

Space Weather Highlights
04 – 10 September 2006

SEC PRF 1619
12 September 2006

Solar activity was at very low levels. The largest region on the disk was Region 908 (S13, L=130, class/area, Hkx/260 on 08 September), but the region only produced B-class activity. The disk was spotless on 04 September.

No greater than 10 MeV proton events were observed.

The greater than 2 MeV electron flux at geosynchronous orbit was at high levels on 05 – 10 September.

The geomagnetic field ranged from quiet to major storm levels. Solar wind speed ranged from a high of near 630 km/s late on 04 September to a low of about 335 km/s early on 10 September. The period began with solar wind speed at about 460 km/s. By early on 04 September, wind speed and temperature increased sharply, both increases indicative of a co-rotating interaction region in advance of a coronal hole high speed stream. For the first two hours on 04 September, the IMF Bz fluctuated from +12 to – 10 nT, and as a result, minor storm conditions were observed at high latitudes through 04/1500 UTC with two periods of active and minor storm conditions at middle latitudes. By about 1900 UTC on the 4th, wind speed peaked at near 650 km/s, but the IMF Bz had relaxed, not varying much beyond +/- 5 nT. As a result, geomagnetic conditions relaxed to mostly quiet levels at middle latitude with only two periods of minor to major storming at high latitudes through midday on 05 September. Approximately midday on 06 and 07 September, periods of prolonged southward Bz were responsible for active to minor storm conditions at high latitudes. For the remainder of the summary period, wind speed steadily decayed, and ended the period near 360 km/s, while the IMF Bz did not vary much beyond +/- 5 nT. As a result, the geomagnetic field was mostly quiet.

Space Weather Outlook
13 September – 09 October 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 13 September, 17 – 25 September and again on 02 – 07 October

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 18 September, 23 – 24 September, and again on 28 September – 01 October. Unsettled to active periods are possible on 18 and 23 September while unsettled to minor storm periods are possible on 28 September – 02 October.



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 September	79	0	0	A5.3	0	0	0	0	0	0	0	0	0
05 September	80	26	130	A4.5	0	0	0	0	0	0	0	0	0
06 September	84	53	280	A5.5	0	0	0	0	0	0	0	0	0
07 September	87	39	260	A6.8	0	0	0	0	0	0	0	0	0
08 September	87	49	330	A7.4	0	0	0	0	0	0	0	0	0
09 September	86	51	340	A5.7	0	0	0	0	0	0	0	0	0
10 September	87	50	320	A6.6	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
	04 September	5.1E+5	1.6E+4	3.4E+3		7.0E+6
05 September	1.1E+6	1.5E+4	3.5E+3		2.7E+8	
06 September	7.4E+5	1.6E+4	3.5E+3		3.2E+8	
07 September	9.6E+5	1.7E+4	3.8E+3		2.8E+8	
08 September	5.3E+5	1.6E+4	3.9E+3		1.2E+8	
09 September	4.3E+5	1.6E+4	4.1E+3		1.3E+8	
10 September	5.0E+5	1.6E+4	3.8E+3		1.2E+8	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	04 September	15	3-5-4-2-2-2-1	30	3-5-5-5-3-3-1	23
05 September	7	3-2-2-2-2-1-1	24	3-2-5-6-3-3-2-1	8	3-2-3-2-1-2-2-2
06 September	6	2-2-2-2-2-1-2-1	16	2-1-2-5-4-4-1-2	7	2-2-1-2-2-2-2-2
07 September	5	1-2-3-1-1-2-1-0	17	2-2-5-2-5-3-0-0	8	1-1-1-1-2-2-2-1
08 September	4	2-2-2-1-1-1-0-1	4	1-3-3-0-0-0-0-0	4	1-2-1-0-1-1-0-2
09 September	1	1-1-0-0-0-0-1-0	1	1-1-0-1-0-0-0-0	2	1-1-0-0-0-0-0-1
10 September	5	1-2-1-1-2-1-2-2	5	1-1-2-3-0-2-1-1	6	1-2-1-1-1-2-1-2

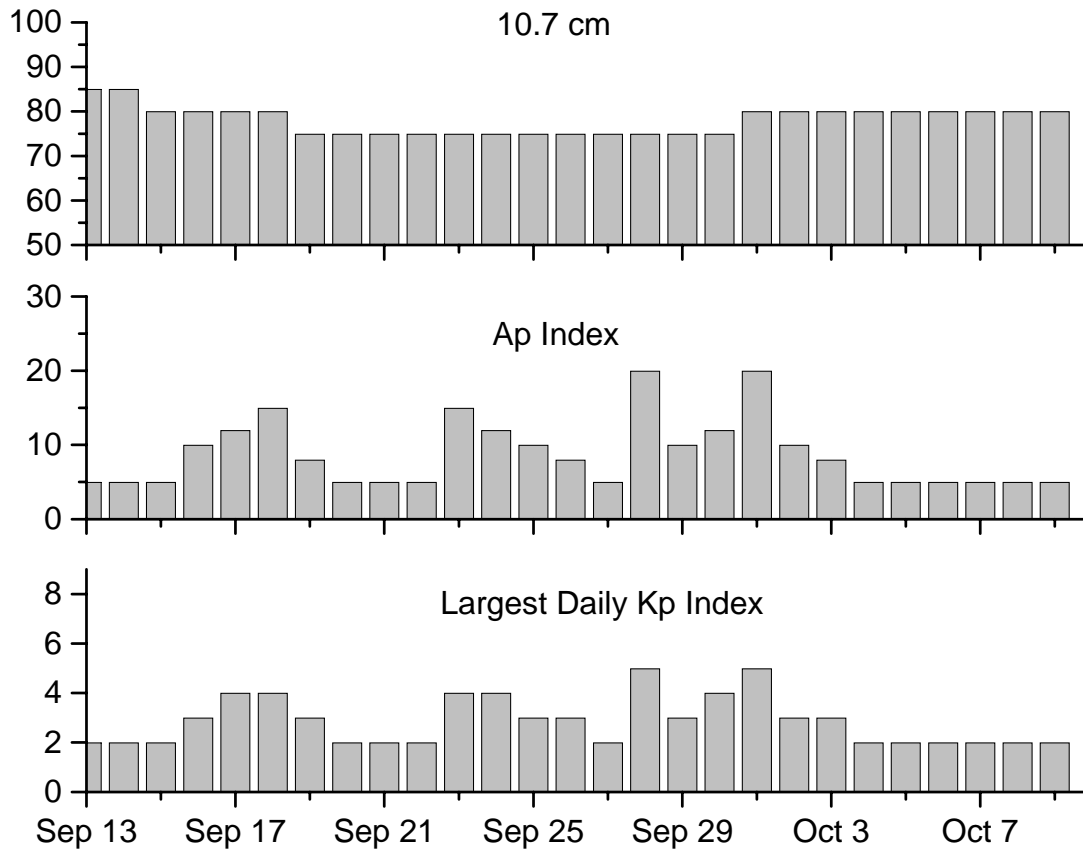


Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
04 Sep 0027	WARNING: Geomagnetic K=4	04 Sep 0030 - 1600
04 Sep 0216	ALERT: Geomagnetic K=4	04 Sep 0215
04 Sep 0317	ALERT: Geomagnetic K=5	04 Sep 0315
04 Sep 0321	WARNING: Geomagnetic K=5	04 Sep 0325 - 1600
04 Sep 0526	ALERT: Geomagnetic K=6	04 Sep 0525
04 Sep 1557	EXTENDED WARNING: Geomagnetic K=4	04 Sep 0030 - 2359
04 Sep 2354	EXTENDED WARNING: Geomagnetic K=4	04 Sep 0030 - 05 Sep 1600
05 Sep 1108	ALERT: Electron 2MeV Integral Flux >1000pfu	05 Sep 1050
06 Sep 0500	ALERT: Electron 2MeV Integral Flux >1000pfu	06 Sep 0500
06 Sep 1112	WARNING: Geomagnetic K=4	06 Sep 1115 - 1600
07 Sep 0751	WARNING: Geomagnetic K=4	07 Sep 0752 - 1600
07 Sep 0806	ALERT: Geomagnetic K=4	07 Sep 0805
07 Sep 0807	ALERT: Electron 2MeV Integral Flux >1000pfu	07 Sep 0745
08 Sep 1041	ALERT: Electron 2MeV Integral Flux >1000pfu	08 Sep 1025
09 Sep 0745	ALERT: Electron 2MeV Integral Flux >1000pfu	09 Sep 0730
10 Sep 1015	ALERT: Electron 2MeV Integral Flux >1000pfu	10 Sep 1000



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 Sept	85	5	2	27 Sept	75	5	2
14	85	5	2	28	75	20	5
15	80	5	2	29	75	10	3
16	80	10	3	30	75	12	4
17	80	12	4	01 Oct	80	20	5
18	80	15	4	02	80	10	3
19	75	8	3	03	80	8	3
20	75	5	2	04	80	5	2
21	75	5	2	05	80	5	2
22	75	5	2	06	80	5	2
23	75	15	4	07	80	5	2
24	75	12	4	08	80	5	2
25	75	10	3	09	80	5	2
26	75	8	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
<i>No Events Observed</i>												

Flare List

Date	Time			Optical X-ray Class.	Imp / Brtns	Location Lat CMD	Rgn
	Begin	Max	End				
04 September	0442	0448	0452	B2.0			
	1554	1607	1707	B2.8			
	1712	1715	1719	B3.5			
05 September	1239	1243	1246	B1.2			
06 September	No Flares Observed						
07 September	0628	0746	0828	B4.2			909
	2252	2257	2336	B1.8			
08 September	0130	0139	0147	B4.4			909
	0234	0239	0245	B3.3			909
	0454	0458	0502	B2.1			
	1013	1058	1146	B5.6			909
09 September	0304	0316	0326	B3.8			909
	0710	0722	0746	B3.9			909
	1919	1925	1934	B1.6			907
	2250	2257	2309	B2.3			
10 September	0248	0251	0304	B1.0			
	0649	0723	0815	B6.0			909
	1925	1930	1943	B1.4			909



Region Summary

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 907

05 Sep	S13E44	157	0020	08	Bxo	005	B										
06 Sep	S13E31	157	0030	07	Csi	007	B										
07 Sep	S13E17	158	0020	07	Cso	003	B										
08 Sep	S13E03	159	0010	01	Axx	001	A										
09 Sep	S13W08	156	0020	06	Dso	004	B										
10 Sep	S12W20	155	0010	06	Bxo	005	B										
								0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 159

Region 908

05 Sep	S13E71	130	0110	03	Hax	001	A										
06 Sep	S12E59	129	0200	04	Hax	001	A										
07 Sep	S13E45	130	0210	05	Hax	001	A										
08 Sep	S13E32	130	0260	06	Hkx	003	A										
09 Sep	S15E19	129	0240	05	Cko	003	B										
10 Sep	S14E06	129	0230	05	Cao	005	B										
								0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 129

Region 909

06 Sep	S08E25	163	0050	08	Csi	015	B										
07 Sep	S09E09	166	0030	05	Cao	005	B										
08 Sep	S09W04	166	0060	06	Dso	015	B										
09 Sep	S08W17	165	0080	10	Dsi	014	B										
10 Sep	S11W30	165	0080	10	Dro	010	B										
								0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 166

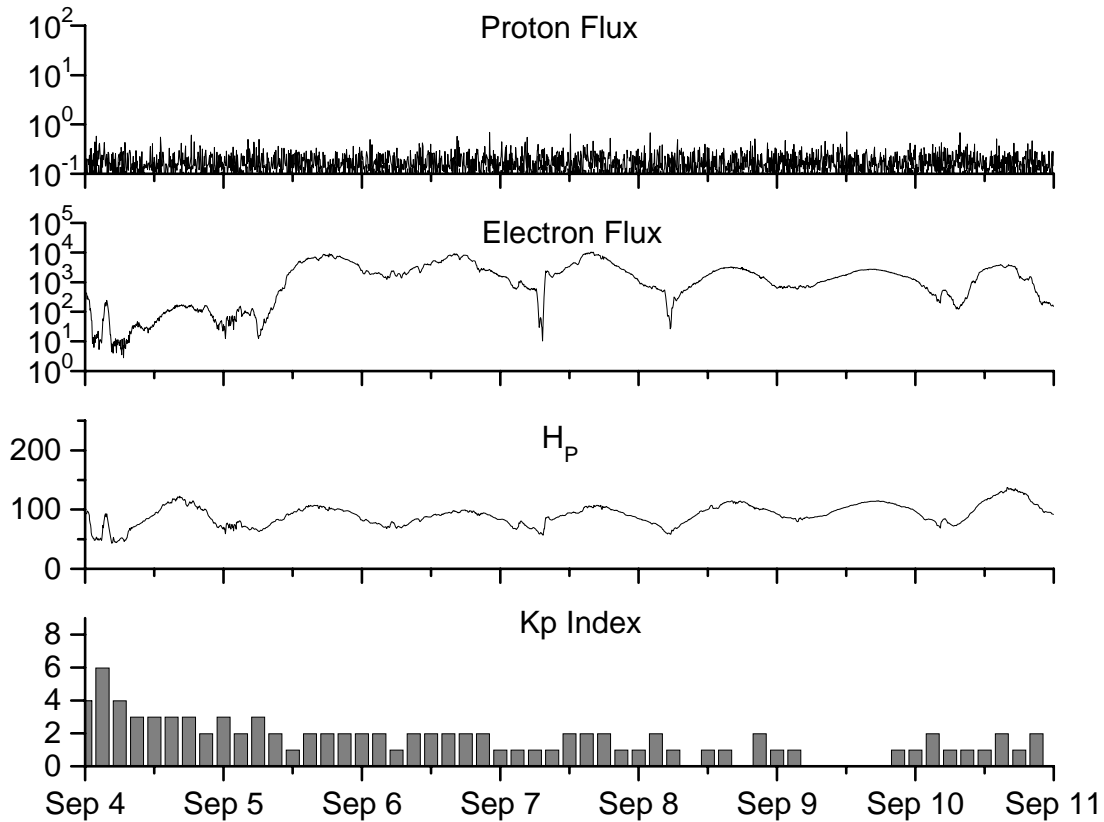


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

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									
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	
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 04 September 2006*

Protons plot contains the five-minute averaged integral proton flux (protons/cm²-sec -sr) as measured by GOES-11 (W128) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

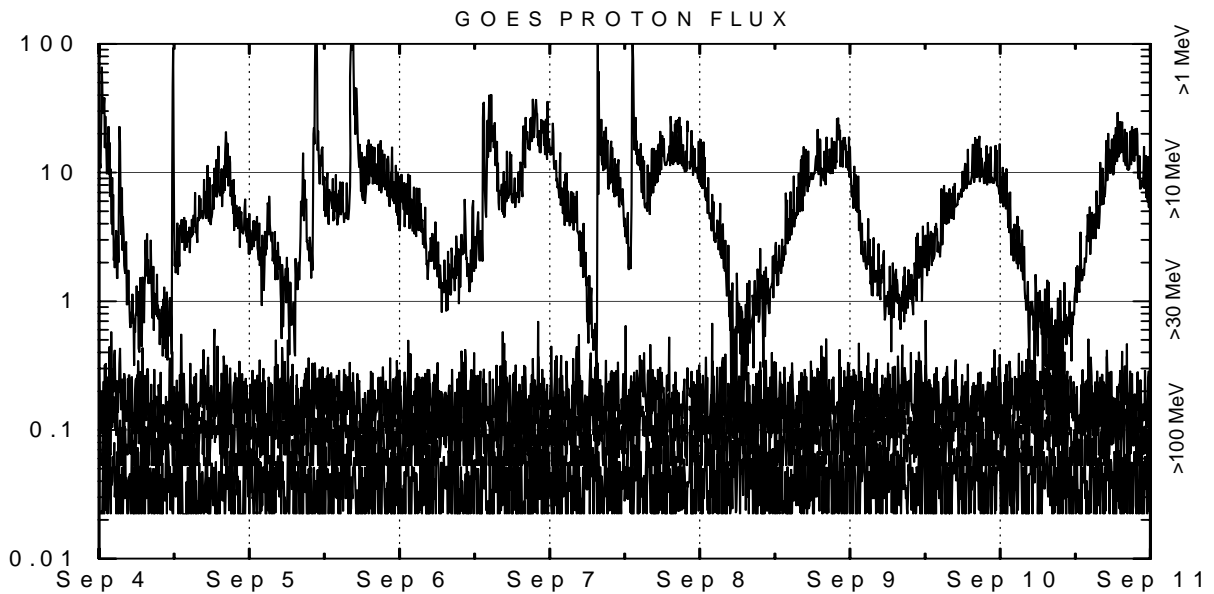
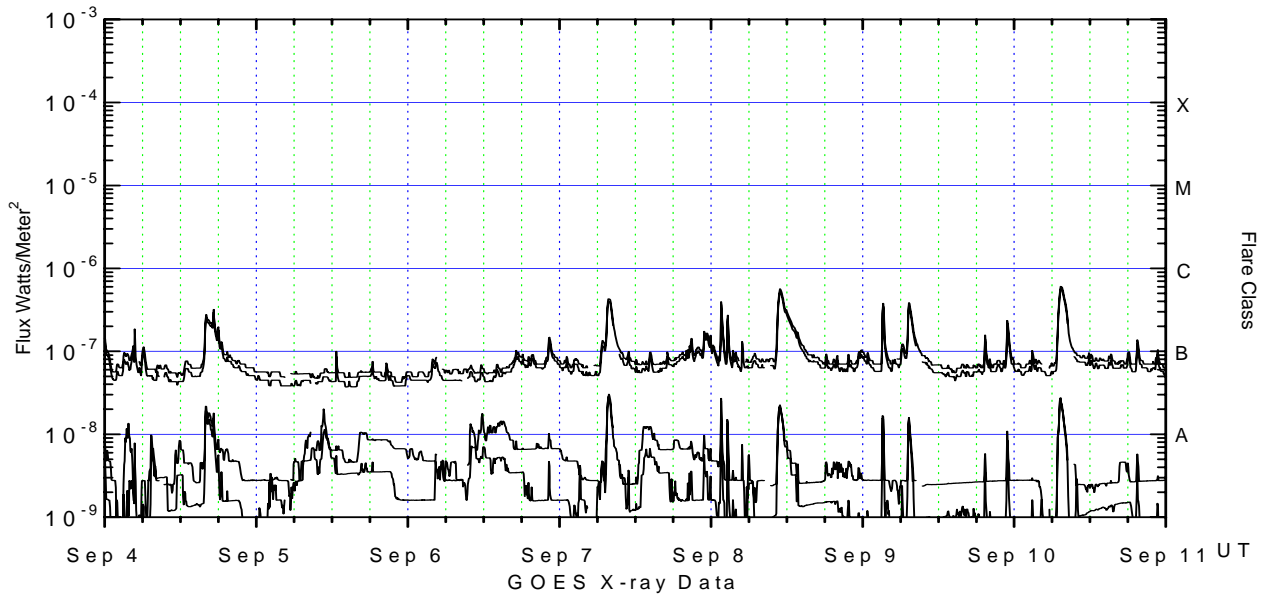
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV at GOES-12 (W075).

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 11 (W128) 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 (W128) 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.

