

Solar activity was very low during 08 - 10 December with no flare activity observed. Activity increased to low levels on 11 December by virtue of an isolated low-level C-class flare from Region 1009 (S25, L = 146, class/area Dso/050 on 10 December). Region 1009 emerged on 10 December as a simply-structured spot group. It departed the visible disk early on 13 December. Activity decreased to very low levels during 12 - 14 December with no flare activity observed. A filament disappearance (location N50W15) occurred between 12/0600 - 0800 UTC and was associated with a slow CME off the northwest limb based on SOHO/LASCO C2 data.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit reached high levels during 08 - 10 December.

Geomagnetic field activity was at quiet levels at all latitudes during most of the period. ACE solar wind measurements indicated a subsiding coronal hole high-speed stream was in progress at the start of the period. Velocities gradually decreased from 532 to 314 km/sec during 08 - 10 December. A solar sector boundary crossing (away (+) to toward (-)) occurred late on 10 December associated with minor increases in velocity, plasma density, and IMF total field intensity.

Space Weather Outlook
17 December 2008 - 12 January 2009

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 02 - 06 January.

Geomagnetic field activity is expected to be at quiet levels during 17 - 21 December. Activity is expected to increase to unsettled levels during 22 - 24 December due to a recurrent coronal hole high speed stream (CH HSS). Activity is expected to decrease to quiet levels during 25 - 30 December. Activity is expected to increase to unsettled levels during 31 December - 02 January due to another recurrent CH HSS. Activity is expected to decrease to quiet levels during 03 - 12 January.



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	
08 December	69	0	0	<A1.0	0	0	0	0	0	0	0	0	0
09 December	69	0	0	<A1.0	0	0	0	0	0	0	0	0	0
10 December	71	13	50	<A1.0	0	0	0	0	0	0	0	0	0
11 December	70	12	20	<A1.0	1	0	0	0	0	0	0	0	0
12 December	71	14	20	<A1.0	0	0	0	0	0	0	0	0	0
13 December	70	0	0	<A1.0	0	0	0	0	0	0	0	0	0
14 December	69	0	0	<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
	08 December	2.4E+6	1.8E+4	4.1E+3		1.3E+8
09 December	3.2E+6	1.9E+4	4.2E+3		1.2E+8	
10 December	4.1E+6	1.9E+4	4.4E+3		1.0E+8	
11 December	2.7E+6	2.0E+4	4.5E+3		4.4E+7	
12 December	3.0E+6	1.9E+4	4.3E+3		3.9E+7	
13 December	2.2E+6	1.9E+4	4.1E+3		2.7E+7	
14 December	2.3E+6	1.9E+4	4.3E+3		2.8E+7	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	08 December	1	1-1-0-0-0-0-0-0	1	1-0-0-2-0-0-0-0	5
09 December	1	0-0-0-0-0-1-1-0	0	0-0-0-0-0-0-0-0	0	0-0-0-0-0-0-0-0
10 December	2	0-0-0-0-1-1-1-2	2	0-0-0-1-1-0-1-1	2	0-0-0-0-1-1-0-2
11 December	4	1-1-1-1-1-2-1-1	4	0-0-1-1-2-2-1-0	3	1-1-1-1-1-1-0-1
12 December	2	1-0-0-1-2-1-0-1	3	0-0-0-2-3-0-0-0	2	1-0-0-1-1-1-0-1
13 December	1	1-1-0-0-0-0-0-0	0	0-0-0-0-1-0-0-0	1	1-1-0-0-0-0-0-0
14 December	1	1-0-0-0-0-0-1-0	0	0-0-0-0-0-0-0-0	0	1-0-0-0-0-0-0-0

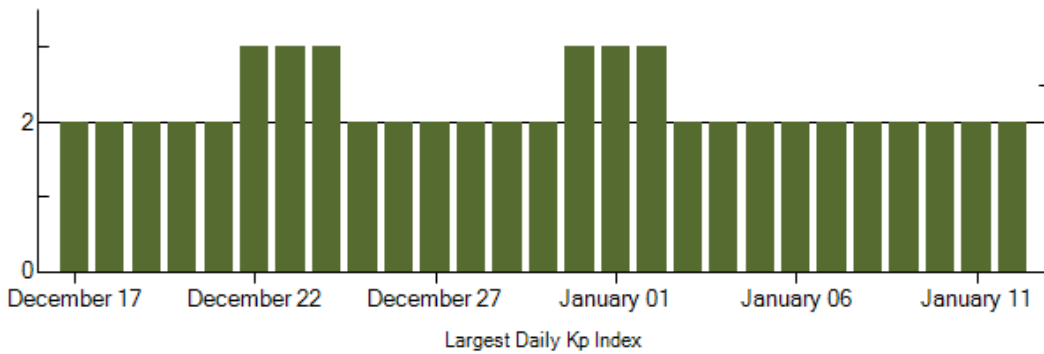
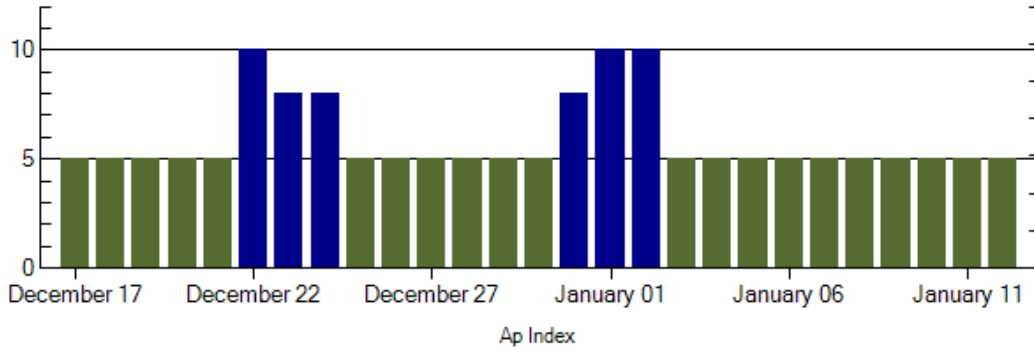
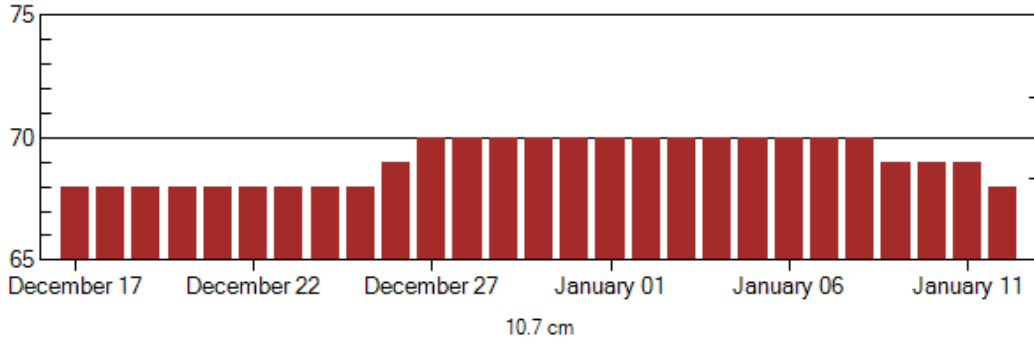


Alerts and Warnings Issued

<u>Date & Time of Issue</u>	<u>Type of Alert or Warning</u>	<u>Date & Time of Event UTC</u>
08 Dec 1100	ALERT: Electron 2MeV Integral Flux > 1000pfu	08 Dec 1045
09 Dec 1105	ALERT: Electron 2MeV Integral Flux > 1000pfu	09 Dec 1050
10 Dec 1319	ALERT: Electron 2MeV Integral Flux > 1000pfu	10 Dec 1255



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
17 Dec	68	5	2	31 Dec	70	8	3
18	68	5	2	01 Jan	70	10	3
19	68	5	2	02	70	10	3
20	68	5	2	03	70	5	2
21	68	5	2	04	70	5	2
22	68	10	3	05	70	5	2
23	68	8	3	06	70	5	2
24	68	8	3	07	70	5	2
25	68	5	2	08	70	5	2
26	69	5	2	09	69	5	2
27	70	5	2	10	69	5	2
28	70	5	2	11	69	5	2
29	70	5	2	12	68	5	2
30	70	5	2				



Energetic Events

Date	Time			X-ray	Optical Information			Peak		Sweep Freq	
			½	Integ	Imp/	Location	Rgn	Radio Flux		Intensity	
	Begin	Max	Max	Class	Flux	Brtns	Lat CMD	#	245	2695	II

No Events Observed

Flare List

Date	Time			X-ray	Imp /	Optical	Rgn	
	Begin	Max	End	Class.	Brtns	Location		
				Lat	CMD			
08 December	No Flares Observed							
09 December	No Flares Observed							
10 December	No Flares Observed							
11 December	0522	0537	0550	B2.6	1009			
11 December	0827	0831	0833	B2.2	1009			
11 December	0922	0925	0927	C1.4	1009			
11 December	1134	1137	1141	B1.0	1009			
11 December	1141	1144	1146	B9.6	1009			
11 December	1412	1415	1417	B2.1	1009			
12 December	No Flares Observed							
13 December	No Flares Observed							
14 December	No Flares Observed							

Region Summary

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

Region 1009

10 Dec	S26W59	146	0050	07	Dso	003	B									
11 Dec	S25W73	147	0020	05	Bxo	002	B	1								
12 Dec	S25W90	151	0020	02	Bxo	004	B									
								1	0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 146



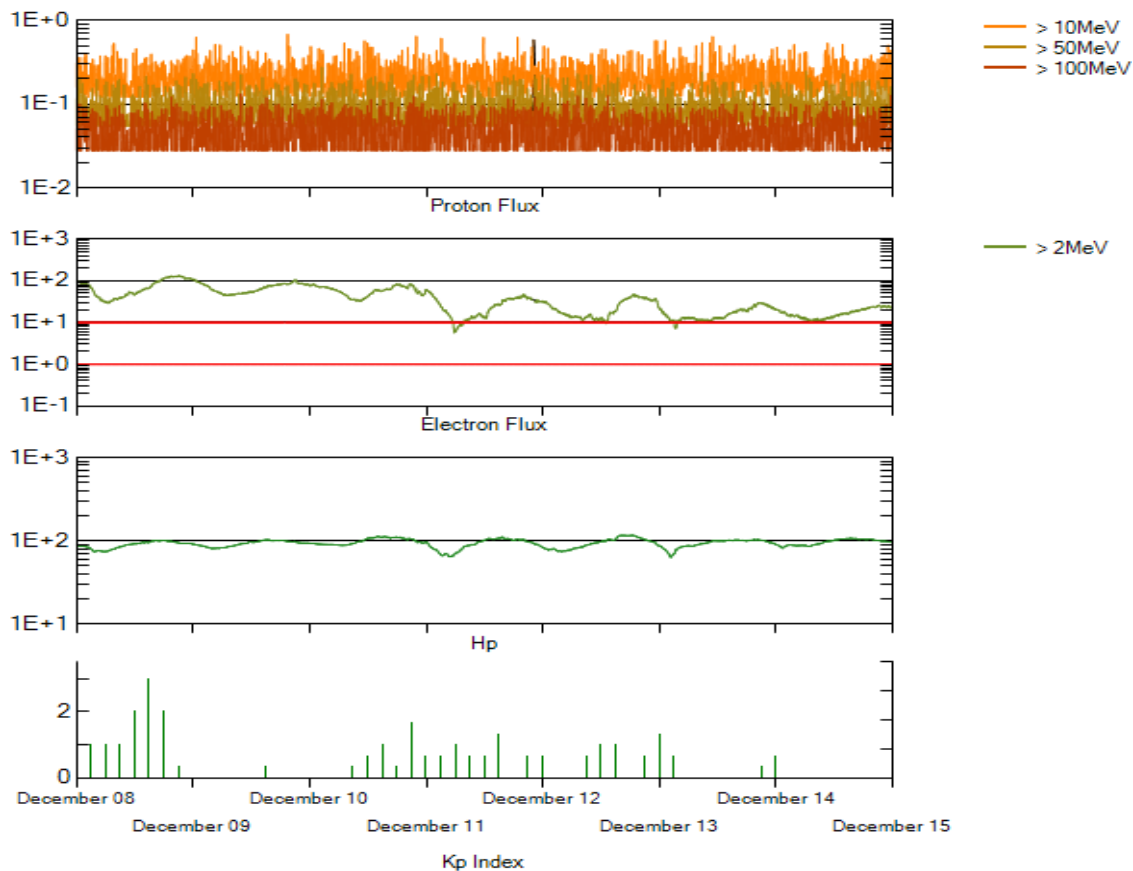
Recent Solar Indices (preliminary)
Of the observed monthly mean values

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 08 December 2008*

GOES-11 designated Primary Electron Satellite and GOES-10 Secondary: December 1, 2008 the GOES-12 Electron sensor began experiencing periods of noise and sensor is unreliable.

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.

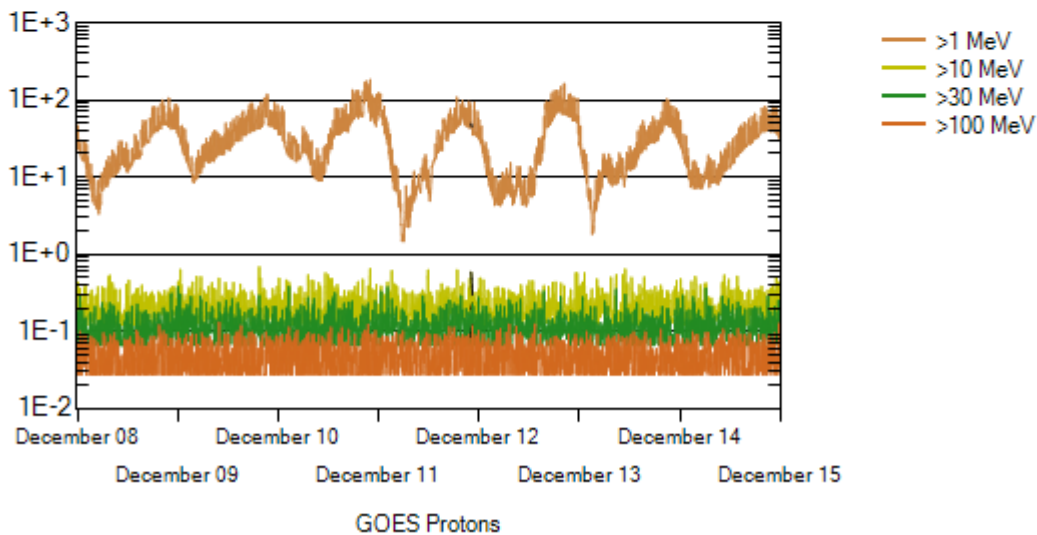
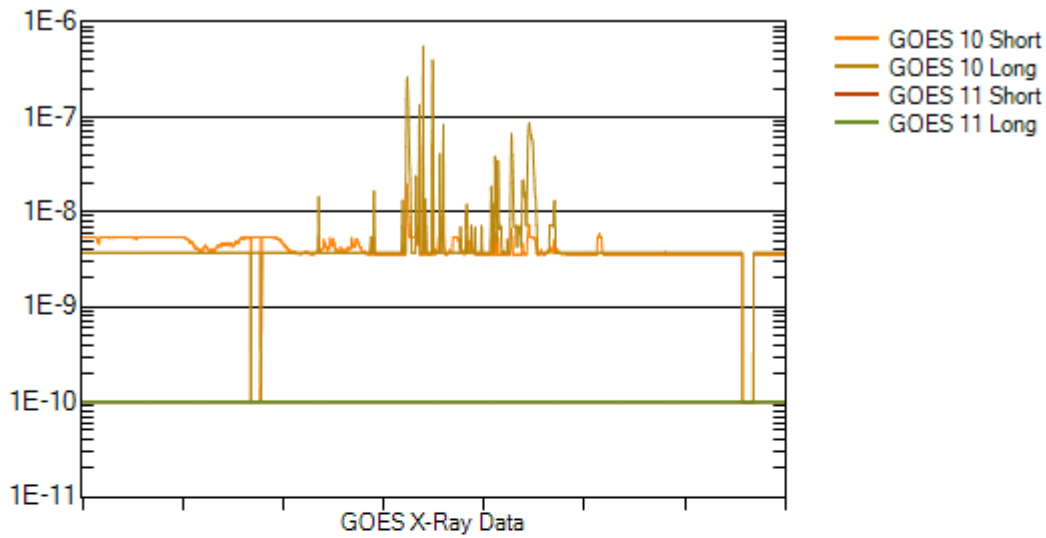
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV at GOES-11 (W135).

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 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

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.

