

Space Weather Highlights
10 – 16 March 2008

SEC PRF 1698
18 March 2008

Solar activity was very low. The disk was spotless during most of the period. However, Region 985 (S10, L = 201, class/area Bxo/090 on 10 March) emerged near the west limb on 10 March. It produced three subflares on 11 March, the largest of which was a B5/Sf at 11/0557 UTC. Region 985 departed the west limb on 11 March.

No proton events were observed at geosynchronous orbit.

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

The geomagnetic field was at quiet to active levels throughout the period. However, occasional minor to severe storm periods were observed at high latitudes. ACE solar wind measurements indicated a recurrent coronal hole high-speed stream was in progress during the entire period. A peak velocity of 735 km/sec was detected at 11/0457 UTC. Velocities slowly decreased during the rest of the period with a low of 535 km/sec detected on 16 March. IMF Bz varied + 5 nT throughout the period. IMF Bt reached a peak of 6 nT at 10/0655 UTC.

Space Weather Outlook
19 March – 14 April 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 most of the period. However, the flux may drop to normal levels on 26 March and 05 April.

Geomagnetic field activity is expected to be at quiet levels during 19 - 24 March. Activity is expected to increase to unsettled levels on 25 March as a recurrent coronal hole high-speed stream begins to disturb the field. A further increase to minor storm levels is expected during 26 - 28 March as coronal hole effects persist. Activity is expected to decrease to unsettled levels on 29 March as the high-speed stream subsides. Quiet conditions are expected during 30 March - 03 April. Another recurrent coronal hole high-speed stream is forecast to disturb the field during 04 - 09 April with active conditions expected during most of the period. However, minor storm levels are expected on 05 April. Activity is expected to decrease to unsettled levels during 10 - 11 April as the high-speed stream subsides. Quiet conditions are forecast for the rest of the period.



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	
10 March	70	12	90	<A1.0	0	0	0	0	0	0	0	0	0
11 March	70	0	0	<A1.0	0	0	0	3	0	0	0	0	0
12 March	69	0	0	<A1.0	0	0	0	0	0	0	0	0	0
13 March	70	0	0	<A1.0	0	0	0	0	0	0	0	0	0
14 March	70	0	0	<A1.0	0	0	0	0	0	0	0	0	0
15 March	70	12	20	<A1.0	0	0	0	0	0	0	0	0	0
16 March	70	12	20	<A1.0	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
	10 March	1.5E+6	1.7E+4	3.5E+3		1.4E+8
11 March	7.4E+6	1.8E+4	3.6E+3		2.5E+8	
12 March	5.1E+6	1.7E+4	3.4E+3		4.1E+8	
13 March	1.5E+7	1.7E+4	3.6E+3		6.0E+8	
14 March	9.6E+6	1.8E+4	3.9E+3		4.9E+8	
15 March	1.0E+7	1.8E+4	4.1E+3		4.2E+8	
16 March	3.0E+6	1.8E+4	4.1E+3		4.3E+8	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	10 March	12	3-3-2-3-2-2-3-3	25	4-4-3-5-4-4-3-3	18
11 March	7	2-2-3-2-3-2-2-1	25	3-2-4-5-6-3-2-1	12	3-1-4-2-4-3-1-2
12 March	9	2-3-3-2-1-1-3-2	15	2-2-4-4-3-2-3-3	14	2-4-4-2-1-1-4-2
13 March	11	3-3-2-2-3-2-3-1	33	2-2-2-7-6-3-2-1	14	2-3-2-4-4-3-3-2
14 March	12	3-3-3-1-2-3-2-3	22	2-2-4-4-4-5-3-3	13	2-3-3-2-2-4-3-3
15 March	7	2-2-2-3-2-1-2-1	33	4-2-4-7-5-2-1-1	11	3-3-1-4-3-2-1-1
16 March	4	2-2-1-0-1-1-1-1	7	2-2-2-1-3-2-1-1	5	2-2-1-0-1-1-1-2

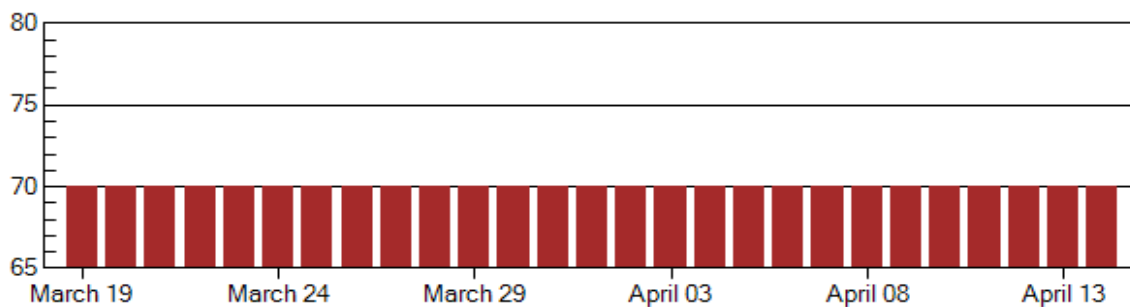


Alerts and Warnings Issued

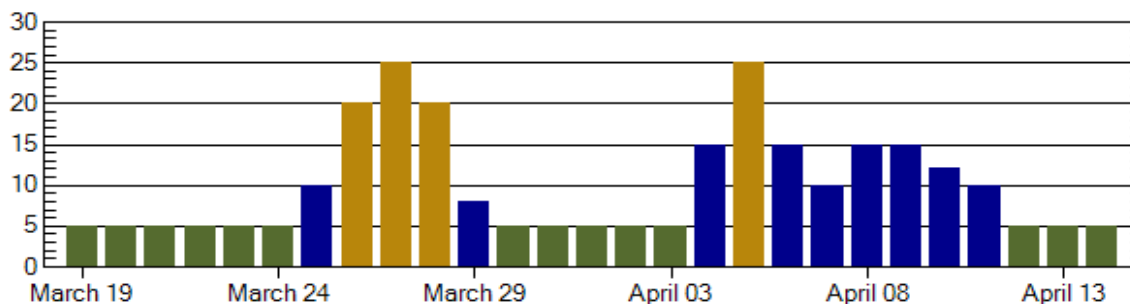
Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
10 Mar 1126	ALERT: Electron 2MeV Integral Flux >1000pfu	10 Mar 1110
10 Mar 1556	EXTENDED WARNING: Geomagnetic K=4	08 Mar 1746 - 11/1600
11 Mar 0642	ALERT: Electron 2MeV Integral Flux >1000pfu	11 Mar 0625
11 Mar 1532	EXTENDED WARNING: Geomagnetic K=4	08 Mar 1746 - 12/1600
12 Mar 0532	ALERT: Electron 2MeV Integral Flux >1000pfu	12 Mar 0530
12 Mar 1522	EXTENDED WARNING: Geomagnetic K=4	08 Mar 1746 - 13/1600
13 Mar 0518	ALERT: Electron 2MeV Integral Flux >1000pfu	13 Mar 0500
13 Mar 1557	EXTENDED WARNING: Geomagnetic K=4	08 Mar 1746 - 14/1600
14 Mar 0543	ALERT: Electron 2MeV Integral Flux >1000pfu	14 Mar 0500
14 Mar 1702	WARNING: Geomagnetic K=4	14 Mar 1705 - 2359
14 Mar 2354	EXTENDED WARNING: Geomagnetic K=4	14 Mar 1705 - 15/1600
15 Mar 0811	ALERT: Electron 2MeV Integral Flux >1000pfu	15 Mar 0755
15 Mar 1510	EXTENDED WARNING: Geomagnetic K=4	14 Mar 1705 - 16/1600
16 Mar 0501	ALERT: Electron 2MeV Integral Flux >1000pfu	16 Mar 0500



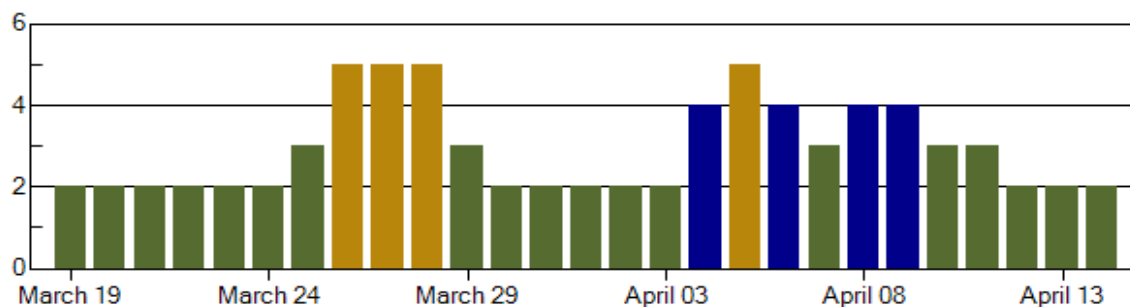
Twenty-seven Day Outlook



10.7 cm



Ap Index



Largest Daily Kp Index

Date	Radio Flux 10.7 cm	Planetary A Index	Largest Kp Index	Date	Radio Flux 10.7 cm	Planetary A Index	Largest Kp Index
19 Mar	70	5	2	02 Apr	70	5	2
20	70	5	2	03	70	5	2
21	70	5	2	04	70	15	4
22	70	5	2	05	70	25	5
23	70	5	2	06	70	15	4
24	70	5	2	07	70	10	3
25	70	10	3	08	70	15	4
26	70	20	5	09	70	15	4
27	70	25	5	10	70	12	3
28	70	20	5	11	70	10	3
29	70	8	3	12	70	5	2
30	70	5	2	13	70	5	2
31	70	5	2	14	70	5	2
01 Apr	70	5	2				



Energetic Events

Date	Time		X-ray	Optical Information			Peak		Sweep Freq				
	$\frac{1}{2}$		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	X-ray Class.			
10 March	No Flares Observed						
11 March	0334	0341	0352		Sf	S10W83	985
	0446	0453	0459		Sf	S10W84	985
	0553	0558	0614	B5.9	Sf	S10W85	985
12 March	No Flares Observed						
13 March	No Flares Observed						
14 March	No Flares Observed						
15 March	No Flares Observed						
16 March	No Flares Observed						

Region Summary

Date	Location		Sunspot Characteristics							X-ray			Optical	
	Helio		Area (10 ⁻⁶ hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical			
	(° Lat ° CMD)	Lon						C	M	X	S	1	2	
<i>Region 985</i>														
10 Mar	S10W83	201	0090	05	Bxo	002	B							
11 Mar	S10W96	201												
0 0 0 0 0 0 0 0 0														
Crossed West Limb.														
Absolute heliographic longitude: 201														
<i>Region 986</i>														
15 Mar	S04W41	094	0020	03	Bxo	002	B							
16 Mar	S04W56	096	0020	02	Bxo	002	B							
0 0 0 0 0 0 0 0 0														
Still on Disk.														
Absolute heliographic longitude: 094														



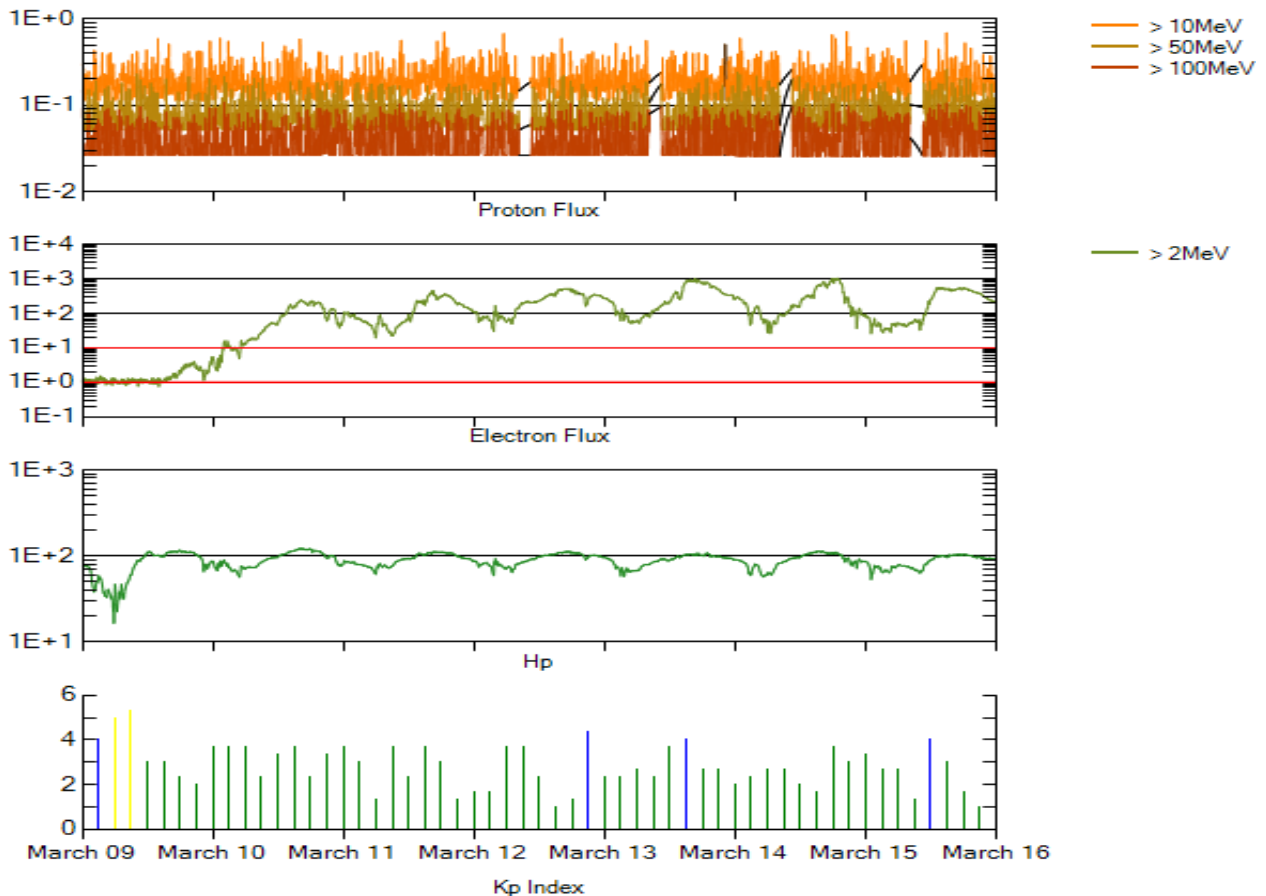
Recent Solar Indices (preliminary)
Of the observed monthly mean values

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
2006									
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	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
2007									
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			67.1		9	
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	
2008									
January	5.1	3.4	0.67			72.1		6	
February	3.8	2.1	0.55			71.2		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 09 March 2008*

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.

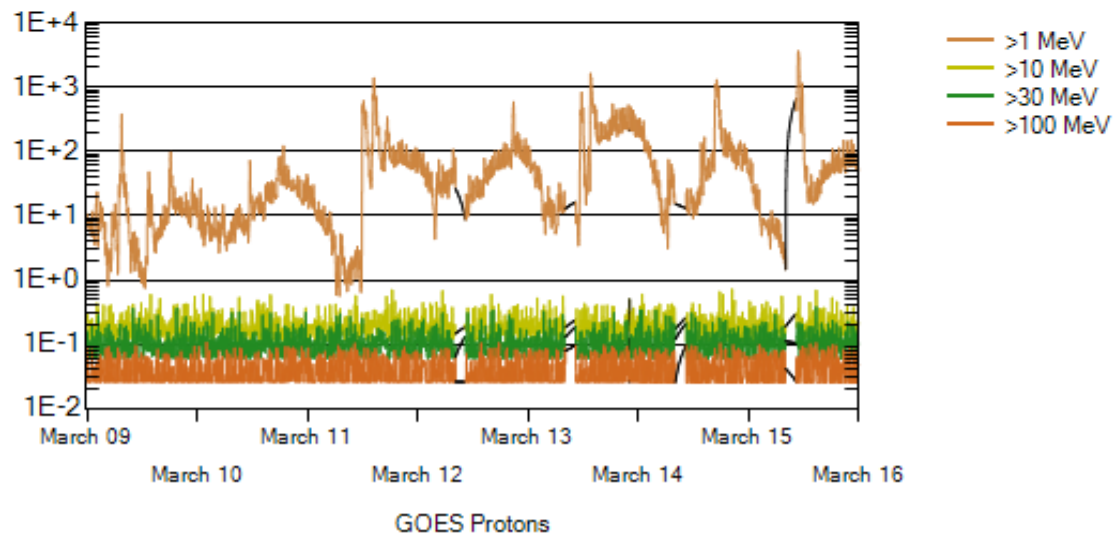
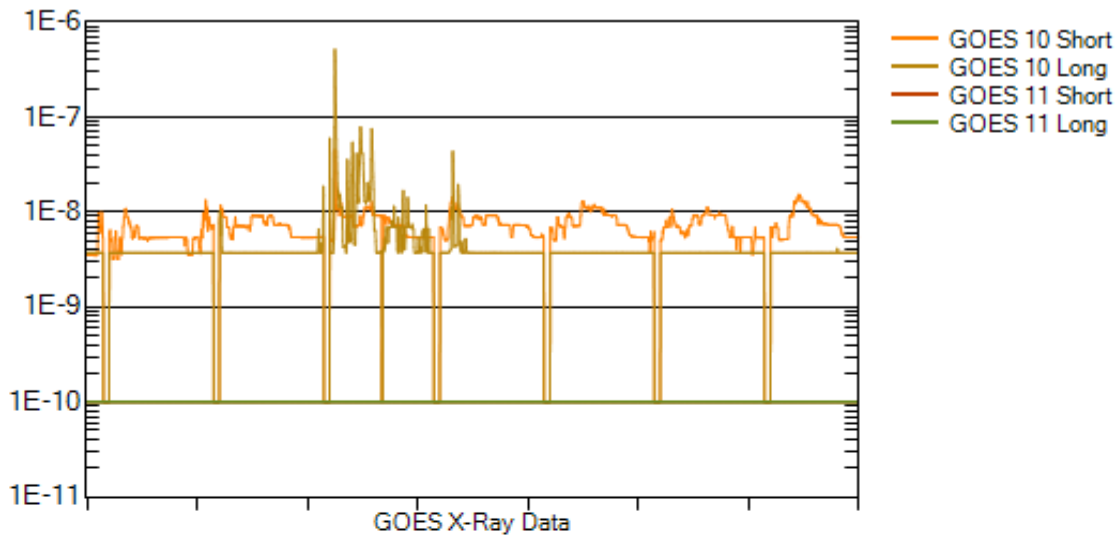
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV at GOES-12 (W075).

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 (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.

