

Space Weather Highlights
03 April – 09 April 2006

SEC PRF 1597
11 April 2006

Solar activity was at very low to moderate levels. During the summary period, Region 865 (S11, L=113, class/area, Dkc/620 on 04 April) produced two impulsive M-class flares, both on 06 April. The first flare was an M1.4/2f at 06/0533 UTC, while the second was an M1.2/1N at 06/2042 UTC with an associated weak Tenflare (100 sfu). No significant CMEs were observed from either of these flares. This region rotated off the visible disk on 08 April. Region 867 (S16, L=089, class/area, Dso/130 on 04 April) produced five C-class flares, the largest was a C9.7 at 07/0803 UTC. Region 867 is expected to rotate around the west limb on 10 April.

No greater than 10 MeV proton events were observed this period.

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

The geomagnetic field ranged from quiet to severe storm levels. Solar wind speed ranged from a low of near 250 km/s early on 03 April to a high of about 700 km/s late on 09 April. From 03 April through midday on 04 April, weak solar wind flow was evident as wind speed was generally at 300 km/s and below and the Bz component of the IMF did not vary much beyond +5 to -1 nT. As a result, the geomagnetic field was very quiet. By about 04/0600 UTC, the IMF Bz turned sharply south to -10 to -15nT and remained south through about 05/1800 UTC. During this time period, wind speed gradually increased to about 350 km/s, and by 05/1800 UTC, it rose more sharply to near 400 km/s and continued to rise slowly to about 450 km/s by late on the 5th. At middle latitudes, the geomagnetic field responded with unsettled to active levels through 06/0900 UTC and at high latitudes, active to major storm levels were observed through about 06/1800 UTC. This heightened activity was due to the presence of a geoeffective coronal hole wind stream. By late on 06 April and through late on 08 April, the IMF Bz relaxed and did not vary much beyond +/- 3 nT while the solar wind speed gradually decayed to near 300 km/s. During this period, the geomagnetic field was generally quiet with isolated unsettled to active periods at high latitudes through midday on 08 April. Early on 09 April, ACE sensors detected increases in temperature, density, and wind velocity, along with fluctuations in the IMF Bz to +10 to -18 nT. This was the result of a co-rotating interaction region preceding a high speed stream from a coronal hole. The geomagnetic field responded with unsettled to minor storm at middle latitudes, while high latitudes experienced active to severe storm levels. The period ended with the IMF Bz fluctuating between +/- 10 nT and solar wind speed near 700 km/s.

Space Weather Outlook
12 April – 08 May 2006

Solar activity is expected to be at predominately very low to low levels with isolated moderate activity possible after the return of old Region 865 on 22 April.

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 12 – 22 April.

The geomagnetic field is expected to be at quiet to unsettled levels for the majority of the period. Active to major storm conditions are expected on 14 – 17 April, while active to minor storm conditions are expected on 02 May and again on 06 – 07 May, all due to effects from recurrent coronal hole wind streams.



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	
03 April	100	79	550	B1.5	3	0	0	0	0	0	0	0	0
04 April	100	62	850	B1.0	0	0	0	0	0	0	0	0	0
05 April	99	88	860	B1.0	2	0	0	0	0	0	0	0	0
06 April	99	105	800	B1.2	0	2	0	0	1	1	0	0	0
07 April	95	65	450	B1.5	1	0	0	0	0	0	0	0	0
08 April	91	57	380	B1.5	0	0	0	0	0	0	0	0	0
09 April	89	46	120	B1.4	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
	03 April	6.5E+5	1.7E+4	4.1E+3		1.3E+6
04 April	4.9E+5	1.7E+4	3.9E+3		1.9E+6	
05 April	2.8E+5	1.6E+4	3.5E+3		8.2E+5	
06 April	5.3E+5	1.6E+4	3.4E+3		1.9E+6	
07 April	4.4E+5	1.7E+4	3.6E+3		3.1E+6	
08 April	7.4E+5	1.6E+4	3.6E+3		6.0E+6	
09 April	6.8E+5	1.5E+4	3.4E+3		1.4E+6	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	27 March	8	3-3-0-0-1-3-1-3	5	2-2-0-0-1-3-1-2	9
28 March	4	0-3-1-0-1-1-1-1	4	1-2-1-0-2-1-1-1	6	1-3-1-0-1-1-2-1
29 March	4	1-1-0-1-2-2-1-1	2	0-1-0-2-0-0-0-1	6	1-2-0-1-2-3-2-2
30 March	2	1-1-0-0-0-1-1-1	2	2-0-0-0-0-0-2-1	4	1-1-0-0-1-2-2-2
31 March	2	0-0-1-1-1-1-2-0	9	2-0-3-3-4-2-0-0	4	1-0-1-2-2-1-2-1
01 April	1	0-0-0-0-1-0-0-1	0	0-0-0-0-0-1-0-0	2	1-0-0-0-1-0-0-1
02 April	1	0-0-0-0-2-0-0-0	0	0-0-0-0-0-0-0-0	1	1-0-0-0-1-0-0-1

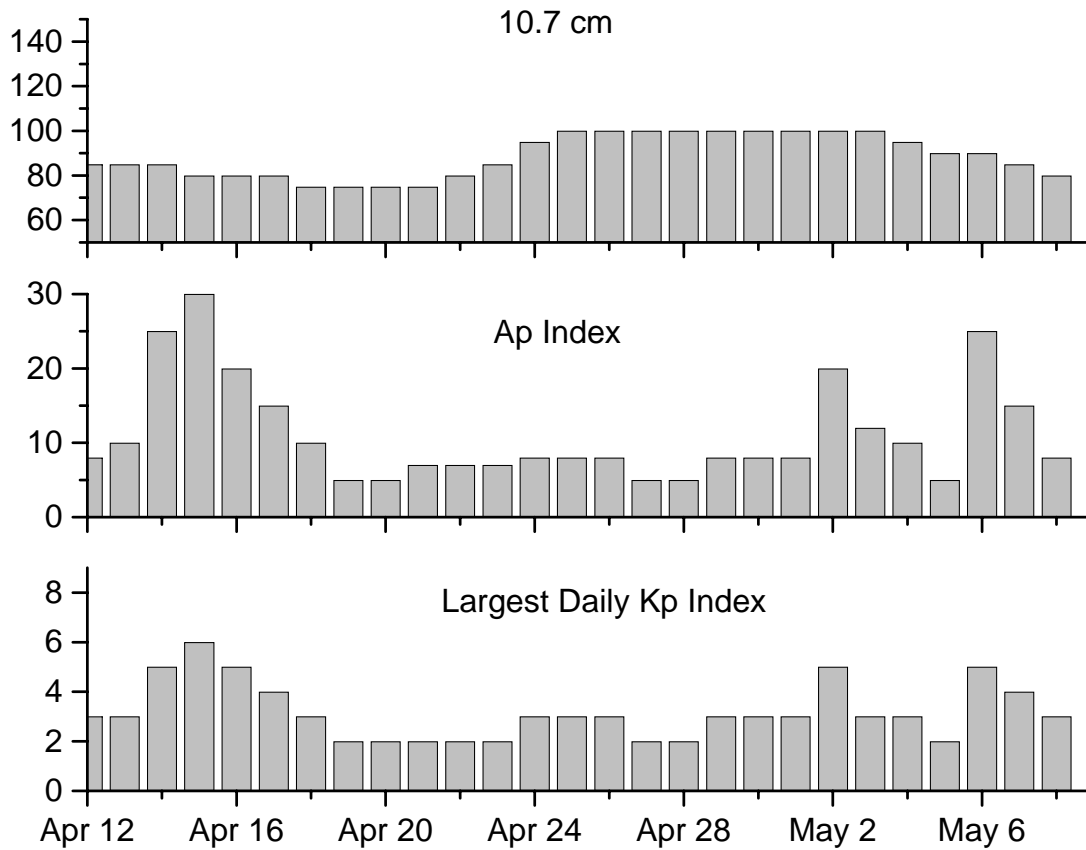


Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
05 Apr 0258	ALERT: Geomagnetic K=4	05 Apr 0255
05 Apr 0354	WARNING: Geomagnetic K=4	05 Apr 0355 - 1600
05 Apr 0840	WARNING: Geomagnetic K=5	05 Apr 0840 – 1200
05 Apr 1127	ALERT: Geomagnetic K=5	05 Apr 1126
05 Apr 1156	EXTENDED WARNING: Geomagnetic K=5	05 Apr 0840 – 1600
05 Apr 1555	EXTENDED WARNING: Geomagnetic K=4	05 Apr 0355 - 2359
06 Apr 0717	WARNING: Geomagnetic K=4	06 Apr 0715 - 1600
06 Apr 0724	ALERT: Geomagnetic K=4	06 Apr 0723
06 Apr 2232	SUMMARY: 10cm Radio Burst	06 Apr 2038
09 Apr 0032	WARNING: Geomagnetic K=4	09 Apr 0045 - 1600
09 Apr 0137	ALERT: Geomagnetic K=4	09 Apr 0135
09 Apr 0627	WARNING: Geomagnetic K=5	09 Apr 0627 - 1600
09 Apr 0659	ALERT: Geomagnetic K=5	09 Apr 0659
09 Apr 1538	EXTENDED WARNING: Geomagnetic K=4	09 Apr 0045 - 2359
09 Apr 2252	ALERT: Geomagnetic K=5	09 Apr 2250
09 Apr 2345	EXTENDED WARNING: Geomagnetic K=4	09 Apr 0045 – 10 Apr 1600
08 Apr 0032	2- 245 MHz Radio Bursts	07 Apr



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
12 April	85	8	3	26 April	100	8	3
13	85	10	3	27	100	5	2
14	85	25	5	28	100	5	2
15	80	30	6	29	100	8	3
16	80	20	5	30	100	8	3
17	80	15	4	01 May	100	8	3
18	75	10	3	02	100	20	5
19	75	5	2	03	100	12	3
20	75	5	2	04	95	10	3
21	75	7	2	05	90	5	2
22	80	7	2	06	90	25	5
23	85	7	2	07	85	15	4
24	95	8	3	08	80	8	3
25	100	8	3				



Energetic Events

Date	Time			X-ray		Optical Information			Peak		Sweep Freq	
	Begin	Max	½ Max	Class	Integ Flux	Imp/ Brtns	Location		Radio Flux		Intensity	
							Lat	CMD	245	2695	II	IV
06 Apr	0522	0533	0536	M1.4	.004	2f	S07W54	865	65			
	2033	2042	2050	M1.2	.007	1n	S05W62	865	100			

Flare List

Date	Time			Optical X-ray Class.	Imp / Brtns	Location Lat CMD	Rgn
	Begin	Max	End				
03 April	0105	0108	0111	B1.7			
	1023	1027	1029	B3.6			867
	1037	1048	1057	B4.0			
	1200	1203	1205	C1.8			867
	1220	1224	1226	B9.0			867
	1607	1625	1627	C1.4			867
	2020	2027	2055	B4.3			867
	2113	2126	2136	C4.0			865
04 April	0051	0057	0101	B5.8			867
	0238	0305	0323	B3.5			867
	0449	0453	0504	B7.0			
	0600	0607	0618	B3.8			867
	1446	1455	1505	B4.6			867
	1553	1557	1600	B2.7			867
	1823	1826	1828	B1.6			867
05 April	1915	1921	1931	B2.8			867
	0644	0649	0652	B3.1			867
	1113	1120	1123	B4.8			867
	1206	1209	1214	B2.1			867
	1301	1307	1311	C2.6			867
	1514	1521	1524	C8.1			867
	1818	1823	1825	B8.2			867
	1945	1951	1953	B7.3			867
2103	2107	2109	B5.1			867	



Flare List- Continued

Date	Time			Optical	Imp / Brtns	Location Lat CMD	Rgn
	Begin	Max	End	X-ray Class.			
06 April	0317	0321	0323	B3.9			866
	B0530	0533	0536	M1.4	2f	S07W54	865
	0935	0938	0943	B3.2			867
	1028	1035	1043	B4.5			
	1415	1420	1424	B9.9			865
	1628	1631	1634	B2.6			867
	1648	1655	1700	B6.7			
07 April	2038	2041	2057	M1.2	1n	S05W62	865
	0118	0121	0124	B2.2			865
	0457	0500	0502	B3.2			
	0725	0729	0733	B5.8			867
	0757	0803	0805	C9.7			867
	0936	0940	0943	B4.4			867
	2120	2123	2125	B2.5			865
08 April	2237	2241	2244	B3.3			865
	0231	0235	0240	B3.3			865
	0315	0322	0331	B2.5			865
	1220	1224	1229	B2.3			
09 April	1624	1631	1638	B2.5			
	0547	0552	0610	B2.6			868



Region Summary

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

Region 865

28 Mar S13E60	110	0020	02	Hsx	001	A												
29 Mar S12E48	109	0130	09	Dso	010	B												
30 Mar S13E32	111	0140	09	Dai	013	Bg					2							
31 Mar S13E20	110	0210	11	Eai	018	B												
01 Apr S12E07	110	0240	12	Eai	018	Bgd												
02 Apr S11W06	110	0340	12	Ehc	027	Bgd												
03 Apr S11W21	112	0330	11	Eki	031	Bgd	1											
04 Apr S11W35	113	0620	09	Dkc	020	Bg												
05 Apr S11W47	111	0600	12	Eki	022	Bg												
06 Apr S11W60	111	0530	11	Ekc	025	Bg		2				1	1					
07 Apr S11W78	116	0230	08	Dko	007	B												
08 Apr S09W90	115	0180	05	Cao	003	B												
											1	2	0	2	1	1	0	0

Crossed West Limb.

Absolute heliographic longitude: 110

Region 866

29 Mar S06E69	088	0070	02	Hsx	001	A												
30 Mar S08E56	087	0070	03	Hsx	002	A												
31 Mar S07E42	088	0120	03	Hsx	001	A												
01 Apr S06E28	089	0080	03	Hsx	001	A												
02 Apr S06E16	088	0100	03	Hax	003	A												
03 Apr S06E05	086	0120	09	Cao	006	B												
04 Apr S06W11	089	0100	03	Cao	003	B												
05 Apr S06W23	087	0110	06	Cao	006	B												
06 Apr S06W36	087	0120	04	Cao	006	B												
07 Apr S05W53	091	0090	03	Dso	005	B												
08 Apr S06W63	088	0080	04	Cso	004	B												
09 Apr S06W79	091	0040	04	Cao	002	B												
											0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 086



Region Summary- Continued

Location		Sunspot Characteristics							X-ray			Optical			
Date	(° Lat ° CMD)	Helio		Flares			Mag Class	C	M	X	S	1	2	3	4
		Lon	Area (10 ⁻⁶ hemi)	Extent (helio)	Spot Class	Spot Count									

Region 867

02 Apr S16E16	088	0050	07	Dso	008	B										
03 Apr S16E03	088	0100	08	Dao	012	Bg	2									
04 Apr S16W11	089	0130	10	Dso	009	Bg										
05 Apr S16W26	090	0120	11	Esi	014	Bg	2									
06 Apr S16W39	090	0080	10	Dsi	011	Bg										
07 Apr S15W56	094	0080	04	Cho	005	B	1									
08 Apr S16W67	092	0050	04	Cao	003	B										
09 Apr S16W82	094	0030	02	Hrx	002	A										
								5	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 088

Region 868

05 Apr S07W06	070	0030	05	Cao	006	B										
06 Apr S07W19	070	0040	05	Dso	006	B										
07 Apr S06W34	072															
08 Apr S06W47	072															
09 Apr S06W60	072															
								0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 070

Region 869

06 Apr S12E24	027	0030	05	Bxo	007	B										
07 Apr S12E08	030	0050	06	Dso	008	B										
08 Apr S12W04	029	0070	07	Cao	007	B										
09 Apr S12W16	028	0050	09	Cai	012	B										
								0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 029

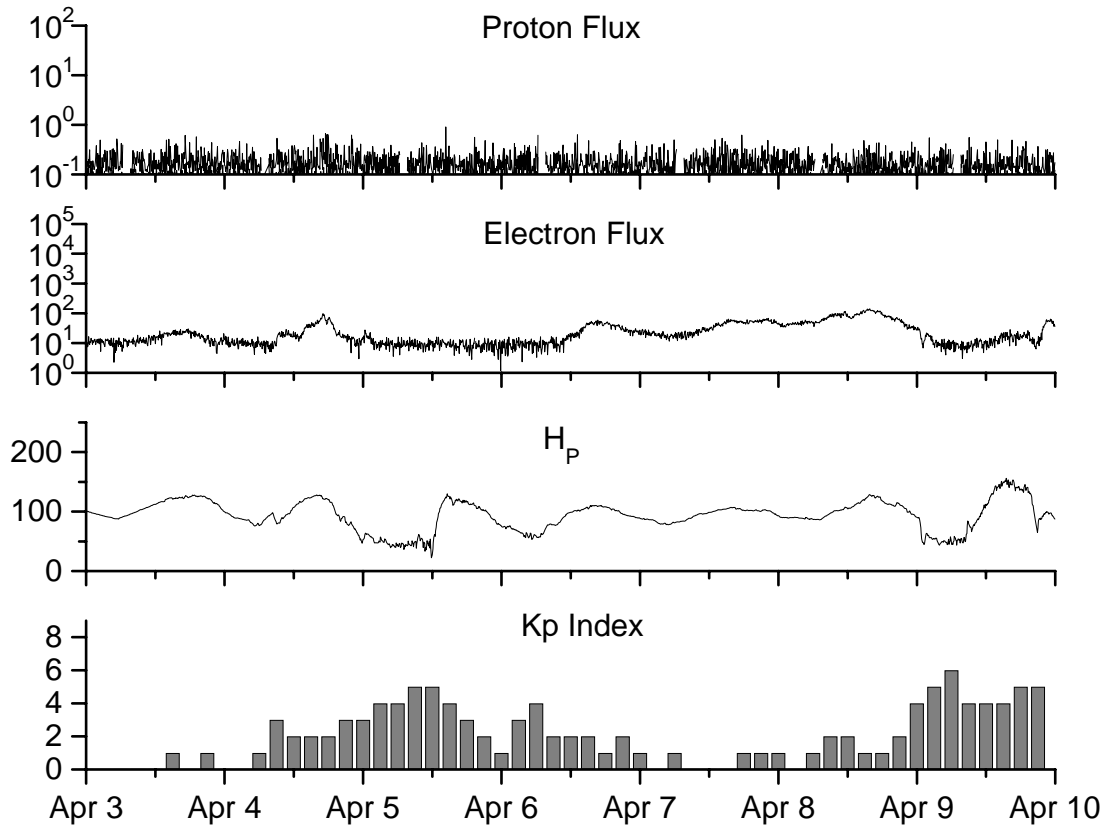


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

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									
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	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	42.9	25.9	96.6	87.8	16	11.8
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			90.8		21	
October	13.0	8.5	0.65			76.7		7	
November	32.2	18.0	0.56			86.3		8	
December	62.6	41.2	0.66			90.8		7	
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	

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 03 April 2006

Protons plot contains the five-minute averaged integral proton flux (protons/cm²-sec -sr) as measured by GOES-11 (W103) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

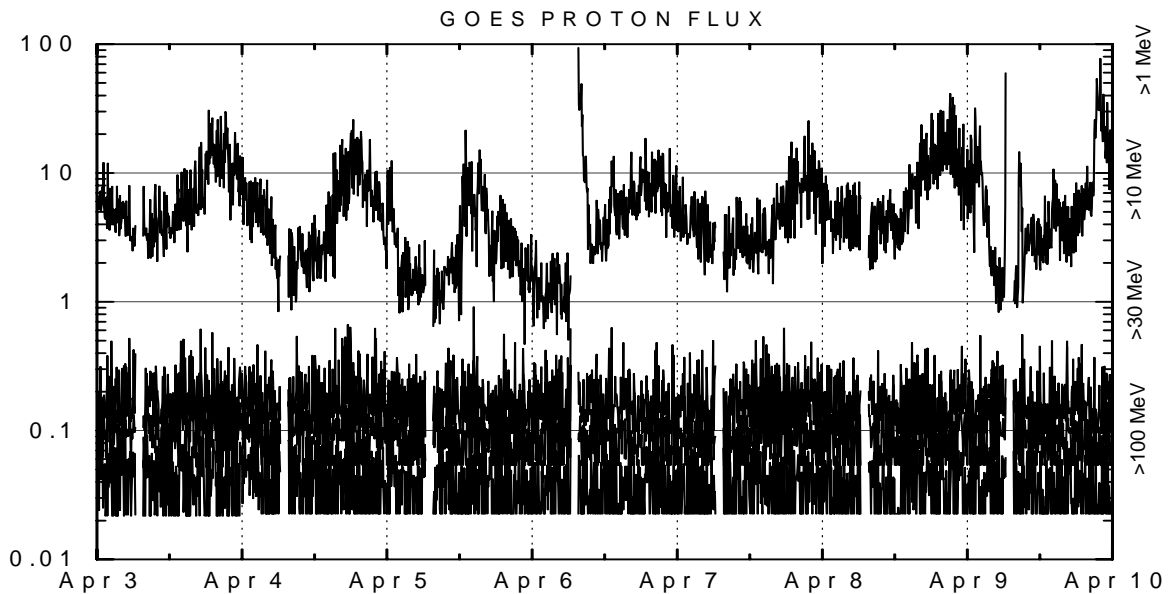
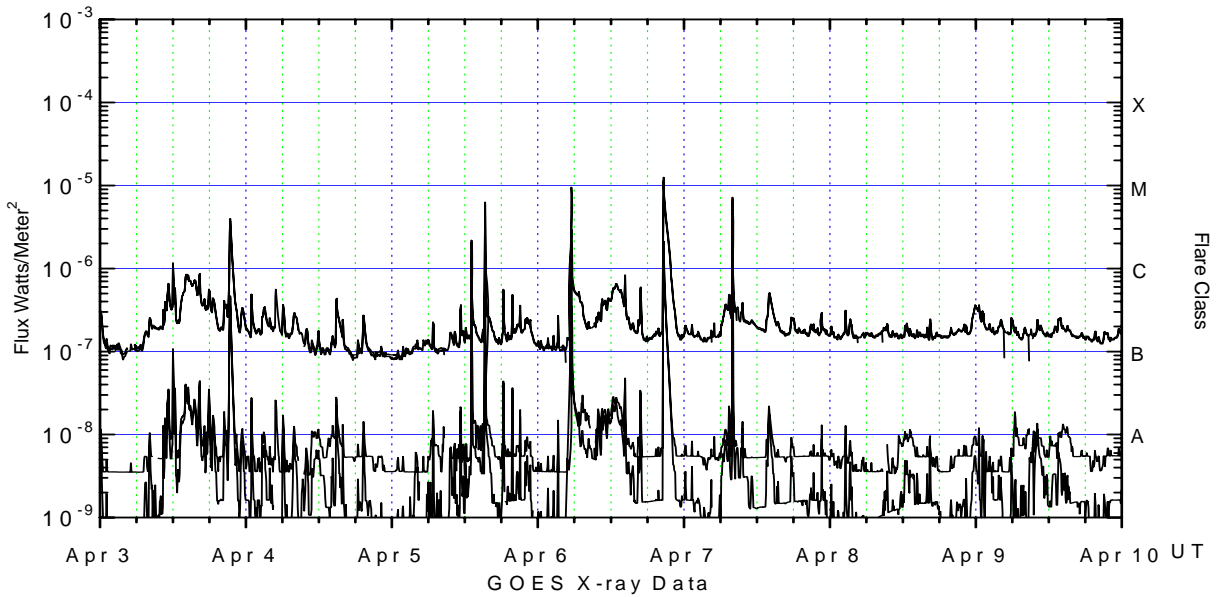
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV at GOES-12 (W75).

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 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 (W103) 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.

