B | 1 | | | | | | | | | |
| 06 Jul | S16W87 | 152 | 0060 | 01 | Hax | 001 | A | | | | | | | | | | |
| | | | | | | | | 4 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | |

Crossed West Limb.

Absolute heliographic longitude: 154



Region Summary - continued.

| Date | Location | | Sunspot Characteristics | | | | Flares | | | | | | | | | | | | | | | |
|--------------------------------------|----------|-------|---------------------------------|-------------------|---------------|---------------|--------------|-------|---|---|---------|---|---|---|---|---|--|--|--|--|--|--|
| | ° Lat | ° CMD | 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 788</i> | | | | | | | | | | | | | | | | | | | | | | |
| 02 Jul | S06E70 | 048 | 0120 | 01 | Hax | 001 | A | | | | | | | | | | | | | | | |
| 03 Jul | S05E58 | 047 | 0100 | 09 | Cao | 003 | B | | | | | | | | | | | | | | | |
| 04 Jul | S06E47 | 044 | 0100 | 09 | Cso | 004 | B | | | | | | | | | | | | | | | |
| 05 Jul | S06E32 | 046 | 0090 | 02 | Hsx | 001 | A | 1 | | | | 2 | | | | | | | | | | |
| 06 Jul | S07E17 | 048 | 0070 | 02 | Hsx | 001 | A | | | | | | | | | | | | | | | |
| 07 Jul | S06E03 | 049 | 0080 | 03 | Hsx | 002 | A | | | | | | | | | | | | | | | |
| 08 Jul | S05W11 | 049 | 0120 | 03 | Hsx | 001 | A | | | | | | | | | | | | | | | |
| 09 Jul | S06W23 | 048 | 0100 | 02 | Hsx | 002 | A | | | | | | | | | | | | | | | |
| 10 Jul | S05W37 | 049 | 0070 | 03 | Hsx | 007 | A | | | | | | | | | | | | | | | |
| | | | | | | | | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | | | | | | |
| Still on Disk. | | | | | | | | | | | | | | | | | | | | | | |
| Absolute heliographic longitude: 049 | | | | | | | | | | | | | | | | | | | | | | |
| <i>Region 789</i> | | | | | | | | | | | | | | | | | | | | | | |
| 04 Jul | N18E74 | 017 | 0030 | 01 | Hsx | 001 | A | | | | | | | | | | | | | | | |
| 05 Jul | N16E66 | 014 | 0140 | 10 | Dso | 006 | B | | | | | | | | | | | | | | | |
| 06 Jul | N17E53 | 012 | 0130 | 11 | Eao | 005 | B | | | | | 1 | | | | | | | | | | |
| 07 Jul | N17E40 | 012 | 0200 | 10 | Dso | 010 | B | 3 | | | | 2 | | | | | | | | | | |
| 08 Jul | N17E26 | 012 | 0190 | 11 | Esi | 012 | B | | | | | 1 | | | | | | | | | | |
| 09 Jul | N18E15 | 010 | 0170 | 14 | Esi | 026 | B | 1 | | | | 2 | | | | | | | | | | |
| 10 Jul | N17E01 | 011 | 0150 | 11 | Eai | 014 | B | | | | | | | | | | | | | | | |
| | | | | | | | | 4 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | | | | | | |
| Still on Disk. | | | | | | | | | | | | | | | | | | | | | | |
| Absolute heliographic longitude: 011 | | | | | | | | | | | | | | | | | | | | | | |

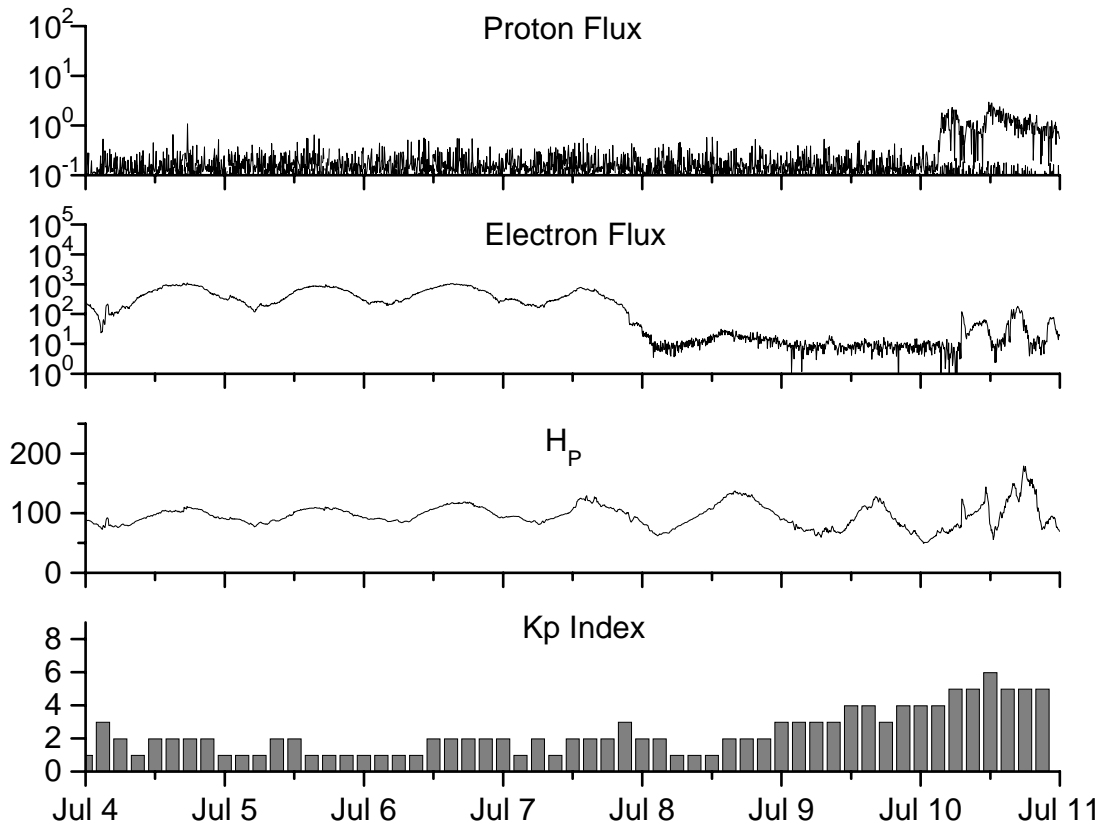


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

| Month | Sunspot Numbers | | | Radio Flux | | Geomagnetic | | | |
|-------------|-----------------|--------------|-----------------|---------------|--------------|-----------------------|-----------------|-----------------|-----------------|
| | Observed SWO | values RI | Ratio RI/SWO | Smooth SWO | values RI | *Penticton 10.7 cm | Smooth Value | Planetary Ap | Smooth Value |
| 2003 | | | | | | | | | |
| June | 118.4 | 77.4 | 0.65 | 113.6 | 65.2 | 129.4 | 130.2 | 24 | 21.5 |
| July | 132.8 | 85.0 | 0.64 | 106.9 | 62.0 | 127.8 | 127.2 | 19 | 22.0 |
| August | 114.3 | 72.7 | 0.64 | 102.8 | 60.3 | 122.1 | 125.2 | 23 | 22.2 |
| September | 82.6 | 48.8 | 0.59 | 100.7 | 59.8 | 112.3 | 123.7 | 18 | 21.8 |
| October | 118.9 | 65.5 | 0.55 | 96.6 | 58.4 | 153.1 | 121.8 | 35 | 21.1 |
| November | 118.9 | 67.3 | 0.57 | 93.6 | 57.0 | 153.1 | 120.1 | 28 | 20.0 |
| December | 75.4 | 46.5 | 0.62 | 91.4 | 55.0 | 115.1 | 118.0 | 16 | 18.6 |
| 2004 | | | | | | | | | |
| January | 62.3 | 37.7 | 0.61 | 87.9 | 52.0 | 114.1 | 116.3 | 22 | 18.1 |
| February | 75.6 | 45.8 | 0.61 | 84.2 | 49.4 | 107.0 | 115.5 | 13 | 17.7 |
| March | 81.0 | 49.1 | 0.61 | 80.9 | 47.2 | 112.2 | 114.6 | 14 | 16.9 |
| April | 59.3 | 39.3 | 0.66 | 77.9 | 45.6 | 101.2 | 112.3 | 11 | 15.5 |
| May | 77.3 | 41.5 | 0.54 | 74.1 | 43.9 | 99.8 | 109.2 | 8 | 14.3 |
| June | 78.9 | 43.2 | 0.55 | 70.4 | 41.7 | 97.4 | 107.2 | 8 | 14.0 |
| July | 87.8 | 51.0 | 0.58 | 68.3 | 40.2 | 118.5 | 105.9 | 23 | 13.8 |
| August | 69.5 | 40.9 | 0.59 | 66.6 | 39.3 | 110.1 | 105.0 | 11 | 13.8 |
| September | 50.0 | 27.7 | 0.55 | 63.7 | 37.6 | 103.1 | 103.7 | 10 | 13.6 |
| October | 77.9 | 48.4 | 0.62 | 61.3 | 35.9 | 105.7 | 102.1 | 9 | 13.5 |
| November | 70.5 | 43.7 | 0.62 | 60.0 | 35.4 | 113.2 | 101.5 | 26 | 14.1 |
| December | 34.7 | 17.9 | 0.52 | 58.8 | 35.3 | 94.6 | 101.3 | 11 | 14.8 |
| 2005 | | | | | | | | | |
| January | 52.0 | 31.3 | 0.60 | | | 102.4 | | 22 | |
| February | 45.4 | 29.1 | 0.64 | | | 97.3 | | 11 | |
| March | 41.0 | 24.8 | 0.60 | | | 90.0 | | 12 | |
| April | 41.5 | 24.4 | 0.59 | | | 85.9 | | 12 | |
| May | 65.4 | 42.6 | 0.65 | | | 99.5 | | 20 | |
| June | 59.8 | 39.6 | 0.66 | | | 93.7 | | 13 | |

NOTE: All smoothed values after September 2002 and monthly values after March 2003 are preliminary estimates. The lowest smoothed sunspot index number for Cycle 22, RI = 8.0, occurred in May 1996. The highest smoothed sunspot number for Cycle 23, RI = 120.8, occurred April 2000. *After June 1991, 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 04 July 2005*

Protons plot contains the five-minute averaged integral proton flux (protons/cm²-sec -sr) as measured by GOES-11 (W115) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

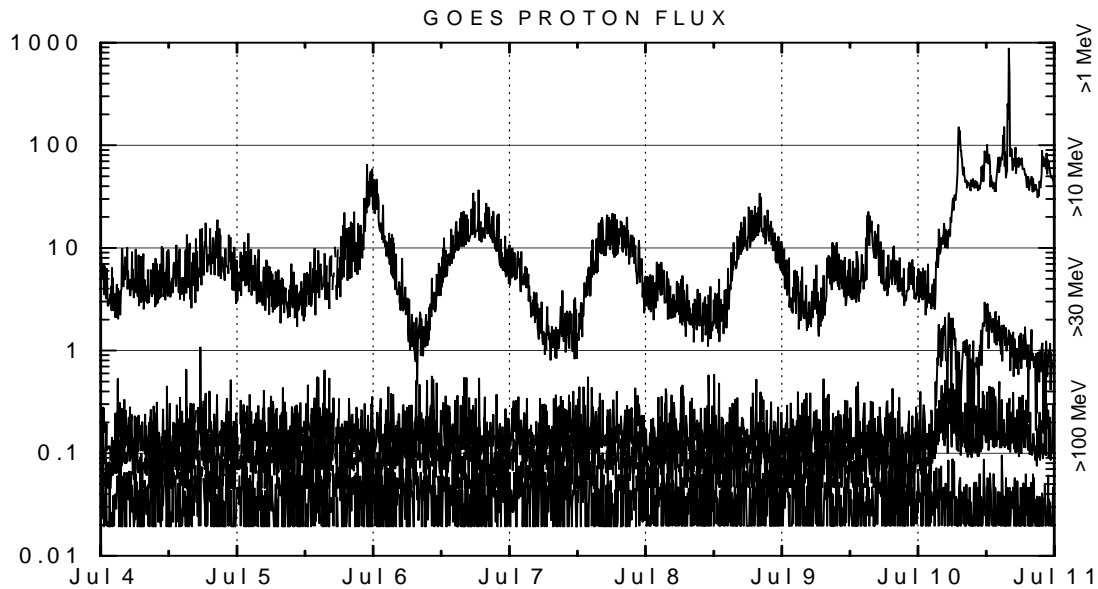
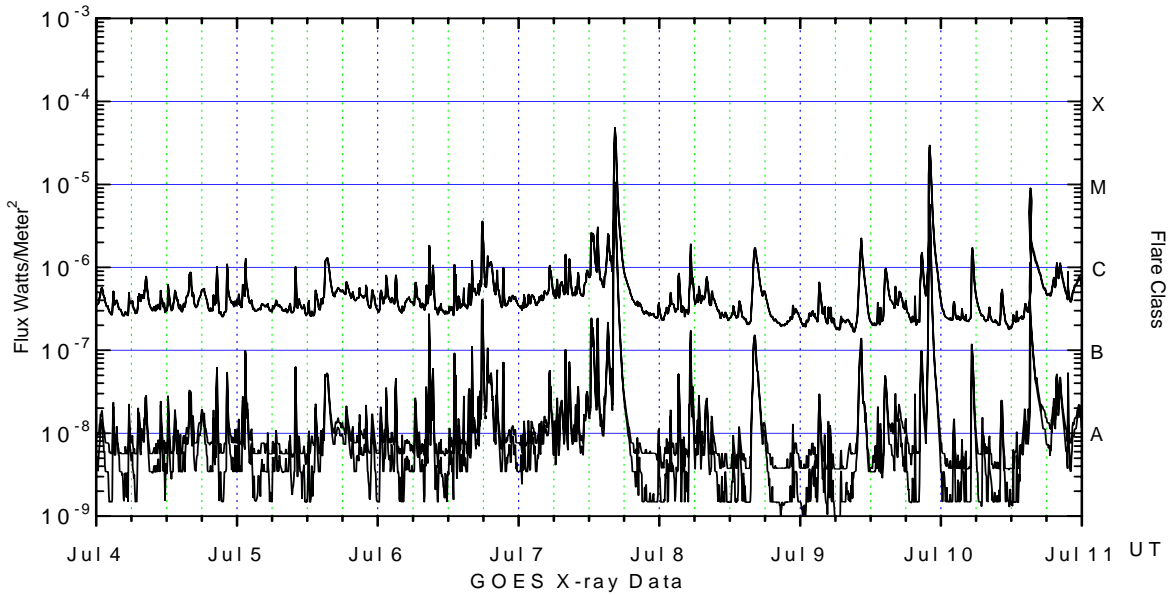
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV at GOES-12 (W75).

H_p plot contains the five minute averaged magnetic field H - component in nanoteslas (nT) as measured by GOES-12. 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 Air Force Weather Agency) 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 Hartland, UK. These data are made available through cooperation from the Geological Survey of Canada (GSC), British Geological Survey (BGS) 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 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/m^2) as measured by GOES 12 (W75) and GOES 10 (W135) 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 ($\text{protons/cm}^2\text{-sec-sr}$) as measured by GOES-11 (W115) for each of the energy thresholds: >1, >10, >30 and >100 MeV. P10 event threshold is 10 pfu ($\text{protons/cm}^2\text{-sec-sr}$) at greater than 10 MeV.

