

**Space Weather Highlights**  
**07 – 13 April 2008**

**SEC PRF 1702**  
**15 April 2008**

Solar activity was very low. No flares were detected. The visible disk was spotless.

No proton events were observed at geosynchronous orbit.

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

Geomagnetic field activity ranged from quiet to active levels during much of the period. However, intermittent minor to major storm periods also occurred at high latitudes. ACE solar wind measurements indicated Earth was under the influence of a recurrent coronal hole high-speed stream during the period. Solar wind velocities were elevated throughout the period with a peak of 778 km/sec detected at 08/1740 UTC and a minimum of 500 km/sec detected at 11/2044 UTC. IMF Bt was variable with a range of 1 - 7 nT. IMF Bz was variable with a range of +/- 5 nT.

**Space Weather Outlook**  
**16 April – 12 May 2008**

Solar activity is expected to be very low.

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 16 April and 23 April - 12 May.

Geomagnetic field activity is expected to be at quiet levels during 16 - 22 April. Activity is expected to increase to active to major storm levels during 23 - 25 April due to a recurrent coronal hole high-speed stream. Activity is expected to decrease to unsettled levels during 26 - 27 April as the high-speed stream subsides. Quiet conditions are forecast during 28 - 30 April. Activity is expected to increase to unsettled to active levels during 01 - 05 May with minor storm levels likely on 02 May as another recurrent coronal hole high-speed stream affects the field. Activity is expected to decrease to quiet to unsettled levels during the remainder of the period as the high-speed stream subsides.



**Daily Solar Data**

Date	Radio Flux 10.7 cm	Sun spot No.	Sunspot Area (10 <sup>-6</sup> hemi.)	X-ray Background	Flares							
					X-ray Flux			Optical				
					C	M	X	S	1	2	3	4
07 April	69	0	0	<A1.0	0	0	0	0	0	0	0	0
08 April	70	0	0	<A1.0	0	0	0	0	0	0	0	0
09 April	68	0	0	<A1.0	0	0	0	0	0	0	0	0
10 April	68	0	0	<A1.0	0	0	0	0	0	0	0	0
11 April	67	0	0	<A1.0	0	0	0	0	0	0	0	0
12 April	68	0	0	<A1.0	0	0	0	0	0	0	0	0
13 April	69	0	0	<A1.0	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
	07 April	8.0E+6	1.7E+4	3.8E+3		2.5E+8
08 April	5.7E+6	1.7E+4	3.4E+3		3.2E+8	
09 April	3.8E+6	1.7E+4	3.7E+3		4.0E+8	
10 April	2.7E+6	1.7E+4	3.6E+3		6.4E+8	
11 April	2.1E+6	1.7E+4	3.9E+3		6.2E+8	
12 April	4.0E+6	1.8E+4	3.9E+3		3.4E+8	
13 April	3.6E+6	1.7E+4	4.1E+3		3.6E+8	

**Daily Geomagnetic Data**

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	07 April	9	3-3-2-2-1-2-1-3	13	3-4-2-3-2-3-2-2	12
08 April	6	1-2-2-2-2-2-1-2	21	2-1-2-6-5-2-2-2	9	1-1-2-3-3-2-2-3
09 April	9	3-2-4-2-2-1-1-1	20	3-2-4-5-5-2-1-1	12	3-3-4-3-2-1-1-2
10 April	*	*_*_*_*_*_*_*_*_*	12	2-2-3-4-4-2-1-1	8	3-2-2-1-2-1-2-3
11 April	3	1-1-0-1-2-1-1-1	8	1-2-0-4-3-2-0-1	4	2-1-0-2-1-1-0-2
12 April	8	2-3-2-2-2-1-2-2	24	5-2-4-5-5-1-2-1	11	2-4-3-2-3-1-2-2
13 April	6	1-2-1-1-2-2-2-2	11	1-1-3-4-3-3-2-1	7	1-2-1-2-2-3-2-2

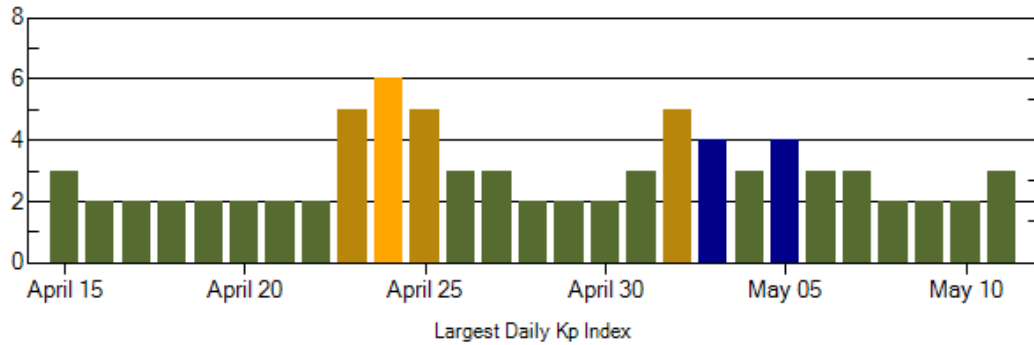
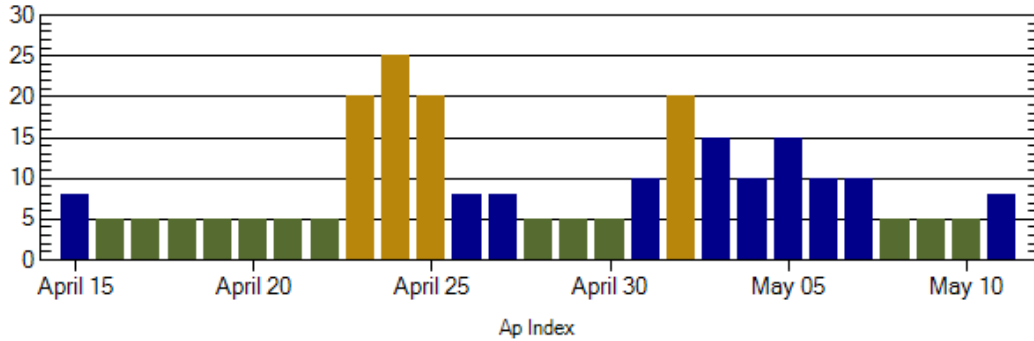
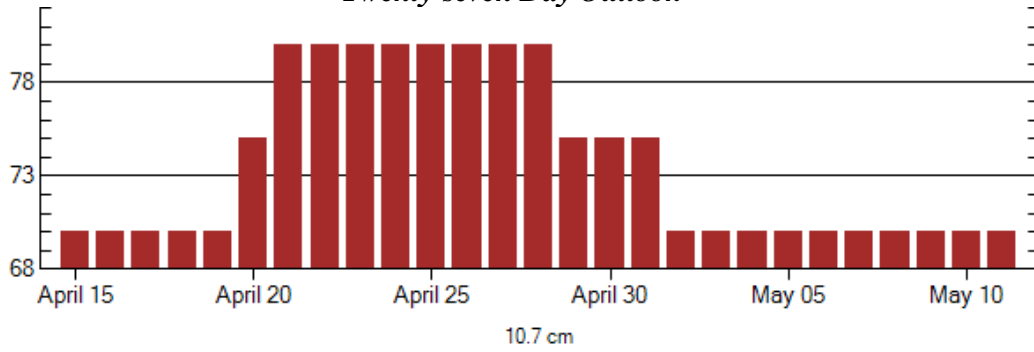


### *Alerts and Warnings Issued*

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
07 Apr 0949	ALERT: Electron 2MeV Integral Flux $\geq 1000$ pfu	07 Apr 0930
08 Apr 1051	ALERT: Electron 2MeV Integral Flux $\geq 1000$ pfu	08 Apr 1030
09 Apr 0536	ALERT: Electron 2MeV Integral Flux $\geq 1000$ pfu	09 Apr 0520
09 Apr 0650	ALERT: Geomagnetic K = 4	09 Apr 0649
09 Apr 0652	WARNING: Geomagnetic K = 4	09 Apr 0700 – 1600
10 Apr 0503	ALERT: Electron 2MeV Integral Flux $\geq 1000$ pfu	10 Apr 0500
11 Apr 0501	ALERT: Electron 2MeV Integral Flux $\geq 1000$ pfu	11 Apr 0500
12 Apr 0517	ALERT: Electron 2MeV Integral Flux $\geq 1000$ pfu	12 Apr 0500
12 Apr 0521	ALERT: Geomagnetic K = 4	12 Apr 0516
13 Apr 0500	ALERT: Electron 2MeV Integral Flux $\geq 1000$ pfu	13 Apr 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
16 Apr	70	5	2	30 Apr	75	5	2
17	70	5	2	01 May	75	10	3
18	70	5	2	02	70	20	5
19	70	5	2	03	70	15	4
20	75	5	2	04	70	10	3
21	80	5	2	05	70	15	4
22	80	5	2	06	70	10	3
23	80	20	5	07	70	10	3
24	80	25	6	08	70	5	2
25	80	20	5	09	70	5	2
26	80	8	3	10	70	5	2
27	80	8	3	11	70	8	3
28	80	5	2	12	70	8	3
29	75	5	2				



***Energetic 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	IV
<i>No Events Observed</i>													

***Flare List***

Date	Time			Optical	Imp / Brtns	Location Lat CMD	Rgn
	Begin	Max	End	Class.			
07 April	<i>No Flares Observed</i>						
08 April	<i>No Flares Observed</i>						
09 April	<i>No Flares Observed</i>						
10 April	<i>No Flares Observed</i>						
11 April	<i>No Flares Observed</i>						
12 April	<i>No Flares Observed</i>						
13 April	<i>No Flares Observed</i>						

***Region Summary***

Date	Location		Sunspot Characteristics														
	Helio		Area (10 <sup>-6</sup> hemi)	Extent (helio)	Flares			X-ray		Optical							
	(° Lat ° CMD)	Lon			Spot Class	Spot Count	Mag Class	C	M	X	S	1	2				
<i>Region 989</i>																	
07 Apr	S11W93	204															
										0	0	0	0	0	0	0	0
Absolute heliographic longitude: 204																	



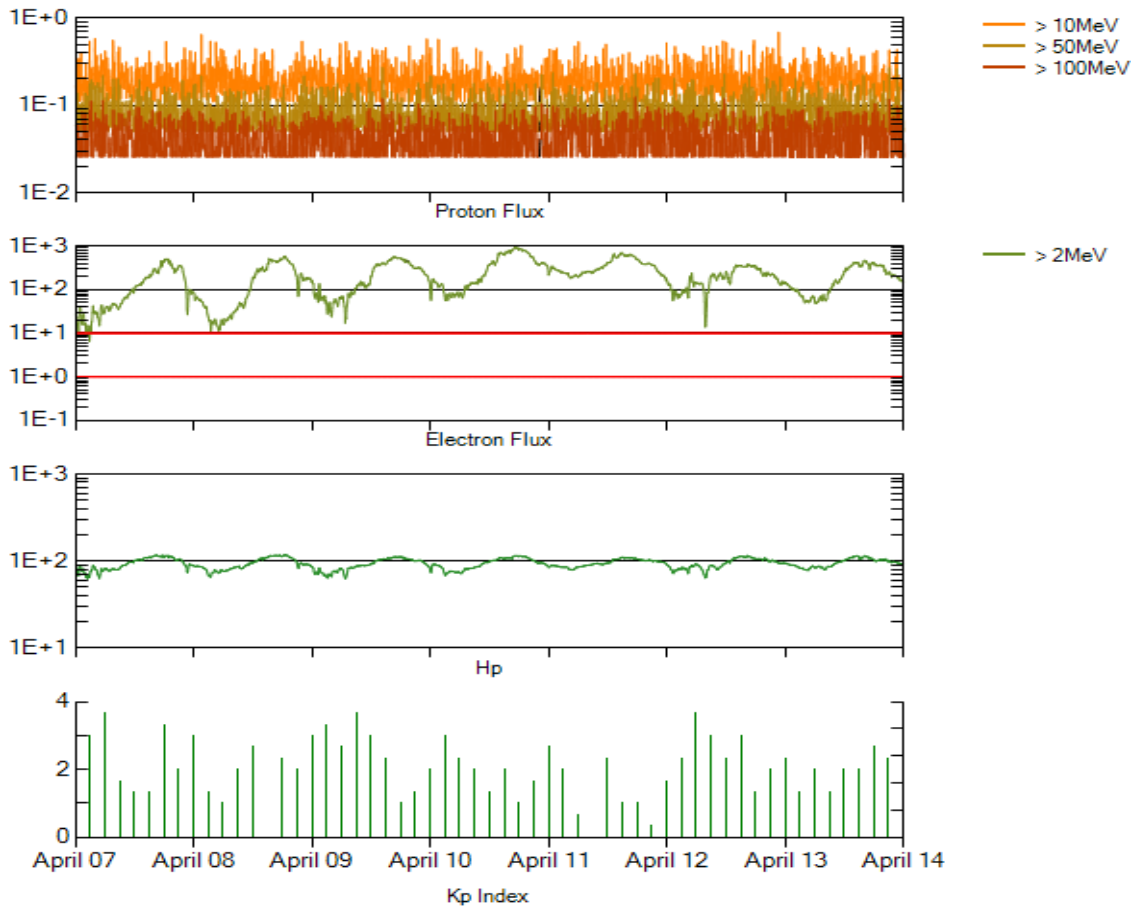
**Recent Solar Indices (preliminary)**  
**Of the observed monthly mean values**

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
<b>2006</b>									
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	22.3	12.7	86.4	78.5	9	8.5
December	22.2	13.6	0.61	20.7	12.1	84.3	77.9	15	8.5
<b>2007</b>									
January	26.6	16.9	0.64	19.7	12.0	83.5	77.5	6	8.4
February	17.2	10.6	0.62	18.9	11.6	77.8	76.9	6	8.4
March	9.7	4.8	0.49	17.5	10.8	72.3	76.0	8	8.4
April	6.9	3.7	0.54	16.0	9.9	72.4	75.2	9	8.5
May	19.4	11.7	0.60	14.2	8.7	74.5	74.2	9	8.4
June	20.0	12.0	0.60	12.8	7.7	73.7	73.2	7	7.8
July	15.6	10.0	0.64	11.6	7.0	71.6	72.5	8	7.4
August	9.9	6.2	0.63	10.2	6.1	69.2	71.8	7	7.6
September	4.8	2.4	0.50	9.9	5.9	67.1	71.5	9	7.8
October	1.3	0.9	0.70			65.5		9	
November	2.5	1.7	0.68			69.7		5	
December	16.2	10.1	0.62			78.6		4	
<b>2008</b>									
January	5.1	3.4	0.67			72.1		6	
February	3.8	2.1	0.55			71.2		9	
March	15.9	9.3	0.58			72.9		10	

**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 07 April 2008*

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.

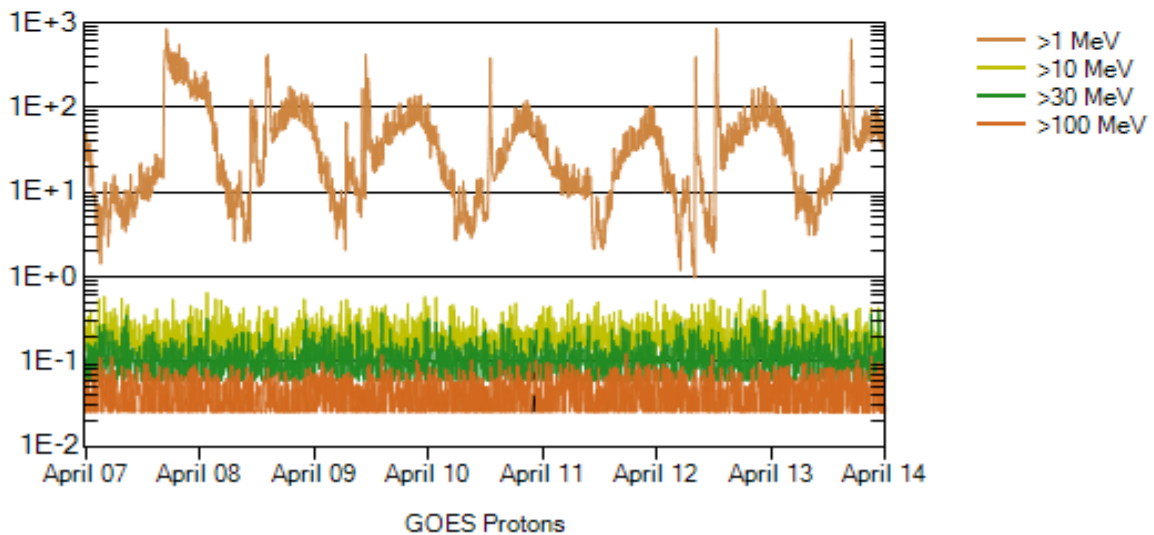
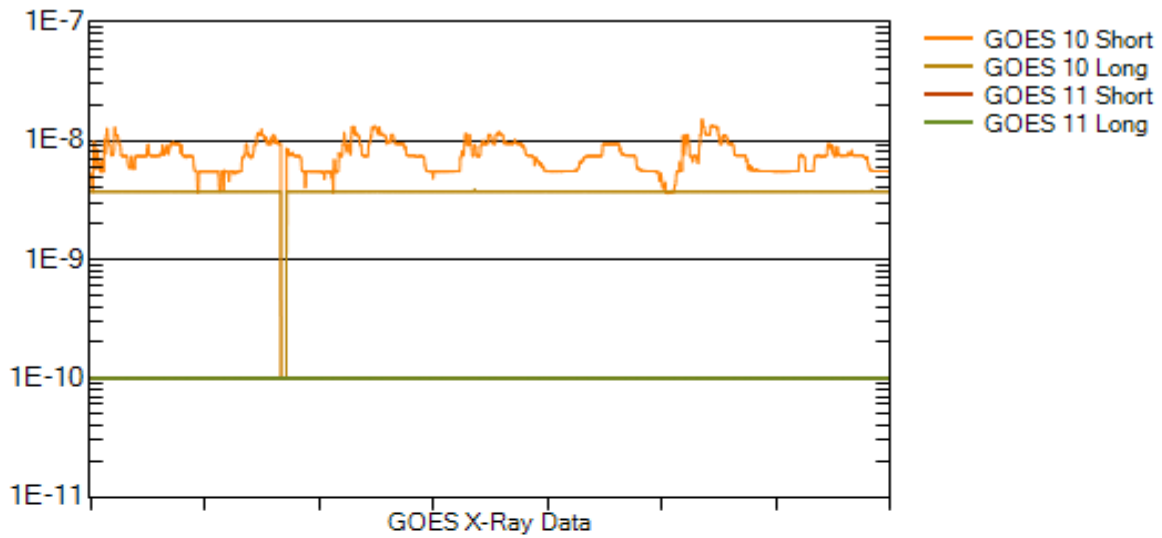
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm<sup>2</sup>-sec -sr) with energies greater than 2 MeV at GOES-12 (W075).

Hp 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.

Kp 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 Kp 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 Kp 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.

