

Space Weather Highlights
21 August – 27 August 2006

SEC PRF 1617
29 August 2006

Solar activity was at very low to low levels. Region 904 (S14, L=121, class/area, Eki/700 on 15 August) produced the largest flare of the period, a C4.7 at 21/1923 UTC. This region rotated around the west limb on 21 August. On 21 August, a new region rotated onto the east limb as a reversed polarity spot group. New Region 905 (S06, L=327, class/area, Eac/350 on 27 August) was responsible for seven C-class flares, including a C2.5 flare at 26/2008 UTC with an associated partial halo CME (estimated plane of sky speed of 700 km/s).

No greater than 10 MeV proton events were observed.

The greater than 2 MeV electron flux at geosynchronous orbit was at high levels on 14 – 17 August.

The geomagnetic field was at quiet to severe storm levels at high latitudes while quiet to minor storm levels were observed at middle latitudes. Solar wind speed ranged from a low of near 330 km/s late on 26 August to a high of 630 km/s late on 27 August. The period began with solar wind speed slowly increasing from about 420 km/s, while the IMF Bz varied between +/- 8 nT. These conditions persisted through midday on the 22nd. During this period, the geomagnetic field was at minor to severe storm levels at high latitudes with active to minor storm levels at middle latitudes. This activity was due to a recurrent coronal hole high speed wind stream. From late on 22 August until approximately midday on 27 August, wind speed decayed and the IMF Bz did not vary much beyond +/- 3 nT. As a result, the geomagnetic field was mostly quiet with some isolated unsettled periods. Around midday on 27 August, wind speed began to increase to a maximum of 630 km/s while the IMF Bz began fluctuating between +/- 20 nT. This activity was due to another coronal hole high speed stream moving into geoeffective position. Minor to major storm periods were observed at high latitudes while unsettled to active conditions were seen at middle latitudes during this time.

Space Weather Outlook
30 August – 25 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 04 – 13 September and again on 17 – 25 September.

The geomagnetic field is expected to be mostly quiet to unsettled for the majority of the forecast period. Recurrent coronal hole high speed wind streams are expected to rotate into geoeffective positions on 03 – 04 September and again on 23 – 24 September. Unsettled to minor storm periods are possible on 03 – 04 September while unsettled to active periods are possible on 23 – 24 September.



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
21 August	88	24	280	B2.0	7	0	0	0	0	0	0	0
22 August	81	14	230	B1.1	0	0	0	0	0	0	0	0
23 August	78	22	280	A7.9	0	0	0	1	0	0	0	0
24 August	78	22	290	A4.6	0	0	0	0	0	0	0	0
25 August	77	23	260	A3.9	0	0	0	0	0	0	0	0
26 August	76	21	330	A3.5	1	0	0	1	0	0	0	0
27 August	79	26	350	A5.8	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
	21 August	4.9E+5	1.4E+4	2.9E+3		5.4E+7
22 August	3.1E+6	1.5E+4	3.3E+3		7.8E+7	
23 August	1.1E+6	1.5E+4	3.4E+3		1.5E+8	
24 August	8.4E+5	1.6E+4	3.8E+3		2.2E+8	
25 August	1.2E+6	1.6E+4	3.7E+3		1.7E+8	
26 August	1.8E+6	1.7E+4	4.0E+3		1.6E+8	
27 August	6.7E+5	1.6E+4	3.9E+3		1.2E+7	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	21 August	10	1-3-2-2-2-2-3-3	24	2-2-4-4-5-3-3-5	13
22 August	17	3-1-5-4-3-3-2-2	42	3-2-6-7-5-4-3-1	17	3-3-3-4-4-4-4-2
23 August	4	2-2-3-0-1-0-1-0	5	2-2-3-0-0-0-2-0	7	2-3-3-0-1-1-1-2
24 August	4	3-1-0-0-1-1-1-1	4	1-1-1-0-2-2-1-1	5	3-1-0-1-1-1-1-2
25 August	0	0-0-0-1-0-0-0-0	1	0-1-0-1-0-0-0-0	2	1-1-0-1-1-1-0-1
26 August	2	0-1-1-0-0-0-2-1	1	0-0-1-0-0-0-1-1	3	1-1-1-0-0-0-2-2
27 August	12	1-1-2-2-3-3-4-3	27	2-1-2-5-5-6-3-2	18	2-1-1-3-4-5-4-3

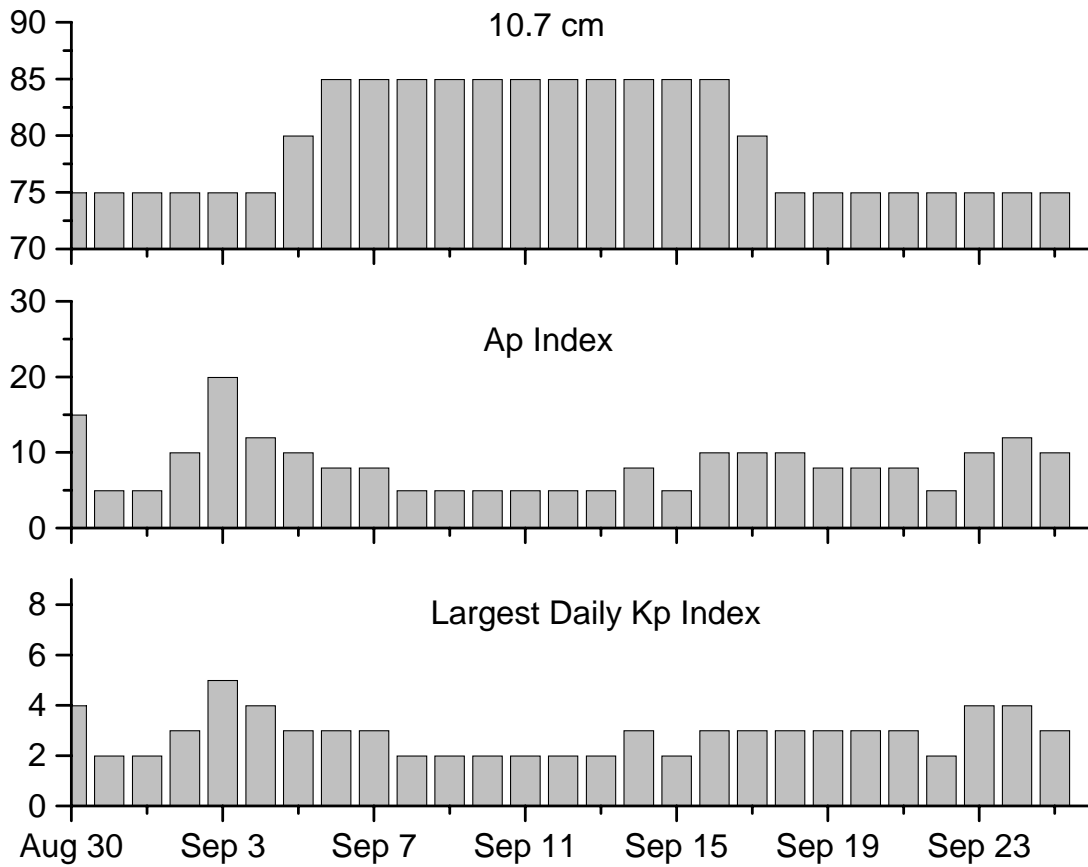


Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
21 Aug 0426	ALERT: Geomagnetic K = 4	21 Aug 0423
21 Aug 0427	WARNING: Geomagnetic K = 4	21 Aug 0427 – 1600
21 Aug 1416	ALERT: Electron 2MeV Integral Flux \geq 1000pfu	21 Aug 1355
22 Aug 0007	WARNING: Geomagnetic K = 4	22 Aug 0010 – 23/1600
22 Aug 0848	ALERT: Geomagnetic K = 4	22 Aug 0845
22 Aug 1339	ALERT: Electron 2MeV Integral Flux \geq 1000pfu	22 Aug 1320
23 Aug 0732	ALERT: Electron 2MeV Integral Flux \geq 1000pfu	23 Aug 0710
24 Aug 0529	ALERT: Electron 2MeV Integral Flux \geq 1000pfu	24 Aug 0505
25 Aug 0517	ALERT: Electron 2MeV Integral Flux \geq 1000pfu	25 Aug 0500
26 Aug 0527	ALERT: Electron 2MeV Integral Flux \geq 1000pfu	26 Aug 0500
27 Aug 1250	WARNING: Geomagnetic K = 4	27 Aug 1250 – 28/1600
27 Aug 1449	ALERT: Geomagnetic K = 4	27 Aug 1446
27 Aug 1558	WARNING: Geomagnetic K = 5	27 Aug 1600 – 28/1600
27 Aug 1629	ALERT: Geomagnetic K = 5	27 Aug 1626



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
30 Aug	75	15	4	13 Sept	85	5	2
31	75	5	2	14	85	8	3
01 Sept	75	5	2	15	85	5	2
02	75	10	3	16	85	10	3
03	75	20	5	17	85	10	3
04	57	12	4	18	75	10	3
05	80	10	3	19	75	8	3
06	85	8	3	20	75	8	3
07	85	8	3	21	75	8	3
08	85	5	2	22	75	5	2
09	85	5	2	23	75	10	4
10	85	5	2	24	75	12	4
11	85	5	2	25	75	10	3
12	85	5	2				



Energetic Events

Date	Time		X-ray		Optical Information			Peak		Sweep Freq
	Begin	Max	Max	Class	Flux	Imp/	Location	Radio Flux		Intensity
						Brtns	Lat CMD	245	2695	II

No Events Observed

Flare List

Date	Time			Optical	Imp / Brtns	Location Lat CMD	Rgn
	Begin	Max	End	X-ray Class.			
21 August	0046	0050	0053	C3.6			
	0150	0155	0201	B4.7			
	0220	0226	0233	C3.8			
	0400	0404	0407	B6.7			
	0436	0449	0511	C3.0			
	0709	0712	0716	B4.2			
	0955	1006	1025	C1.0			
	1208	1219	1230	C2.6			
	1316	1321	1323	B7.8			
	1503	1507	1512	B3.6			
	1548	1554	1600	C1.0			905
	1907	1923	1932	C4.7			904
	2128	2131	2135	B3.1			905
22 August	0000	0004	0009	B3.3			904
	0040	0045	0047	B6.6			904
	0155	0158	0200	B3.8			904
	0208	0211	0214	B2.4			905
	0312	0316	0318	B1.9			
	1255	1324	1408	B6.1			904
	1430	1434	1438	B5.8			905
2232	2246	2305	B5.6			905	
23 August	0040	0041	0047	B7.6	Sf	S07E58	905
24 August	1949	2007	2020	B2.2			
25 August	<i>No Flares Observed</i>						
26 August	1552	1607	1631	B3.0			
	2001	2008	2028	C2.5	Sf	S11E10	905
27 August	0113	0117	0120	B1.3			
	0534	0539	0543	B3.3			905
	0634	0638	0642	B3.3			905
	0758	0804	0808	B2.0			905
	0852	0904	0915	B1.2			
	0934	0937	0940	B1.9			905
	1033	1045	1054	B2.2			
	1145	1148	1150	B1.4			
	1524	1528	1531	B2.3			
	1535	1541	1546	B3.9			905
1705	1708	1712	B1.1				



Flare List – continued.

Date	Time			Optical	Imp/ Brtns	Location Lat CMD	Rgn
	Begin	Max	End	X-ray Class.			
27 August	1815	1837	1857	B2.1			
	2008	2011	2013	B1.7			905

Region Summary

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

Region 904

09 Aug	S14E76	121	0080	03	Hax	001	A										
10 Aug	S13E63	121	0300	10	Ekc	011	Bg	1				7					
11 Aug	S13E51	120	0640	13	Ekc	016	Bg	4				1					
12 Aug	S13E38	120	0750	14	Eki	017	Bg										
13 Aug	S13E25	119	0680	15	Eko	016	Bg										
14 Aug	S13E11	120	0690	14	Eki	024	Bg										
15 Aug	S14W03	121	0700	15	Eki	022	Bg										
16 Aug	S12W15	120	0600	16	Fko	019	Bg	2				1					
17 Aug	S13W28	120	0590	16	Fko	016	Bg	1									
18 Aug	S13W42	120	0590	16	Fko	019	Bg										
19 Aug	S14W54	120	0540	17	Fko	011	B	1									
20 Aug	S14W72	124	0520	09	Cko	005	B	2				1					
21 Aug	S12W88	127	0180	06	Hhx	001	A	1									
								12	0	0	10	0	0	0	0	0	

Crossed West Limb.

Absolute heliographic longitude: 121

Region 905

21 Aug	S08E74	325	0100	03	Cao	003	B	1									
22 Aug	S07E60	326	0230	10	Dso	004	B										
23 Aug	S08E47	326	0280	10	Dso	012	Bg					1					
24 Aug	S08E33	326	0290	12	Eai	012	Bg										
25 Aug	S08E20	326	0260	11	Eho	013	Bg										
26 Aug	S08E05	328	0330	12	Eko	011	Bg	1				1					
27 Aug	S06W07	327	0350	13	Eac	016	Bg										
								2	0	0	2	0	0	0	0	0	

Still on Disk.

Absolute heliographic longitude: 328

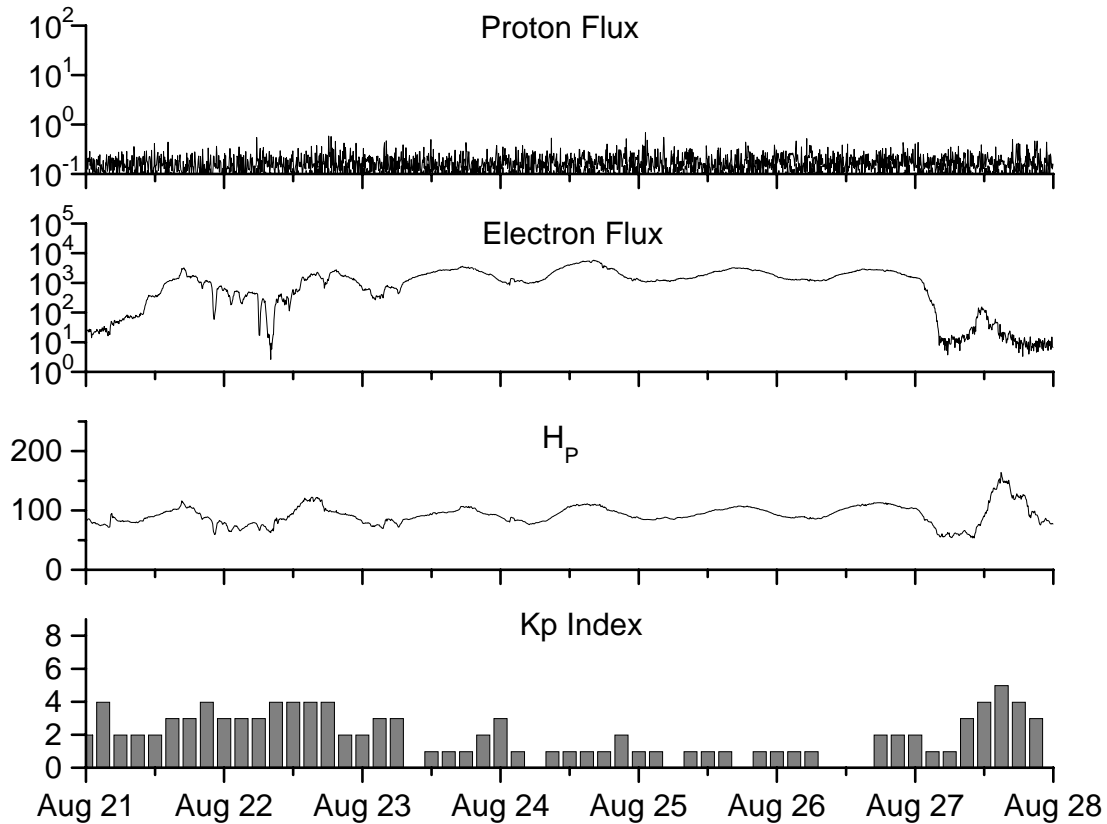


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

Month	Sunspot Numbers			Radio Flux		Geomagnetic			
	Observed SEC	values RI	Ratio RI/SEC	Smooth SEC	values RI	*Penticton 10.7 cm	Smooth Value	Planetary Ap	Smooth Value
2004									
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	37.2	20.8	83.8	84.0	6	9.9
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	
July	22.6	12.2	0.54			75.8		7	

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 21 August 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.

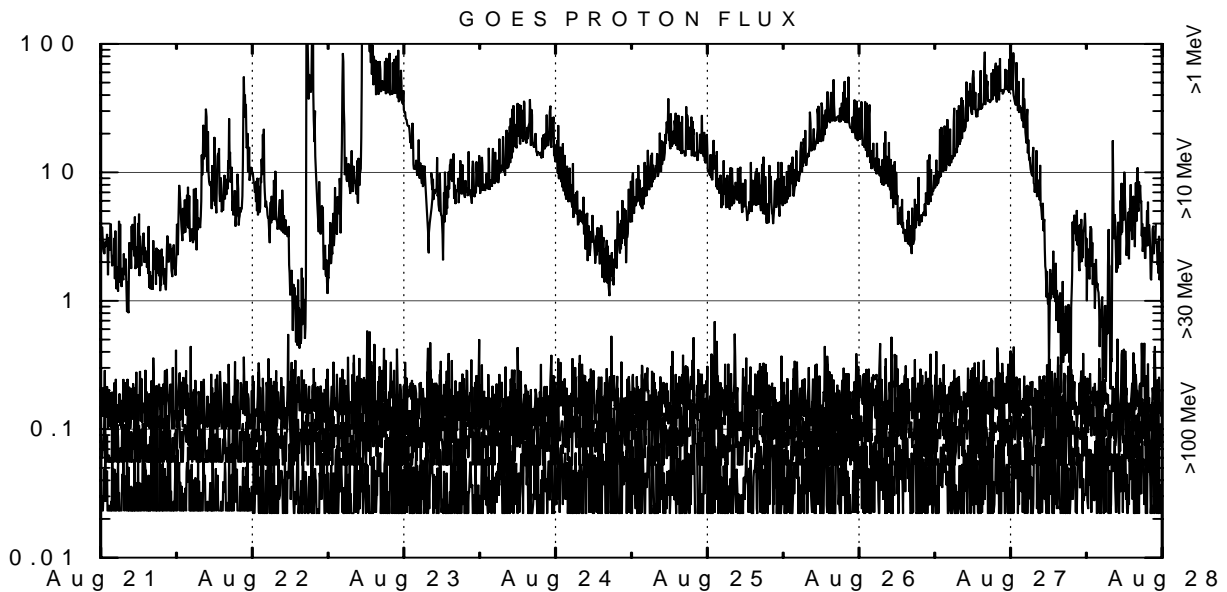
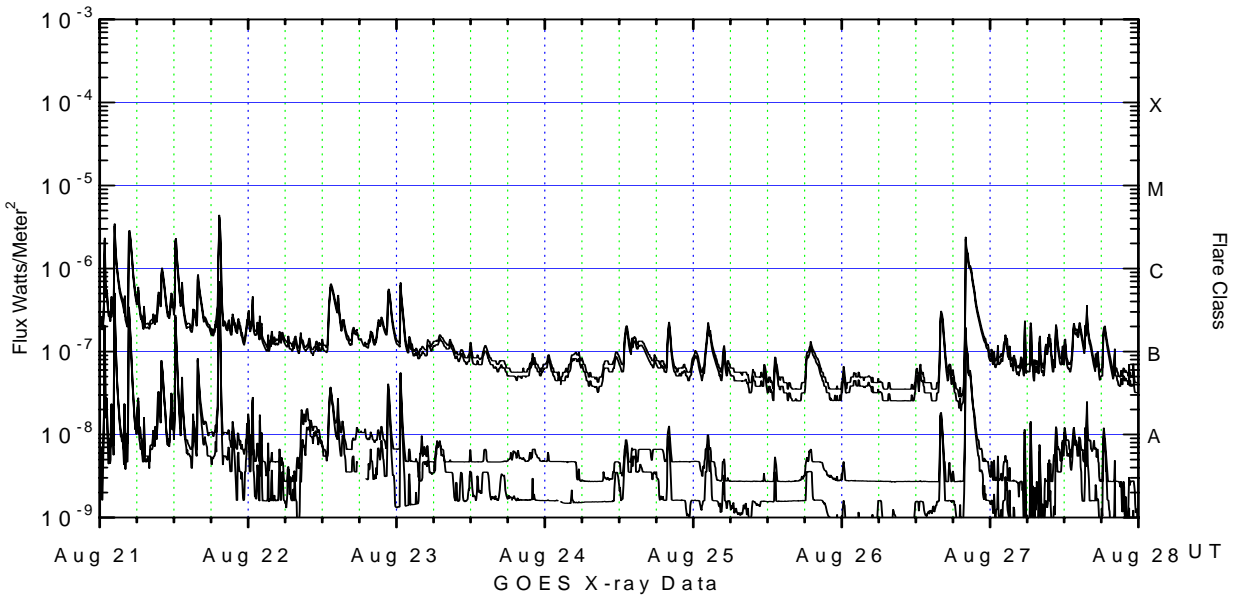
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec-sr) with energies greater than 2 MeV at GOES-12 (W075).

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 (W075) and GOES 11 (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.

