

Space Weather Highlights
10 - 16 November 2008

SWO PRF 1733
18 November 2008

Solar activity was very low through the period. New-cycle polarity Region 1008 (N33, L = 121, class/area Dso/080 on 11 November) produced isolated low-level B-class flares on 10 and 12 November.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit increased to high levels during 10 - 15 November.

Geomagnetic field activity was at quiet levels during 10 - 15 November. Activity increased to active levels during 16/0000 - 0600 UTC, then decreased to quiet levels for the rest of the period. ACE solar wind measurements indicated the 16 November active levels were associated with a coronal hole high-speed stream (CH HSS). The HSS began late on 15 November, reached a peak velocity of 528 km/sec at 16/1216 UTC, then gradually decreased during the rest of the period. Interplanetary magnetic field changes associated with the CH HSS included an increase in Bt (peak 14 nT at 15/2021 UTC) and intermittent periods of southward Bz (minimum -13 nT at 15/2225 UTC).

Space Weather Outlook
19 November - 15 December 2008

Solar activity is expected to be at very 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 during 26 November - 03 December and 06 - 12 December.

Geomagnetic field activity is expected to be at quiet levels during 19 - 24 November. Activity is expected to increase to mostly unsettled levels during 25 - 26 November due to a recurrent CH HSS. Quiet levels are expected during 27 November - 03 December followed by an increase to unsettled to active levels during 04 - 06 December due to another recurrent CH HSS. Activity is expected to decrease to quiet levels during 07 - 15 December.



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	
10 November	69	16	40	<A1.0	0	0	0	0	0	0	0	0	0
11 November	71	18	80	<A1.0	0	0	0	0	0	0	0	0	0
12 November	71	21	80	<A1.0	0	0	0	0	0	0	0	0	0
13 November	69	16	70	<A1.0	0	0	0	0	0	0	0	0	0
14 November	68	12	30	<A1.0	0	0	0	0	0	0	0	0	0
15 November	68	11	50	<A1.0	0	0	0	0	0	0	0	0	0
16 November	68	11	40	<A1.0	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
	10 November	5.9E+5	1.8E+4	4.1E+3		1.2E+8
11 November	6.5E+5	1.9E+4	4.6E+3		1.5E+8	
12 November	7.0E+5	1.9E+4	4.3E+3		1.4E+8	
13 November	8.0E+5	1.9E+4	4.5E+3		1.0E+8	
14 November	1.3E+6	1.9E+4	4.4E+3		1.1E+8	
15 November	1.7E+6	1.9E+4	4.3E+3		6.8E+7	
16 November	5.7E+5	1.9E+4	4.3E+3		1.5E+6	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	10 November	3	1-2-1-1-1-1-0-1	4	0-1-3-1-2-1-0-0	3
11 November	1	0-1-0-1-1-0-0-0	0	0-0-0-1-0-0-0-0	1	0-1-0-1-0-0-0-0
12 November	4	0-0-1-1-1-0-3-1	2	0-0-2-1-1-0-1-0	2	0-0-1-1-1-0-0-1
13 November	2	0-1-0-0-1-2-0-0	0	0-0-0-1-0-0-0-0	1	1-0-0-0-0-0-0-0
14 November	1	0-0-0-0-0-2-0-1	0	0-0-0-0-0-0-0-0	1	0-0-0-0-0-0-0-1
15 November	3	1-1-0-0-0-0-2-2	1	0-1-0-0-0-0-1-1	6	2-2-0-1-2-2-2-2
16 November	7	3-4-1-1-1-0-1-1	11	3-4-2-2-4-1-1-0	8	4-4-1-0-1-0-0-1

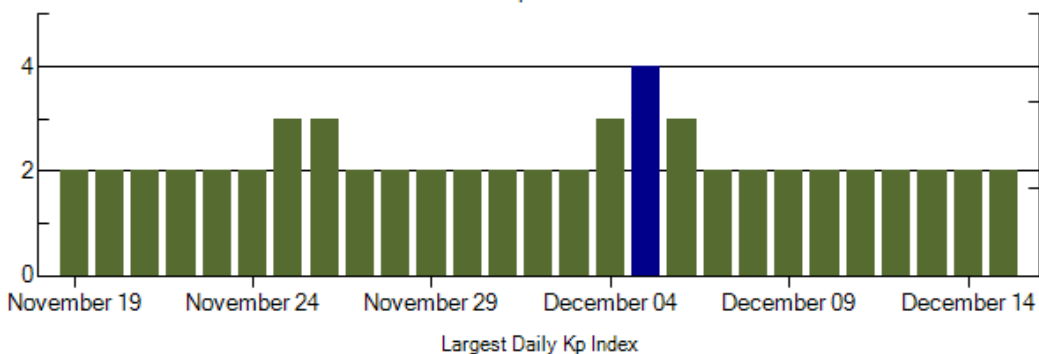
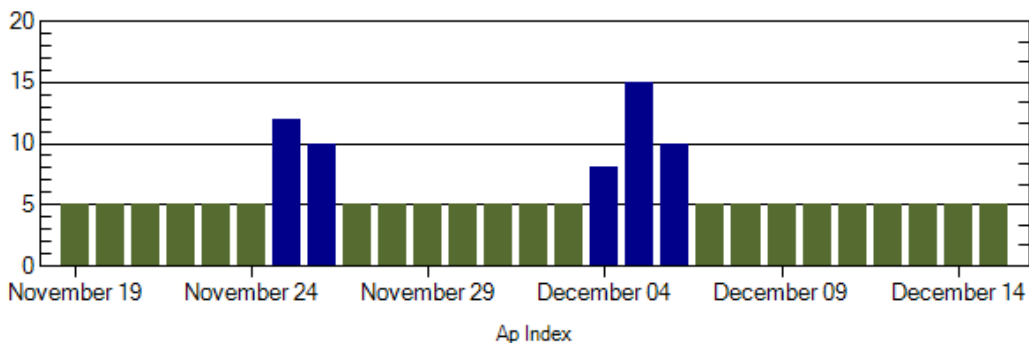
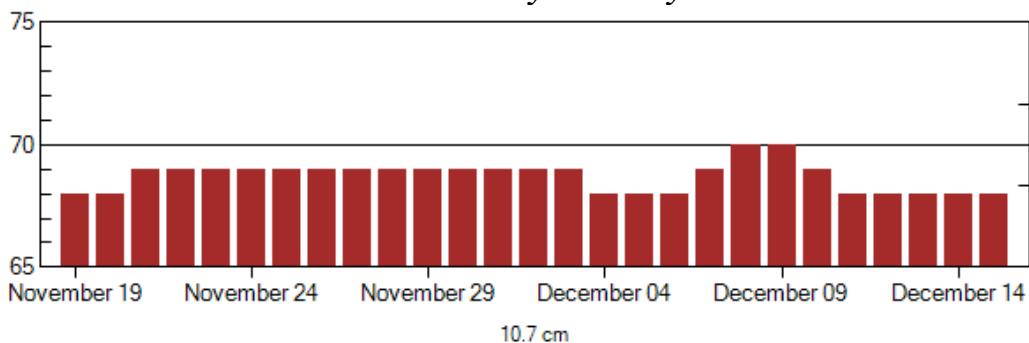


Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
10 Nov 1007	ALERT: Electron 2MeV Integral Flux > 1000pfu	10 Nov 0940
11 Nov 0712	ALERT: Electron 2MeV Integral Flux > 1000pfu	11 Nov 0635
12 Nov 0500	ALERT: Electron 2MeV Integral Flux > 1000pfu	12 Nov 050
13 Nov 0951	ALERT: Electron 2MeV Integral Flux > 1000pfu	13 Nov0935
14 Nov 0858	ALERT: Electron 2MeV Integral Flux > 1000pfu	14 Nov 0840
15 Nov 1336	ALERT: Electron 2MeV Integral Flux > 1000pfu	15 Nov 1320
16 Nov 0159	WARNING: Geomagnetic K = 4	16 Nov 0215 - 0600
16 Nov 0220	ALERT: Geomagnetic K = 4	16 Nov 0219



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
19 Nov	68	5	2	03 Dec	69	5	2
20	68	5	2	04	68	8	3
21	69	5	2	05	68	15	4
22	69	5	2	06	68	10	3
23	69	5	2	07	69	5	2
24	69	5	2	08	70	5	2
25	69	12	3	09	70	5	2
26	69	10	3	10	69	5	2
27	69	5	2	11	68	5	2
28	69	5	2	12	68	5	2
29	69	5	2	13	68	5	2
30	69	5	2	14	68	5	2
01 Dec	69	5	2	15	68	5	2
02	69	5	2				



Energetic Events

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

No Events Observed

Flare List

Date	Time			X-ray	Imp /	Location	Rgn
	Begin	Max	End	Class.	Brtns	Lat CMD	
10 November	2018	2031	2038	B3.0	1008		
11 November	No Flares Observed						
12 November	0002	0009	0025	B1.4	1008		
13 November	No Flares Observed						
14 November	No Flares Observed						
15 November	No Flares Observed						
16 November	No Flares Observed						

Region Summary

Date	Location		Sunspot Characteristics				Flares							
	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 1008

10 Nov	N33E01	121	0040	03	Dso	006	B
11 Nov	N33W09	118	0080	06	Dso	008	B
12 Nov	N33W24	119	0080	08	Dso	011	B
13 Nov	N33W38	120	0070	08	Cao	006	B
14 Nov	N33W53	121	0030	01	Cro	002	B
15 Nov	N32W65	120	0050	02	Hsx	001	A
16 Nov	N33W78	120	0040	02	Hsx	001	A

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 121



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

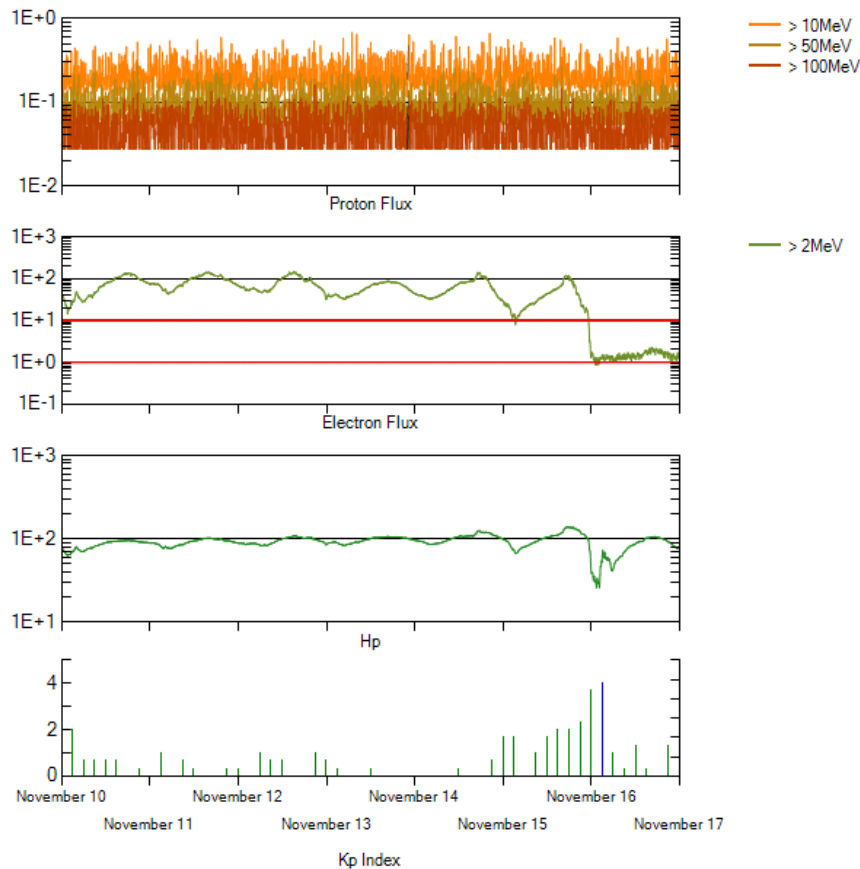
Month	Sunspot Numbers			Radio Flux		Geomagnetic			
	Observed values SEC	Ratio RI	Ratio RI/SEC	Smooth values SEC	Smooth values RI	*Penticton 10.7 cm	Smooth Value	Planetary Ap	Smooth Value
2006									
November	31.5	21.5	0.68	22.3	12.7	86.4	78.5	9	8.5
December	22.2	13.6	0.61	20.7	12.1	84.3	77.9	15	8.5
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	11.6	7.0	71.6	72.5	8	7.4
August	9.9	6.2	0.63	10.2	6.1	69.2	71.8	7	7.6
September	4.8	2.4	0.50	9.9	5.9	67.1	71.5	9	7.8
October	1.3	0.9	0.70	10.0	6.1	65.5	71.5	9	7.9
November	2.5	1.7	0.68	9.4	5.7	69.7	71.1	5	7.8
December	16.2	10.1	0.62	8.1	5.0	78.6	70.5	4	7.8
2008									
January	5.1	3.4	0.67	6.9	4.2	72.1	70.0	6	7.7
February	3.8	2.1	0.55	5.9	3.6	71.2	69.6	9	7.6
March	15.9	9.3	0.58	5.3	3.3	72.9	69.5	10	7.4
April	4.9	2.9	0.59	5.3	3.3	70.3	69.6	9	7.1
May	5.7	2.9	0.51			68.4		6	
June	4.2	3.1	0.74			65.9		7	
July	1.0	0.5	0.50			65.8		6	
August	0.0	0.5	**			66.4		5	
September	1.5	1.1	0.73			67.1		5	
October	5.2	2.9	0.56			68.3		6	

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.

**SEC sunspot number was less than RI value, so a ratio could not be done.





*Weekly Geosynchronous Satellite Environment Summary
Week Beginning 10 November 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.

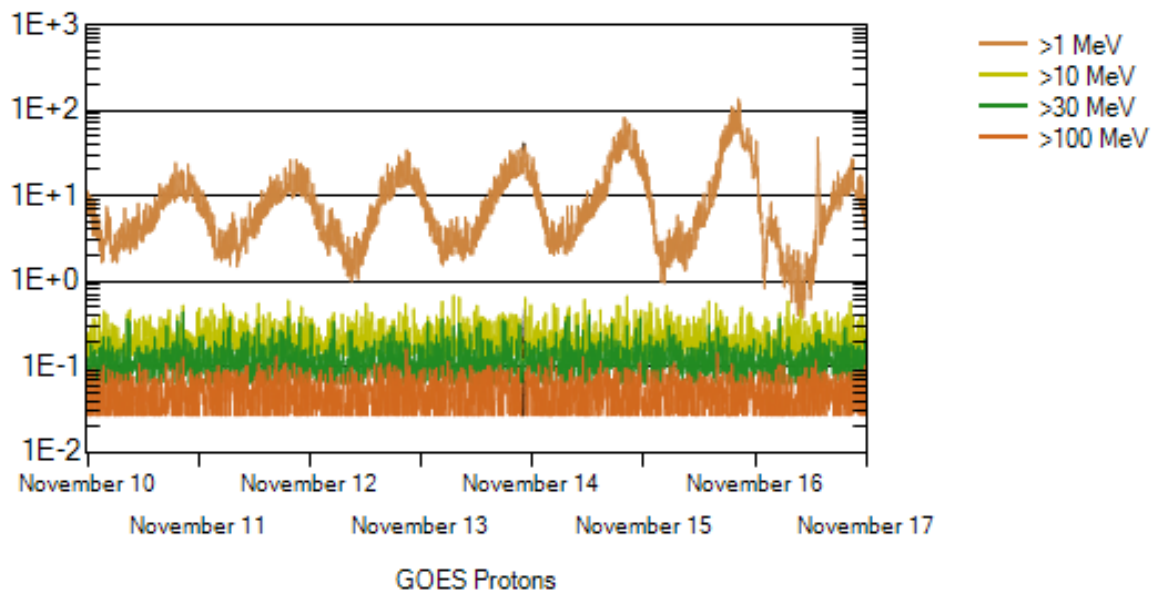
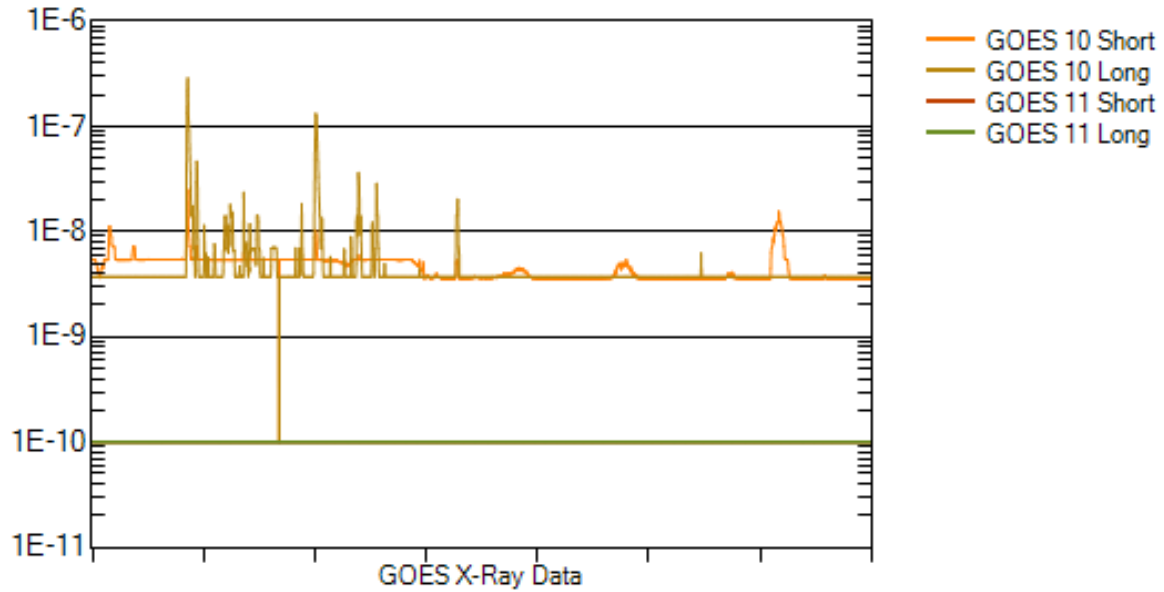
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV at GOES-12 (W075).

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.

