

Solar activity was very low. Old-cycle polarity Region 1012 (S06, L=278, class/area Axx/010 on 11 February) produced isolated B-class flares during 10 - 13 February. Region 1012 decayed to spotless plage on 14 February.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit increased to high levels on 15 February.

Geomagnetic field activity was at quiet levels during 09 - 13 February. Activity increased to active levels during 14 - 15 February with minor to major storm periods detected at high latitudes. ACE solar wind measurements indicated the 14 - 15 February activity was associated with a recurrent coronal hole high-speed stream (CH HSS). The co-rotating interaction region in advance of the CH HSS was detected on 14 February and was associated with increased velocities, increased IMF Bt (maximum 17 nT at 14/0518 UTC, and intermittent periods of enhanced southward IMF Bz (minimum -15 nT at 14/0543 UTC). The HSS commenced early on 14 February and continued through the rest of the period with a peak velocity of 623 km/sec detected at 15/0910 UTC. IMF Bz varied from +04 to -05 nT during the HSS.

**Space Weather Outlook**  
**18 February 2009 - 16 March 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 14 - 16 March. Normal flux levels are expected during the rest of the period.

Geomagnetic field activity is expected to be at quiet levels during 18 - 20 February. Activity is expected to increase to quiet to unsettled levels with isolated active conditions during 21 - 22 February due to a recurrent CH HSS. Activity is expected to decrease to mostly quiet levels during 23 February - 12 March. Activity is expected to increase to quiet to unsettled levels with isolated active conditions during 13 - 14 February due to another CH HSS. Isolated minor to major storm conditions are possible at high latitudes during this period. Activity is expected to decrease to mostly quiet levels during 15 - 16 March as the CH HSS 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	
09 February	71	0	0	<A1.0	0	0	0	0	0	0	0	0	0
10 February	68	0	0	<A1.0	0	0	0	0	0	0	0	0	0
11 February	70	11	10	<A1.0	0	0	0	0	0	0	0	0	0
12 February	70	11	10	<A1.0	0	0	0	0	0	0	0	0	0
13 February	70	11	10	<A1.0	0	0	0	0	0	0	0	0	0
14 February	70	0	0	<A1.0	0	0	0	0	0	0	0	0	0
15 February	70	0	0	<A1.0	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
	09 February	2.4E+5	1.9E+4	4.2E+3		4.4E+5
10 February	3.9E+5	2.0E+4	4.5E+3		7.9E+5	
11 February	2.9E+5	2.0E+4	4.2E+3		2.4E+5	
12 February	1.9E+5	2.0E+4	4.3E+3		9.7E+4	
13 February	3.6E+5	2.1E+4	4.5E+3		1.5E+5	
14 February	7.5E+5	2.0E+4	4.2E+3		1.1E+5	
15 February	3.5E+6	1.9E+4	4.2E+3		3.6E+7	

**Daily Geomagnetic Data**

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

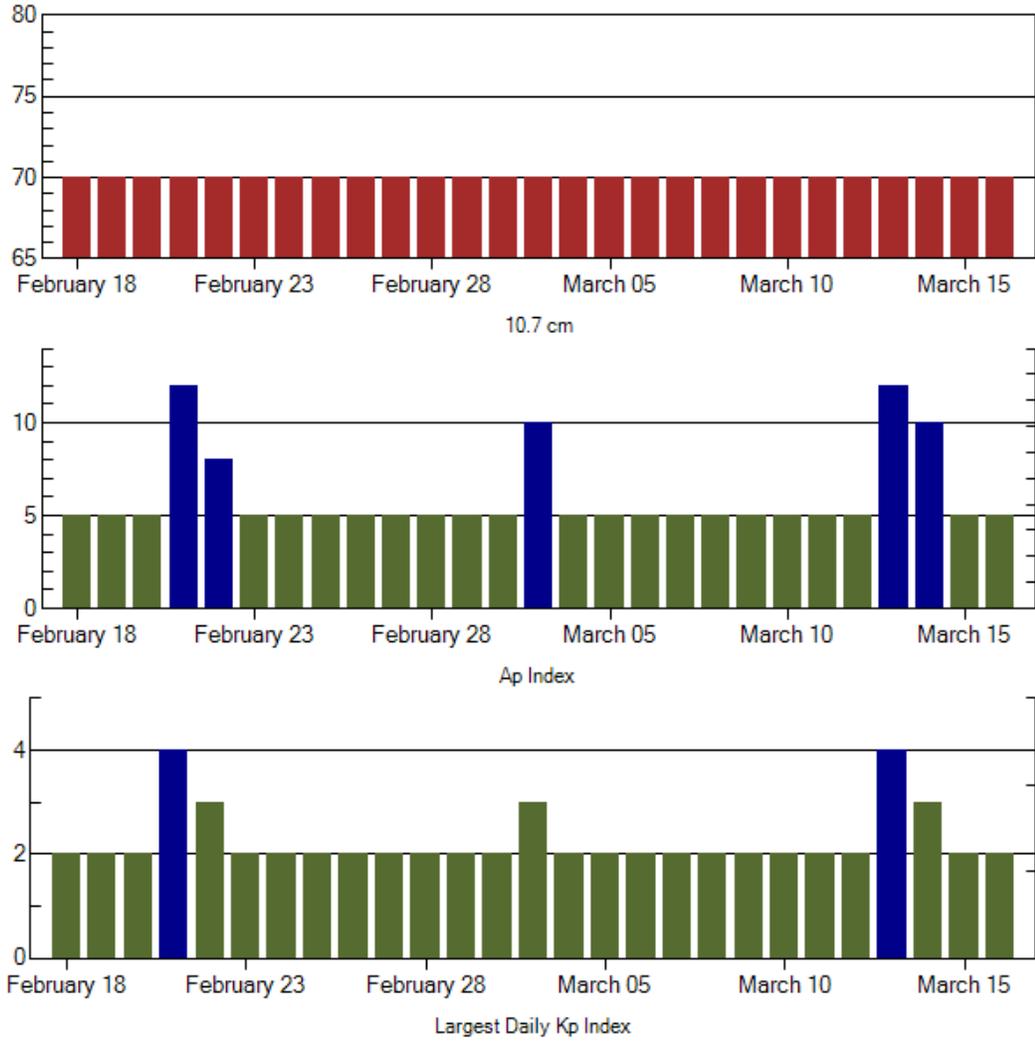


*Alerts and Warnings Issued*

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
14 Feb 0535	WARNING: Geomagnetic K = 4	14 Feb 0600 - 1600
14 Feb 0744	ALERT: Geomagnetic K = 4	14 Feb 0742
14 Feb 0749	ALERT: Geomagnetic K = 5	14 Feb 0747
14 Feb 1523	EXTENDED WARNING: Geomagnetic K = 4	14 Feb 0600 - 2359
14 Feb 2339	EXTENDED WARNING: Geomagnetic K = 4	14 Feb 0600 - 15/0600
15 Feb 1844	ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	15 Feb 1825



### 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
18 Feb	70	5	2	04 Mar	70	5	2
19	70	5	2	05	70	5	2
20	70	5	2	06	70	5	2
21	70	12	4	07	70	5	2
22	70	8	3	08	70	5	2
23	70	5	2	09	70	5	2
24	70	5	2	10	70	5	2
25	70	5	2	11	70	5	2
26	70	5	2	12	70	5	2
27	70	5	2	13	70	12	4
28	70	5	2	14	70	10	3
01 Mar	70	5	2	15	70	5	2
02	70	5	2	16	70	5	2
03	70	10	3				



***Energetic Events***

Date	Time		X-ray		Optical Information			Peak		Sweep Freq
	Begin	Max	Class	Flux	Imp/	Location	Rgn	Radio Flux		Intensity
					Brtns	Lat CMD	#	245	2695	II

***No Events Observed***

***Flare List***

Date	Time			X-ray Class.	Imp / Brtns	Location Lat CMD	Rgn
	Begin	Max	End				
09 Feb	No Flares Observed						
10 Feb	No Flares Observed						
11 Feb	No Flares Observed						
12 Feb	No Flares Observed						
13 Feb	No Flares Observed						
14 Feb	No Flares Observed						
15 Feb	No Flares Observed						

***Region Summary***

Date	Location		Sunspot Characteristics				Flares				
	° Lat ° CMD	Helio	Area (10 <sup>-6</sup> hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray		Optical	
		Lon						C	M	X	S

***Region 1012***

11 Feb	S06E62	275	0010	01	Axx	001	A										
12 Feb	S05E48	276	0010	01	Axx	001	A										
13 Feb	S06E34	278	0010	01	Axx	001	A										
14 Feb	S06E20	278															
15 Feb	S06E07	278															

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 278



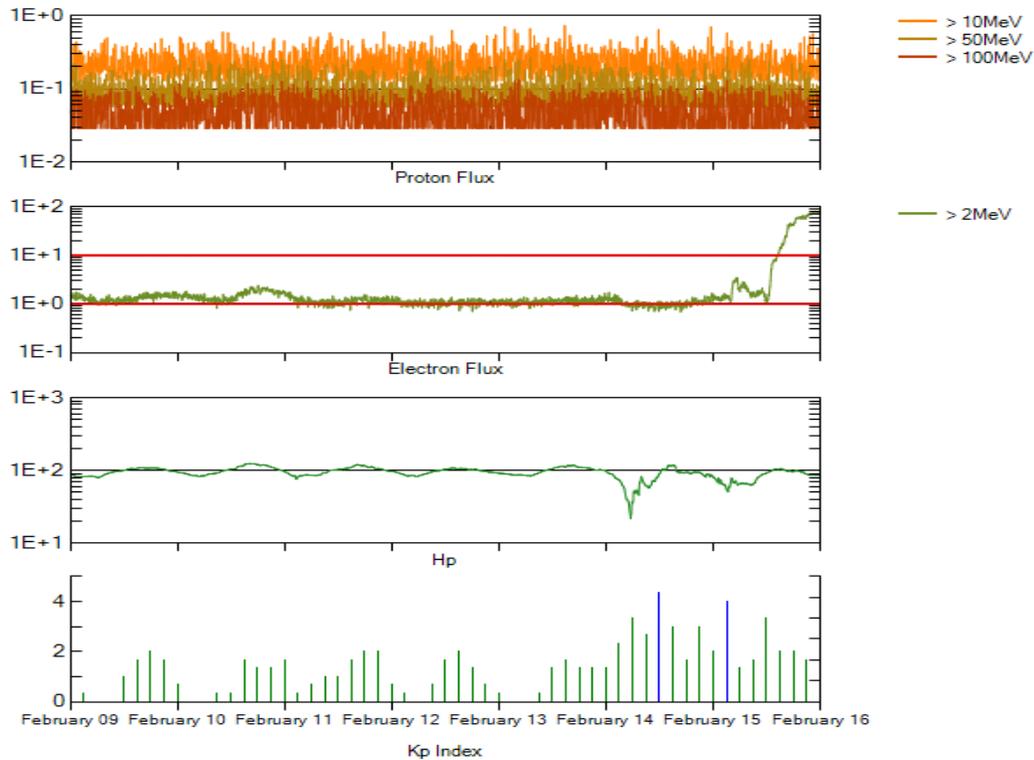
**Recent Solar Indices (preliminary)**  
**Of the observed monthly mean values**

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
<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	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
<b>2008</b>									
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			65.8		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	

**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 09 February 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/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.

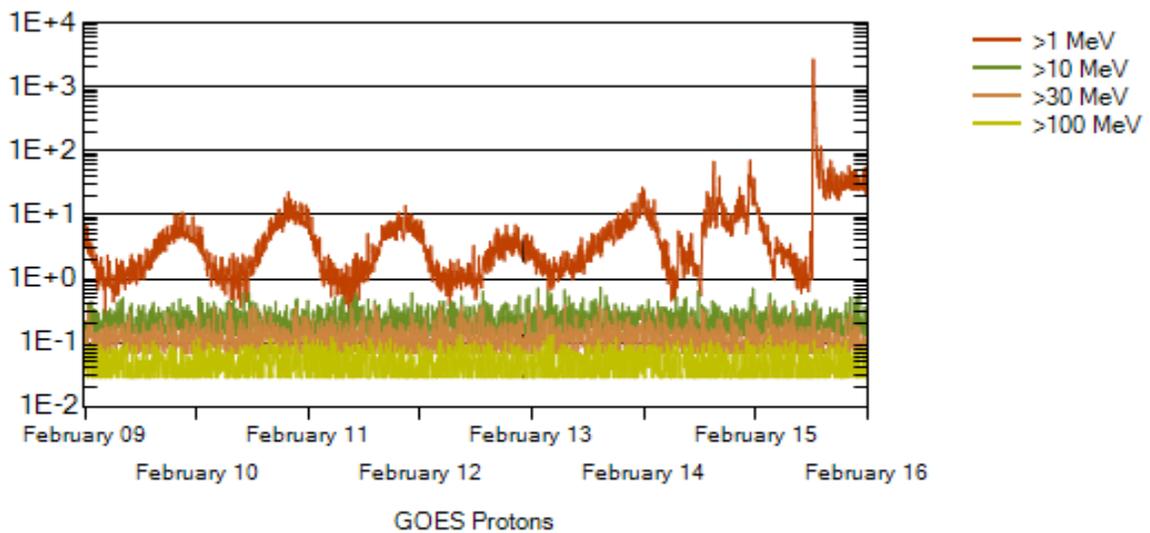
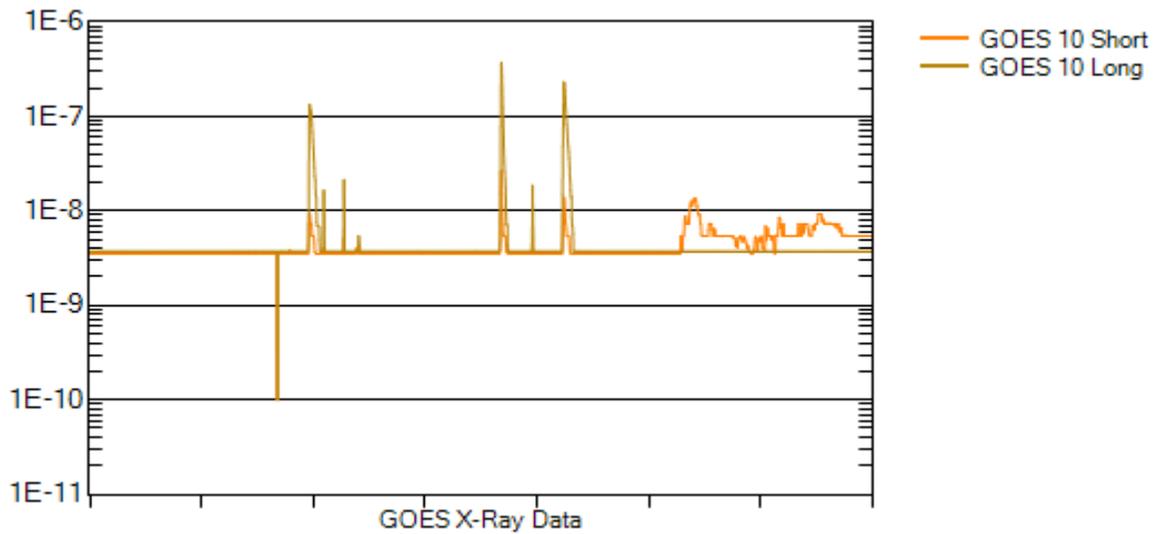
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm<sup>2</sup>-sec -sr) with energies greater than 2 MeV at GOES-11 (W135).

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<sup>2</sup>) 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 (protons/cm<sup>2</sup>-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 (protons/cm<sup>2</sup>-sec-sr) at greater than 10 MeV.

