

**Space Weather Highlights**  
**30 April – 06 May 2007**

**SEC PRF 1653**  
**08 May 2007**

Solar activity was very low to low. Activity increased from very low to low levels on 02 May due to an impulsive C8.5/1b X-ray flare at 02/2339 UTC from Region 953 (S10, L=308, class/area Dkc/520 on 28 April). Activity decreased to very low levels until 05/1247 UTC when Region 953 produced another impulsive X-ray flare, a C4.2/1f. The remainder of the period was at very low levels due to B-class flares from Region 953.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit reached high levels during the entire summary period.

The geomagnetic field was at quiet levels the majority of the summary period. Early on 30 April, active levels were observed at the middle latitudes, while high latitudes observed periods of minor storm conditions early on 30 April and again midday on 01 May. ACE solar wind data indicated wind velocities of near 675 km/s early on 30 April as a recurrent coronal hole high-speed stream remained in a geoeffective position. By late on 30 April, wind speeds began a slow, gradual decay as the coronal hole moved out of a geoeffective position. The summary period ended with wind velocities near 280 km/s. The Bz component of the IMF field generally did not vary much beyond +/- 3 nT with the exception of a brief period of +/- 6 nT early in the period.

**Space Weather Outlook**  
**09 May – 04 June 2007**

Solar activity is expected to be at very low levels.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to reach high levels during 25 May – 03 June.

Geomagnetic field activity is expected to be at quiet to unsettled levels through 18 May. A recurrent coronal hole high-speed stream is expected to disturb the field during 19 - 20 May with unsettled to active levels likely. Quiet to unsettled conditions are expected during 21 – 23 May. Another round of coronal hole effects are expected during 24 - 27 May with unsettled to minor storm conditions possible. Quiet to unsettled conditions are expected for the remainder of the forecast period.



### *Daily Solar Data*

Date	Radio	Sun	Sunspot	X-ray	Flares							
	Flux	spot	Area	Background	X-ray Flux			Optical				
	10.7 cm	No.	(10 <sup>-6</sup> hemi.)		C	M	X	S	1	2	3	4
30 April	87	38	510	A5.4	0	0	0	1	0	0	0	0
01 May	86	32	480	A3.8	0	0	0	0	0	0	0	0
02 May	87	33	450	A2.9	1	0	0	0	1	0	0	0
03 May	83	33	400	A2.8	0	0	0	1	0	0	0	0
04 May	83	19	330	A2.8	0	0	0	0	0	0	0	0
05 May	81	18	260	A2.8	1	0	0	0	1	0	0	0
06 May	78	14	120	A2.5	0	0	0	0	0	0	0	0

### *Daily Particle Data*

Date	Proton Fluence (protons/cm <sup>2</sup> -day-sr)			Electron Fluence (electrons/cm <sup>2</sup> -day-sr)		
	>1 MeV	>10 MeV	>100 MeV	>.6 MeV	>2MeV	>4 MeV
30 April	1.3E+6	1.7E+4	3.7E+3		1.7E+8	
01 May	1.1E+6	1.6E+4	3.8E+3		4.0E+8	
02 May	9.6E+5	1.6E+4	4.1E+3		4.9E+8	
03 May	1.1E+6	1.7E+4	4.3E+3		5.4E+8	
04 May	1.2E+6	1.7E+4	4.1E+3		4.6E+8	
05 May	1.1E+6	1.8E+4	4.3E+3		2.9E+8	
06 May	2.0E+6	1.8E+4	4.5E+3		2.2E+8	

### *Daily Geomagnetic Data*

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
30 April	13	4-4-4-2-1-2-1-1	28	4-5-5-5-2-3-2-2	20	5-5-4-2-3-2-2-1
01 May	5	2-2-3-0-1-1-1-1	9	1-2-5-1-2-1-0-1	8	3-3-3-1-1-2-2-2
02 May	1	1-0-0-0-0-1-0-1	1	1-1-0-0-0-0-0-0	3	1-1-0-0-0-1-0-1
03 May	2	0-1-1-1-1-1-1-1	3	0-0-2-1-1-1-1-1	4	1-0-2-1-1-1-2-1
04 May	1	0-0-0-1-1-1-1-0	2	1-0-0-1-0-0-0-2	2	1-0-0-1-0-0-1-0
05 May	0	0-0-0-0-0-0-0-0	1	0-0-1-1-0-0-0-1	3	1-0-1-1-0-0-0-1
06 May	0	0-0-0-0-0-0-0-1	0	0-0-0-0-0-0-0-1	2	1-0-0-0-0-1-1-1

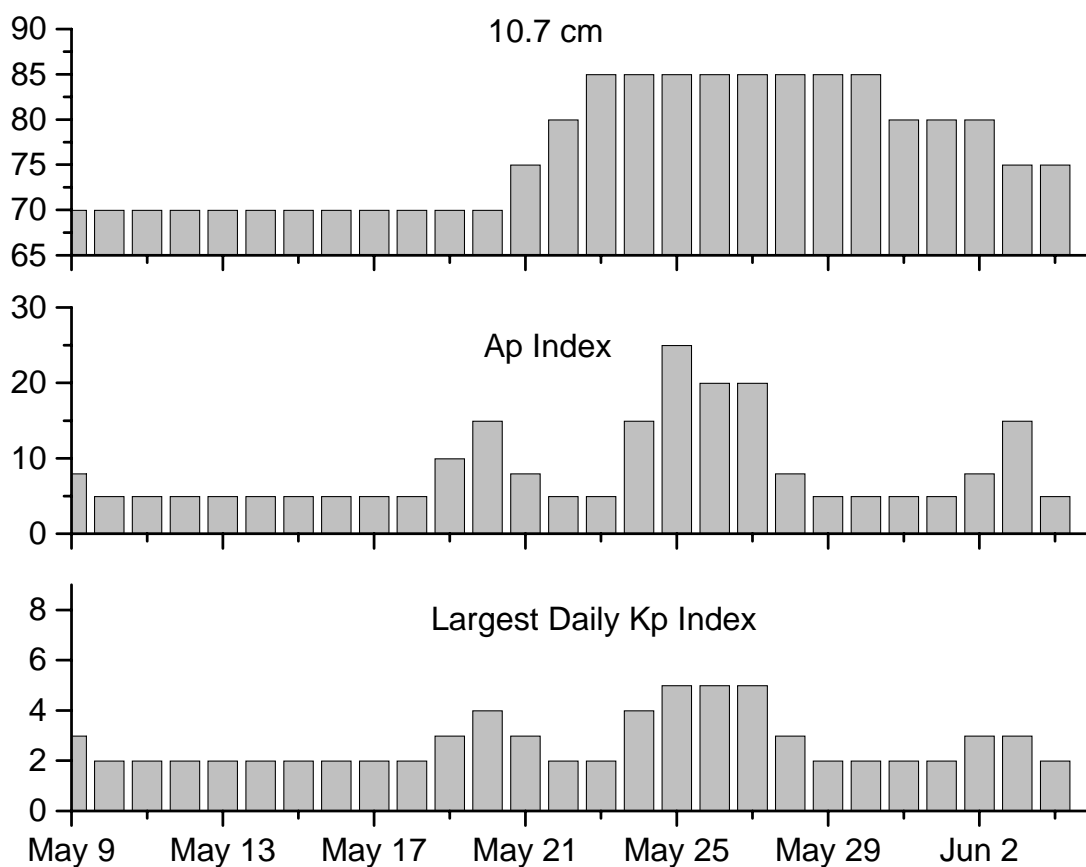


### *Alerts and Warnings Issued*

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
30 Apr 0018	WARNING: Geomagnetic K = 4	30 Apr 0020 – 1600
30 Apr 0151	ALERT: Geomagnetic K = 5	30 Apr 0150
30 Apr 0502	ALERT: Electron 2MeV Integral Flux $\geq 1000$ pfu	30 Apr 0500
30 Apr 0543	EXTENDED WARNING: Geomagnetic K = 5	29 Apr 2035 – 30/1600
01 May 0503	ALERT: Electron 2MeV Integral Flux $\geq 1000$ pfu	01 May 0500
01 May 0737	ALERT: Geomagnetic K = 4	01 May 0735
02 May 0510	ALERT: Electron 2MeV Integral Flux $\geq 1000$ pfu	02 May 0500
03 May 0506	ALERT: Electron 2MeV Integral Flux $\geq 1000$ pfu	03 May 0500
04 May 0522	ALERT: Electron 2MeV Integral Flux $\geq 1000$ pfu	04 May 0500
05 May 0505	ALERT: Electron 2MeV Integral Flux $\geq 1000$ pfu	05 May 0500
06 May 0502	ALERT: Electron 2MeV Integral Flux $\geq 1000$ pfu	06 May 0500



# *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 May	70	8	3	23	85	5	2
10	70	5	2	24	85	15	4
11	70	5	2	25	85	25	5
12	70	5	2	26	85	20	5
13	70	5	2	27	85	20	5
14	70	5	2	28	85	8	3
15	70	5	2	29	85	5	2
16	70	5	2	30	85	5	2
17	70	5	2	31	80	5	2
18	70	5	2	01 June	80	5	2
19	70	10	3	02	80	8	3
20	70	15	4	03	75	15	3
21	75	8	3	04	75	5	2
22	80	5	2				



### ***Energetic Events***

Energy Level Events												
Date	Time			X-ray		Optical Information			Peak		Sweep Freq	
	1/2			Integ		Imp/	Location	Rgn	Radio Flux		Intensity	
	Begin	Max	Max	Class	Flux	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.			
30 April	0156	0159	0211	B1.0			
	0444	0448	0454	B1.0			
	0756	0759	0801	B1.9			
	0921	0941	0947	B2.0			
	1146	1150	1156	B1.2			
	1537	1537	1546	B2.6	Sf	S16E14	953
	2343	2346	2355	B1.4			
01 May	0129	0133	0145	B1.0			
	0151	0154	0157	B1.0			
	0305	0311	0315	B1.5			
	0339	0348	0353	B1.5			
	1614	1618	1622	B1.7			
02 May	2225	2232	2245	B1.6			
	0359	0413	0426	B1.3			953
	1506	1512	1523	B1.2			953
	1556	1602	1605	B8.1			953
	1805	1854	2045	B3.8			953
03 May	2333	2339	0009	C8.5	1b	S14W17	953
	0024	0024	0026		Sf	S16W16	953
	1136	1140	1144	B1.2			954
04 May	1620	1636	1641	B1.2			953
	1730	1734	1739	B1.0			953
	1806	1816	1824	B3.0			953
05 May	0201	0205	0211	B1.0			
	0908	0911	0914	B1.8			953
	1040	1045	1050	B1.0			973
	1056	1111	1118	B1.4			953
	B1247	U1248	A1255	C4.2	1f	S14W46	953
06 May	1622	1625	1628	B1.0			
	0113	0118	0125	B1.3			
	0138	0142	0146	B1.0			
	0530	0548	0559	B1.2			
	1820	1849	1854	B2.2			
	2304	2319	2329	B9.8			



### Region Summary

Location			Sunspot Characteristics												
Date	( ° Lat ° CMD)	Helio Lon	Area (10 <sup>-6</sup> hemi)	Extent (helio)	Flares		Mag Class	X-ray			Optical				
					Spot Class	Spot Count		C	M	X	S	1	2	3	4
Region 953															
25 Apr	S14E73	310	0230	04	Hsx	004	B								
26 Apr	S10E61	309	0450	11	Hkx	007	A								
27 Apr	S10E49	308	0500	07	Dkc	008	Bd					1			
28 Apr	S10E36	308	0520	08	Dkc	010	Bg								
29 Apr	S10E23	308	0500	05	Dki	008	Bgd								
30 Apr	S10E09	308	0480	05	Dki	013	Bgd					1			
01 May	S12W04	308	0440	07	Cko	008	Bg								
02 May	S10W17	308	0420	07	Cko	010	B	1					1		
03 May	S11W30	308	0380	07	Cko	010	B					1			
04 May	S10W44	308	0330	06	Cko	009	B								
05 May	S10W57	307	0260	05	Cko	008	B	1					1		
06 May	S10W69	305	0120	05	Cao	004	B								
								2	0	0	3	2	0	0	0

Still on Disk.

Absolute heliographic longitude: 008

#### Region 954

30 Apr	S05E29	288	0030	04	Cao	005	B								
01 May	S06E16	288	0040	03	Bxo	004	B								
02 May	S06E01	290	0030	03	Bxo	003	B								
03 May	S07W12	290	0020	02	Bxo	003	B								
04 May	S07W25	290													
05 May	S07W38	290													
06 May	S07W51	290													
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 290

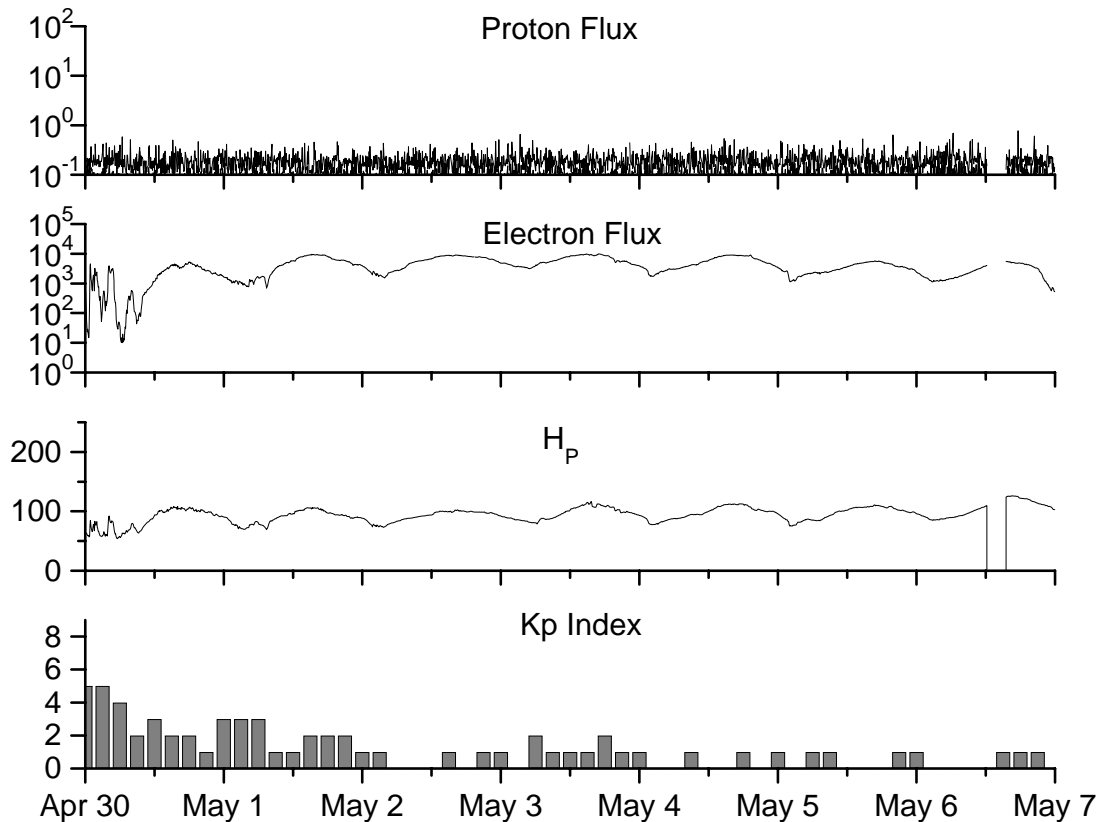


**Recent Solar Indices (preliminary)  
of the observed monthly mean values**

Month	Sunspot Numbers			Radio Flux		Geomagnetic			
	Observed values	Ratio	Smooth values	*Penticton	Smooth	Planetary	Smooth		
	SEC	RI	RI/SEC	SEC	RI	10.7 cm	Value	Ap	Value
2005									
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	33.4	18.7	76.6	82.6	6	9.2
March	21.3	10.8	0.51	31.0	17.4	75.5	81.6	8	8.4
April	55.2	30.2	0.55	30.6	17.1	89.0	80.9	11	7.9
May	39.6	22.2	0.56	30.7	17.3	81.0	80.8	8	7.9
June	37.7	13.9	0.37	28.9	16.3	80.1	80.6	9	8.3
July	22.6	12.2	0.54	27.2	15.3	75.8	80.3	7	8.7
August	22.8	12.9	0.57	27.6	15.6	79.0	80.3	9	8.7
September	25.2	14.5	0.58	27.7	15.6	77.8	80.2	8	8.7
October	15.7	10.4	0.66	25.2	14.2	74.3	79.4	8	8.6
November	31.5	21.5	0.68			86.4		9	
December	22.2	13.6	0.61			84.3		15	
2007									
January	26.6	16.9	0.64			83.5		6	
February	17.2	10.6	0.62			77.8		6	
March	9.7	4.8	0.49			72.3		7	
April	6.9	3.7	0.54			72.4		9	

**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 30 April 2007*

*Protons* plot contains the five-minute averaged integral proton flux (protons/cm<sup>2</sup>–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/cm<sup>2</sup>–sec–sr) with energies greater than 2 MeV at GOES-12 (W075).

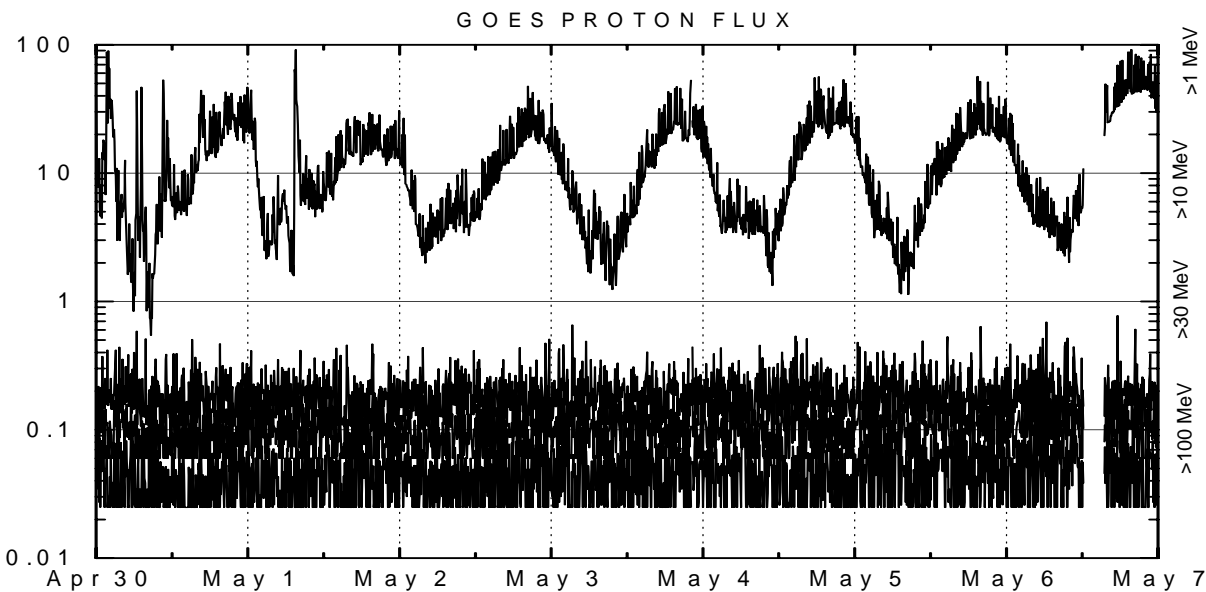
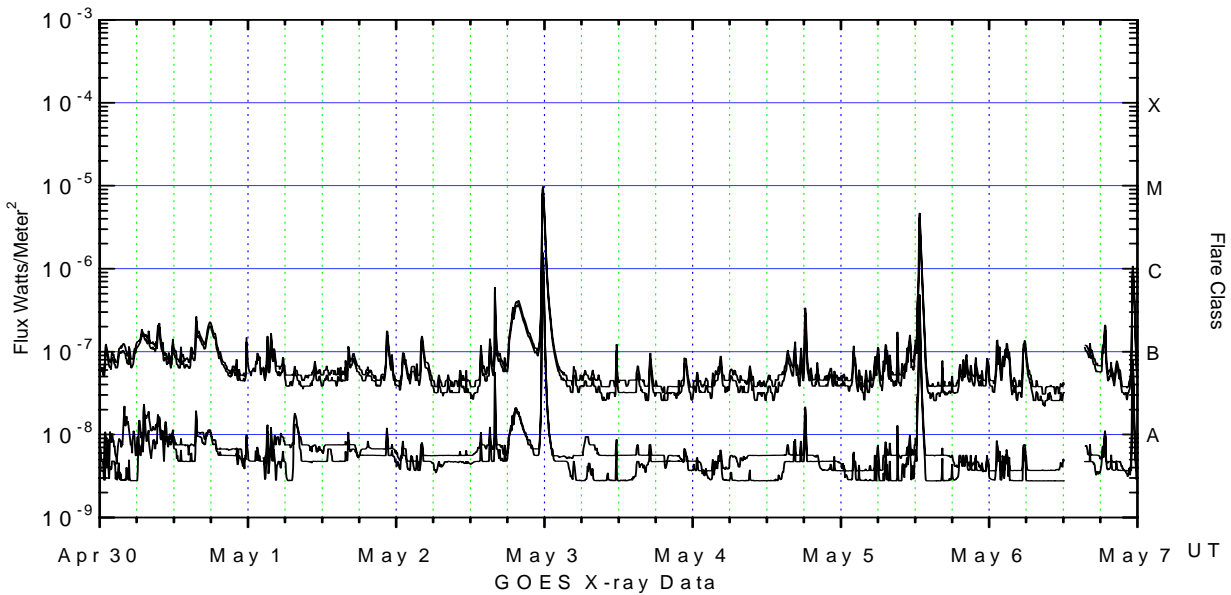
*H<sub>p</sub>* plot contains the five minute averaged magnetic field H - component in nanoteslas (nT) as measured by GOES-12. The H component is parallel to the spin axis of the satellite, which is nearly parallel to the Earth's rotation axis.

*K<sub>p</sub>* 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<sub>p</sub> 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<sub>p</sub> 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 ( $\text{watts/m}^2$ ) as measured by GOES 10 (W060) 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 ( $\text{protons/cm}^2\text{-sec-sr}$ ) as measured by GOES-11 (W135) for each of the energy thresholds: >1, >10, >30 and >100 MeV. P10 event threshold is 10 pfu ( $\text{protons/cm}^2\text{-sec-sr}$ ) at greater than 10 MeV.

