

Space Weather Highlights 13 – 19 June 2005

SWO PRF 1555
21 June 2005

Solar activity ranged from very low on 13 June to moderate on 16 June. Low levels were observed on the remaining days of the summary period. Just prior to rotating around the west limb on 16 June, Region 775 (N08, L=054, class/area, Dkc/360 on 09 June) produced the largest event of the period, an M4.0/Sf at 16/2022 UTC with associated Type II (989 km/s) and Type IV radio sweeps. A 170 sfu proton flare Tenflare and a CME were also associated with this event. Early on 14 June, at 0730 UTC, the same region produced a C4.2/1f flare with an associated asymmetrical, full halo CME. Other regions of interest on the visible disk included Region 779 (S18, L=335, class/area, Eki/460 on 18 June) which formed near disk center on 15 June and became the largest spotted region on the visible disk. Though the region exhibited steady growth in both area and complexity, only low-level C-class activity was observed. New Region 780 (S08, L=251, class/area, Dao/070 on 18 June) rotated onto the disk on the 17th and produced several low-level C-class flares. The remainder of the disk and limb were quiet and stable.

Solar wind data were available from the NASA Advanced Composition Explorer (ACE) spacecraft during most of the summary period. The period began with solar wind speed near 550 km/s and the Bz component of the IMF sustained southward near -18 nT, as the 09 June CME became geoeffective. Bz remained south through 13/1400 UTC. After that, and through to about 14/1800 UTC, the IMF Bz did not vary much beyond +/- 3 nT and solar wind speed stayed steady at about 475 km/s. At about 14/1800 UTC, a minor transient from the 12 June CMEs were observed at ACE. Solar wind speed increased to about 550 km/s and the IMF Bz fluctuated between +/-10 nT through 15/0200 UTC, and then became oriented southward through about 15/1200 UTC. Thereafter, through early on the 16th, solar wind velocities decayed to about 450 km/s, and the IMF Bz did not vary much beyond +/- 3 nT. At about 16/0830 UTC, transient flow associated with the CME activity on 14 June impacted the ACE spacecraft. A short-lived period of southward IMF Bz to near -16 nT was observed, while solar wind speed increased to near 685 km/s by 16/1400 UTC. Thereafter, and through to the end of the summary period, solar wind speeds slowly decayed and ended the period near 410 km/s, while the IMF Bz did not vary much beyond +/- 3 nT.

A greater than 100 MeV proton event began at 16/2125 UTC following the 16 June M4.0 flare. The event ended at 17/0730 UTC with a peak flux of 2.94 pfu at 16/2315 UTC. A greater than 10 MeV proton event began at 16/2200 UTC, peaked at 17/0500 UTC at 44 pfu, and ended at 17/1805 UTC.

The greater than 2 MeV electron flux at geosynchronous orbit reached high levels from 13 - 19 June.

The geomagnetic field ranged from quiet to major storm levels. The period began with active to minor storm conditions at middle latitudes, and active to major storm conditions at higher latitudes, as the 09 June CME became geoeffective. These conditions lasted through about midday on 13 June. Through early on the 15th, the field relaxed to mostly quiet to unsettled. By 15/0600 UTC, and for the next 12 hours, unsettled to active conditions were observed at the middle latitudes, while active to major storm conditions occurred at the higher latitudes, as the 12 June CMEs became geoeffective. Thereafter, through midday on 16 June, the field was mostly quiet to unsettled. By midday on the 16th, geomagnetic activity levels rose again as 14 June CME became geoeffective. Unsettled to active conditions were observed at the middle latitudes, while active to major storm levels occurred at the higher latitudes. These conditions persisted generally through early on 17 June. Thereafter, and through the end of the summary period, quiet conditions were observed at the middle latitudes, while higher latitudes observed quiet to active conditions.

Space Weather Outlook 22 June -18 July 2005

Solar activity is expected to be at very low to low levels. After 30 June, and through 16 July, isolated moderate levels are possible after the return of old Region 775 (N10, L=055).

A greater than 10 MeV proton event is not expected through 30 June. Thereafter, and through the remainder of the forecast period, there is a slight chance for a greater than 10 MeV proton event after the return of old Region 775.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at high levels on 22 – 24 June, 27 June – 01 July, and 03 – 18 July.

The geomagnetic field is expected to range from quiet to minor storm levels. Recurrent coronal hole high speed wind streams are expected to produce active to minor storm levels on 25 - 27 June and on 01 – 04 July, while unsettled to active conditions are expected on 12 - 14 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 | |
| 13 June | 92 | 73 | 700 | B1.3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14 June | 94 | 44 | 560 | B1.4 | 2 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 |
| 15 June | 95 | 64 | 730 | B1.3 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 16 June | 98 | 67 | 650 | B1.8 | 2 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| 17 June | 91 | 59 | 530 | B2.3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18 June | 90 | 50 | 530 | B1.5 | 5 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 |
| 19 June | 87 | 43 | 500 | B1.0 | 1 | 0 | 0 | 1 | 0 | 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 |
| | 13 June | 1.8E+6 | 1.4E+4 | 3.1E+3 | 2.8E+8 | |
| 14 June | 1.0E+6 | 1.5E+4 | 3.3E+3 | | 6.4E+8 | |
| 15 June | 2.7E+6 | 1.5E+4 | 3.3E+3 | | 4.5E+7 | |
| 16 June | 1.1E+6 | 1.8E+5 | 2.5E+4 | | 3.2E+7 | |
| 17 June | 6.7E+6 | 1.9E+6 | 5.8E+4 | | 8.0E+7 | |
| 18 June | 1.2E+6 | 1.0E+5 | 4.1E+3 | | 1.4E+8 | |
| 19 June | 7.7E+5 | 2.8E+4 | 3.5E+3 | | 2.6E+8 | |

Daily Geomagnetic Data

| Date | Middle Latitude Fredericksburg | | High Latitude College | | Estimated Planetary | |
|---------|-----------------------------------|-----------------|--------------------------|-----------------|------------------------|-----------------|
| | A | K-indices | A | K-indices | A | K-indices |
| | 13 June | 17 | 5-4-3-2-3-2-3-1 | 36 | 4-6-6-4-5-3-2-1 | 33 |
| 14 June | 8 | 2-1-2-1-1-1-4-2 | 7 | 2-2-2-2-2-0-3-2 | 10 | 2-2-2-2-2-2-4-3 |
| 15 June | 14 | 3-4-3-2-3-2-3-2 | 30 | 2-4-6-5-5-3-1-2 | 21 | 3-5-5-3-4-3-3-2 |
| 16 June | 19 | 1-2-3-4-3-4-4-4 | 36 | 1-2-3-6-6-6-3-2 | 26 | 1-2-2-6-5-4-4-3 |
| 17 June | 9 | 4-3-1-1-2-2-2-1 | 20 | 4-4-2-4-4-4-2-2 | 14 | 4-4-3-2-2-3-3-2 |
| 18 June | 5 | 1-2-2-1-1-1-2-1 | 8 | 2-2-3-1-3-2-2-1 | 7 | 1-2-3-1-2-2-2-1 |
| 19 June | 3 | 1-1-1-1-1-1-1-1 | 4 | 1-1-1-1-2-2-0-2 | 7 | 2-1-2-2-2-2-2-2 |

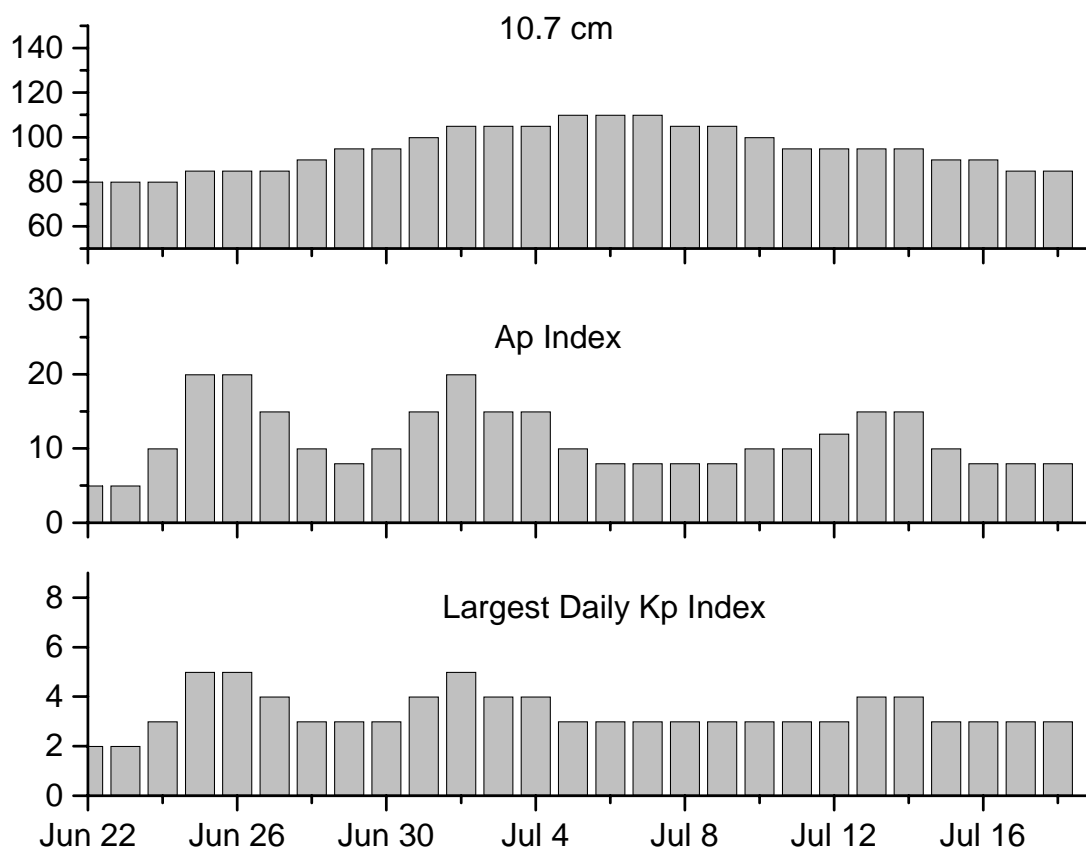


Alerts and Warnings Issued

| <u>Date & Time of Issue</u> | <u>Type of Alert or Warning</u> | <u>Date & Time of Event UTC</u> |
|---------------------------------|--|-------------------------------------|
| 13 Jun 0509 | EXTENDED WARNING: Geomagnetic K = 5 | 12 Jun 1814 – 13 Jun 1500 |
| 13 Jun 0527 | ALERT: Geomagnetic K = 6 | 13 Jun 0526 |
| 13 Jun 1259 | ALERT: Electron 2MeV Integral Flux > 1000pfu | 13 Jun 1240 |
| 13 Jun 1448 | WARNING: Geomagnetic K = 4 | 13 Jun 1500 - 2359 |
| 14 Jun 0006 | 1 – 245 MHz Radio Noise Storm | 13 Jun |
| 14 Jun 0515 | ALERT: Electron 2MeV Integral Flux > 1000pfu | 14 Jun 0500 |
| 14 Jun 0728 | ALERT: Type IV Radio Emission | 14 Jun 0656 |
| 14 Jun 1635 | SUMMARY: 10cm Radio Burst | 14 Jun 1541 |
| 14 Jun 1843 | SUMMARY: Geomagnetic Sudden Impulse | 14 Jun 1810 |
| 15 Jun 0006 | 2 – 245 MHz Radio Bursts | 14 Jun |
| 15 Jun 0006 | 1 – 245 MHz Radio Noise Storm | 14 Jun |
| 15 Jun 0351 | ALERT: Geomagnetic K = 4 | 15 Jun 15 0350 |
| 15 Jun 0610 | WARNING: Geomagnetic K = 4 | 15 Jun 0610 - 1500 |
| 15 Jun 0845 | ALERT: Electron 2MeV Integral Flux > 1000pfu | 15 Jun 0830 |
| 15 Jun 1005 | ALERT: Geomagnetic K = 4 | 15 Jun 1005 |
| 15 Jun 1457 | EXTENDED WARNING: Geomagnetic K=4 | 15 Jun 0610 -2359 |
| 15 Jun 2142 | WATCH: Geomagnetic A \geq 20 | 17 Jun |
| 15 Jun 2155 | WATCH: Geomagnetic A \geq 20 | 17 Jun |
| 16 Jun 0004 | 1 – 245 MHz Radio Burst | 15 Jun |
| 16 Jun 0004 | 1 – 245 MHz Radio Noise Storm | 15 Jun |
| 16 Jun 0954 | ALERT: Geomagnetic K = 4 | 16 Jun 0955 |
| 16 Jun 1014 | WARNING: Geomagnetic K = 4 | 16 Jun 1015 -1600 |
| 16 Jun 1055 | ALERT: Geomagnetic K = 5 | 16 Jun 1056 |
| 16 Jun 1107 | WARNING: Geomagnetic K = 6 | 16 Jun 1108 -1600 |
| 16 Jun 1154 | ALERT: Geomagnetic K = 6 | 16 Jun 1155 |
| 16 Jun 1245 | SUMMARY: Geomagnetic Sudden Impulse | 16 Jun 0851 |
| 16 Jun 1457 | EXTENDED WARNING: Geomagnetic K= 4 | 16 Jun 1015 -2359 |
| 16 Jun 1507 | ALERT: Electron 2MeV Integral Flux > 1000pfu | 16 Jun 1440 |
| 16 Jun 2033 | ALERT: Type IV Radio Emission | 16 Jun 2017 |
| 16 Jun 2038 | SUMMARY: 10cm Radio Burst | 16 Jun 2008 |
| 16 Jun 2057 | WARNING: Proton 10MeV Integral Flux > 10pfu | 16 Jun 2115 -17 Jun 0600 |
| 16 Jun 2110 | ALERT: Type II Radio Emission | 16 Jun 2100 |
| 16 Jun 2115 | WARNING: Proton 100MeV Integral Flux > 1pfu | 16 Jun 2130 – 17 Jun 0400 |
| 16 Jun 2140 | ALERT: Proton Event 100MeV Integral Flux > 1pfu | 16 Jun 2125 |
| 16 Jun 2215 | ALERT: Proton Event 10MeV Integral Flux > 10pfu | 16 Jun 2200 |
| 16 Jun 2354 | EXTENDED WARNING: Geomagnetic K= 4 | 16 Jun 1015 – 17 Jun 1600 |
| 17 Jun 0019 | 1 – 245 MHz Radio Noise Storm | 16 Jun |
| 17 Jun 0059 | CONT ALERT: Proton Event 10MeV Integral Flux > 10pfu | 16 Jun 2200 |
| 17 Jun 0103 | CONT ALERT: Proton Event 100MeV Integral Flux > 1pfu | 16 Jun 2125 |
| 17 Jun 0314 | EXT WARNING: Proton 100MeV Integral Flux > 1 pfu | 16 Jun 2130 – 17 Jun 1200 |
| 17 Jun 0321 | EXT WARNING: Proton 10MeV Integral Flux > 10pfu | 16 Jun 2115 – 17 Jun 1600 |
| 17 Jun 1310 | ALERT: Electron 2MeV Integral Flux > 1000pfu | 17Jun 1250 |
| 17 Jun 1734 | SUMMARY: Proton Event 100MeV Integral Flux > 1pfu | 16 Jun 2125 |
| 17 Jun 2149 | SUMMARY: Proton Event 10MeV Integral Flux > 10pfu | 16 Jun 2200 |
| 18 Jun 0005 | 3 – 245 MHz Radio Bursts | 17 Jun |
| 18 Jun 0005 | 1 – 245 MHz Radio Noise Storm | 17 Jun |
| 18 Jun 0931 | ALERT: Electron 2MeV Integral Flux > 1000pfu | 18 Jun 0910 |
| 19 Jun 0645 | ALERT: Electron 2MeV Integral Flux > 1000pfu | 19 Jun 0620 |



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 |
|--------|-----------------------|----------------------|---------------------|--------|-----------------------|----------------------|---------------------|
| 22 Jun | 80 | 5 | 2 | 06 Jul | 110 | 8 | 3 |
| 23 | 80 | 5 | 2 | 07 | 110 | 8 | 3 |
| 24 | 80 | 10 | 3 | 08 | 105 | 8 | 3 |
| 25 | 85 | 20 | 5 | 09 | 105 | 8 | 3 |
| 26 | 85 | 20 | 5 | 10 | 100 | 10 | 3 |
| 27 | 85 | 15 | 4 | 11 | 95 | 10 | 3 |
| 28 | 90 | 10 | 3 | 12 | 95 | 12 | 3 |
| 29 | 95 | 8 | 3 | 13 | 95 | 15 | 4 |
| 30 | 95 | 10 | 3 | 14 | 95 | 15 | 4 |
| 01 Jul | 100 | 15 | 4 | 15 | 90 | 10 | 3 |
| 02 | 105 | 20 | 5 | 16 | 90 | 8 | 3 |
| 03 | 105 | 15 | 4 | 17 | 85 | 8 | 3 |
| 04 | 105 | 15 | 4 | 18 | 85 | 8 | 3 |
| 05 | 110 | 10 | 3 | | | | |



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 |
| 16 Jun 05 | 2001 | 2022 | 2042 | M4.0 | .062 | Sf | N09W87 | 775 | | 170 | | 1 |

Flare List

| Date | Time | | | Optical X-ray Class. | Imp / Brtns | Location Lat CMD | Rgn |
|---------|-------|-------|------|----------------------------|----------------|---------------------|-----|
| | Begin | Max | End | | | | |
| 13 June | 0336 | 0339 | 0341 | B2.9 | | | |
| | 0611 | 0615 | 0620 | B2.7 | | | |
| | 1002 | 1040 | 1115 | B6.9 | | | 775 |
| | 1212 | 1215 | 1217 | B3.8 | | | 775 |
| 14 June | 0514 | 0515 | 0522 | B5.4 | Sf | S09W43 | 776 |
| | 0703 | 0718 | 0813 | C4.2 | 1f | N08W45 | 775 |
| | 1542 | 1555 | 1624 | C7.4 | Sf | N11W59 | 775 |
| | 1907 | 1910 | 1912 | B8.4 | | | 775 |
| 15 June | 0305 | 0310 | 0315 | B5.8 | | | 773 |
| | 0732 | 0735 | 0737 | B2.1 | | | |
| | 0945 | 0950 | 0953 | B3.6 | | | |
| | 1413 | 1418 | 1421 | B3.0 | | | |
| | 1445 | 1448 | 1451 | B3.4 | | | |
| | 1748 | 1753 | 1759 | B2.6 | | | 776 |
| | 1840 | 1842 | 1849 | C2.2 | Sf | S05W58 | 776 |
| | 2026 | 2030 | 2035 | B2.4 | | | 776 |
| 16 June | 2221 | 2243 | 2249 | B8.9 | | | 776 |
| | 0158 | 0200 | 0211 | C1.6 | Sf | S06W63 | 776 |
| | 0611 | 0623 | 0631 | B4.4 | | | 776 |
| | 0721 | 0905 | 0939 | C1.7 | | | 775 |
| | 1159 | 1205 | 1213 | B8.6 | | | 776 |
| | 1243 | 1246 | 1248 | B3.7 | | | 776 |
| | 1334 | 1338 | 1342 | B3.6 | | | 776 |
| | 1415 | 1418 | 1421 | B3.8 | | | 776 |
| | 1713 | 1721 | 1731 | B5.8 | | | 775 |
| | 2009 | U2010 | 2016 | M4.0 | Sf | N09W87 | 775 |
| 17 June | 1845 | 1904 | 1911 | C1.4 | | | 780 |
| | 2115 | 2119 | 2121 | B5.4 | | | 780 |
| | 2210 | 2236 | 2243 | C2.7 | | | 780 |
| | 2335 | 2338 | 2340 | B3.2 | | | 780 |
| 18 June | 0018 | 0021 | 0024 | C1.6 | Sf | S07E66 | 780 |
| | 0101 | 0105 | 0110 | B3.3 | | | 780 |
| | 0158 | 0159 | 0202 | B7.6 | Sf | S07E66 | 780 |
| | 0228 | 0230 | 0233 | B4.2 | Sf | S07E65 | 780 |
| | 0239 | 0241 | 0246 | B5.7 | Sf | S08E65 | 780 |
| | 0300 | 0304 | 0313 | B6.6 | | | 780 |
| | 0449 | 0449 | 0453 | B2.8 | Sf | S08E63 | 780 |



Flare List – continued.

| Date | Begin | Time | | Class. | Optical X-ray Brtns | Imp / Lat CMD | Location | Rgn |
|---------|-------|------|------|--------|---------------------------|------------------|----------|-----|
| | | Max | End | | | | | |
| 18 June | | 0649 | 0652 | 0654 | B3.2 | | | 779 |
| | | 0825 | 0829 | 0835 | C1.3 | Sf | S05E61 | 780 |
| | | 0845 | 0849 | 0854 | B5.4 | | | 780 |
| | | 1032 | 1036 | 1038 | B6.6 | | | 780 |
| | | 1139 | 1149 | 1157 | C1.0 | | | 780 |
| | | 1320 | 1324 | 1326 | B2.5 | | | 780 |
| | | 1527 | 1535 | 1542 | B3.3 | | | 779 |
| | | 1558 | 1601 | 1603 | B2.6 | | | 780 |
| | | 1644 | 1650 | 1658 | B5.3 | | | 780 |
| | | 1801 | 1819 | 1838 | B3.7 | | | |
| | | 2010 | 2034 | 2043 | C1.0 | | | 779 |
| | | 2307 | 2308 | 2310 | | Sf | S05E54 | 780 |
| | | 2309 | 2311 | 2319 | C1.8 | Sf | S17W30 | 779 |
| | | 2359 | 0002 | 0009 | B2.7 | | | 779 |
| 19 June | | 0029 | 0034 | 0039 | B3.8 | | | 779 |
| | | 0305 | 0309 | 0313 | B2.8 | | | 779 |
| | | 0708 | 0711 | 0713 | B3.3 | | | 779 |
| | | 0948 | 0955 | 1002 | B1.5 | | | |
| | | 1142 | 1145 | 1206 | B1.8 | | | 779 |
| | | 1212 | 1217 | 1219 | B3.0 | | | 780 |
| | | 1228 | 1237 | 1243 | B6.2 | | | 780 |
| | | 1340 | 1343 | 1346 | B3.0 | | | 779 |
| | | 1405 | 1411 | 1416 | B3.1 | | | 779 |
| | | 1924 | 1926 | 1936 | C2.1 | Sf | S16W43 | 779 |
| | | 2006 | 2011 | 2014 | B3.8 | | | 780 |
| | 2157 | 2201 | 2209 | B1.3 | | | | |



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 773

| | | | | | | | | | | | | | | | | | | |
|--------|--------|-----|------|----|-----|-----|---|--|---|---|---|---|---|---|---|---|---|---|
| 01 Jun | S12E76 | 093 | 0110 | 08 | Dso | 004 | B | | | | | | | | | | | |
| 02 Jun | S12E63 | 093 | 0140 | 09 | Dao | 003 | B | | | | | | | | | | | |
| 03 Jun | S13E50 | 093 | 0140 | 08 | Dao | 006 | B | | | | | | | | | | | |
| 04 Jun | S13E36 | 094 | 0190 | 11 | Eso | 008 | B | | | | | | | | | | | |
| 05 Jun | S13E23 | 093 | 0120 | 09 | Dao | 006 | B | | | | | | | | | | | |
| 06 Jun | S12E09 | 093 | 0110 | 09 | Dao | 010 | B | | | | | | | | | | | |
| 07 Jun | S14W04 | 093 | 0130 | 09 | Dao | 005 | B | | | | | | | | | | | |
| 08 Jun | S14W18 | 093 | 0090 | 09 | Dso | 006 | B | | | | | | | | | | | |
| 09 Jun | S14W31 | 093 | 0070 | 09 | Dao | 004 | B | | | | | | | | | | | |
| 10 Jun | S14W44 | 093 | 0070 | 06 | Cso | 004 | B | | | | | | | | | | | |
| 11 Jun | S15W54 | 089 | 0060 | 03 | Cso | 003 | B | | | | | | | | | | | |
| 12 Jun | S15W67 | 089 | 0040 | 02 | Hsx | 002 | A | | | | | | | | | | | |
| 13 Jun | S16W80 | 089 | 0030 | 02 | Bxo | 003 | B | | | | | | | | | | | |
| 14 Jun | S16W93 | 089 | | | | | | | | | | | | | | | | |
| | | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Crossed West Limb.

Absolute heliographic longitude: 093

Region 775

| | | | | | | | | | | | | | | | | | | |
|--------|--------|-----|------|----|-----|-----|-----|---|---|---|----|---|---|---|---|---|--|--|
| 04 Jun | N12E75 | 055 | 0160 | 03 | Hsx | 002 | A | | | | | | | | | | | |
| 05 Jun | N12E61 | 055 | 0160 | 04 | Hsx | 001 | A | | | | | | | | | | | |
| 06 Jun | N12E48 | 054 | 0180 | 05 | Cao | 007 | B | | | | | | | | | | | |
| 07 Jun | N10E35 | 054 | 0240 | 05 | Cao | 006 | B | | | | | 1 | | | | | | |
| 08 Jun | N10E21 | 054 | 0270 | 05 | Dki | 012 | Bgd | | | | | | | | | | | |
| 09 Jun | N08E08 | 054 | 0360 | 08 | Dkc | 016 | Bgd | 1 | | | | 2 | | | | | | |
| 10 Jun | N08W05 | 054 | 0330 | 08 | Dkc | 017 | Bgd | | | | | | | | | | | |
| 11 Jun | N10W19 | 054 | 0330 | 07 | Dki | 013 | Bg | | | | | | | | | | | |
| 12 Jun | N10W32 | 054 | 0360 | 06 | Dhc | 017 | Bg | 2 | | | | 5 | | | | | | |
| 13 Jun | N10W46 | 055 | 0290 | 05 | Dhi | 016 | Bg | | | | | | | | | | | |
| 14 Jun | N09W59 | 055 | 0200 | 04 | Dao | 007 | B | 2 | | | | 1 | 1 | | | | | |
| 15 Jun | N09W74 | 057 | 0230 | 06 | Dho | 004 | B | | | | | | | | | | | |
| 16 Jun | N10W86 | 055 | 0130 | 03 | Hax | 002 | A | 1 | 1 | | | 1 | | | | | | |
| | | | | | | | | 6 | 1 | 0 | 10 | 1 | 0 | 0 | 0 | 0 | | |

Crossed West Limb.

Absolute heliographic longitude: 054



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 776

| | | | | | | | | | | | | | | | | | | |
|--------|--------|-----|------|----|-----|-----|----|---|--|----|---|---|----|---|---|---|---|---|
| 05 Jun | S05E71 | 045 | 0230 | 07 | Dao | 003 | B | 1 | | | 1 | | | | | | | |
| 06 Jun | S05E61 | 041 | 0300 | 11 | Eao | 007 | B | 2 | | | | | | 1 | | | | |
| 07 Jun | S06E47 | 042 | 0490 | 11 | Eko | 016 | B | 1 | | | 1 | | | | | | | |
| 08 Jun | S06E33 | 042 | 0570 | 10 | Dki | 021 | Bg | 4 | | | 3 | | | | | | | |
| 09 Jun | S06E20 | 042 | 0600 | 11 | Ekc | 030 | Bg | 1 | | | 1 | | | | | | | |
| 10 Jun | S06E07 | 042 | 0580 | 13 | Ekc | 026 | Bg | | | | 1 | | | | | | | |
| 11 Jun | S06W08 | 043 | 0520 | 12 | Eki | 028 | Bg | | | | | | | | | | | |
| 12 Jun | S06W21 | 043 | 0440 | 11 | Eki | 036 | Bg | | | | | | 1 | | | | | |
| 13 Jun | S06W34 | 043 | 0380 | 09 | Dko | 024 | Bg | | | | | | | | | | | |
| 14 Jun | S06W48 | 044 | 0360 | 08 | Dki | 017 | B | | | | | | 1 | | | | | |
| 15 Jun | S05W64 | 047 | 0320 | 06 | Cho | 005 | B | 1 | | | 1 | | | | | | | |
| 16 Jun | S05W77 | 046 | 0270 | 05 | Cko | 005 | B | 1 | | | 1 | | | | | | | |
| 17 Jun | S06W92 | 048 | 0190 | 05 | Hax | 002 | B | | | | | | | | | | | |
| | | | | | | | | | | 11 | 0 | 0 | 11 | 1 | 0 | 0 | 0 | 0 |

Crossed West Limb.

Absolute heliographic longitude: 042

Region 777

| | | | | | | | | | | | | | | | | | | |
|--------|--------|-----|------|----|-----|-----|---|--|--|---|---|---|---|---|---|---|---|---|
| 10 Jun | N05E57 | 352 | 0030 | 04 | Bxo | 004 | B | | | | | | | | | | | |
| 11 Jun | N05E41 | 354 | 0010 | 00 | Axx | 001 | A | | | | | | | | | | | |
| 12 Jun | N05E28 | 354 | | | | | | | | | | | | | | | | |
| 13 Jun | N05E15 | 354 | | | | | | | | | | | | | | | | |
| 14 Jun | N05E02 | 354 | | | | | | | | | | | | | | | | |
| 15 Jun | N05W11 | 354 | | | | | | | | | | | | | | | | |
| 16 Jun | N05W24 | 354 | | | | | | | | | | | | | | | | |
| 17 Jun | N05W37 | 354 | | | | | | | | | | | | | | | | |
| 18 Jun | N05W50 | 354 | | | | | | | | | | | | | | | | |
| 19 Jun | N05W63 | 354 | | | | | | | | | | | | | | | | |
| | | | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Still on Disk.

Absolute heliographic longitude: 354

Region 778

| | | | | | | | | | | | | | | | | | | |
|--------|--------|-----|------|----|-----|-----|---|--|--|---|---|---|---|---|---|---|---|---|
| 15 Jun | N07W38 | 021 | 0030 | 01 | Hsx | 001 | A | | | | | | | | | | | |
| 16 Jun | N08W50 | 019 | 0010 | 01 | Axx | 001 | A | | | | | | | | | | | |
| 17 Jun | N08W63 | 019 | | | | | | | | | | | | | | | | |
| 18 Jun | N08W76 | 019 | | | | | | | | | | | | | | | | |
| | | | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Still on Disk.

Absolute heliographic longitude: 021



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 779

| | | | | | | | | | | | | | | | | | |
|--------|--------|-----|------|----|-----|-----|----|---|---|---|---|---|---|---|---|---|---|
| 15 Jun | S17E08 | 335 | 0150 | 07 | Dai | 014 | B | | | | | | | | | | |
| 16 Jun | S17W05 | 334 | 0240 | 08 | Dai | 019 | B | | | | | | | | | | |
| 17 Jun | S18W19 | 335 | 0300 | 11 | Eki | 025 | Bg | | | | | | | | | | |
| 18 Jun | S18W32 | 335 | 0460 | 11 | Eki | 024 | B | 2 | | | 1 | | | | | | |
| 19 Jun | S17W45 | 335 | 0460 | 12 | Eko | 016 | B | 1 | | | 1 | | | | | | |
| | | | | | | | | 3 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |

Still on Disk.

Absolute heliographic longitude: 334

Region 780

| | | | | | | | | | | | | | | | | | |
|--------|--------|-----|------|----|-----|-----|---|---|---|---|---|---|---|---|---|---|---|
| 17 Jun | S07E66 | 250 | 0040 | 01 | Cso | 002 | B | 2 | | | | | | | | | |
| 18 Jun | S08E52 | 251 | 0070 | 05 | Dao | 006 | B | 3 | | | 7 | | | | | | |
| 19 Jun | S07E38 | 252 | 0040 | 04 | Dso | 007 | B | | | | | | | | | | |
| | | | | | | | | 5 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 |

Still on Disk.

Absolute heliographic longitude: 252

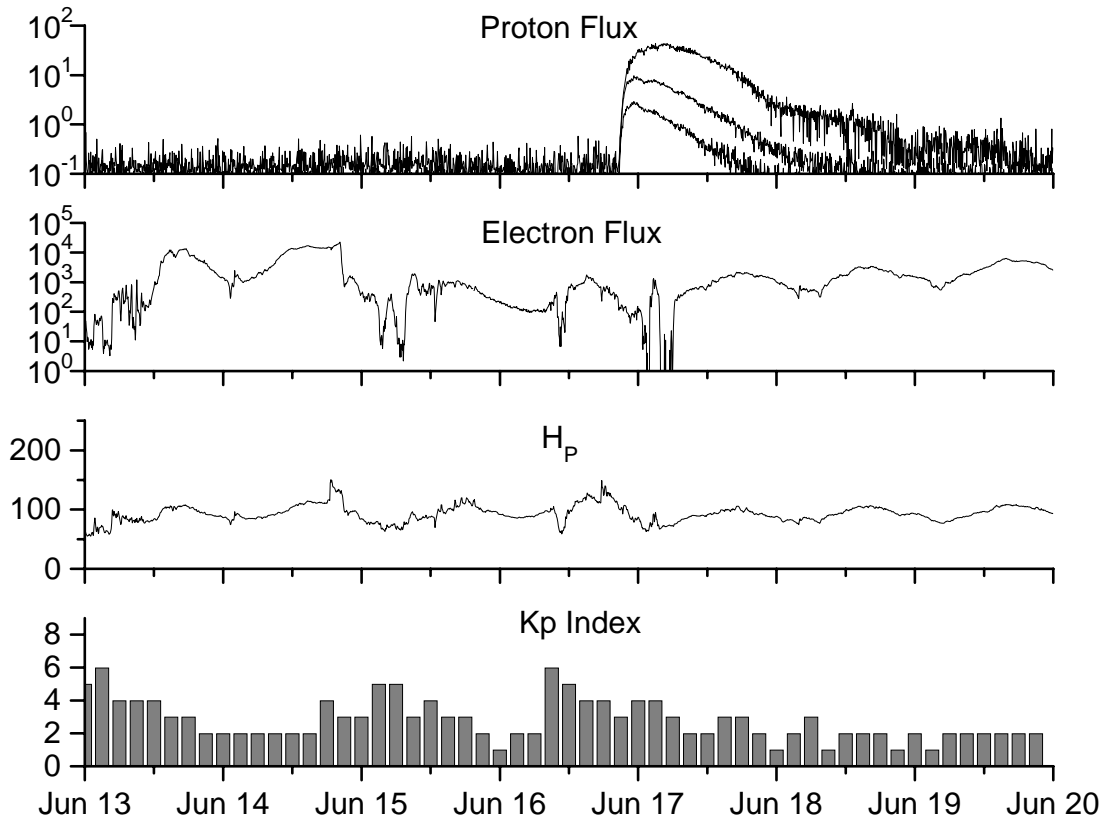


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

| 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 | | | 94.6 | | 11 | |
| 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 | |

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 13 June 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.

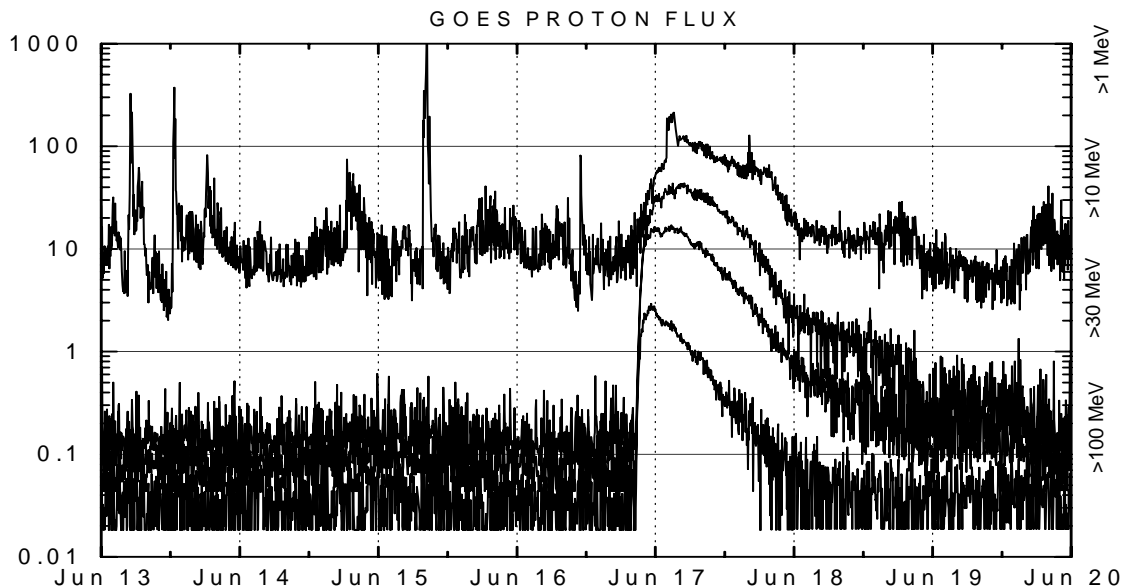
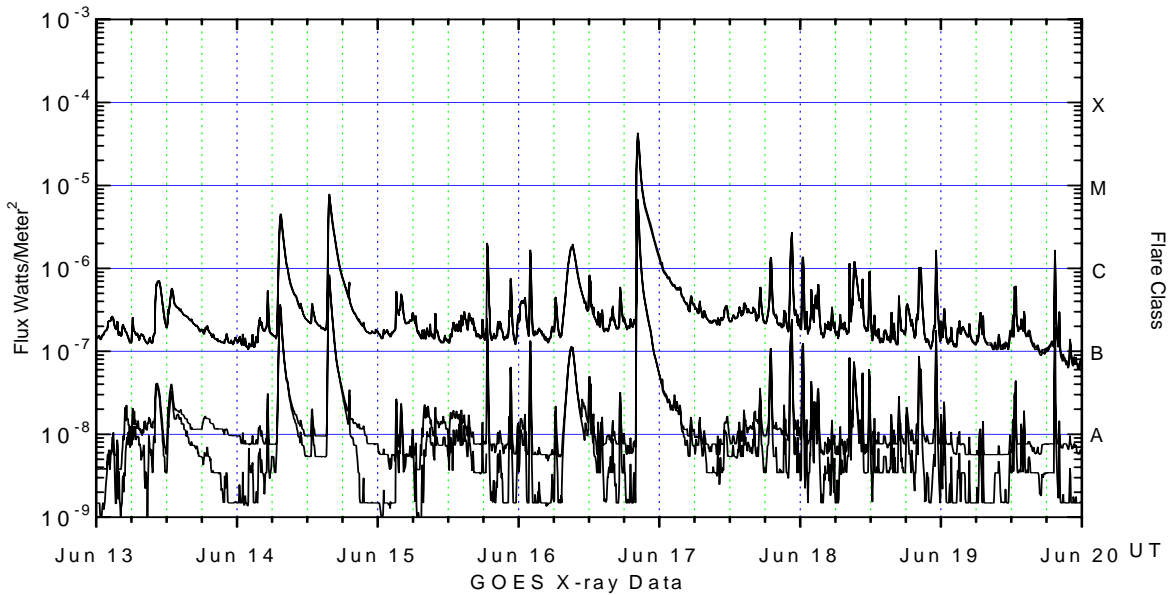
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec-sr) with energies greater than 2 MeV at GOES-12 (W75).

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.

