

**Space Weather Highlights**  
**11 February – 17 February 2008**

**SEC PRF 1694**  
**19 February 2008**

Solar activity was very low with no flares were detected. The disk was spotless throughout the summary period.

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 to active levels at middle latitudes during 11 - 15 February. During the same period, high latitudes observed mostly unsettled to minor storm levels with isolated major storm periods. This activity was due to a recurrent coronal hole high speed stream that became geoeffective on 10 February. By midday on 15 February, activity decreased to mostly quiet levels at middle latitudes, and quiet to active levels at high latitudes. ACE solar wind measurements (764 km/s at 11/1029 UTC) and density (4.3 p/cc at 11/0159 UTC) both peaked early in the period. Significant changes in the IMF were also observed early in the period including increased Bt (peak 7 nT at 11/0156 UTC) and intermittent periods of southward Bz (minimum -5 nT at 11/0306 UTC). The high-speed stream began decaying early on 16 February and ended the summary period with velocities near 470 km/s.

**Space Weather Outlook**  
**20 February – 17 March 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 20 - 27 February, 29 February - 07 March, and 09 - 17 March.

The geomagnetic field is expected to be mostly quiet to unsettled during 20 - 27 February. Activity is expected to increase to unsettled to active levels during 28 February - 02 March due to a recurrent coronal hole high-speed stream. Quiet to unsettled levels are expected during 03 - 07 March as the high-speed stream subsides. Activity is expected to increase to unsettled to active levels during 08 - 13 March with minor to major storm periods possible at high latitudes due to a recurrent coronal hole high-speed stream. Quiet to unsettled conditions are expected during 14 - 17 March 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
11 February	72	0	0		0	0	0	0	0	0	0	0
12 February	72	0	0		0	0	0	0	0	0	0	0
13 February	71	0	0		0	0	0	0	0	0	0	0
14 February	71	0	0		0	0	0	0	0	0	0	0
15 February	70	0	0		0	0	0	0	0	0	0	0
16 February	70	0	0		0	0	0	0	0	0	0	0
17 February	71	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
	11 February	8.4E+6	1.6E+4	3.3E+3		1.1E+8
12 February	3.8E+6	1.6E+4	3.3E+3		2.2E+8	
13 February	2.8E+6	1.7E+4	3.8E+3		2.7E+8	
14 February	3.1E+6	1.7E+4	3.8E+3		2.2E+8	
15 February	5.5E+6	1.7E+4	3.7E+3		2.1E+8	
16 February	2.2E+6	1.7E+4	3.7E+3		3.0E+8	
17 February	2.5E+6	1.7E+4	3.9E+3		3.7E+8	

**Daily Geomagnetic Data**

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	11 February	16	3-4-3-4-4-2-1-2	31	2-3-4-6-6-4-2-2	17
12 February	6	2-2-2-2-2-2-1-1	22	1-2-3-6-5-3-2-1	11	2-3-3-3-3-3-2-2
13 February	10	3-3-3-2-3-2-1-1	26	1-1-4-5-6-4-3-1	12	2-2-3-2-4-3-2-2
14 February	10	2-2-1-2-2-1-4-3	16	2-1-3-3-5-2-3-3	15	2-1-2-1-3-1-5-4
15 February	8	2-3-3-2-2-1-1-1	26	1-2-3-6-6-3-2-1	10	2-3-3-3-3-2-1-1
16 February	8	3-3-2-2-2-1-2-0	12	1-2-3-4-4-2-2-1	9	3-3-2-2-3-2-2-1
17 February	3	0-2-1-1-1-1-1-0	6	0-2-2-3-3-0-0-0	5	1-1-2-2-2-1-1-1



### *Alerts and Warnings Issued*

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
11 Feb 1351	ALERT: Electron 2MeV Integral Flux >1000pfu	11 Feb 1330
11 Feb 1558	EXTENDED WARNING: Geomagnetic K=4	11 Feb 1228 - 2359
11 Feb 2305	EXTENDED WARNING: Geomagnetic K=4	11 Feb 1228 -1600
12 Feb 0822	ALERT: Electron 2MeV Integral Flux >1000pfu	12 Feb 0821
13 Feb 0500	ALERT: Electron 2MeV Integral Flux >1000pfu	13 Feb 0500
13 Feb 0820	ALERT: Geomagnetic K=4	13 Feb 0819
13 Feb 1422	WARNING: Geomagnetic K=4	13 Feb 1423 - 1600
13 Feb 1426	ALERT: Geomagnetic K=4	13 Feb 1425
13 Feb 1625	EXTENDED WARNING: Geomagnetic K=4	13 Feb 1423 - 2359
14 Feb 0853	ALERT: Electron 2MeV Integral Flux >1000pfu	14 Feb 0835
14 Feb 2024	ALERT: Geomagnetic K=4	14 Feb 2023
14 Feb 2214	WARNING: Geomagnetic K=4	14 Feb 2213 - 15/1600
14 Feb 2215	ALERT: Geomagnetic K=4	14 Feb 2215
15 Feb 0917	ALERT: Electron 2MeV Integral Flux >1000pfu	15 Feb 0710
16 Feb 0530	ALERT: Electron 2MeV Integral Flux >1000pfu	16 Feb 0500
17 Feb 0502	ALERT: Electron 2MeV Integral Flux >1000pfu	17 Feb 0500



**Twenty-seven Day Outlook**  
**Plot not available this week**

Date	Radio Flux 10.7 cm	Planetary A Index	Largest Kp Index	Date	Radio Flux 10.7 cm	Planetary A Index	Largest Kp Index
20 Feb	72	8	3	05 Mar	72	5	2
21	72	12	3	06	72	8	3
22	72	5	2	07	72	8	3
23	72	5	2	08	72	15	4
24	72	5	2	09	72	15	4
25	72	5	2	10	72	10	3
26	72	5	2	11	72	12	3
27	72	5	2	12	72	15	4
28	72	15	4	13	72	10	3
29	72	15	4	14	72	5	2
01 Mar	72	12	3	15	72	5	2
02	72	10	3	16	72	10	3
03	72	8	3	17	72	10	3
04	72	5	2				



***Energetic Events***

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

*No Events Observed*

***Flare List***

Date	Time			Optical	Imp / Brtns	Location Lat CMD	Rgn
	Begin	Max	End	Class.			
11 February	No Flares Observed						
12 February	No Flares Observed						
13 February	No Flares Observed						
14 February	No Flares Observed						
15 February	No Flares Observed						
16 February	No Flares Observed						
17 February	No Flares Observed						

***Region Summary***

Date	Location		Sunspot Characteristics										
	( ° Lat ° CMD)	Helio Lon	Flares				X-ray			Optical			
			Area (10 <sup>-6</sup> hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	C	M	X	S	1	2

**No Active Regions**



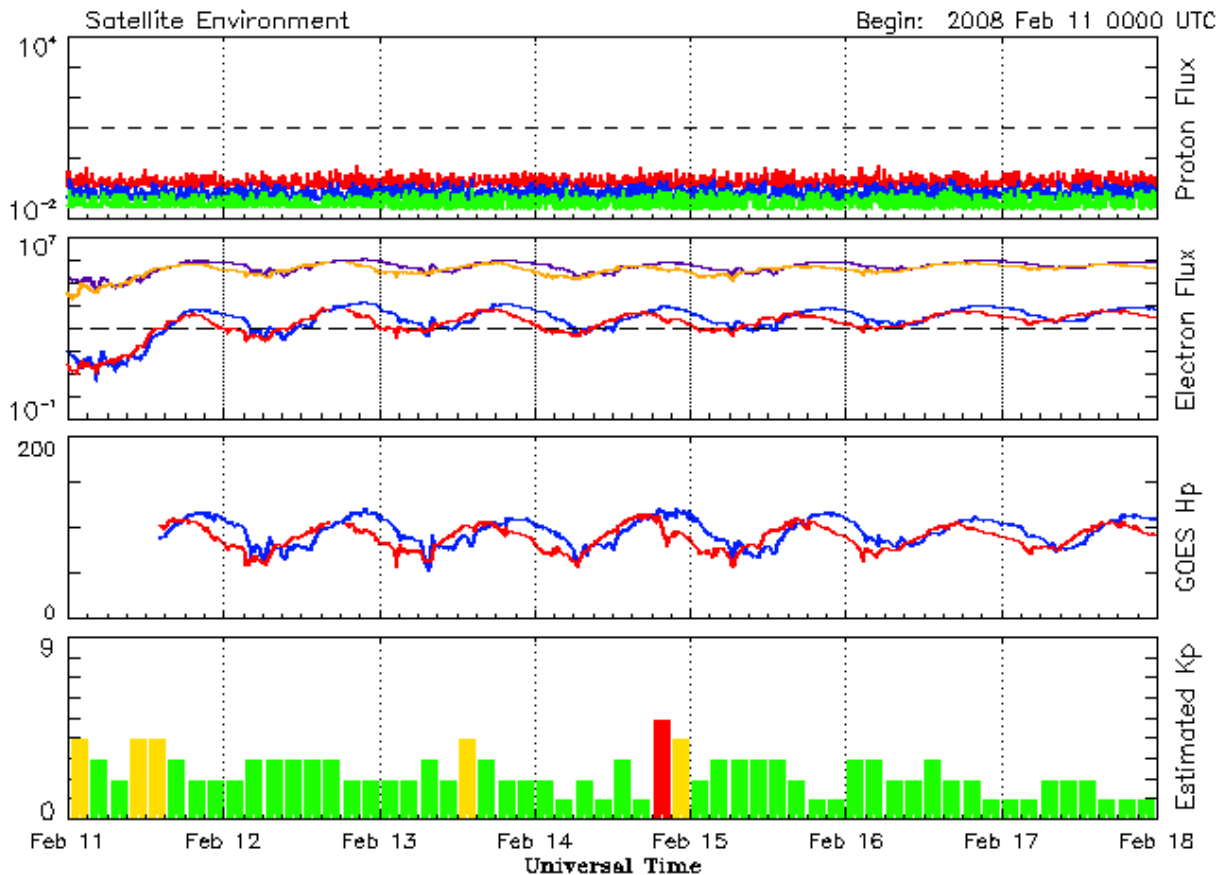
**Recent Solar Indices (preliminary)**  
**Of the observed monthly mean values**

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
<b>2006</b>									
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	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			69.2		7	
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	
<b>2008</b>									
January	5.1	3.4	0.67			72.1		6	

**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.





Updated 2008 Feb 19 20:51:28 UTC

NOAA/SWPC Boulder, CO USA

*Weekly Geosynchronous Satellite Environment Summary  
Week Beginning 10 February 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.

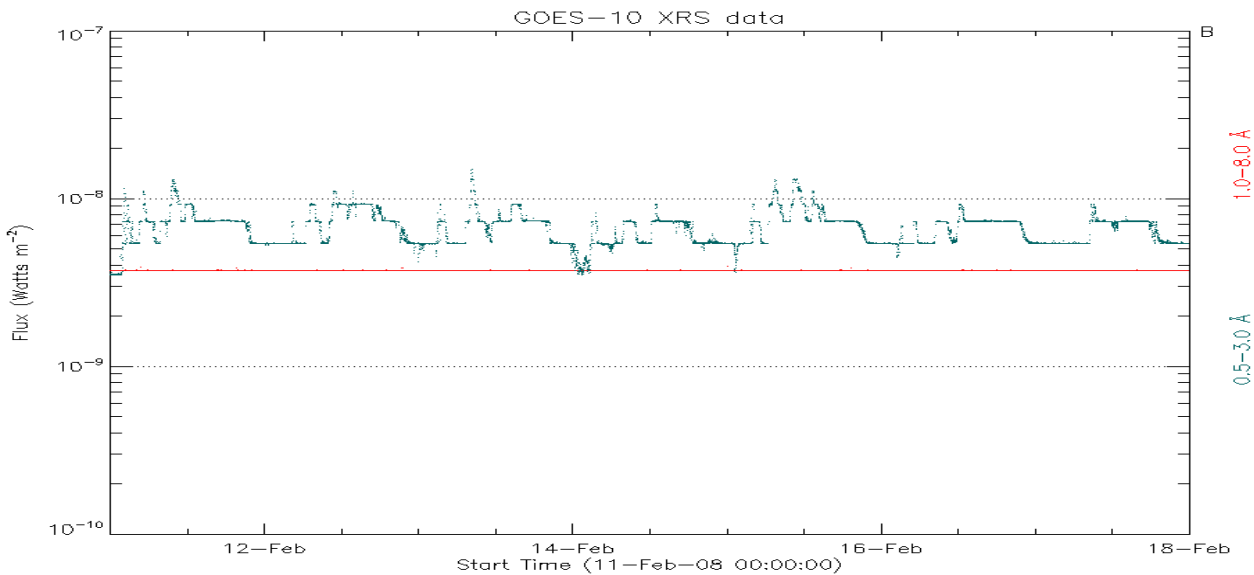
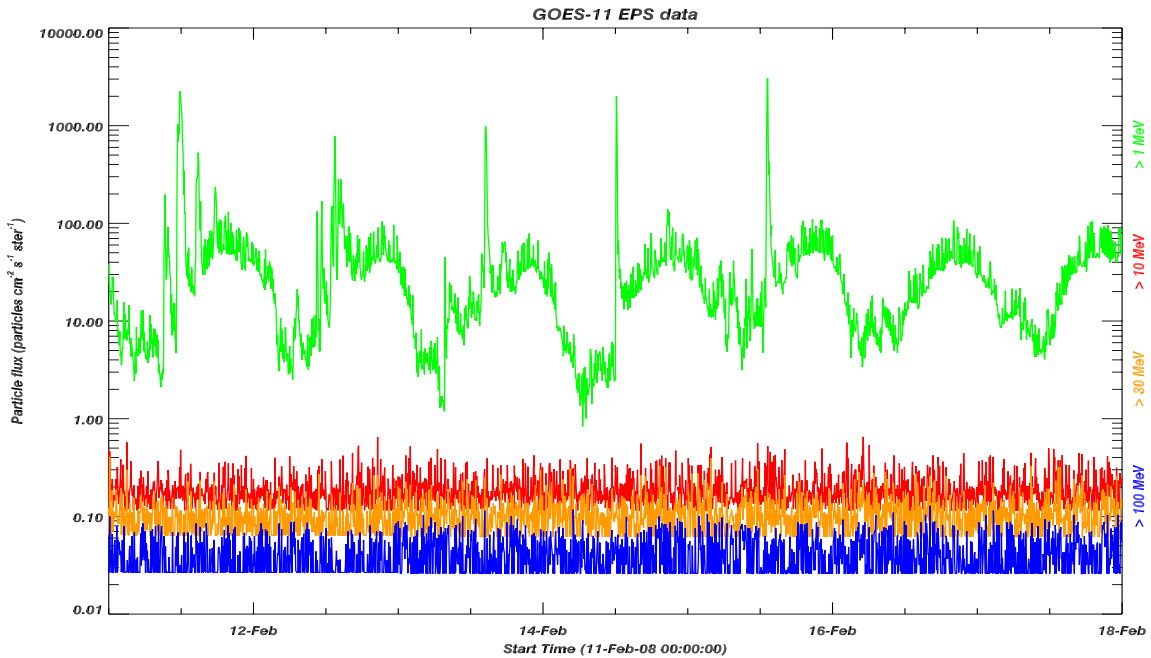
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm<sup>2</sup>-sec -sr) with energies greater than 2 MeV at GOES-12 (W075).

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.





