

**Space Weather Highlights**  
**14 January – 20 January 2008**

**SEC PRF 1690**  
**22 January 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 during each day of the period.

The geomagnetic field was unsettled to active on 14 January with minor to major storm periods detected at high latitudes. Activity decreased to quiet to unsettled levels at mid latitudes during the remainder of the period. However, active to minor storm periods were detected at high latitudes during 15 - 19 January. A brief major storm period was also detected at high latitudes on 19 January. ACE solar wind observations indicated a recurrent coronal hole high-speed stream was in progress during the period. Solar wind velocities were variable throughout the period with a range of 533 - 763 km/sec. IMF Bz was also variable throughout the period in the + 6 nT range. IMF Bt readings were elevated during the period with a peak of 8.0 nT observed at 14/0406 UTC.

**Space Weather Outlook**  
**23 January – 18 February 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 23 - 27 January and 03 - 18 February.

The geomagnetic field is expected to be quiet during 23 - 31 January. Activity is expected to increase to unsettled to active levels on 01 - 02 February due to the onset of a recurrent coronal hole high-speed stream. Quiet to unsettled conditions are expected during 03 - 04 February as the high-speed stream gradually subsides. Quiet conditions are expected during 05- 08 February. Activity is expected to increase to unsettled to active levels during 09 - 10 February due to another recurrent coronal hole high-speed stream. Quiet to unsettled conditions are expected during 11 - 13 February as coronal hole effects subside. Activity is expected to decrease to quiet levels during the rest of the period.



### 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	
14 January	75	0	0	<A1.0	0	0	0	0	0	0	0	0	0
15 January	74	0	0	<A1.0	0	0	0	0	0	0	0	0	0
16 January	73	0	0	<A1.0	0	0	0	0	0	0	0	0	0
17 January	74	0	0	<A1.0	0	0	0	0	0	0	0	0	0
18 January	71	0	0	<A1.0	0	0	0	0	0	0	0	0	0
19 January	71	0	0	<A1.0	0	0	0	0	0	0	0	0	0
20 January	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
	14 January	5.8E+6	1.7E+4	3.7E+3		3.5E+7
15 January	3.4E+6	1.7E+4	3.7E+3		1.4E+8	
16 January	3.7E+6	1.8E+4	3.8E+3		2.3E+8	
17 January	5.3E+6	1.8E+4	3.8E+3		2.9E+8	
18 January	3.5E+6	1.7E+4	3.9E+3		1.5E+8	
19 January	5.7E+6	1.7E+4	3.8E+3		2.8E+8	
20 January	3.1E+6	1.8E+4	3.9E+3		2.3E+8	

### Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	14 January	14	3-2-2-4-3-2-3-3	30	2-2-4-6-4-5-4-3	16
15 January	7	3-2-2-1-2-2-1-1	19	3-2-3-5-5-3-0-1	8	3-2-2-2-3-2-0-2
16 January	9	3-2-2-2-2-2-1-3	22	2-2-4-5-5-3-2-3	11	3-3-3-3-2-2-2-3
17 January	7	2-1-1-1-2-2-2-3	16	3-1-2-4-5-3-2-1	10	3-1-1-2-2-2-2-3
18 January	10	3-3-3-2-2-2-2-1	20	3-2-3-3-5-5-2-1	10	3-3-3-1-2-3-2-2
19 January	6	1-1-2-2-2-3-1-1	28	1-1-5-6-5-4-2-2	9	1-1-3-3-3-3-1-2
20 January	4	0-2-2-1-2-1-1-1	5	0-2-2-2-2-0-1-2	6	1-3-2-1-2-1-2-2

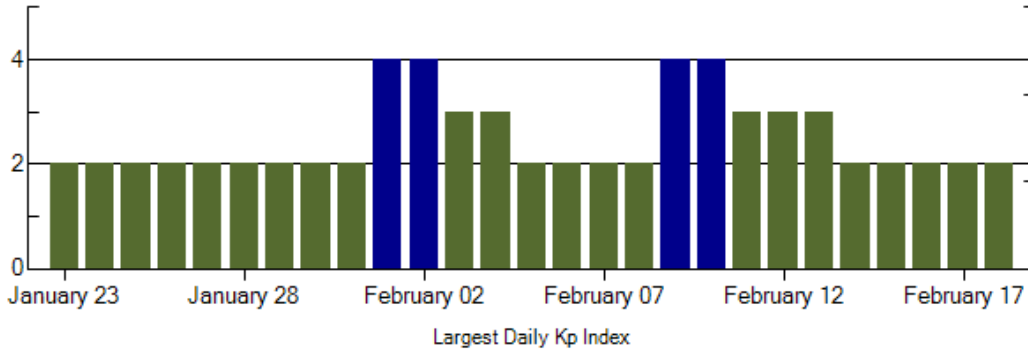
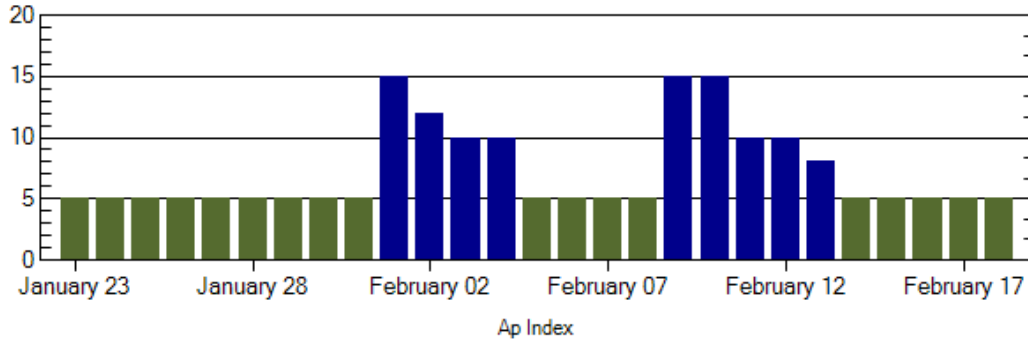
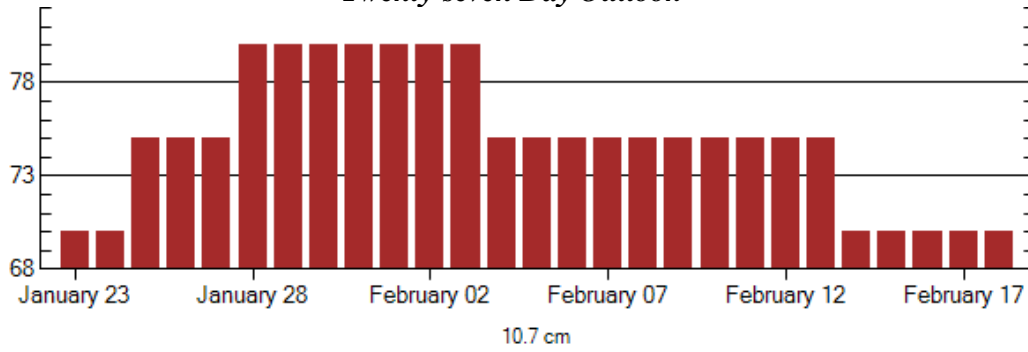


### *Alerts and Warnings Issued*

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
14 Jan 1133	WARNING: Geomagnetic K=5	14 Jan 1133 - 1400
14 Jan 1555	EXTENDED WARNING: Geomagnetic K=4	12 Jan 1555 - 14/2359
14 Jan 1758	ALERT: Electron 2MeV Integral Flux >1000pfu	14 Jan 1740
14 Jan 2359	EXTENDED WARNING: Geomagnetic K=4	12 Jan 1555 - 15/1600
15 Jan 0957	ALERT: Electron 2MeV Integral Flux >1000pfu	15 Jan 0935
15 Jan 1555	EXTENDED WARNING: Geomagnetic K=4	12 Jan 1555 - 15/2359
16 Jan 0851	ALERT: Electron 2MeV Integral Flux >1000pfu	16 Jan 0830
16 Jan 1053	ALERT: Geomagnetic K=4	16 Jan 1052
17 Jan 0514	ALERT: Electron 2MeV Integral Flux >1000pfu	17 Jan 0500
17 Jan 1712	WARNING: Geomagnetic K=4	17 Jan 1712 - 2359
18 Jan 0242	ALERT: Geomagnetic K=4	18 Jan 0241
18 Jan 0809	WARNING: Geomagnetic K=4	18 Jan 0809 - 1600
18 Jan 0842	ALERT: Geomagnetic K=4	18 Jan 0820
18 Jan 1033	ALERT: Electron 2MeV Integral Flux >1000pfu	18 Jan 1010
18 Jan 1556	EXTENDED WARNING: Geomagnetic K=4	18 Jan 0809 - 2359
19 Jan 0923	ALERT: Electron 2MeV Integral Flux >1000pfu	19 Jan 0745
19 Jan 1134	ALERT: Geomagnetic K=4	19 Jan 1134
20 Jan 0625	ALERT: Electron 2MeV Integral Flux >1000pfu	20 Jan 0610



### 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
23 Jan	70	5	2	06 Feb	75	5	2
24	70	5	2	07	75	5	2
25	75	5	2	08	75	5	2
26	75	5	2	09	75	15	4
27	75	5	2	10	75	15	4
28	80	5	2	11	75	10	3
29	80	5	2	12	75	10	3
30	80	5	2	13	75	8	3
31	80	5	2	14	70	5	2
01 Feb	80	15	4	15	70	5	2
02	80	12	4	16	70	5	2
03	80	10	3	17	70	5	2
04	75	10	3	18	70	5	2
05	75	5	2				



### ***Energetic Events***

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

*No Events Observed*

### ***Flare List***

Date	Time			Optical	Imp / Brtns	Location	Rgn
	Begin	Max	End	Class.		Lat CMD	
14 January	No Flares Observed						
15 January	No Flares Observed						
16 January	No Flares Observed						
17 January	No Flares Observed						
18 January	No Flares Observed						
19 January	No Flares Observed						
20 January	No Flares Observed						

### ***Region Summary***

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

No Active Regions



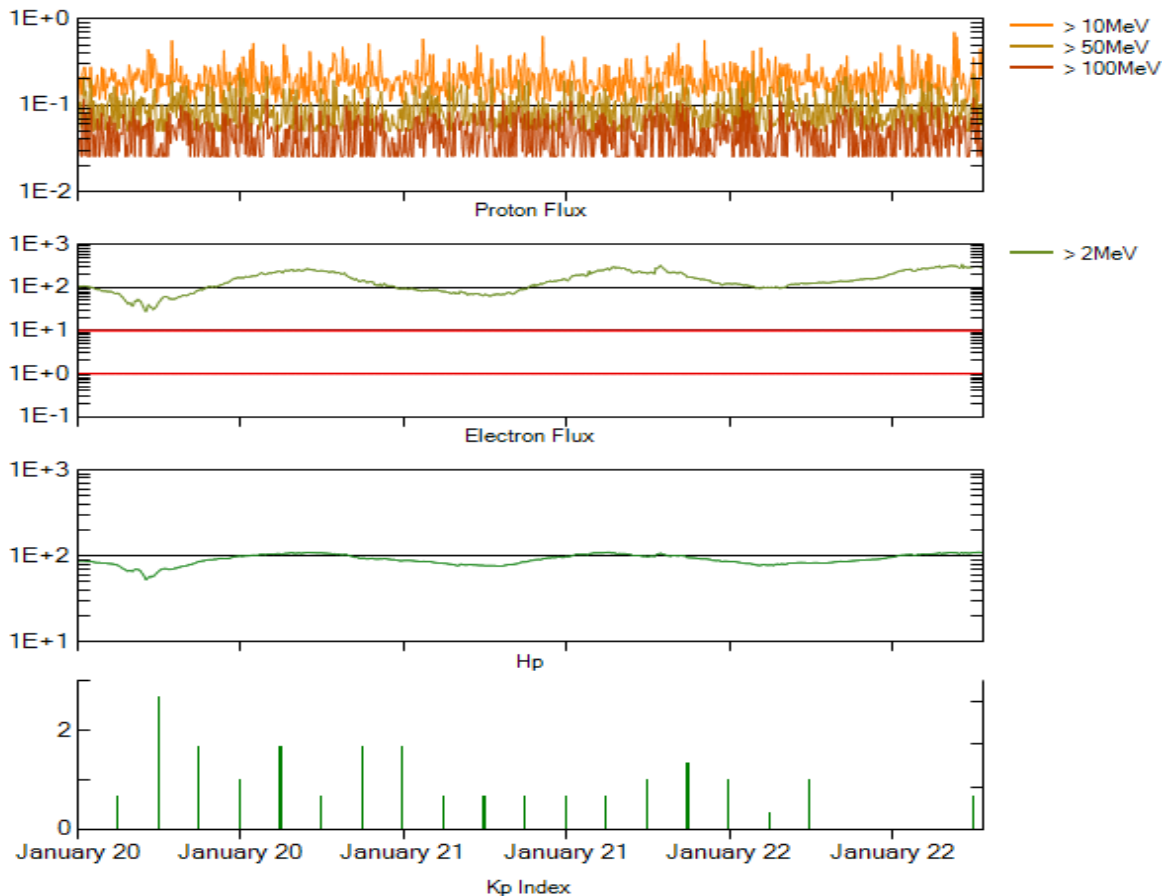
**Recent Solar Indices (preliminary)**  
**Of the observed monthly mean values**

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
<b>2006</b>									
January	28.0	15.4	0.55	37.2	20.8	83.8	84.0	6	9.9
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			71.6		8	
August	9.9	6.2	0.63			69.2		7	
September	4.8	2.4	0.50			67.1		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	

**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 20 January 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.

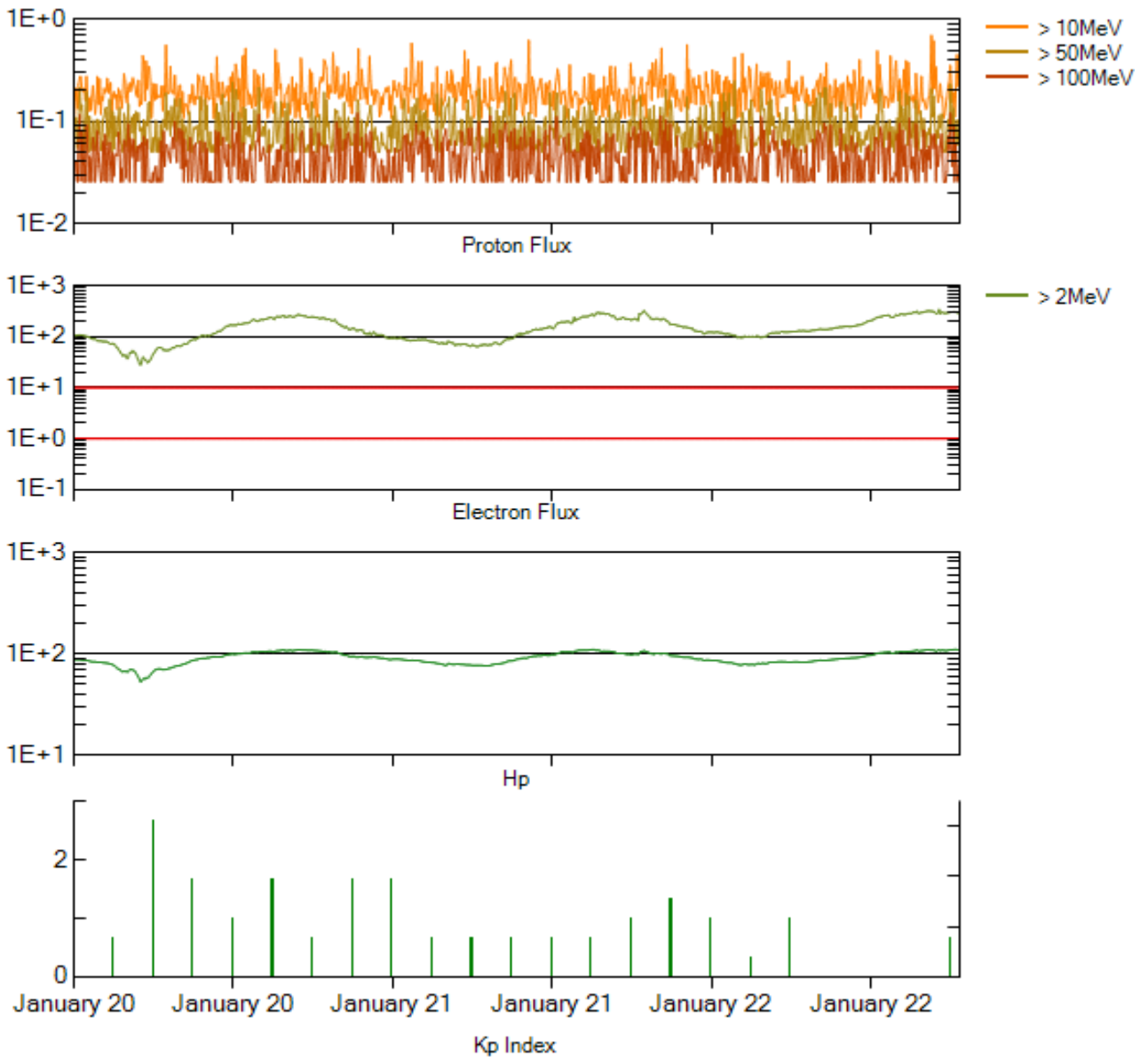
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm<sup>2</sup>-sec -sr) with energies greater than 2 MeV at GOES-12 (W075).

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 (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.

