

Space Weather Highlights
12 February – 18 February 2007

SEC PRF 1642
20 February 2007

Solar activity was at very low to low levels. Isolated, optically uncorrelated B- and C-class flares occurred during the period.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit reached high levels during 15 – 18 February.

The geomagnetic field was disturbed during 12 – 16 February due to a recurrent coronal hole high-speed stream. Activity ranged from quiet to minor storm levels during the disturbance with a brief period of major storm at high latitudes on 14 February. ACE near-real-time solar wind data indicated the recurrent high-speed stream commenced on 12 February accompanied by a brief density increase (peak 51 p/cc at 12/1147 UTC) and a solar sector boundary shift. Velocity reached a peak of 778 km/s at 14/0830 UTC. Maximum IMF Bz variations occurred during 12 – 13 February with a peak southward Bz of minus 11 nT at 13/1558 UTC. Field activity decreased to quiet to unsettled levels during 17 – 18 February as coronal hole effects subsided.

Space Weather Outlook
21 February – 19 March 2007

Solar activity is expected to be at very low to low levels.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to reach high levels on 21 – 24 February, 26 February – 04 March; and again during 07 – 19 March.

The geomagnetic field is expected to be at quiet levels during 21 – 24 February. Field activity is expected to increase to unsettled to minor storm levels during 25 – 27 February (with major storm periods likely at high latitudes) due to a recurrent high-speed stream. Quiet to unsettled conditions are expected during 28 February – 11 March. Another recurrent coronal hole high-speed stream is expected to disturb the field during 12 – 13 March with unsettled to minor storm conditions expected. Quiet to unsettled conditions are 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
12 February	74	0	0	<A1.0	0	0	0	0	0	0	0	0
13 February	73	0	0	<A1.0	0	0	0	0	0	0	0	0
14 February	73	0	0	<A1.0	0	0	0	0	0	0	0	0
15 February	74	0	0	<A1.0	0	0	0	0	0	0	0	0
16 February	75	12	60	<A1.0	1	0	0	0	0	0	0	0
17 February	75	11	20	<A1.0	0	0	0	0	0	0	0	0
18 February	76	12	40	<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
12 February	1.5E+6	1.9E+4	4.2E+3		7.6E+7	
13 February	1.4E+6	1.7E+4	3.8E+3		1.4E+6	
14 February	1.9E+6	1.7E+4	3.6E+3		1.6E+7	
15 February	5.6E+6	1.7E+4	3.9E+3		1.1E+8	
16 February	3.5E+6	1.6E+4	3.8E+3		2.9E+8	
17 February	2.7E+6	1.7E+4	4.1E+3		3.6E+8	
18 February	2.2E+6	1.7E+4	3.7E+3		3.0E+8	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg			High Latitude College			Estimated Planetary	
	A	K-indices		A	K-indices		A	K-indices
12 February	4	0-1-0-1-2-2-2-2		11	0-0-0-4-4-4-2-1		7	0-1-0-2-3-3-2-3
13 February	13	2-2-3-1-2-2-2-5		18	2-0-1-2-4-5-2-5		17	2-2-2-1-1-4-4-5
14 February	16	3-3-4-4-2-3-3-2		29	4-3-4-6-4-3-4-3		18	4-3-3-3-3-3-4-2
15 February	15	2-5-2-3-3-3-2-2		16	2-3-2-5-4-3-2-1		11	2-4-1-2-2-2-3-2
16 February	6	3-2-1-0-1-1-2-2		9	1-1-3-2-4-2-1-1		6	1-2-2-1-1-1-2-3
17 February	7	2-3-1-1-1-1-1-3		7	3-2-1-1-1-3-1-2		8	2-3-1-1-1-2-1-3
18 February	3	2-0-1-1-1-1-1-0		7	1-1-1-3-3-3-1-0		5	1-0-1-1-2-2-1-2

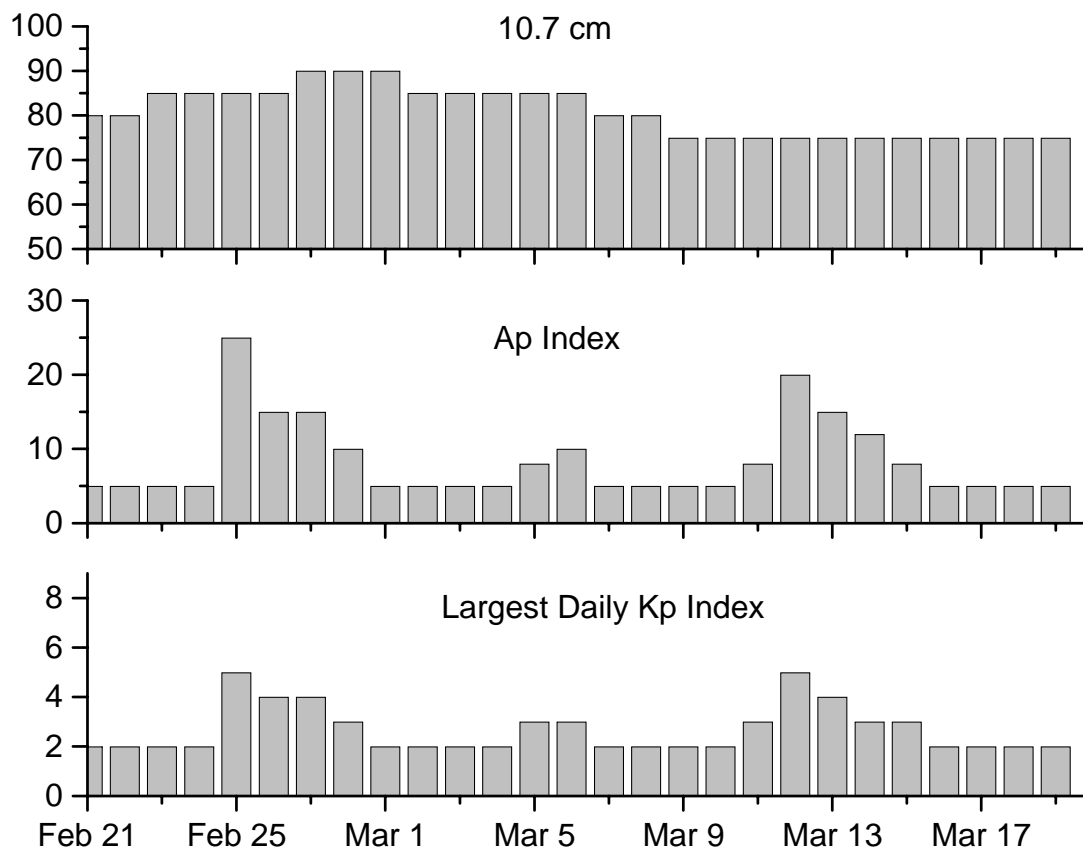


Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
12 Feb 0846	ALERT: Electron 2MeV Integral Flux >1000pfu	12 Feb 0830
12 Feb 1724	WARNING: Geomagnetic K=4	12 Feb 1725 - 2359
12 Feb 1724	ALERT: Geomagnetic K=4	12 Feb 1724
12 Feb 2313	EXTENDED WARNING: Geomagnetic K=4	12 Feb 1725 - 13/1600
13 Feb 1619	EXTENDED WARNING: Geomagnetic K=4	12 Feb 1725 - 13/2359
13 Feb 2325	WARNING: Geomagnetic K=5	13 Feb 2326 - 14/1600
14 Feb 1554	EXTENDED WARNING: Geomagnetic K=4	12 Feb 1725 - 14/2359
14 Feb 2344	EXTENDED WARNING: Geomagnetic K=4	12 Feb 1725 - 15/1600
15 Feb 0404	WARNING: Geomagnetic K=5	15 Feb 0405 - 15/1600
15 Feb 0407	ALERT: Geomagnetic K=5	15 Feb 0406
15 Feb 1312	ALERT: Electron 2MeV Integral Flux >1000pfu	15 Feb 1250
15 Feb 1554	EXTENDED WARNING: Geomagnetic K=4	12 Feb 1725 - 15/2359
15 Feb 2354	EXTENDED WARNING: Geomagnetic K=4	12 Feb 1725 - 16/1600
16 Feb 0625	ALERT: Electron 2MeV Integral Flux >1000pfu	16 Feb 0610
17 Feb 0520	ALERT: Electron 2MeV Integral Flux >1000pfu	17 Feb 0500
18 Feb 0502	ALERT: Electron 2MeV Integral Flux >1000pfu	18 Feb 0500



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
21 Feb	80	5	2	07 Mar	80	5	2
22	80	5	2	08	80	5	2
23	85	5	2	09	75	5	2
24	85	5	2	10	75	5	2
25	85	25	5	11	75	8	3
26	85	15	4	12	75	20	5
27	90	15	4	13	75	15	4
28	90	10	3	14	75	12	3
01 Mar	90	5	2	15	75	8	3
02	85	5	2	16	75	5	2
03	85	5	2	17	75	5	2
04	85	5	2	18	75	5	2
05	85	8	3	19	75	5	2
06	85	10	3				



Energetic Events

Date	Time		X-ray		Optical Information			Peak		Sweep Freq
	$\frac{1}{2}$		Integ		Imp/	Location	Rgn	Radio Flux		Intensity
	Begin	Max	Max	Class	Flux	Brtns	Lat CMD	#	245 2695	II IV

No Events Observed

Flare List

Date	Time			Optical X-ray Class.	Imp / Brtns	Location Lat CMD	Rgn
	Begin	Max	End				
12 February	No Flares Observed						
13 February	No Flares Observed						
14 February	No Flares Observed						
15 February	1455	1459	1503	B1.2			
16 February	0150	0156	0159	C1.7			
17 February	No Flares Observed						
18 February	1929	1932	1937	B8.3			

Region Summary

Location			Sunspot Characteristics											
Date	Helio		Flares					X-ray			Optical			
			Area	Extent	Spot	Spot	Mag							
	(° Lat ° CMD)	Lon	(10 ⁻⁶ hemi)	(helio)	Class	Count	Class	C	M	X	S	1	2	3

Region 942

16 Feb S13E69	131	0060	03	Cao	002	B
17 Feb S11E55	132	0020	01	Hsx	001	A
18 Feb S12E41	133	0040	03	Cso	002	B

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 133

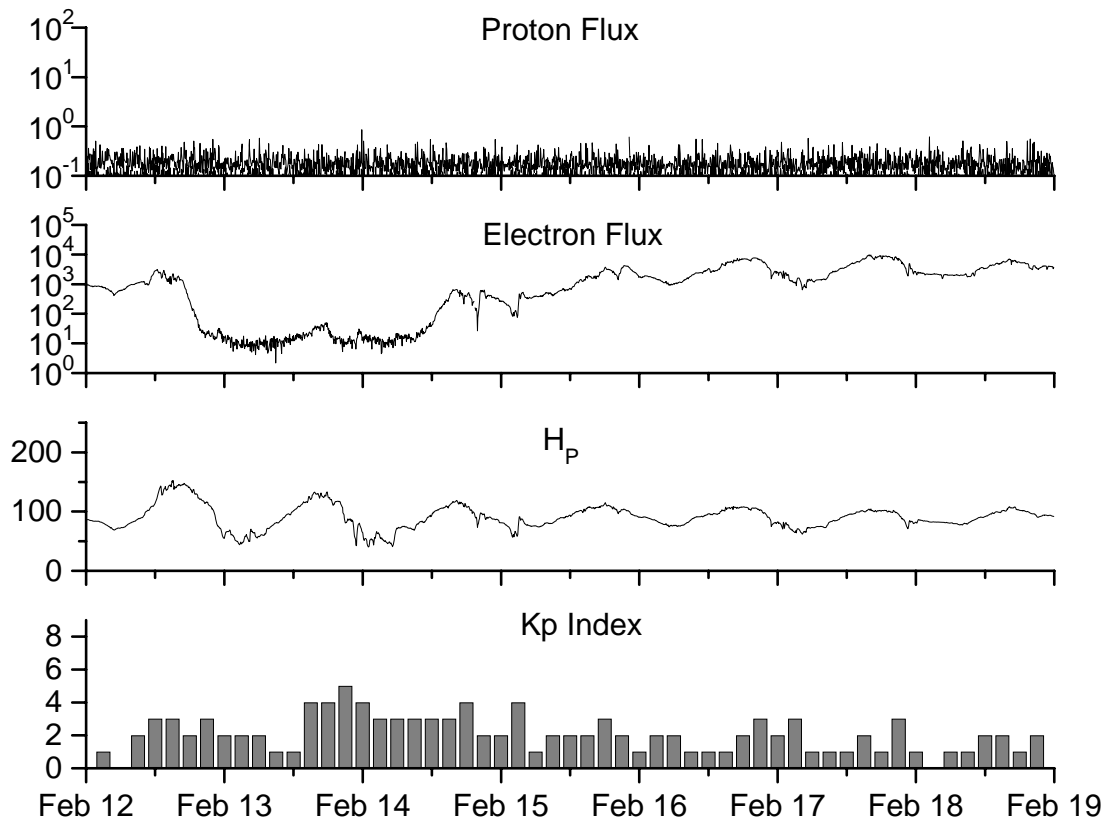


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

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
2005									
February	45.4	29.1	0.64	56.4	34.0	97.3	98.5	11	14.6
March	41.0	24.8	0.60	55.8	33.6	90.0	97.2	12	15.3
April	41.5	24.4	0.59	52.6	31.7	85.9	95.5	12	15.7
May	65.4	42.6	0.65	48.3	29.0	99.5	93.2	20	14.8
June	59.8	39.6	0.66	47.9	28.9	93.7	91.9	13	13.9
July	71.0	39.9	0.56	48.1	29.2	96.6	90.9	16	13.1
August	65.6	36.4	0.55	45.4	27.5	90.7	89.3	16	12.2
September	39.2	22.1	0.56	42.9	25.9	90.8	87.8	21	11.8
October	13.0	8.5	0.65	42.6	25.5	76.7	87.4	7	11.6
November	32.2	18.0	0.56	42.1	24.9	86.3	86.7	8	11.1
December	62.6	41.2	0.66	40.1	23.0	90.8	85.4	7	10.4
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			79.0		9	
September	25.2	14.5	0.58			77.8		8	
October	15.7	10.4	0.66			74.3		8	
November	31.5	21.5	0.68			86.4		9	
December	22.2	13.6	0.61			84.3		15	
2007									
January	26.6	16.9	0.64			83.5		5	

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 12 February 2007

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.

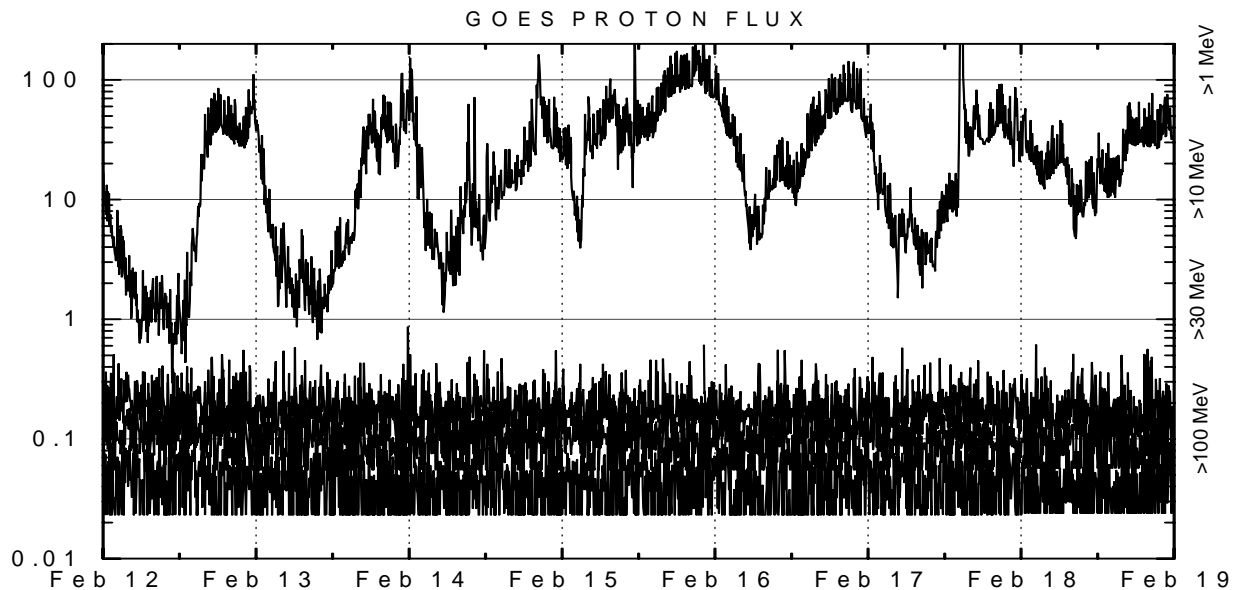
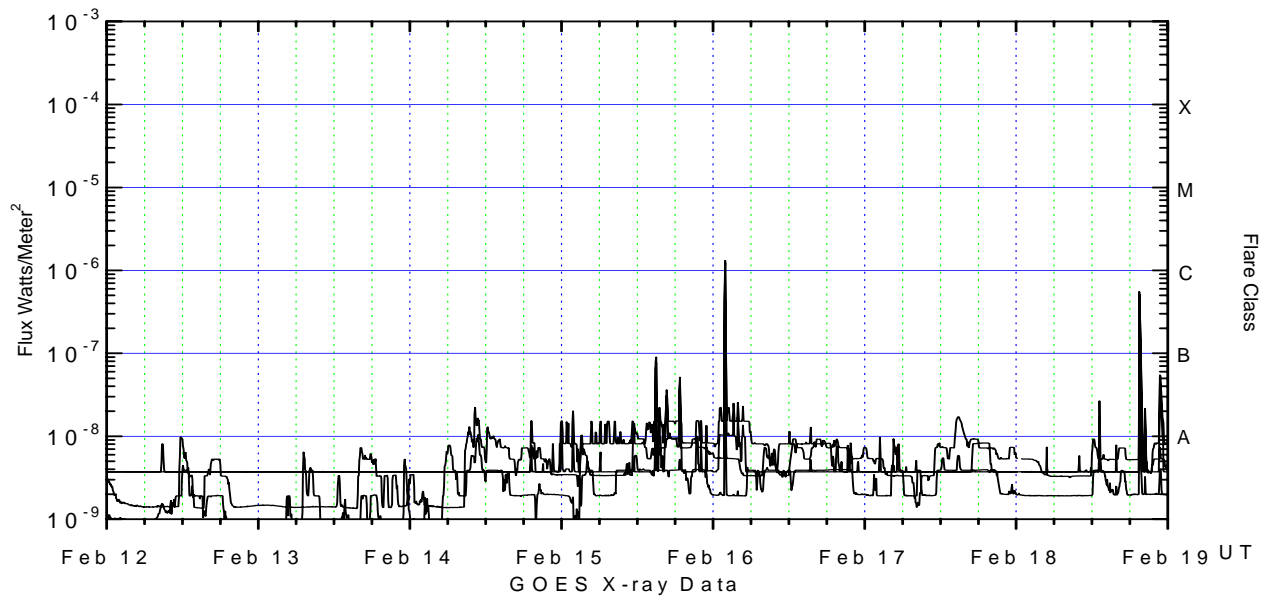
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec-sr) with energies greater than 2 MeV at GOES-12 (W075).

H_p 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.

K_p 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 K_p 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 K_p 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 12 (W075) 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.

