

Solar activity was at low levels during 03 - 04 January. A C1/Sf flare occurred at 03/2335 UTC from Region 1142 (S13, L=208, class/area Dsi/120 on 03 January), and a C1 flare occurred at 04/0325 UTC from Region 1141 (N35, L=267, class/area Eao/060 on 04 January). Activity decreased to very low levels for the remainder of the period. Region 1141 rotated around the west limb on 07 January.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at normal levels from 03 - 07 January. Fluxes increased to high levels from 08 - 09 January.

Geomagnetic field activity was at predominantly quiet levels from 03 - 06 January at 2100 UTC. Activity increased to unsettled to minor storm levels between 06/2100 - 07/0300 UTC. Activity decreased to mostly quiet to unsettled levels for the remainder of the period. The increase in activity was associated with a recurrent coronal hole high-speed stream (CH HSS). During this period of elevated activity, measurements by the ACE spacecraft indicated that the density reached 71 p/cc at 06/1927 UTC, Bt peaked at 16 nT at 06/2021 UTC, while Bz decreased to -16 nT at 06/2021 UTC. Solar wind velocities increased from around 400 km/s to a peak of 672 km/s at 08/1848 UTC. Solar wind speeds remained elevated at around 550 km/s for the remainder of the period.

### **Space Weather Outlook** **12 January - 07 February 2011**

Solar activity is expected to be at very low levels with a slight chance for low levels during 12 - 13 January, as Region 1040 (N34, L=189, class/area Hsx/210 on 04 January) rotates off the west limb. Activity is expected to decrease to very low levels for the remainder 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 moderate to high levels on 12 January. Flux levels are expected to decrease to normal to moderate levels during 13 January - 03 February. High levels are expected from 04 - 07 February.

Geomagnetic field activity is expected to be at mostly quiet levels from 12 - 13 January. Quiet to unsettled levels are expected during 14 - 15 January as a CH HSS moves into a geoeffective position. Mostly quiet levels are expected during 16 - 19 January. Activity is expected to increase to quiet to unsettled levels during 20 - 21 January, due to another CH HSS. Activity is expected to decrease to quiet levels during 22 January - 02 February. Quiet to unsettled levels are expected from 03 - 05 February as another CH HSS moves into geoeffective position. Quiet conditions are expected to prevail for the remainder of the forecast 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
03 January	92	51	320	A8.7	1	0	0	1	0	0	0	0
04 January	91	54	360	B1.0	1	0	0	0	0	0	0	0
05 January	88	50	250	A8.4	0	0	0	0	0	0	0	0
06 January	87	28	230	A7.4	0	0	0	0	0	0	0	0
07 January	86	52	170	A7.7	0	0	0	0	0	0	0	0
08 January	85	52	180	A7.2	0	0	0	0	0	0	0	0
09 January	83	50	150	A7.2	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
03 January	2.0e+05	1.4e+04	3.3e+03		8.6e+05	
04 January	1.6e+05	1.4e+04	3.3e+03		8.4e+05	
05 January	2.3e+05	1.4e+04	3.4e+03		8.9e+05	
06 January	7.6e+05	1.5e+04	3.4e+03		9.7e+05	
07 January	1.3e+05	1.3e+04	3.2e+03		1.0e+06	
08 January	4.4e+05	1.4e+04	3.2e+03		4.4e+07	
09 January	6.0e+05	1.3e+04	3.3e+03		1.5e+08	

### Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
03 January	3	0-1-0-1-2-1-1-1	3	0-0-0-2-2-2-0-1	4	0-0-0-0-1-2-2-2
04 January	3	1-2-1-1-1-1-1-0	5	0-1-1-3-2-2-1-0	4	1-2-1-1-1-1-1-0
05 January	2	0-0-0-1-1-1-1-0	2	0-0-0-1-2-1-0-0	2	0-0-0-1-1-0-0-0
06 January	9	2-0-0-0-1-1-2-5	3	0-0-0-0-0-1-1-3	8	1-1-0-0-0-1-1-5
07 January	10	4-2-2-2-1-1-2-3	13	3-2-3-3-4-2-2-2	11	4-2-2-2-2-1-2-3
08 January	6	2-1-2-2-2-2-1-2	15	2-2-2-5-3-3-3-2	7	2-2-1-2-2-2-1-2
09 January	4	0-2-1-0-1-2-1-2	6	1-1-0-2-2-3-2-2	5	1-2-0-0-1-2-2-2

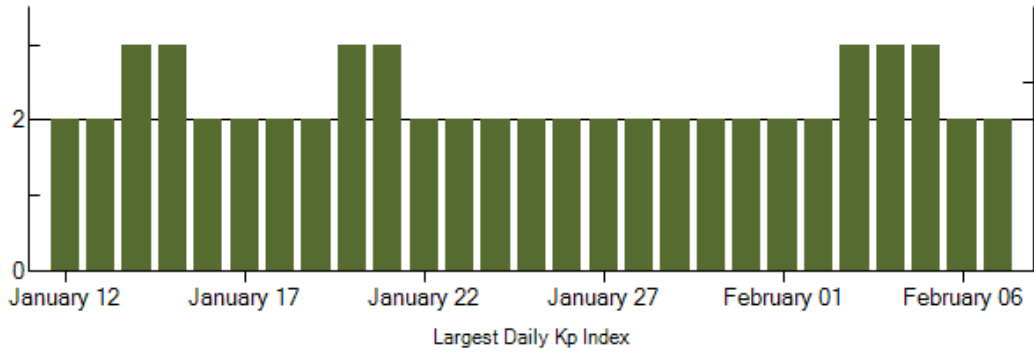
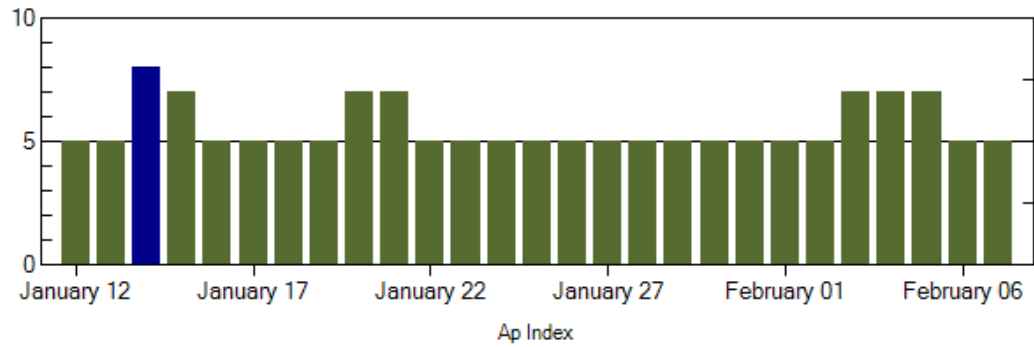
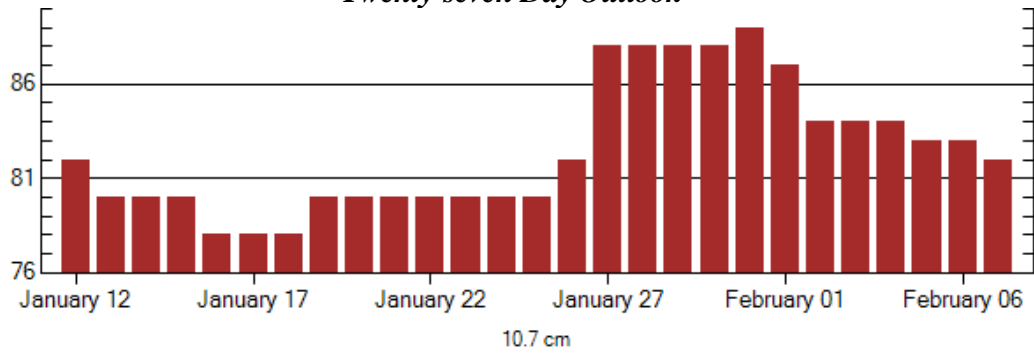


### *Alerts and Warnings Issued*

<u>Date &amp; Time of Issue</u>	<u>Type of Alert or Warning</u>	<u>Date &amp; Time of Event UTC</u>
06 Jan 2208	WARNING: Geomagnetic K = 4	06 Jan 2210 - 07/1600
06 Jan 2245	ALERT: Geomagnetic K = 4	06 Jan 2245
06 Jan 2305	WARNING: Geomagnetic K = 5	06 Jan 2304 - 07/1600
08 Jan 1522	ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	08 Jan 1505
09 Jan 0731	CONTINUED ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	08 Jan 1505



### 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
12 Jan	82	5	2	26 Jan	82	5	2
13	80	5	2	27	88	5	2
14	80	8	3	28	88	5	2
15	80	7	3	29	88	5	2
16	78	5	2	30	88	5	2
17	78	5	2	31	89	5	2
18	78	5	2	01 Feb	87	5	2
19	80	5	2	02	84	5	2
20	80	7	3	03	84	7	3
21	80	7	3	04	84	7	3
22	80	5	2	05	83	7	3
23	80	5	2	06	83	5	2
24	80	5	2	07	82	5	2
25	80	5	2				



### *Energetic Events*

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

*No Events Observed*

### *Flare List*

Date	Time			X-ray Class.	Imp/ Brtns	Optical		Rgn
	Begin	Max	End			Location Lat CMD		
03 January	0436	0441	0446	B1.4				
	1319	1325	1333	B2.6				1141
	1344	1353	1411	B4.2				1141
	1533	1541	1545	B3.3				1141
	2201	2222	2231	B3.6				1142
	2331	2331	A0001	C1.1	SF	S14E05		1142
04 January	0222	0225	0227	B2.9				1141
	0319	0325	0327	C1.9				1141
	0557	0602	0605	B9.4				1141
	0756	0801	0808	B3.3				1141
	0935	0939	0941	B3.6				
	0943	0947	0949	B6.4				1141
	1942	1945	1948	B1.9				1141
	2339	2345	2351	B4.2				1140
05 January	2323	2327	2329	B4.0				1141
	2350	2358	0005	B1.8				1140
06 January	No Flares Observed							
07 January	0001	0006	0009	B1.2				1139
	0659	0705	0714	B1.7				1141
	1512	1520	1534	B5.1				
08 January	0918	0923	0927	B2.5				1139
09 January	1346	1351	1356	B1.3				1140



### Region Summary

Date	Location		Sunspot Characteristics					Flares											
	° Lat ° CMD)	Helio	Area (10 <sup>-6</sup> hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical								
		Lon						C	M	X	S	1	2	3	4				
<i>Region 1137</i>																			
25 Dec	N18E23	311	20	5	CRO	5	B												
26 Dec	N18E10	310	10	5	BXO	6	B												
27 Dec	N18E00	308																	
28 Dec	N16W21	315	10	1	AXX	2	A												
29 Dec	N17W34	315	10	1	AXX	1	A												
30 Dec	N17W40	308																	
31 Dec	N17W53	308																	
01 Jan	N17W66	308																	
02 Jan	N17W79	308																	

0 0 0 0 0 0 0 0

Crossed West Limb.  
Absolute heliographic longitude: 308

<i>Region 1139</i>																			
29 Dec	S26E48	233	10	2	BXO	2	B												
30 Dec	S26E33	235			AXX	1	A												
31 Dec	S26E20	234																	
01 Jan	S30E03	239		1	AXX	1	A												
02 Jan	S30W10	239																	
03 Jan	S30W23	239																	
04 Jan	S30W36	239																	
05 Jan	S30W49	239																	
06 Jan	S30W62	239																	
07 Jan	S27W74	236	10	1	AXX	3	A												
08 Jan	S29W87	236		1	AXX	1	A												

0 0 0 0 0 0 0 0

Crossed West Limb.  
Absolute heliographic longitude: 239



**Region Summary - continued**

Date	Location		Sunspot Characteristics					Flares												
	° Lat ° CMD)	Helio	Area (10 <sup>-6</sup> hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical									
		Lon						C	M	X	S	1	2	3	4					
<i>Region 1140</i>																				
31 Dec	N32E67	188	180	3	HSX	1	A													
01 Jan	N32E52	190	200	4	HSX	1	A													1
02 Jan	N32E40	189	160	3	HSX	1	A													
03 Jan	N32E25	190	180	2	HSX	1	A													
04 Jan	N34E14	189	210	4	HSX	1	A													
05 Jan	N34E01	188	190	6	CSO	3	B													
06 Jan	N33W11	188	180	3	HSX	1	A													
07 Jan	N33W24	187	140	2	CSO	3	B													
08 Jan	N33W36	186	160	2	CSO	4	B													
09 Jan	N32W49	185	130	2	HSX	1	A													
																				0 0 0 1 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 188

<i>Region 1141</i>																				
01 Jan	N35W25	267	100	7	DSO	6	B													
02 Jan	N34W39	268	10	10	BXO	4	B													
03 Jan	N35W50	265	20	11	BXO	7	B													
04 Jan	N35W64	267	60	13	EAO	6	B													1
05 Jan	N34W76	266	20	12	BXO	3	B													
06 Jan	N33W87	263																		
																				1 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 267

<i>Region 1142</i>																				
01 Jan	S14E33	208	40	6	DSO	5	B													
02 Jan	S12E21	207	90	8	DSO	3	B													
03 Jan	S13E07	208	120	10	DSI	13	B													1 1
04 Jan	S12W05	208	90	8	DSI	17	B													
05 Jan	S13W18	208	40	8	CAO	14	B													
06 Jan	S14W32	208	50	8	CSO	7	B													
07 Jan	S14W45	208		1	AXX	2	A													
08 Jan	S15W56	205	10	2	BXO	3	B													
09 Jan	S17W75	212	10	6	BXO	4	B													
																				1 0 0 1 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 208



***Region Summary - continued***

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

*Region 1143*

07 Jan	S22E16	147	20	4	DSO	4	B										
08 Jan	S23E02	146	10	6	BXO	4	B										
09 Jan	S23W11	146															

Still on Disk.  
Absolute heliographic longitude: 146

*Region 1144*

09 Jan	S16W36	173		2	AXX	1	A										
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Still on Disk.  
Absolute heliographic longitude: 173

*Region 1145*

09 Jan	N15E39	97	10	4	BXO	4	B										
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Still on Disk.  
Absolute heliographic longitude: 97



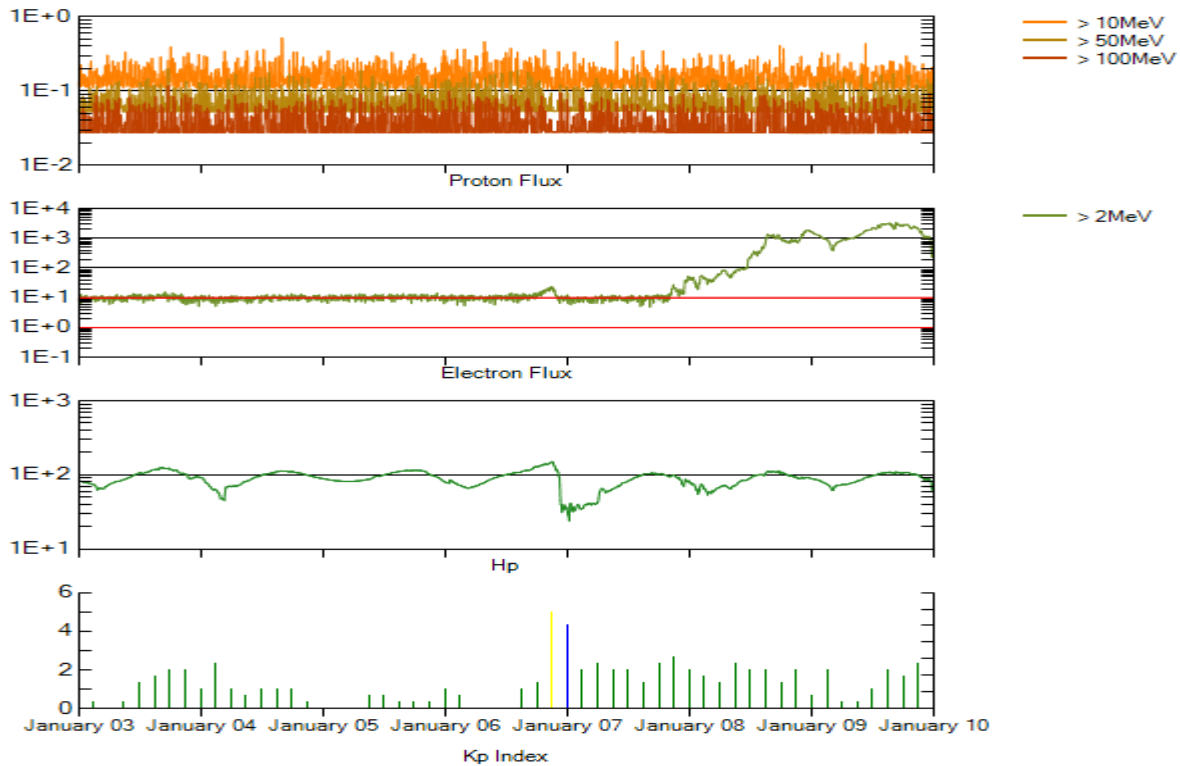


**Recent Solar Indices (preliminary)**  
**Of the observed monthly mean values**

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>2009</b>									
January	2.8	1.3	0.46	3.0	1.8	69.8	68.7	4	4.7
February	2.5	1.4	0.56	3.1	1.9	70.0	68.8	5	4.7
March	0.7	0.7	1.00	3.4	2.0	69.2	69.0	5	4.6
April	1.2	0.8	1.00	3.7	2.2	69.7	69.3	4	4.3
May	3.9	2.9	0.74	3.8	2.3	70.5	69.7	4	4.1
June	6.6	2.9	0.39	4.4	2.7	68.6	70.2	4	4.0
July	5.0	3.2	0.70	5.8	3.6	68.2	71.0	4	3.9
August	0.3	0.0	0.00	7.7	4.8	67.4	72.1	5	3.8
September	6.6	4.3	0.64	9.9	6.2	70.5	73.3	4	3.8
October	7.0	4.8	0.66	11.3	7.1	72.3	74.1	3	4.1
November	7.7	4.1	0.55	12.4	7.6	73.6	74.5	3	4.5
December	15.7	10.8	0.68	13.6	8.3	76.8	74.9	2	4.8
<b>2010</b>									
January	21.3	13.2	0.62	14.8	9.3	81.1	75.5	3	5.0
February	31.0	18.8	0.60	16.7	10.6	84.7	76.5	5	5.1
March	24.7	15.4	0.62	19.1	12.3	83.3	77.5	5	5.3
April	11.2	8.0	0.71	21.4	14.0	75.9	78.3	10	5.5
May	19.9	8.7	0.44	23.8	15.5	73.8	79.0	8	5.7
June	17.9	13.6	0.75	25.2	16.4	72.6	79.7	7	5.8
July	23.1	16.1	0.70			79.9		5	
August	28.2	19.6	0.70			79.7		8	
September	35.6	25.2	0.71			81.1		5	
October	35.0	23.5	0.67			81.6		6	
November	36.1	21.6	0.60			82.5		5	
December	22.0	14.5	0.66			84.3		3	

**NOTE:** Values are final except for the most recent 6 months which are considered preliminary. Cycle 23 started in May 1996 with an RI=8.0. Cycle 23 maximum was April 2000 with an RI=120.8. Solar minimum for cycle 23 was December 2008.





*Weekly Geosynchronous Satellite Environment Summary  
Week Beginning 03 January 2011*

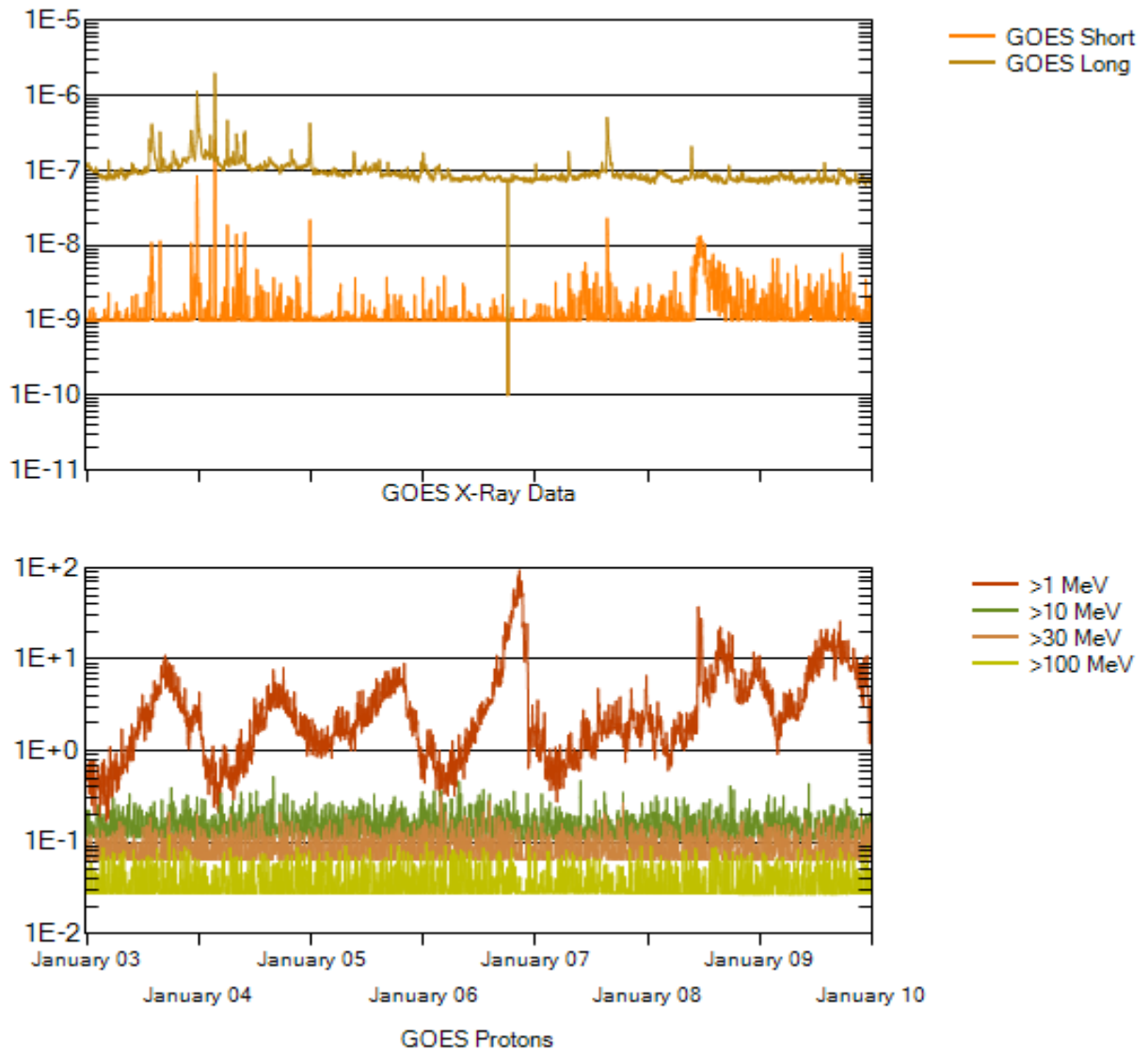
The proton flux plot contains the five-minute averaged integral proton flux (protons/cm<sup>2</sup>-sec -sr) as measured by GOES-13 (W75) for each of three energy thresholds: greater than 10, 50, and 100 MeV. The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm<sup>2</sup>-sec -sr) with energies greater than 2 MeV at GOES-13.

The Hp plot contains the five minute averaged Hp magnetic field component in nanoteslas (nT) as measured by GOES-13. The Hp 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 SWPC 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  
*Week Beginning 03 January 2011*

The x-ray plot contains five-minute averaged x-ray flux (Watts/m<sup>2</sup>) as measured by GOES 14 (W105) in two wavelength bands, 0.05 - 0.4 and 0.1 - 0.8 nm. The letters A, B, C, M and X refer to x-ray event levels for the 0.1 - 0.8 nm band.

The proton plot contains the five-minute averaged integral proton flux (protons/cm<sup>2</sup>-sec-sr) as measured by GOES-13 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.

