

Space Weather Highlights
01 – 07 January 2007

SEC PRF 1636
09 January 2007

Solar activity was very low. Region 933 (S04, L=033, class/area, Cho/310 on 03 January) produced isolated B-class flares during 01 – 02 January. Isolated optically-unassociated B- class flares occurred during 02 – 04 January. No flares were observed during the remainder of the period.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at high levels throughout the period.

Geomagnetic field activity was at quiet to active levels during 01 – 05 January with periods of minor to major storming observed at high latitudes (a brief period of severe storming also occurred at high latitudes on 03 January). ACE solar wind data indicated this activity was associated with a recurrent coronal hole high-speed solar wind stream. Solar wind velocities began to increase on 01 January and remained enhanced until 07 January with a peak velocity of 720 km/sec observed at 03/1340Z. Maximum interplanetary field variations associated with the high-speed stream occurred on 01 January with maximum total field intensity of 15.8 nT at 01/2240Z and maximum southward Bz of - 10.2 nT at 01/2258Z.

Space Weather Outlook
10 January 2007 – 05 February 2007

Solar activity is expected to be at very low to low levels until 14 January. Very low activity is expected during 15 – 24 January. Very low to low activity is expected for the rest of the period.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at high levels during the period.

The geomagnetic field is expected to be at quiet to unsettled levels through 15 January. An increase to unsettled to active levels is expected during 16 – 19 January due to a recurrent coronal hole high-speed solar wind stream. Quiet to unsettled conditions are expected during 20 – 28 January. Activity is expected to increase to unsettled to minor storm levels during 29 – 31 January due to another recurrent coronal hole high-speed solar wind stream. 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
01 January	87	28	260	A4.3	0	0	0	0	0	0	0	0
02 January	90	31	360	A5.1	0	0	0	0	0	0	0	0
03 January	81	38	570	A5.5	0	0	0	0	0	0	0	0
04 January	89	36	520	A3.6	0	0	0	0	0	0	0	0
05 January	89	43	510	A3.1	0	0	0	0	0	0	0	0
06 January	87	47	420	A2.5	0	0	0	0	0	0	0	0
07 January	87	46	450	A2.2	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
01 January	5.5E+6	1.7E+4	4.3E+3		7.0E+7	
02 January	5.5E+6	1.7E+4	4.2E+3		1.4E+7	
03 January	5.7E+6	1.7E+4	4.1E+3		4.9E+7	
04 January	3.5E+6	1.7E+4	4.0E+3		1.6E+8	
05 January	2.3E+6	1.6E+4	3.8E+3		3.2E+8	
06 January	2.0E+6	1.7E+4	4.1E+3		3.2E+8	
07 January	1.7E+6	1.6E+4	4.1E+3		2.7E+8	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
01 January	7	0-0-1-2-3-3-2-2	16	0-0-2-5-5-3-2-1	7	0-0-1-2-3-3-1-2
02 January	12	4-3-1-3-3-2-2-2	30	2-2-3-6-6-4-3-3	19	4-4-2-4-5-3-2-3
03 January	11	1-3-2-3-3-3-2-3	48	2-4-4-6-7-6-3-3	20	2-4-3-4-4-4-3-3
04 January	13	3-3-3-3-2-3-3-2	25	3-4-4-5-5-4-2-2	16	3-4-4-4-2-3-2-2
05 January	6	2-2-2-2-2-2-1-1	19	2-2-3-5-5-4-1-1	9	3-2-2-3-3-2-2-1
06 January	2	1-2-0-0-1-2-0-1	2	0-0-0-0-2-2-1-1	3	1-1-0-0-1-2-1-1
07 January	1	0-0-0-0-1-2-0-0	2	0-0-0-2-2-0-0-0	2	0-0-0-0-1-1-1-1

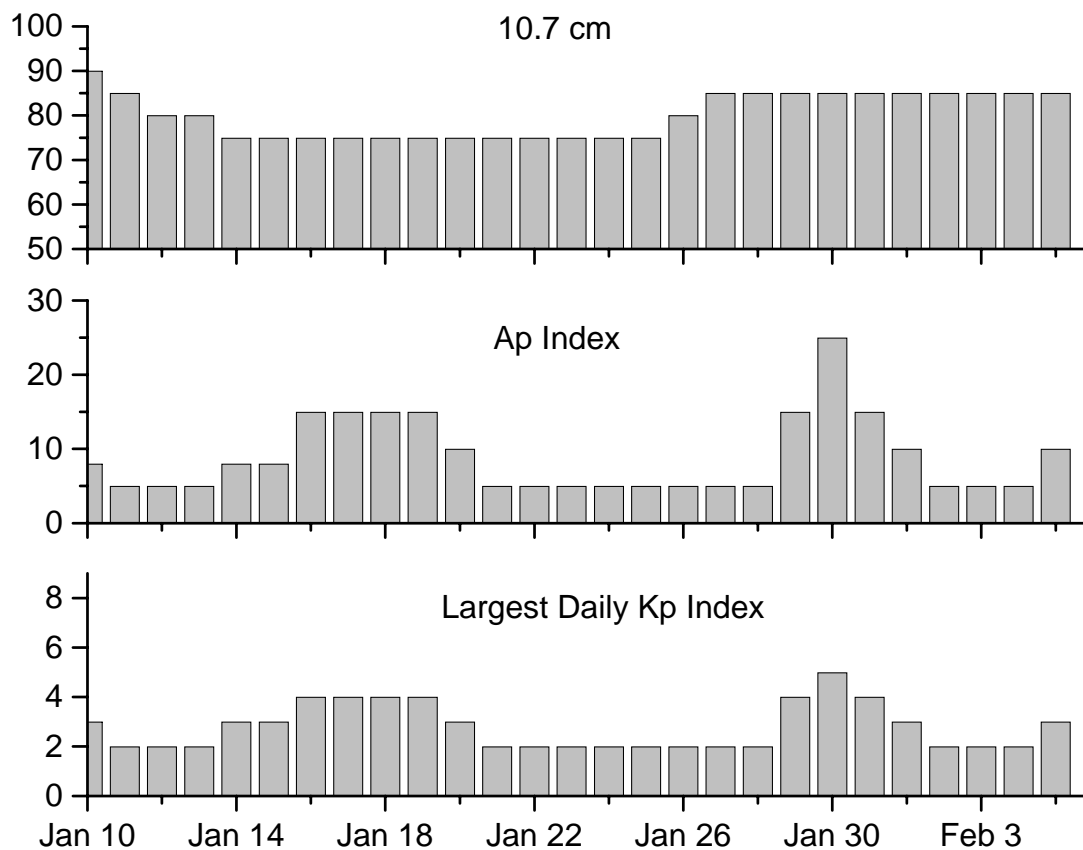


Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
01 Jan 1112	ALERT: Electron 2MeV Integral Flux >1000pfu	01 Jan - 1050
01 Jan 1452	WARNING: Geomagnetic K=4	01 Jan 1452 - 2359
01 Jan 1457	ALERT: Geomagnetic K=4	01 Jan 1456
02 Jan 0028	WARNING: Geomagnetic K=5	02 Jan 0030 - 1600
02 Jan 0105	ALERT: Geomagnetic K=4	02 Jan 0104
02 Jan 1554	EXTENDED WARNING: Geomagnetic K=5	02 Jan 0030 - 2359
02 Jan 2358	WARNING: Geomagnetic K=4	02 Jan 2358 - 03/1600
03 Jan 0339	ALERT: Geomagnetic K=4	03 Jan 0339
03 Jan 1447	ALERT: Electron 2MeV Integral Flux >1000pfu	03 Jan 1425
03 Jan 1537	EXTENDED WARNING: Geomagnetic K=4	02 Jan 2358 - 03/2359
03 Jan 2353	EXTENDED WARNING: Geomagnetic K=4	02 Jan 2358 - 04/1600
04 Jan 0357	ALERT: Geomagnetic K=4	04 Jan 0356
04 Jan 1027	ALERT: Electron 2MeV Integral Flux >1000pfu	04 Jan 1010
04 Jan 1555	EXTENDED WARNING: Geomagnetic K=4	02 Jan 2358 - 04/2359
05 Jan 0527	ALERT: Electron 2MeV Integral Flux >1000pfu	05 Jan 0500
06 Jan 0459	ALERT: Electron 2MeV Integral Flux >1000pfu	06 Jan 0458
07 Jan 0452	ALERT: Electron 2MeV Integral Flux >1000pfu	07 Jan 0450



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
10 Jan	90	8	3	24 Jan	75	5	2
11	85	5	2	25	75	5	2
12	80	5	2	26	80	5	2
13	80	5	2	27	85	5	2
14	75	8	3	28	85	5	2
15	75	8	3	29	85	15	4
16	75	15	4	30	85	25	5
17	75	15	4	31	85	15	4
18	75	15	4	01 Feb	85	10	3
19	75	15	4	02	85	5	2
20	75	10	3	03	85	5	2
21	75	5	2	04	85	5	2
22	75	5	2	05	85	10	3
23	75	5	2				



Energetic Events

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

No Events Observed

Flare List

Date	Begin	Time		Class.	Optical X-ray Brtns	Imp /	Location	Rgn Lat CMD
		Max	End					
01 January		1751	1755	1800	B1.3			933
		1805	1810	1813	B1.2			933
		2035	2040	2045	B1.6			933
02 January		1436	1441	1447	B1.2			933
		1551	1555	1601	B1.4			
		1732	1738	1749	B1.7			
03 January		1859	1904	1907	B1.4			933
		0105	0109	0114	B1.3			
		0250	0254	0301	B1.3			
		1221	1225	1230	B1.8			
04 January		1824	1830	1835	B3.8			
05 January		No Flares Observed						
06 January		No Flares Observed						
07 January		No Flares Observed						



Region Summary

Location			Sunspot Characteristics												
			Flares												
Date	(° Lat ° CMD)	Helio	Area	Extent	Spot	Spot	Mag	X-ray			S	Optical			
		Lon	(10 ⁻⁶ hemi)	(helio)	Class	Count	Class	C	M	X		1	2	3	4

Region 931

25 Dec S08E55	122	0010	01	Axx	001	A
26 Dec S08E39	125	0010	01	Axx	001	A
27 Dec S07E27	123	0010	01	Axx	001	A
28 Dec S07E14	123					
29 Dec S07E01	123					
30 Dec S07W12	123					
31 Dec S07W25	123					
01 Jan S07W38	123					
02 Jan S07W51	123					
03 Jan S07W64	123					
04 Jan S07W77	123					

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 123

Region 932

25 Dec S07E35	142	0020	04	Cso	010	B
26 Dec S07E21	143	0020	04	Cso	004	B
27 Dec S08E08	142	0010	04	Bxo	002	B
28 Dec S08W05	142					
29 Dec S08W18	142					
30 Dec S08W31	142					
31 Dec S08W44	142					
01 Jan S08W57	142					
02 Jan S08W70	142					
03 Jan S08W83	142					
04 Jan S08W96	142					

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 142



Region Summary-Continued

Location		Sunspot Characteristics													
		Helio	Flares				Mag	X-ray			Optical				
Date	(° Lat ° CMD)		Area	Extent	Spot	Spot		C	M	X	S	1	2	3	4
		Lon	(10 ⁻⁶ hemi)	(helio)	Class	Count	Class								

Region 933

30 Dec	S04E78	033	0060	01	Axx	001	A								
31 Dec	S03E66	032	0210	09	Cao	004	B	1			1				
01 Jan	S05E52	032	0220	08	Dso	006	B								
02 Jan	S03E41	030	0310	09	Dhi	007	B								
03 Jan	S04E27	031	0310	09	Cho	005	B								
04 Jan	S04E13	032	0220	06	Dao	004	B								
05 Jan	S03E00	033	0250	10	Dao	011	B								
06 Jan	S04W14	033	0170	09	Cao	002	B								
07 Jan	S05W27	033	0180	04	Hkx	002	A								
								1	0	0	1	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 33

Region 934

31 Dec	N04E64	034	0050	03	Cro	004	B								
01 Jan	N03E51	033	0040	02	Hax	002	A								
02 Jan	N05E37	034	0050	02	Hsx	004	A								
03 Jan	N04E24	034	0020	01	Hrx	002	A								
04 Jan	N04E11	034	0030	01	Hsx	001	A								
05 Jan	N04W02	035	0020	01	Hrx	001	A								
06 Jan	N03W14	033	0010	01	Hrx	002	A								
07 Jan	N04W28	034	0010	01	Axx	001	A								
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 35

Region 935

03 Jan	S06E51	007	0240	03	Hhx	001	A								
04 Jan	S06E37	008	0270	04	Hhx	001	A								
05 Jan	S05E24	009	0240	03	Hax	001	A								
06 Jan	S06E10	009	0220	04	Hax	001	A								
07 Jan	S07W02	008	0250	03	Cho	002	B								
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 8



Region Summary-Continued

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

Region 936

06 Jan	N10E41	338	0020	01	Hrx	002	A								
07 Jan	N09E28	338	0010	01	Axx	001	A								

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 338

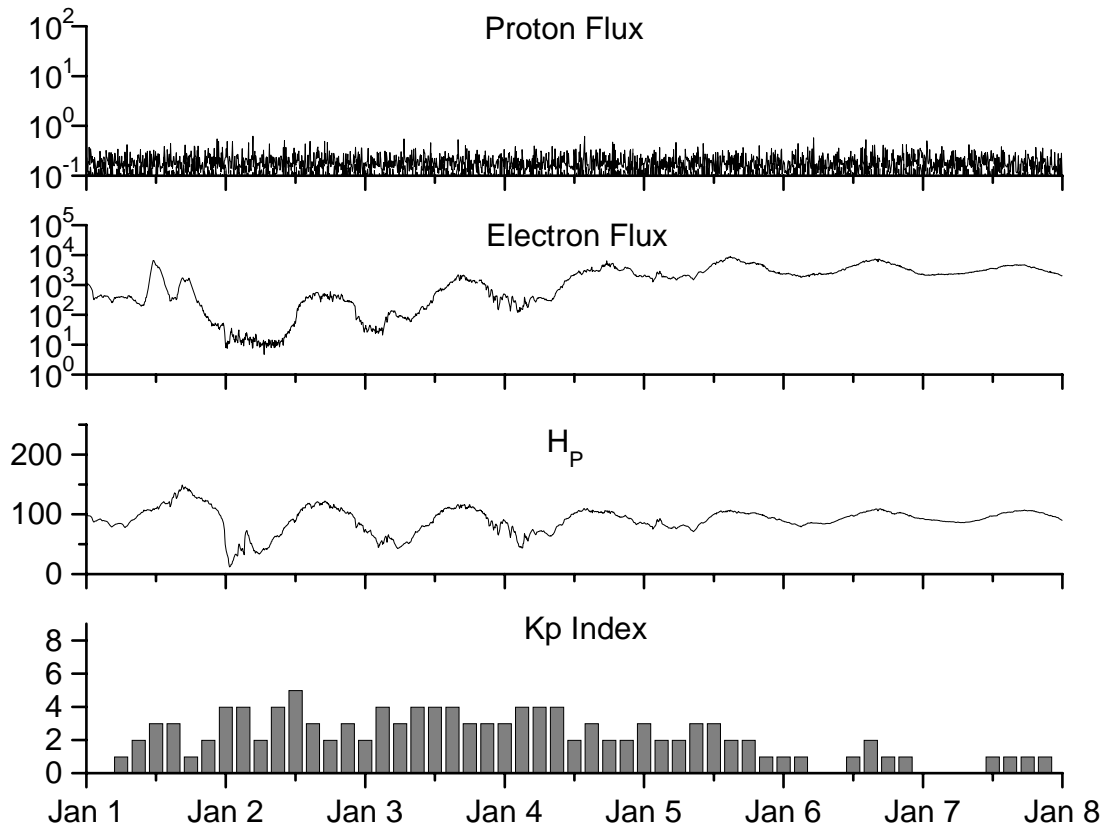


***Recent Solar Indices (preliminary)
of the observed monthly mean values***

Month	Sunspot Numbers					Radio Flux		Geomagnetic	
	<u>Observed values</u>		<u>Ratio</u>	<u>Smooth values</u>		<u>*Penticton</u>	<u>Smooth</u>	<u>Planetary</u>	<u>Smooth</u>
	SEC	RI	RI/SEC	SEC	RI	10.7 cm	Value	Ap	Value
2005									
January	52.0	31.3	0.60	57.3	34.7	102.4	100.3	22	14.7
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	8	8.3
July	22.6	12.2	0.54			75.8		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		7	
November	31.5	21.5	0.68			86.4		8	
December	22.2	13.6	0.61			84.3		14	

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 01 January 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.

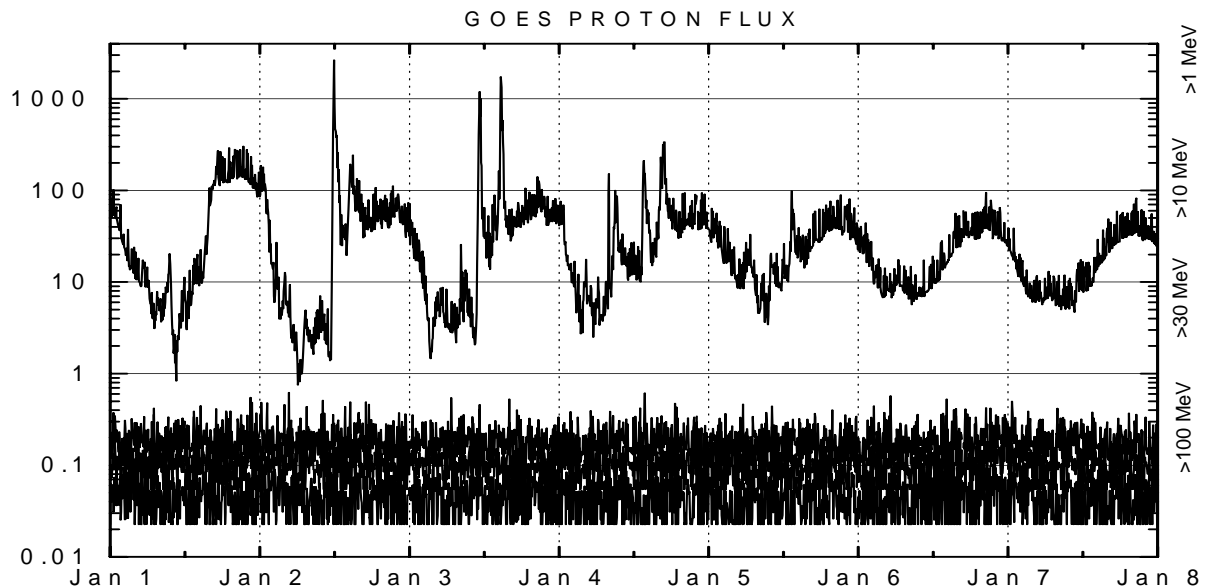
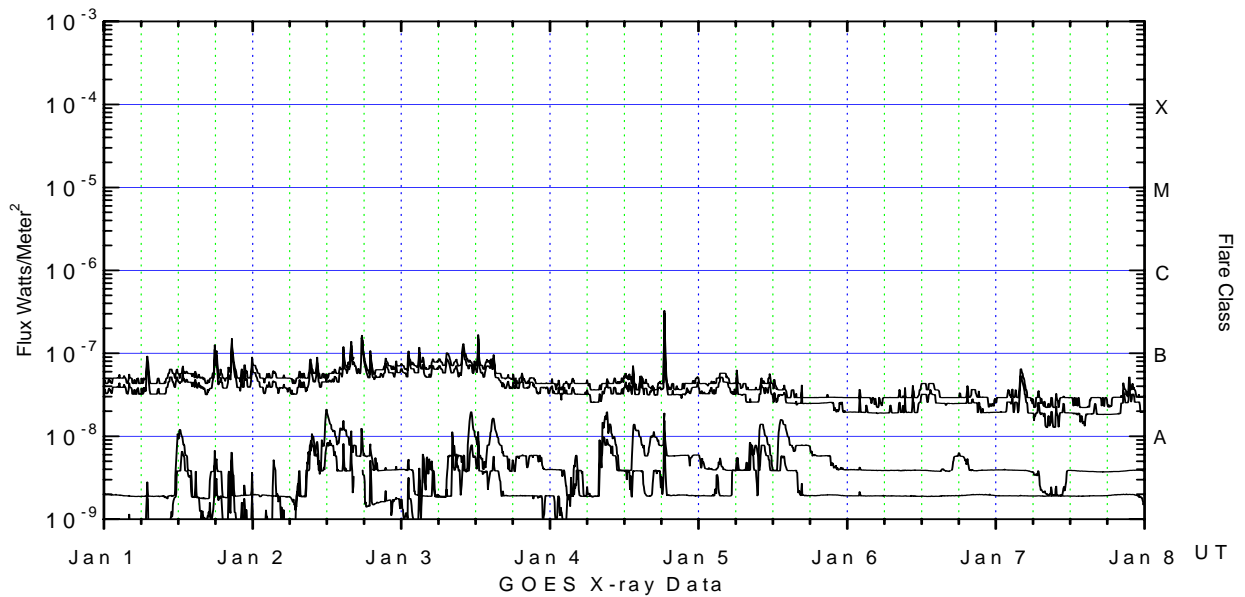
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec-sr) with energies greater than 2 MeV at GOES-12 (W075).

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 Meenook, 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.

