

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

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at high levels on 16 - 18 March. Normal levels were observed on 19 - 22 March.

Geomagnetic field activity was at predominantly quiet levels from 16 March to mid-day on 20 March. During this time, ACE solar wind velocities gradually decreased from 473 km/s to a minimum of 271 km/s at 19/1947 UTC. The interplanetary magnetic field (IMF) Bz ranged between -4 nT and +5 nT. Activity increased at mid-day on 20 March, as a recurrent coronal hole rotated into a geoeffective position. Quiet to unsettled conditions were observed at mid-latitudes through early on 22 March. Major storm periods were observed at high latitudes on 21/09 - 15 UTC. During this period, ACE solar wind velocities increased to a maximum of 472 km/s at 22/0550 UTC. The IMF Bt increased to a maximum of +12 nT, and Bz reached a minimum of -9 nT at 21/0928 UTC.

Space Weather Outlook **25 March - 20 April 2009**

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 increase to high levels during 10-14 April. Normal flux levels are expected during the rest of the period.

Geomagnetic field activity is expected to be at predominantly quiet levels through 08 April. Activity is expected to increase to unsettled to active levels during 09 - 10 April, with a chance for minor storm periods at high latitudes due to a recurrent coronal hole high-speed stream. Mostly quiet activity is expected 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
16 March	69	0	0	<A1.0	0	0	0	0	0	0	0	0
17 March	69	0	0	<A1.0	0	0	0	0	0	0	0	0
18 March	68	0	0	<A1.0	0	0	0	0	0	0	0	0
19 March	69	0	0	<A1.0	0	0	0	0	0	0	0	0
20 March	69	0	0	<A1.0	0	0	0	0	0	0	0	0
21 March	70	0	0	<A1.0	0	0	0	0	0	0	0	0
22 March	69	0	0	<A1.0	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
	16 March	9.3e+05	1.9e+04	4.4e+03		9.9e+07
17 March	8.3e+05	1.9e+04	4.2e+03		8.0e+07	
18 March	1.0e+06	1.9e+04	4.4e+03		7.5e+07	
19 March	8.3e+05	2.0e+04	4.4e+03		4.9e+07	
20 March	8.8e+05	2.0e+04	4.4e+03		3.0e+07	
21 March	6.5e+05	1.9e+04	4.3e+03		1.4e+06	
22 March	2.2e+05	2.0e+04	4.3e+03		1.7e+05	

Daily Geomagnetic Data

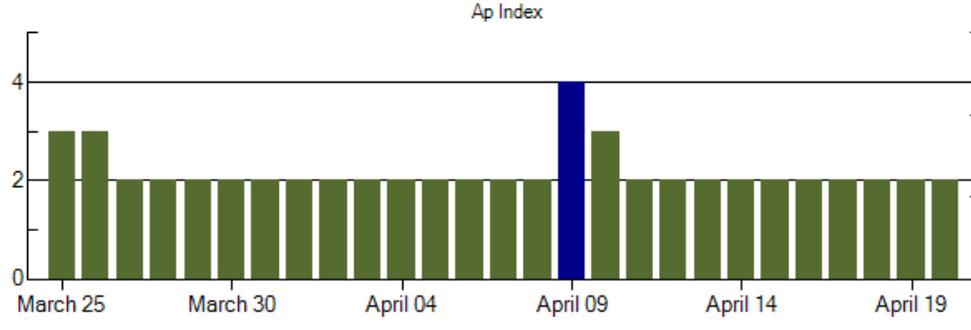
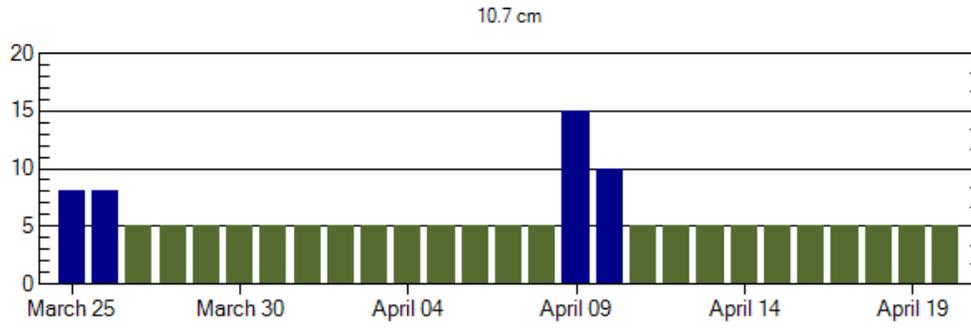
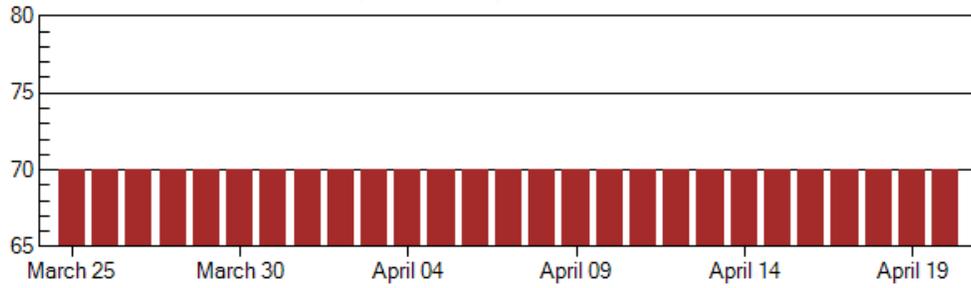
Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	16 March	4	2-0-1-1-1-2-2-0	4	1-0-2-3-1-1-1-0	5
17 March	3	1-1-1-0-1-1-1-1	1	0-0-1-0-1-1-0-0	3	1-0-1-0-1-1-1-1
18 March	0	0-0-0-0-0-0-1-0	0	0-0-0-0-0-0-0-0	1	0-0-0-0-0-0-0-1
19 March	3	2-1-1-0-2-0-1-1	3	0-0-1-1-3-0-0-0	3	1-0-1-0-1-0-0-1
20 March	2	1-0-0-0-1-1-1-1	2	0-0-0-1-0-2-1-1	4	2-0-0-0-0-2-1-2
21 March	5	0-1-2-2-2-1-2-2	23	0-1-1-6-6-2-2-2	8	0-1-1-3-3-1-2-3
22 March	4	2-2-1-1-1-0-1-1	1	0-1-0-0-0-1-0-1	4	2-3-0-0-0-0-0-2

Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
17 Mar 1623	ALERT: Electron 2MeV Integral Flux >= 1000pfu	17 Mar 1610
16 Mar 1726	ALERT: Electron 2MeV Integral Flux >= 1000pfu	16 Mar 1615
18 Mar 1635	ALERT: Electron 2MeV Integral Flux >= 1000pfu	18 Mar 1620



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
25 Mar	70	8	3	08 Apr	70	5	2
26	70	8	3	09	70	15	4
27	70	5	2	10	70	10	3
28	70	5	2	11	70	5	2
29	70	5	2	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	15	70	5	2
02	70	5	2	16	70	5	2
03	70	5	2	17	70	5	2
04	70	5	2	18	70	5	2
05	70	5	2	19	70	5	2
06	70	5	2	20	70	5	2
07	70	5	2				



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

No Events Observed

Flare List

Date	Time			X-ray Class.	Imp / Brtns	Optical		Rgn
	Begin	Max	End			Location Lat CMD		
16 Mar	No Flares Observed							
17 Mar	No Flares Observed							
18 Mar	No Flares Observed							
19 Mar	No Flares Observed							
20 Mar	No Flares Observed							
21 Mar	No Flares Observed							
22 Mar	No Flares Observed							

Region Summary

Date	Location		Sunspot Characteristics				Flares								
	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	3	4

No active regions.



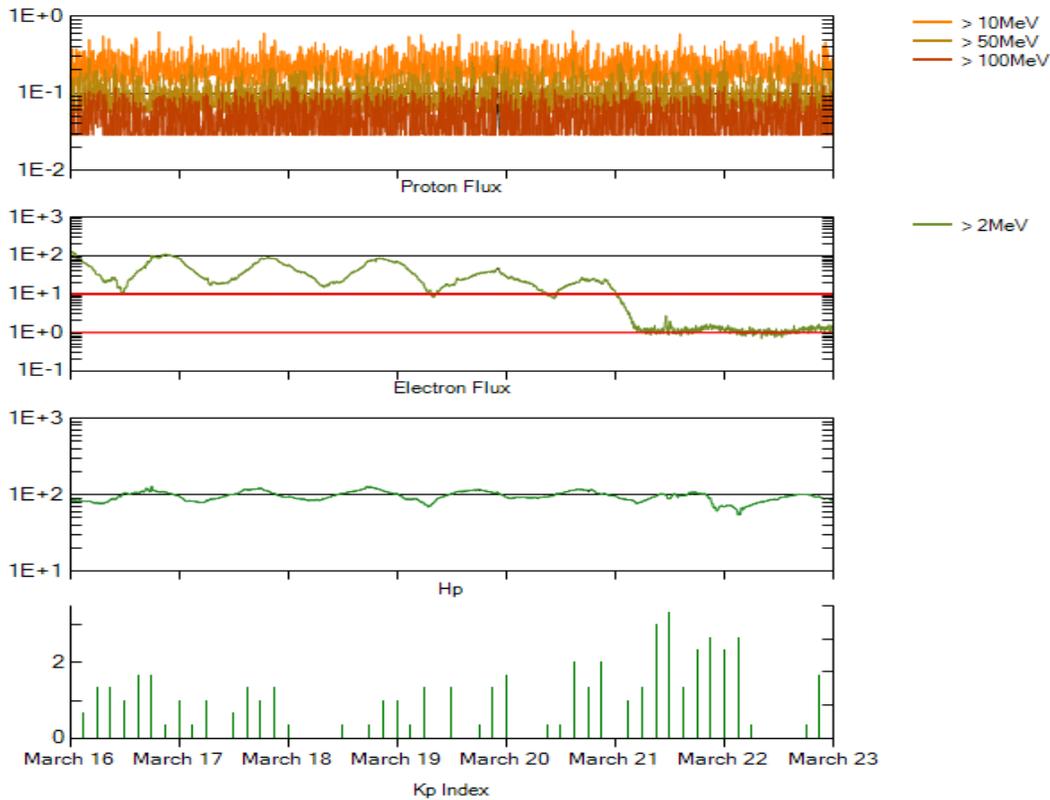
Recent Solar Indices (preliminary)
Of the observed monthly mean values

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
2007									
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	10.0	6.1	65.5	71.5	9	7.9
November	2.5	1.7	0.68	9.4	5.7	69.7	71.1	5	7.8
December	16.2	10.1	0.62	8.1	5.0	78.6	70.5	4	7.8
2008									
January	5.1	3.4	0.67	6.9	4.2	72.1	70.0	6	7.7
February	3.8	2.1	0.55	5.9	3.6	71.2	69.6	9	7.6
March	15.9	9.3	0.58	5.3	3.3	72.9	69.5	10	7.4
April	4.9	2.9	0.59	5.3	3.3	70.3	69.6	9	7.1
May	5.7	2.9	0.51	5.7	3.5	68.4	69.7	6	6.9
June	4.2	3.1	0.74	5.2	3.2	65.9	69.2	7	6.8
July	1.0	0.5	0.50	4.5	2.7	65.8	68.8	6	6.6
August	0.0	0.5	**			66.4		5	
September	1.5	1.1	0.73			67.1		5	
October	5.2	2.9	0.56			68.3		6	
November	6.8	4.1	0.60			68.6		3	
December	1.3	0.8	0.62			69.2		2	
2009									
January	2.8	1.5	0.54			69.8		3	

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.

**SEC sunspot number was less than RI value, so a ratio could not be done.





*Weekly Geosynchronous Satellite Environment Summary
Week Beginning 16 March 2009*

GOES-11 designated Primary Electron Satellite and GOES-10 Secondary: December 1, 2008 the GOES-12 Electron sensor began experiencing periods of noise and sensor is unreliable.

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.

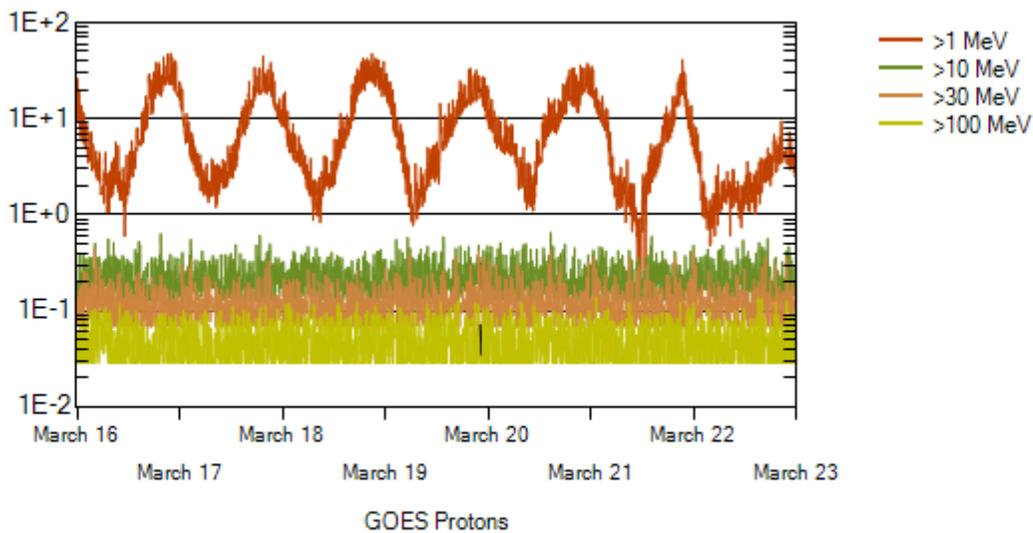
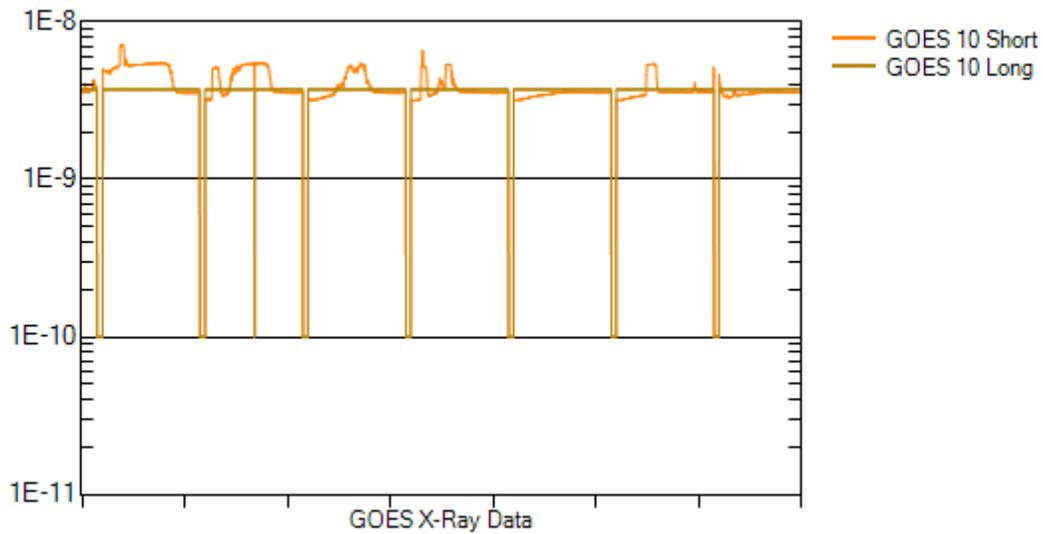
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV at GOES-11 (W135).

Hp plot contains the five minute averaged magnetic field H - component in nanoteslas (nT) as measured by GOES-11. 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 SWPC 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.

