

Solar activity ranged from very low to high levels. Activity was at mostly low levels during 01 – 03 November due to C-class flares from Region 1117 (N22, L = 059, class/area Dsi/550 on 29 October) and also from beyond the southeast limb, which signaled the return of old Region 1112 (S19, L = 218). Activity rose to moderate levels during 04 – 05 November due to isolated low-level M-class flares from new Region 1121 (S18, L=211, class/area Esi/090 on 07 November (old Region 1112)). Activity increased to high levels on 06 November due to an M5/1N flare at 06/1536 UTC from Region 1121 associated with a 100 sfu Tenflare as well as other impulsive discrete-frequency radio bursts. Activity returned to low levels on 07 November as Region 1121 continued to produce isolated C-class flares.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at normal to moderate levels during the period.

Geomagnetic field activity was at quiet levels during most of the period. However, brief periods of unsettled to active levels occurred at high latitudes during 03 – 05 November. ACE solar wind data indicated the unsettled to active levels were likely associated with IMF changes due to a solar sector boundary crossing.

### **Space Weather Outlook** **10 November – 06 December 2010**

Solar activity is expected to be at low levels with a slight chance for moderate levels until Region 1121 departs the visible disk on 17 November. Activity is expected to be at very low to 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 normal to moderate levels during 08 - 19 November. Normal to high flux levels are expected during 20 – 26 November. Flux levels are expected to return to normal levels for the remainder of the forecast period.

Geomagnetic field activity is expected to be at quiet to unsettled levels during 08 – 09 November due to weak coronal hole high-speed stream (CH HSS) effects. Quiet conditions are expected during 10 – 17 November. Field activity is expected to increase to unsettled levels on 18 November as a recurrent CH HSS begins to disturb the field. A further increase to unsettled to minor storm levels is expected during 19 – 20 November as CH HSS effects intensify. Activity is expected to decrease to quiet to unsettled levels on 23 November as CH HSS effects subside. Quiet levels are expected during 24 November – 04 December. Activity is expected to be at quiet to unsettled levels during 05-06 December due to weak coronal hole high-speed stream (CH HSS) effects.



### Daily Solar Data

Date	Radio	Sun	Sunspot	X-ray	Flares							
	Flux	spot	Area	Background	X-ray Flux			Optical				
	10.7 cm	No.	(10 <sup>-6</sup> hemi.)		C	M	X	S	1	2	3	4
01 November	79	30	300	A8.0	1	0	0	0	0	0	0	0
02 November	79	17	80	A9.9	0	0	0	0	0	0	0	0
03 November	79	18	50	B2.1	3	0	0	0	0	0	0	0
04 November	79	34	20	B1.8	1	1	0	1	0	0	0	0
05 November	83	29	80	B1.8	1	1	0	2	0	0	0	0
06 November	89	43	90	B1.8	4	1	0	2	1	0	0	0
07 November	85	34	100	B1.2	1	0	0	0	1	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
01 November	1.6e+06	1.4e+04	3.3e+03		1.5e+07	
02 November	1.2e+06	1.4e+04	3.4e+03		1.4e+07	
03 November	6.4e+05	1.5e+04	3.6e+03		8.0e+06	
04 November	9.9e+05	1.4e+04	3.7e+03		1.1e+07	
05 November	6.6e+05	1.4e+04	3.5e+03		9.5e+06	
06 November	8.3e+05	1.4e+04	3.3e+03		9.9e+06	
07 November	9.2e+05	1.4e+04	3.3e+03		9.4e+06	

### Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
01 November	2	0-0-1-0-2-0-1-0	0	0-0-0-0-0-0-0-0	2	0-1-1-0-1-0-0-1
02 November	1	0-0-1-1-1-0-0-0	2	0-0-2-2-1-0-0-0	2	0-0-1-1-1-1-0-0
03 November	2	1-1-1-1-1-0-1-0	6	0-0-2-2-4-1-1-0	4	1-1-1-1-1-1-1-1
04 November	2	1-1-0-1-1-1-0-1	7	0-0-1-4-4-0-0-0	3	1-1-0-1-2-0-0-1
05 November	2	0-0-1-1-1-2-1-0	4	0-0-2-3-2-0-0-0	2	0-0-1-1-1-1-0-0
06 November	1	0-0-0-0-0-2-0-0	0	0-0-0-1-0-0-0-0	1	0-0-0-0-0-1-0-1
07 November	1	1-0-0-0-1-0-1-0	1	0-0-0-0-0-0-1-1	1	1-0-0-0-0-0-1-0

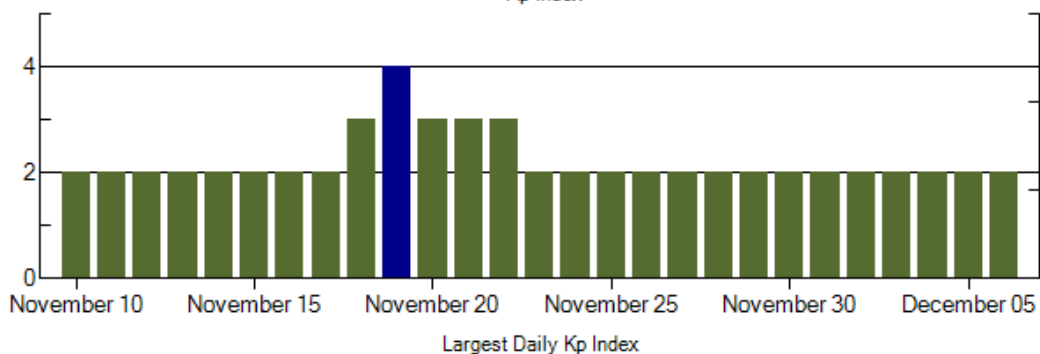
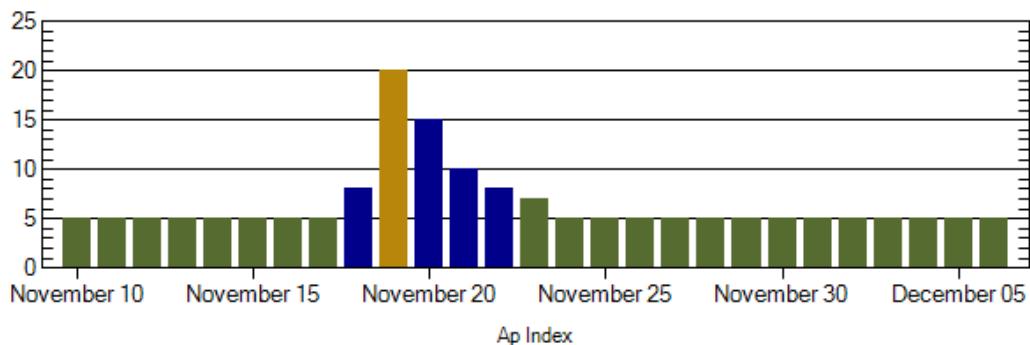
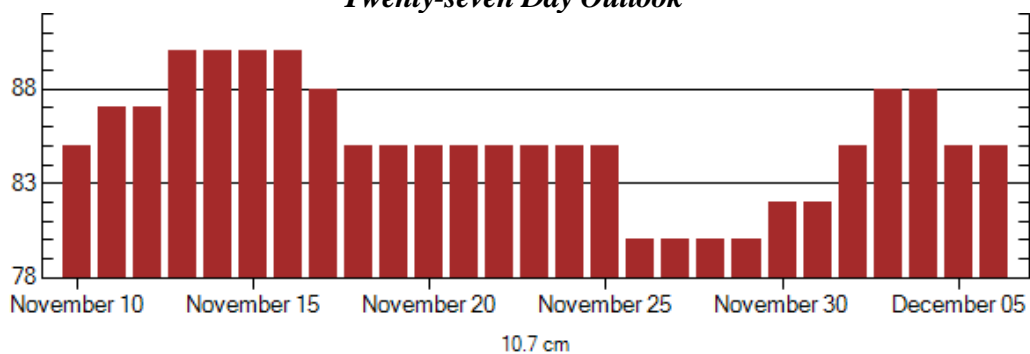


*Alerts and Warnings Issued*

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
03 Nov 1243	ALERT: Type II Radio Emission	03 Nov 1216
06 Nov 1539	ALERT: X-ray Flux exceeded M5	06 Nov 1537
06 Nov 1554	SUMMARY: X-ray Event exceeded M5	06 Nov 1527 - 1544
06 Nov 1623	SUMMARY: 10cm Radio Burst	06 Nov 1533 - 1535



### 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 Nov	85	5	2	24 Nov	85	5	2
11	87	5	2	25	85	5	2
12	87	5	2	26	80	5	2
13	90	5	2	27	80	5	2
14	90	5	2	28	80	5	2
15	90	5	2	29	80	5	2
16	90	5	2	30	82	5	2
17	88	5	2	01 Dec	82	5	2
18	85	8	3	02	85	5	2
19	85	20	4	03	88	5	2
20	85	15	3	04	88	5	2
21	85	10	3	05	85	5	2
22	85	8	3	06	85	5	2
23	85	7	2				



### ***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
04 Nov	2330	2358	0012	M1.6	0.014	SF	S20E76	1121				
05 Nov	1243	1329	1406	M1.0	0.023							
06 Nov	1527	1536	1544	M5.4	0.026	1N	S19E58	1121		100		

### ***Flare List***

Date	Time			Optical			Rgn
	$\frac{1}{2}$			X-ray	Imp /	Location	
	Begin	Max	End	Class.	Brtns	Lat CMD	
01 November	0324	0328	0336	B1.5			
	0436	0443	0450	C1.1			1117
	0930	0934	0936	B1.4			
	1554	1557	1559	B1.4			
02 November	0726	0731	0736	B1.9			1117
	1000	1005	1008	B3.3			1117
03 November	0047	0209	0229	B2.9			
	0554	0611	0626	C3.8			
	1207	1221	1233	C4.9			
	1243	1308	1351	C3.4			1121
04 November	2041	2133	2221	B6.5			1121
	0234	0253	0310	C1.0			1121
	1556	1603	1609	B6.5			1121
	1801	1810	1829	B2.5			1121
	1909	1912	1920	B2.9			1121
	2055	2114	2129	B5.5			1120
	2158	2210	2215	B5.8			1121
05 November	2356	0002	0009	M1.6	SF	S20E76	1121
	0048	0056	0102	C9.7			1121
	0315	0321	0329	B9.4			1121
	0627	0632	0638	B4.4			1121
	1243	1329	1406	M1.0			1121
	2012	2014	2016	B6.2	SF	S19E65	1121
	2328	2328	2336	B8.4	SF	S19E62	1121
	0803	0806	0809	B2.9			1121
	0851	0854	0856	B2.4			1121
	1021	1025	1030	B3.1			1121
	1109	1112	1116	B2.3			1121
	1837	1842	1848	B2.5			1121



*Flare List - Continued*

Date	Time			X-ray Class.	Optical		Rgn
	Begin	Max	End		Imp / Brtns	Location Lat CMD	
06 November	0216	0238	0250	C2.0			1121
	0412	0421	0431	B6.0			1121
	0438	0447	0457	C4.5			1121
	0756	0801	0807	B6.8			1121
	0821	0832	0904	C1.6			1121
	1342	1346	1357		SF	S20E60	1121
	1532	1536	1711	M5.4	1N	S19E58	1121
	1712	1712	1727		SF	S19E49	1121
	1906	1911	1917	C1.4			1121
	2349	0005	0033	B8.5			1121
07 November	0137	0139	0152	C5.4	1F	S22E53	1121
	1312	1358	1428	B5.2			1121
	1628	1631	1638	B2.0			1121
	1821	1829	1845	B3.3			1121
	2355	2358	0000	B1.7			1121



### 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 1117</i>															
19 Oct	N25E74	63	50	5	HSX	1	A								
20 Oct	N24E60	64	70	2	HSX	2	A								
21 Oct	N23E48	63	80	2	HSX	1	A								
22 Oct	N23E36	63	70	2	HSX	1	A								
23 Oct	N22E28	57	120	8	CSO	10	B								
24 Oct	N22E12	60	210	9	DSO	13	B					1			
25 Oct	N22W02	59	260	9	DSI	12	B	1				4			
26 Oct	N21W15	59	360	11	EH1	31	BG					3			
27 Oct	N22W28	59	450	11	EKC	21	B	1				2			
28 Oct	N22W41	60	520	10	DKC	17	B								
29 Oct	N20W55	60	550	9	DSI	14	B								
30 Oct	N20W72	65	480	10	DHO	9	B								
31 Oct	N22W83	60	510	8	DHO	8	B	2				1			
01 Nov	N22W96	63	180	2	CHO	3	B	1							
								5	0	0	11	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 59

<i>Region 1120</i>															
30 Oct	N39E69	283	10	4	BXO	3	B				2				
31 Oct	N40E53	286	40	9	CRO	4	B								
01 Nov	N39E41	285	120	11	ESO	7	B								
02 Nov	N38E31	283	80	13	ESO	7	B								
03 Nov	N39E17	281	50	13	CAO	8	B								
04 Nov	N38E04	282	10	13	BXO	7	B								
05 Nov	N38W09	282	10	14	BXO	2	B								
06 Nov	N41W13	273		1	AXX	2	A								
07 Nov	N41W26	273													
								0	0	0	2	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 282



### *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 1121</i>															
03 Nov	S20E84	218						1							
04 Nov	S20E70	218	10	1	AXX	7	A	1	1		1				
05 Nov	S18E58	215	70	11	CRO	7	B	1	1		2				
06 Nov	S18E48	211	80	13	EAI	9	B	4	1		2	1			
07 Nov	S18E36	211	90	13	ESI	11	BG	1				1			
								8	3	0	5	2	0	0	0

Still on Disk.

Absolute heliographic longitude: 211

<i>Region 1122</i>															
06 Nov	N13W02	262	10	5	CSO	2	B								
07 Nov	N14W18	263	10	7	CAO	3	B								
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 262



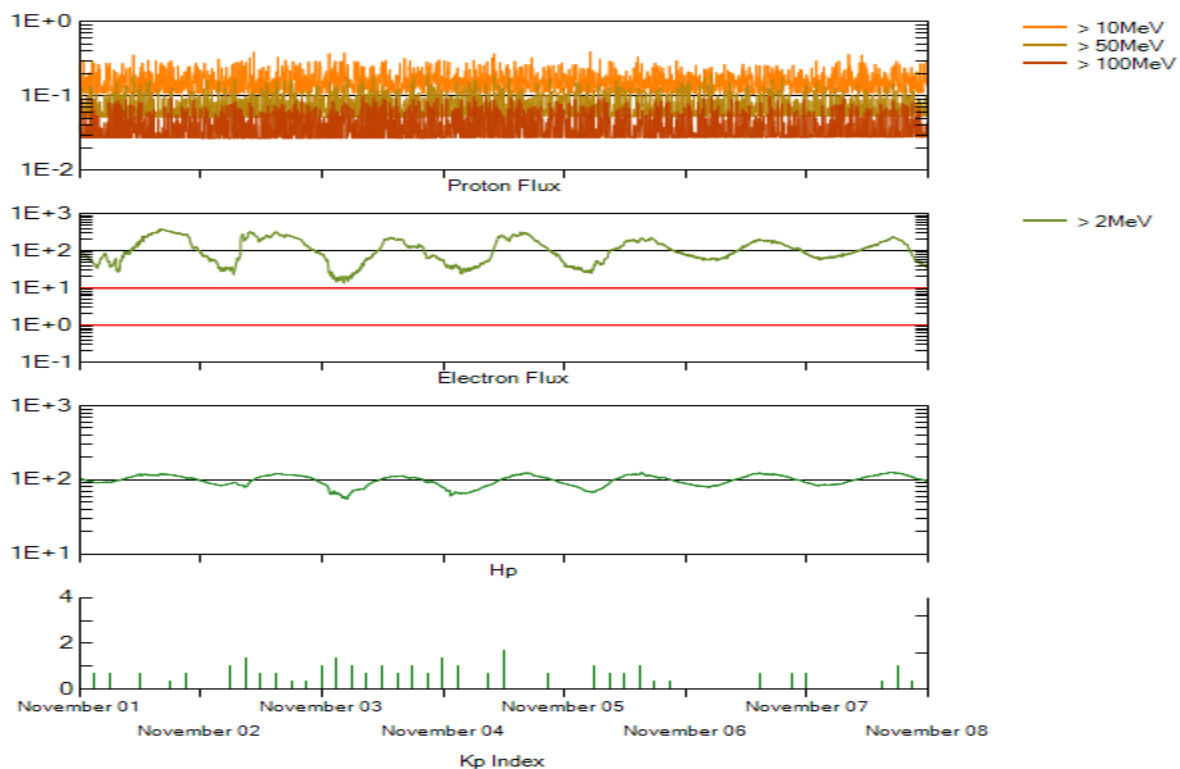


**Recent Solar Indices (preliminary)**  
**Of the observed monthly mean values**

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
November	6.8	4.1	0.60	2.7	1.7	68.6	68.3	4	5.1
December	1.3	0.8	0.62	2.7	1.7	69.2	68.5	4	4.9
2009									
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
2010									
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			73.8		8	
June	17.9	13.6	0.75			72.6		7	
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	

**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, marking the start of Cycle 24, was December 2008.





*Weekly Geosynchronous Satellite Environment Summary*  
*Week Beginning 25 October 2010*

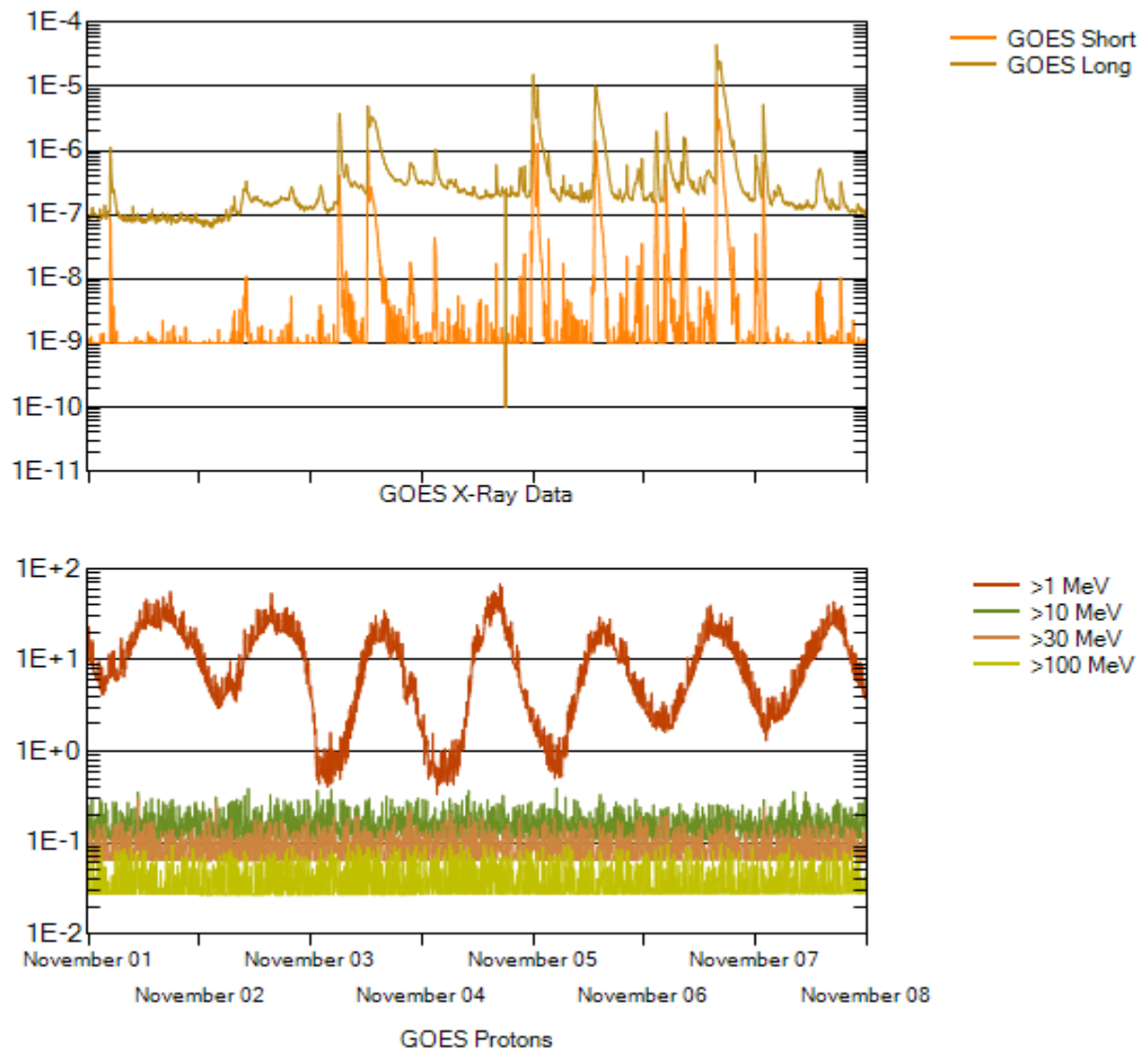
The proton flux plot contains the five-minute averaged integral proton flux (protons/cm<sup>2</sup>–sec–sr) as measured by GOES-13 (W75) for each of three energy thresholds: greater than 10, 50, and 100 MeV. The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm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

The x-ray plot contains five-minute averaged x-ray flux ( $\text{Watts/m}^2$ ) 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 ( $\text{protons/cm}^2\text{-sec-sr}$ ) as measured by GOES-13 for each of the energy thresholds: >1, >10, >30 and >100 MeV. P10 event threshold is 10 pfu ( $\text{protons/cm}^2\text{-sec-sr}$ ) at greater than 10 MeV.

