

Space Weather Highlights
21 January – 27 January 2008

SEC PRF 1691
29 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 at mostly quiet levels during 21 - 24 January. Activity increased to active levels on 25 January. Activity decreased to mostly quiet levels for the balance of the period. ACE solar wind measurements indicated a recurrent coronal hole high-speed stream (HSS) was in progress at the start of the period. Peak velocity during this stream was 606.7 km/sec at 21/0107 UTC followed by a gradual decrease through 22 January. A solar sector boundary crossing (away (+) to toward (-)) occurred during 22 - 23 January associated with increased proton densities (peak 9.6 p/cc at 23/2038 UTC) and increased IMF Bt (peak 5.9 nT at 22/1839 UTC). Another solar sector boundary crossing (toward (-) to away (+)) was detected on 24 January in advance of a coronal hole-related co-rotating interaction region (CIR) and HSS. The CIR began late on 24 January and was associated with an increase in proton densities (peak 17.9 p/cc at 24/1302 UTC) and IMF changes including increased Bt (peak 10.2 nT at 25/0216 UTC) and intermittent periods of southward Bz (minimum -7.2 nT at 25/0458 UTC). Velocities associated with the HSS increased during 25 January and reached a peak of 574.1 km/sec at 25/0731 UTC, then gradually decreased during the rest of the period.

Space Weather Outlook
30 January – 25 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 03 - 24 February.

The geomagnetic field is expected to be quiet during 30 - 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 - 05 February as the high-speed stream gradually subsides. Quiet conditions are expected during 06 - 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 ⁻⁶ hemi.)	X-ray Background	Flares							
					X-ray Flux			Optical				
					C	M	X	S	1	2	3	4
21 January	72	0	0	<A1.0	0	0	0	0	0	0	0	0
22 January	70	0	0	<A1.0	0	0	0	0	0	0	0	0
23 January	71	0	0	<A1.0	0	0	0	0	0	0	0	0
24 January	71	0	0	<A1.0	0	0	0	0	0	0	0	0
25 January	71	0	0	<A1.0	0	0	0	0	0	0	0	0
26 January	73	0	0	<A1.0	0	0	0	0	0	0	0	0
27 January	72	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
	21 January	2.3E+6	1.8E+4	4.2E+3		2.6E+8
22 January	2.3E+6	1.8E+4	4.1E+3		3.2E+8	
23 January	3.0E+6	1.9E+4	4.2E+3		3.3E+8	
24 January	2.9E+6	1.8E+4	4.0E+3		1.8E+8	
25 January	2.1E+6	1.8E+4	4.1E+3		5.4E+7	
26 January	1.7E+6	1.8E+4	4.3E+3		5.8E+7	
27 January	2.7E+6	1.9E+4	4.0E+3		7.3E+7	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	21 January	3	0-1-1-1-1-1-2-1	6	0-1-2-3-3-1-2-0	4
22 January	2	0-1-0-0-0-1-1-1	0	0-0-0-0-0-1-0-0	2	0-1-0-0-0-1-0-1
23 January	3	0-0-1-1-2-2-1-1	1	0-0-0-0-0-0-1-1	3	0-0-1-0-0-1-1-2
24 January	3	2-1-1-1-1-1-1-0	4	0-0-2-2-3-1-1-0	5	1-1-2-1-2-1-2-2
25 January	8	2-3-3-2-1-1-2-1	8	1-3-3-3-1-1-1-2	11	2-4-3-2-1-1-3-2
26 January	6	3-2-1-2-1-2-0-1	8	2-1-1-4-3-1-2-0	5	2-2-1-2-2-1-1-1
27 January	2	1-0-0-0-0-1-1-1	2	0-0-0-0-1-1-1-1	2	1-0-0-0-0-1-1-2

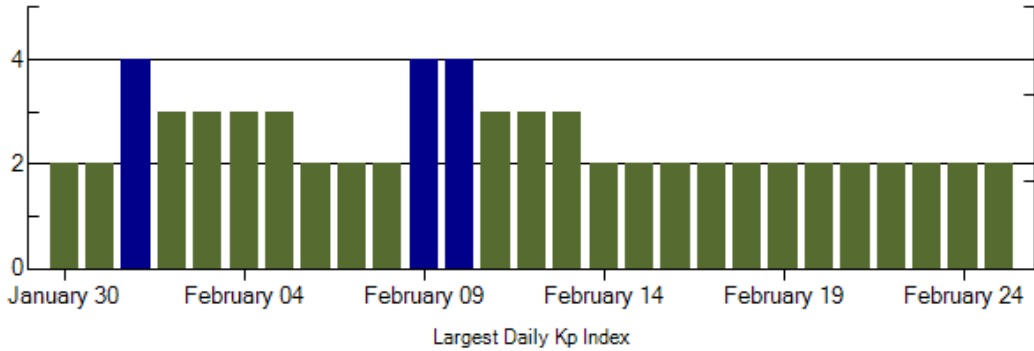
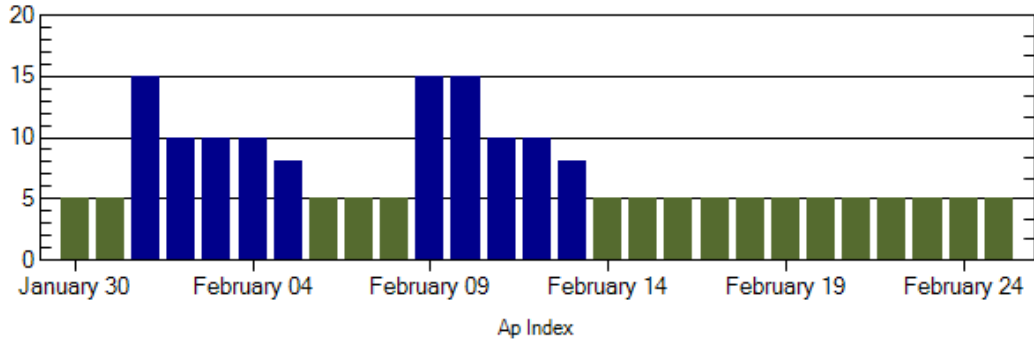
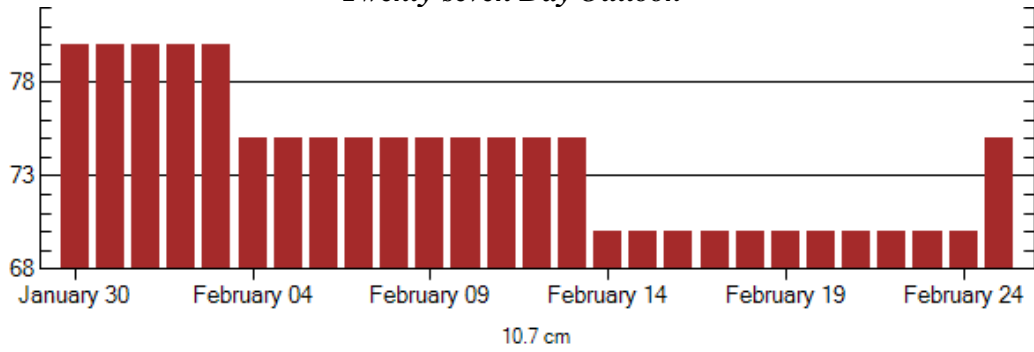


Alerts and Warnings Issued

<u>Date & Time of Issue</u>	<u>Type of Alert or Warning</u>	<u>Date & Time of Event UTC</u>
21 Jan 0506	ALERT: Electron 2MeV Integral Flux >1000pfu	21 Jan 0500
22 Jan 0503	ALERT: Electron 2MeV Integral Flux >1000pfu	22 Jan 0500
23 Jan 0504	ALERT: Electron 2MeV Integral Flux >1000pfu	23 Jan 0500
24 Jan 0501	ALERT: Electron 2MeV Integral Flux >1000pfu	24 Jan 0500
25 Jan 0229	WARNING: Geomagnetic K=4	25 Jan 0230 - 1600
25 Jan 0553	ALERT: Geomagnetic K=4	25 Jan 0552
25 Jan 1422	ALERT: Electron 2MeV Integral Flux >1000pfu	25 Jan 1400
26 Jan 1413	ALERT: Electron 2MeV Integral Flux >1000pfu	26 Jan 1400
27 Jan 1251	ALERT: Electron 2MeV Integral Flux >1000pfu	27 Jan 1245



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
30 Jan	80	5	2	13 Feb	75	8	3
31	80	5	2	14	75	5	2
01 Feb	80	15	4	15	75	5	2
02	80	10	3	16	70	5	2
03	80	10	3	17	70	5	2
04	75	10	3	18	70	5	2
05	75	8	3	19	70	5	2
06	75	5	2	20	70	5	2
07	75	5	2	21	70	5	2
08	75	5	2	22	70	5	2
09	75	15	4	23	70	5	2
10	75	15	4	24	70	5	2
11	75	10	3	25	75	5	2
12	75	10	3				



Energetic Events

Date	Time		X-ray		Optical Information			Peak		Sweep Freq
	Begin	Max	Max	Class	Flux	Imp/	Location	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.			
21 January	No Flares Observed						
22 January	No Flares Observed						
23 January	No Flares Observed						
24 January	No Flares Observed						
25 January	No Flares Observed						
26 January	No Flares Observed						
27 January	No Flares Observed						

Region Summary

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

No Active Regions



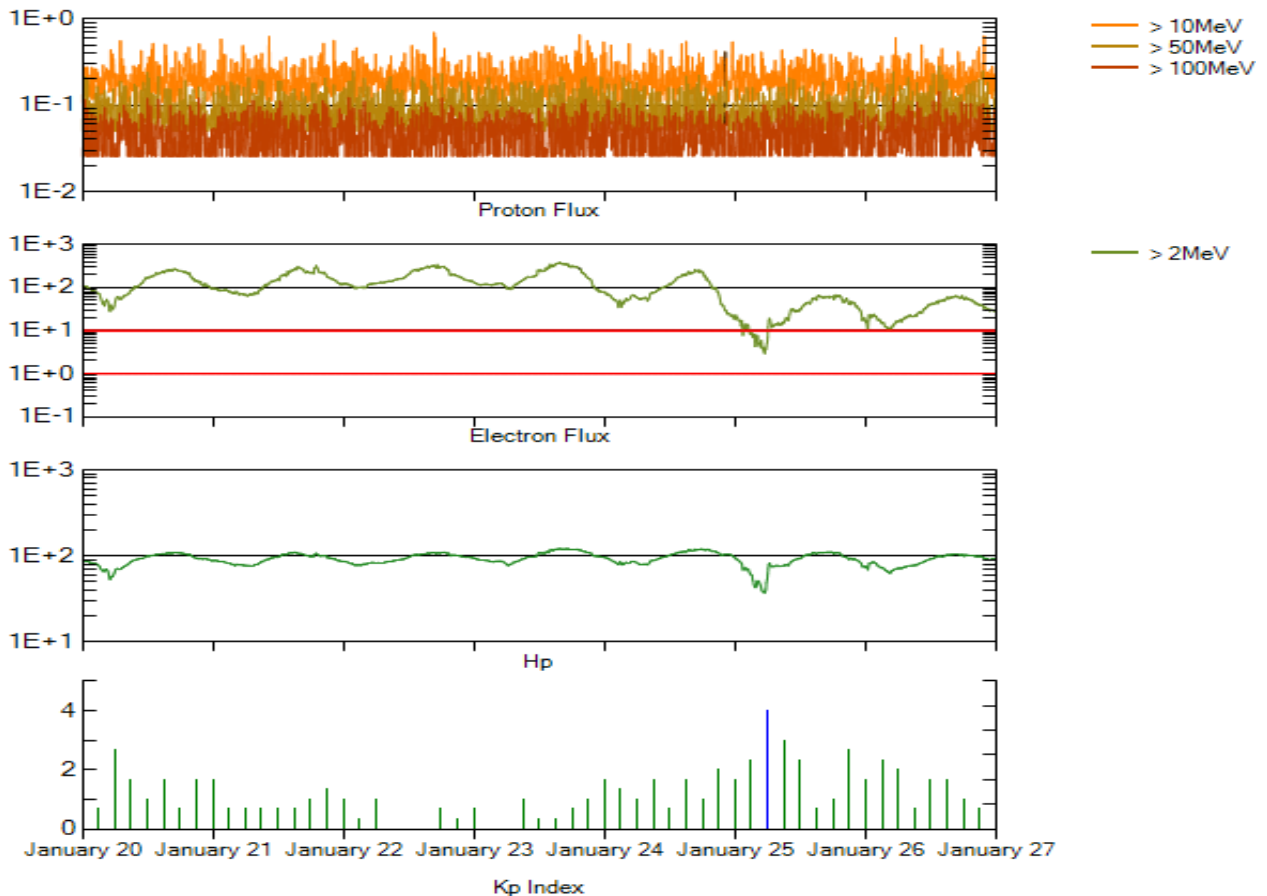
Recent Solar Indices (preliminary)
Of the observed monthly mean values

Month	Sunspot Numbers			Radio Flux		Geomagnetic			
	Observed SEC	values RI	Ratio RI/SEC	Smooth SEC	values RI	*Penticton 10.7 cm	Smooth Value	Planetary Ap	Smooth Value
2006									
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
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			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/cm²-sec -sr) as measured by GOES-11 (W135) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

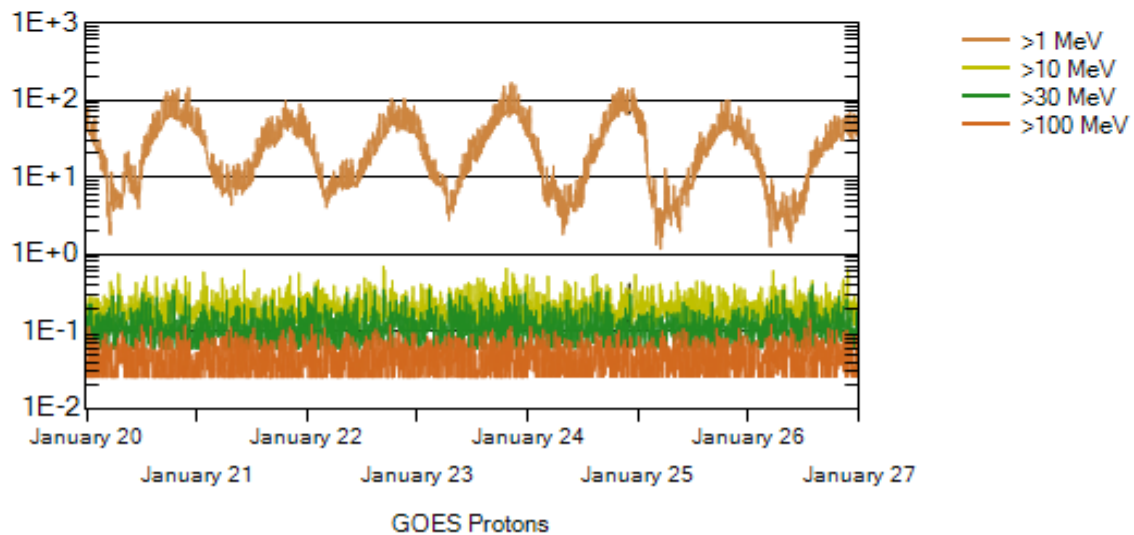
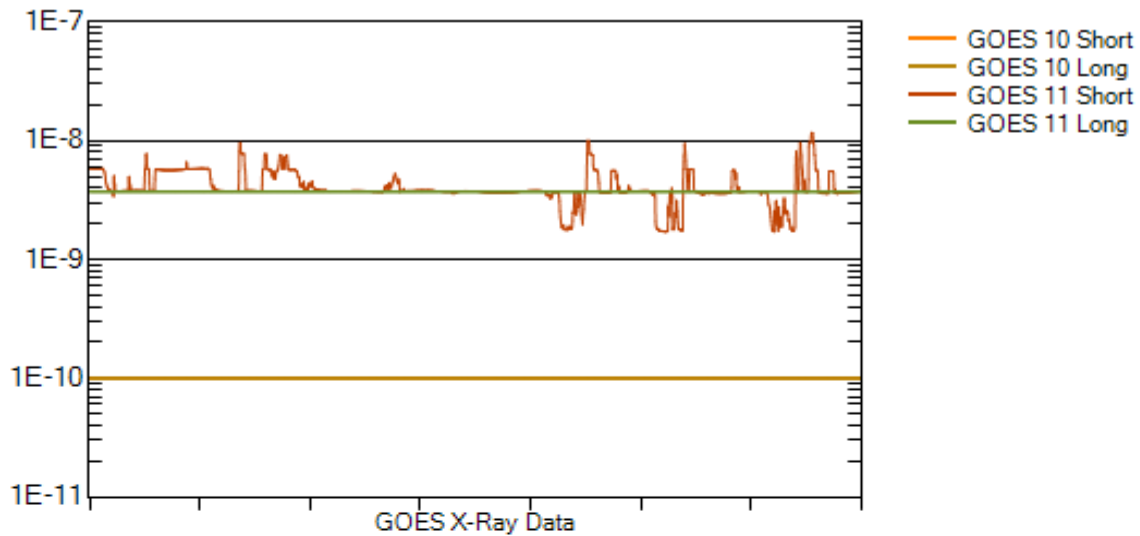
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV at GOES-12 (W075).

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.

