

Space Weather Highlights
31 July – 06 August 2006

SEC PRF 1614
08 August 2006

Solar activity was at very low levels. Through 03 August, the disk was only populated by small, magnetically weak spot groups. Since the 3rd, the disk was spotless.

No greater than 10 MeV proton events were observed.

The greater than 2 MeV electron flux at geosynchronous orbit was at normal levels.

The geomagnetic field was at quiet to unsettled levels at middle latitudes, while high latitudes observed quiet to minor storm conditions. Solar wind speed ranged from a low of near 380 km/s early on 31 July to a high of near 640 km/s midday on 01 August. The Bz component of the IMF did not vary much beyond +/- 3 nT for the majority of the period. Early on 31 July, wind speed and temperature began a slow increase, all in advance of a recurrent coronal hole wind stream. By midday on the 31st, the IMF Bz was fluctuating between +/-11 nT and remained so through the balance of the 31st. By midday on 01 August, wind speed peaked at about 640 km/s, while the IMF Bz relaxed some, not varying much beyond +/- 5 nT through the end of the 1st. As a result, at middle latitudes the geomagnetic field was at quiet to unsettled levels through midday on 01 August, while high latitudes experienced quiet to minor storm conditions through midday on 02 August. Thereafter and through the end of the summary period, the field was at mostly quiet levels.

Space Weather Outlook
09 August – 04 September 2006

Solar activity is expected to be at very low to low levels.

No greater than 10 MeV proton events are expected.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at high levels on 09 – 10 August.

The geomagnetic field is expected to be mostly quiet to unsettled for the majority of the forecast period. Active periods are possible on 24 and 28 August, while active to minor storm periods are possible on 03 September, all due to recurrent coronal hole high speed wind streams due to rotate into geoeffective positions.



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 | |
| 31 July | 72 | 25 | 30 | A1.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 01 August | 73 | 11 | 10 | A1.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 02 August | 72 | 22 | 50 | A1.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 03 August | 71 | 23 | 60 | A2.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04 August | 70 | 0 | 0 | A1.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05 August | 70 | 0 | 0 | <A1.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 06 August | 70 | 0 | 0 | <A1.0 | 0 | 0 | 0 | 0 | 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 |
| | 31 July | 2.3E+6 | 1.6E+4 | 3.9E+3 | | 3.3E+6 |
| 01 August | 6.9E+5 | 1.6E+4 | 3.5E+3 | | 2.6E+6 | |
| 02 August | 6.3E+5 | 1.6E+4 | 3.5E+3 | | 1.0E+7 | |
| 03 August | 4.6E+5 | 1.6E+4 | 3.5E+3 | | 2.3E+7 | |
| 04 August | 8.9E+5 | 1.6E+4 | 3.6E+3 | | 3.4E+7 | |
| 05 August | 8.9E+5 | 1.7E+4 | 3.6E+3 | | 3.0E+7 | |
| 06 August | 1.3E+6 | 1.7E+4 | 3.6E+3 | | 2.7E+7 | |

Daily Geomagnetic Data

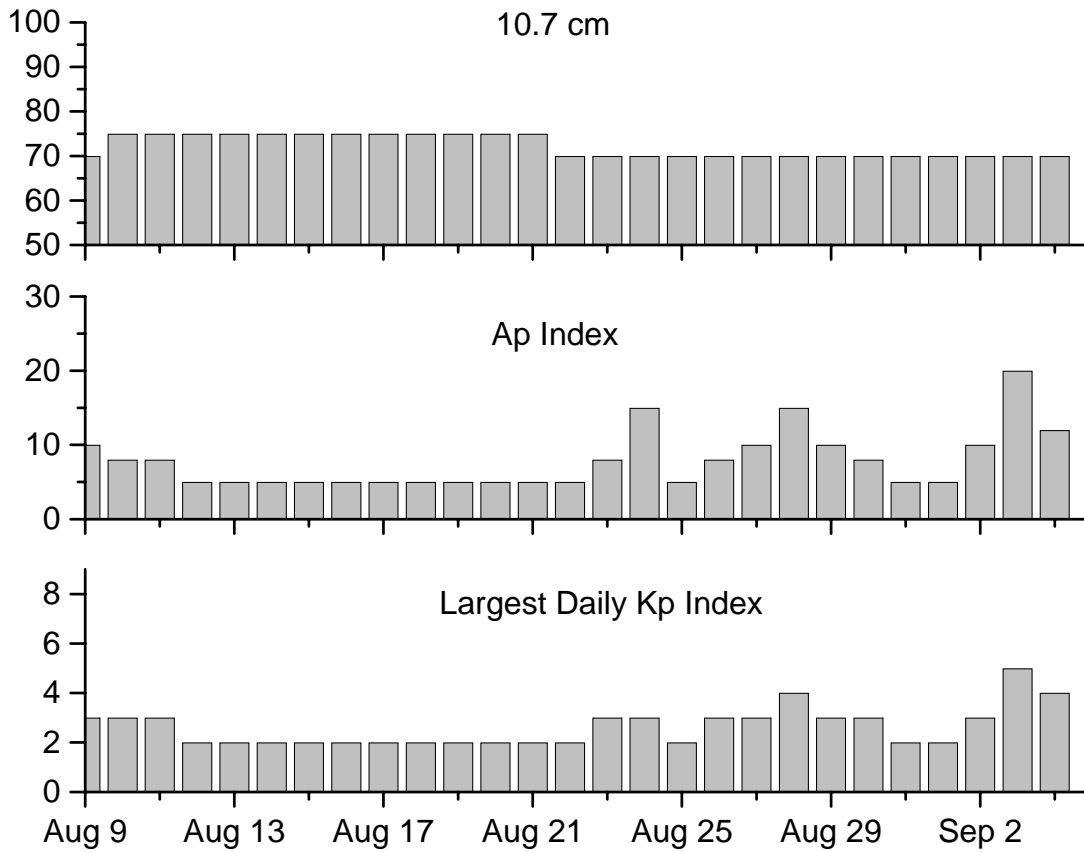
| Date | Middle Latitude Fredericksburg | | High Latitude College | | Estimated Planetary | |
|-----------|-----------------------------------|-----------------|--------------------------|-----------------|------------------------|-----------------|
| | A | K-indices | A | K-indices | A | K-indices |
| | 31 July | 11 | 2-3-3-3-3-1-2-2 | 16 | 3-2-2-4-5-3-1-2 | 12 |
| 01 August | 9 | 2-3-3-3-2-2-1-1 | 25 | 3-4-4-5-5-4-2-1 | 12 | 2-4-4-3-2-2-1-2 |
| 02 August | 7 | 3-2-2-2-2-1-1-2 | 12 | 2-2-3-4-4-1-1-1 | 10 | 3-2-3-3-2-1-1-3 |
| 03 August | 5 | 3-2-1-1-1-0-1-2 | 5 | 3-2-1-1-2-0-1-1 | 6 | 3-2-0-1-0-1-2-2 |
| 04 August | 2 | 0-2-0-0-0-0-1-1 | 1 | 0-1-0-0-0-0-0-1 | 3 | 1-1-0-0-0-0-1-1 |
| 05 August | 2 | 1-1-1-0-1-0-1-1 | 1 | 1-1-1-0-0-0-0-0 | 4 | 2-1-1-0-1-1-1-1 |
| 06 August | 2 | 1-0-1-0-1-0-0-1 | 2 | 1-1-0-0-1-0-0-1 | 4 | 1-1-1-0-1-2-2-1 |

Alerts and Warnings Issued

| Date & Time of Issue | Type of Alert or Warning | Date & Time of Event UTC |
|----------------------|--------------------------|--------------------------|
| 01 Aug 0504 | WARNING: Geomagnetic K=4 | 01 Aug 0505 - 1600 |
| 01 Aug 0506 | ALERT: Geomagnetic K=4 | 01 Aug 0504 |
| 01 Aug 0854 | ALERT: Geomagnetic K=4 | 01 Aug 0851 |



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 |
|--------|-----------------------|----------------------|---------------------|---------|-----------------------|----------------------|---------------------|
| 09 Aug | 70 | 10 | 3 | 23 Aug | 70 | 8 | 3 |
| 10 | 70 | 8 | 3 | 24 | 70 | 15 | 3 |
| 11 | 75 | 8 | 3 | 25 | 70 | 5 | 2 |
| 12 | 75 | 5 | 2 | 26 | 70 | 8 | 3 |
| 13 | 75 | 5 | 2 | 27 | 70 | 10 | 3 |
| 14 | 75 | 5 | 2 | 28 | 70 | 15 | 4 |
| 15 | 75 | 5 | 2 | 29 | 70 | 10 | 3 |
| 16 | 75 | 5 | 2 | 30 | 70 | 8 | 3 |
| 17 | 75 | 5 | 2 | 31 | 70 | 5 | 2 |
| 18 | 75 | 5 | 2 | 01 Sept | 70 | 5 | 2 |
| 19 | 75 | 5 | 2 | 02 | 70 | 10 | 3 |
| 20 | 75 | 5 | 2 | 03 | 70 | 20 | 5 |
| 21 | 75 | 5 | 2 | 04 | 70 | 12 | 4 |
| 22 | 70 | 5 | 2 | | | | |



Energetic Events

| Date | Time | | X-ray | Optical Information | | | Peak | | Sweep Freq |
|------|-------|-----|-------|---------------------|----------|-----|------------|-----|------------|
| | Begin | Max | Integ | Imp/ | Location | Rgn | Radio Flux | | Intensity |
| | | | Class | Flux | Lat | CMD | # | 245 | 2695 |

No Events Observed

Flare List

| Date | Time | | | Optical | Imp / Brtns | Location | Rgn |
|-----------|--------------------|------|------|-----------------|----------------|----------|-----|
| | Begin | Max | End | X-ray Class. | | Lat | |
| 31 July | 2010 | 2022 | 2029 | B2.1 | | | 901 |
| 01 August | 1031 | 1036 | 1040 | B1.1 | | | |
| 02 August | No Flares Observed | | | | | | |
| 03 August | No Flares Observed | | | | | | |
| 04 August | 0127 | 0134 | 0149 | B1.8 | | | |
| | 0326 | 0334 | 0353 | B1.4 | | | 902 |
| 05 August | No Flares Observed | | | | | | |
| 06 August | No Flares Observed | | | | | | |

Region Summary

| 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 |

Region 901

| | | | | | | | | | | | | | | | | | | |
|--------|--------|-----|------|----|-----|-----|---|--|--|--|--|--|--|--|--|--|--|--|
| 22 Jul | N06E70 | 006 | 0040 | 06 | Cso | 006 | B | | | | | | | | | | | |
| 23 Jul | N06E56 | 007 | 0130 | 08 | Dao | 011 | B | | | | | | | | | | | |
| 24 Jul | N05E42 | 008 | 0110 | 08 | Dao | 009 | B | | | | | | | | | | | |
| 25 Jul | N06E28 | 009 | 0100 | 08 | Dao | 006 | B | | | | | | | | | | | |
| 26 Jul | N06E15 | 009 | 0100 | 09 | Cao | 010 | B | | | | | | | | | | | |
| 27 Jul | N05E00 | 011 | 0070 | 09 | Cso | 013 | B | | | | | | | | | | | |
| 28 Jul | N05W12 | 009 | 0070 | 09 | Cso | 007 | B | | | | | | | | | | | |
| 29 Jul | N06W26 | 009 | 0080 | 09 | Cso | 009 | B | | | | | | | | | | | |
| 30 Jul | N06W43 | 013 | 0010 | 01 | Hsx | 001 | A | | | | | | | | | | | |
| 31 Jul | N06W54 | 011 | 0020 | 08 | Dso | 004 | B | | | | | | | | | | | |
| 01 Aug | N06W67 | 011 | | | | | | | | | | | | | | | | |
| 02 Aug | N08W73 | 003 | 0020 | 01 | Axx | 001 | A | | | | | | | | | | | |
| 03 Aug | N08W86 | 003 | 0030 | 06 | Bxo | 002 | B | | | | | | | | | | | |

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 011



Region Summary-Continued

| Location | | | Sunspot Characteristics | | | | | | | Flares | | | | |
|----------|----------------|-------|---------------------------------|-------------------|---------------|---------------|--------------|-------|---|--------|---------|---|---|---|
| Date | (° 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 902

| | | | | | | | | | | | | | | | | | | |
|--------|--------|-----|------|----|-----|-----|---|--|--|--|--|--|--|--|--|--|--|-----------------|
| 30 Jul | S10W21 | 351 | 0030 | 04 | Cso | 002 | B | | | | | | | | | | | |
| 31 Jul | S09W47 | 004 | 0010 | 01 | Hsx | 001 | A | | | | | | | | | | | |
| 01 Aug | S08W62 | 006 | 0010 | 01 | Axx | 001 | A | | | | | | | | | | | |
| 02 Aug | S09W74 | 004 | 0030 | 01 | Cro | 001 | B | | | | | | | | | | | |
| 03 Aug | S09W87 | 004 | 0030 | 01 | Axx | 001 | A | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | 0 0 0 0 0 0 0 0 |

Crossed West Limb.

Absolute heliographic longitude: 351

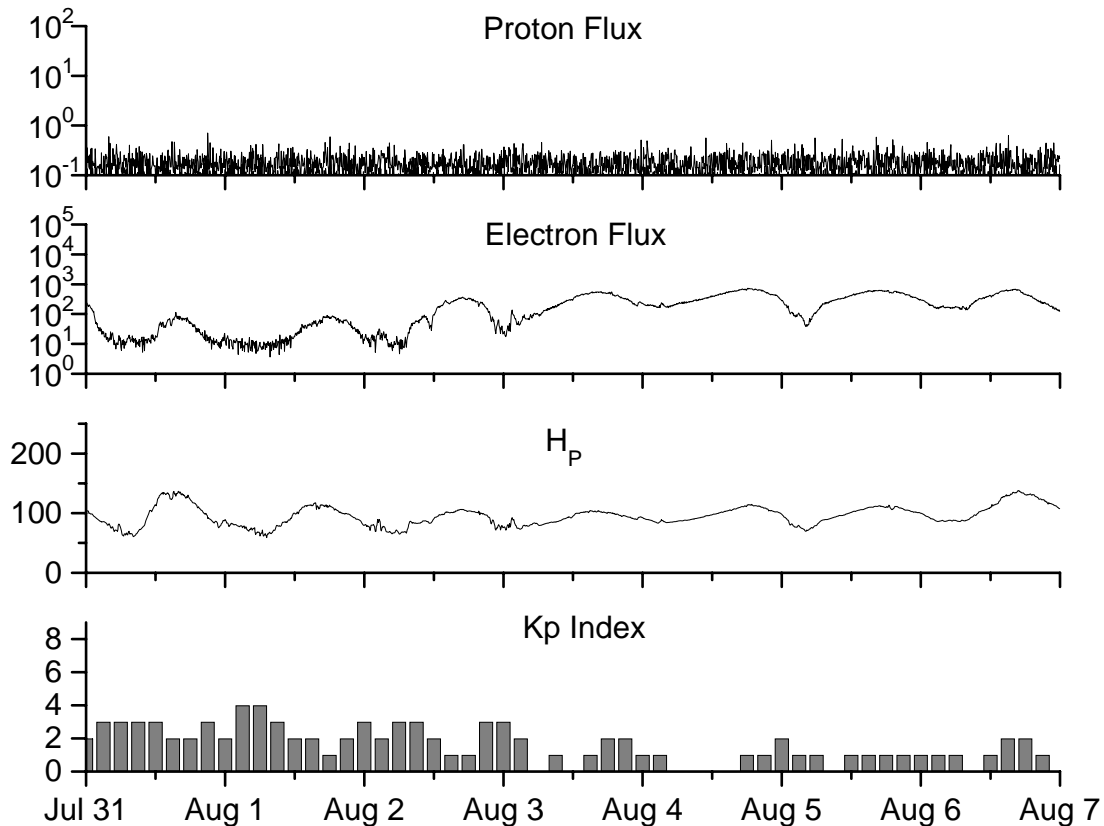


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

| Month | Sunspot Numbers | | | Radio Flux | | Geomagnetic | | | |
|-------------|------------------------|-------------|-----------------|----------------------|---------------------|-----------------------|-----------------|-----------------|-----------------|
| | Observed values SEC | Ratio RI | Ratio RI/SEC | Smooth values SEC | Smooth values RI | *Penticton 10.7 cm | Smooth Value | Planetary Ap | Smooth Value |
| 2004 | | | | | | | | | |
| 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 | 57.3 | 34.7 | 102.4 | 100.3 | 22 | 14.7 |
| February | 45.4 | 29.1 | 0.64 | 56.4 | 34.0 | 97.3 | 98.5 | 11 | 14.6 |
| March | 41.0 | 24.8 | 0.60 | 55.8 | 33.6 | 90.0 | 97.2 | 12 | 15.3 |
| April | 41.5 | 24.4 | 0.59 | 52.6 | 31.7 | 85.9 | 95.5 | 12 | 15.7 |
| May | 65.4 | 42.6 | 0.65 | 48.3 | 29.0 | 99.5 | 93.2 | 20 | 14.8 |
| June | 59.8 | 39.6 | 0.66 | 47.9 | 28.9 | 93.7 | 91.9 | 13 | 13.9 |
| July | 71.0 | 39.9 | 0.56 | 48.1 | 29.2 | 96.6 | 90.9 | 16 | 13.1 |
| August | 65.6 | 36.4 | 0.55 | 45.4 | 27.5 | 90.7 | 89.3 | 16 | 12.2 |
| September | 39.2 | 22.1 | 0.56 | 42.9 | 25.9 | 90.8 | 87.8 | 21 | 11.8 |
| October | 13.0 | 8.5 | 0.65 | 42.6 | 25.5 | 76.7 | 87.4 | 7 | 11.6 |
| November | 32.2 | 18.0 | 0.56 | 42.1 | 24.9 | 86.3 | 86.7 | 8 | 11.1 |
| December | 62.6 | 41.2 | 0.66 | 40.1 | 23.0 | 90.8 | 85.4 | 7 | 10.4 |
| 2006 | | | | | | | | | |
| January | 28.0 | 15.4 | 0.55 | | | 83.8 | | 6 | |
| February | 5.3 | 4.7 | 0.89 | | | 76.6 | | 6 | |
| March | 21.3 | 10.8 | 0.51 | | | 75.5 | | 8 | |
| April | 55.2 | 30.2 | 0.55 | | | 89.0 | | 11 | |
| May | 39.6 | 22.2 | 0.56 | | | 81.0 | | 8 | |
| June | 37.7 | 13.9 | 0.37 | | | 80.1 | | 8 | |

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 31 July 2006*

Protons plot contains the five-minute averaged integral proton flux (protons/cm²-sec -sr) as measured by GOES-11 (W135) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

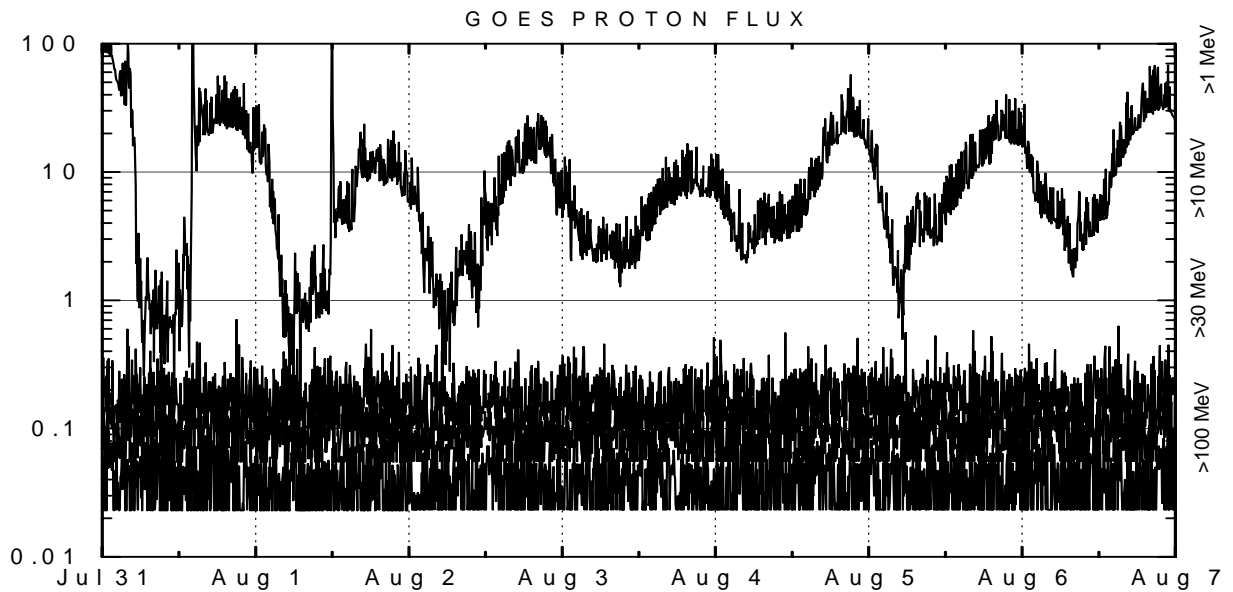
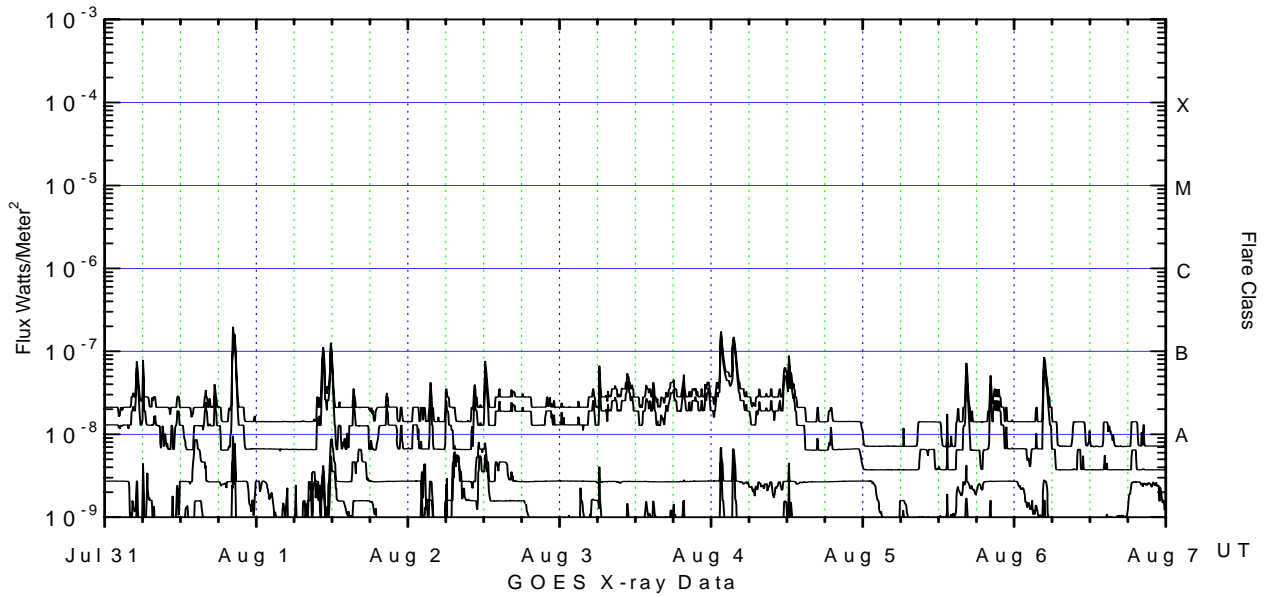
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV at GOES-12 (W075).

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 SEC 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/m²) 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 (protons/cm²-sec-sr) as measured by GOES-11 (W135) 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.

