

Space Weather Highlights
05 - 11 October 2009

SWO PRF 1780
13 October 2009

Solar activity was very low. No flares were detected. The visible disk was spotless.

No proton events were observed at geosynchronous orbit.

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

Geomagnetic field activity was at quiet levels at all latitudes during 05 - 10 October. Activity increased to quiet to unsettled levels on 11 October. A geomagnetic sudden impulse (SI) occurred at 11/0042 UTC (09 nT, as measured by the Boulder USGS magnetometer). ACE solar wind observations indicated the unsettled conditions and SI on 11 October were associated with the onset of a recurrent coronal hole high-speed stream (CH HSS). The CH HSS commenced early on 11 October. Velocities increased to a peak of 463 km/sec at 11/1901 UTC. IMF changes associated with the onset of the CH HSS included increased Bt (peak 16 nT at 11/0558 UTC) and intermittent periods of southward Bz (minimum -10 nT at 11/0636 UTC).

Space Weather Outlook
14 October 2009 – 09 November 2009

Solar activity is expected to be very low.

No proton events are expected at geosynchronous orbit.

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

Geomagnetic field activity is expected to be at quiet levels on 14 October. Activity is expected to increase to quiet to unsettled levels during 15 - 16 October due to a coronal hole high-speed stream (CH HSS). Quiet conditions are expected during 17 - 23 October. Another round of quiet to unsettled conditions are expected during 24 - 25 October due to a recurrent CH HSS. Quiet conditions are expected during the remainder 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
05 October	70	0	0	<A1.0	0	0	0	0	0	0	0	0
06 October	69	0	0	<A1.0	0	0	0	0	0	0	0	0
07 October	69	0	0	<A1.0	0	0	0	0	0	0	0	0
08 October	69	0	0	<A1.0	0	0	0	0	0	0	0	0
09 October	69	0	0	<A1.0	0	0	0	0	0	0	0	0
10 October	70	0	0	<A1.0	0	0	0	0	0	0	0	0
11 October	70	0	0	<A1.0	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
05 October	3.7e+05	1.9e+04	4.0e+03		4.3e+04	
06 October	3.4e+05	1.9e+04	4.2e+03		5.7e+04	
07 October	4.6e+05	2.0e+04	4.5e+03		4.2e+04	
08 October	4.8e+05	2.0e+04	4.8e+03		3.9e+04	
09 October	3.5e+05	2.0e+04	4.6e+03		3.7e+04	
10 October	3.8e+05	2.0e+04	4.7e+03		4.6e+04	
11 October	5.5e+05	1.9e+04	4.3e+03		5.1e+04	

Daily Geomagnetic Data

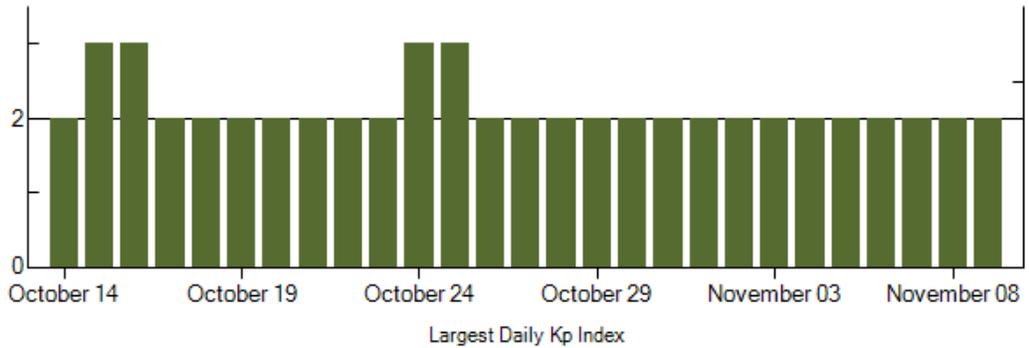
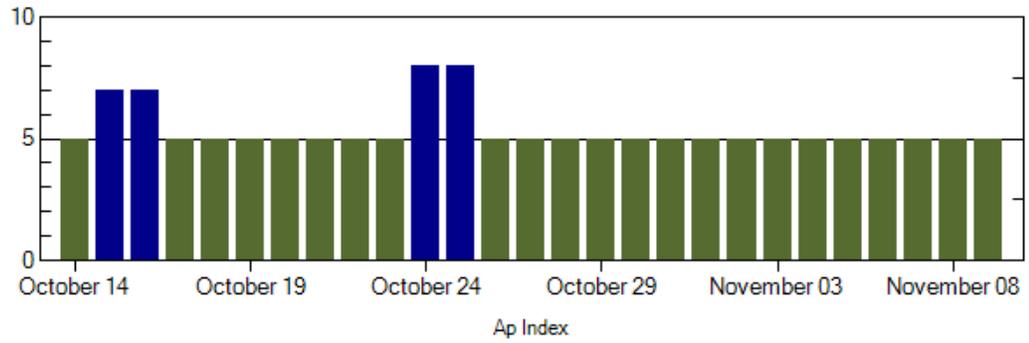
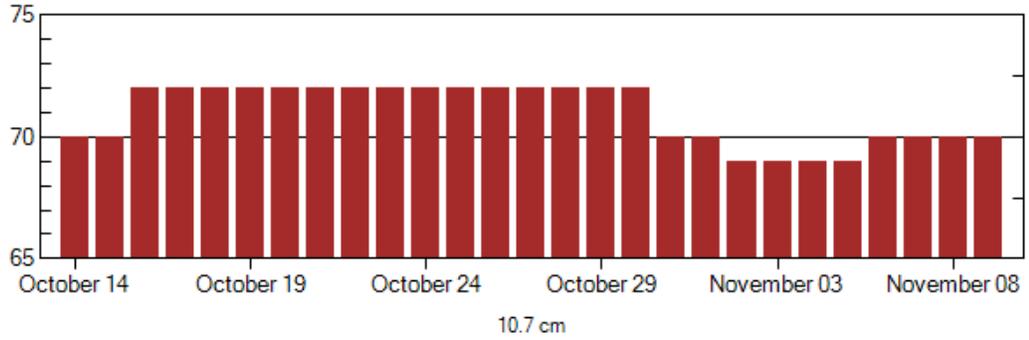
Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	05 October	2	0-2-0-0-1-1-0-0	0	0-0-0-0-0-0-1-0	2
06 October	1	0-0-0-0-1-1-0-0	0	0-0-1-0-0-0-0-0	1	0-1-0-0-0-0-0-0
07 October	1	0-0-0-0-1-1-0-0	0	0-0-0-1-0-0-0-0	2	0-0-0-0-1-0-0-0
08 October	1	0-1-0-0-0-1-0-1	0	0-0-0-0-0-0-0-0	2	1-1-0-0-0-0-1-1
09 October	1	0-1-0-1-0-0-0-0	1	0-0-2-1-0-0-0-0	3	0-1-1-1-1-1-1-1
10 October	0	0-0-0-0-1-0-0-0	2	0-0-1-2-2-0-0-0	2	0-0-0-1-1-0-1-1
11 October	7	2-2-3-1-1-2-2-1	4	1-0-3-2-1-0-1-1	6	1-1-3-1-1-2-2-1

Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
11 Oct 0050	SUMMARY: Geomagnetic Sudden Impulse	11 Oct 0042



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
14 Oct	70	5	2	28 Oct	72	5	2
15	70	7	3	29	72	5	2
16	72	7	3	30	72	5	2
17	72	5	2	31	70	5	2
18	72	5	2	01 Nov	70	5	2
19	72	5	2	02	69	5	2
20	72	5	2	03	69	5	2
21	72	5	2	04	69	5	2
22	72	5	2	05	69	5	2
23	72	5	2	06	70	5	2
24	72	8	3	07	70	5	2
25	72	8	3	08	70	5	2
26	72	5	2	09	70	5	2
27	72	5	2				



Energetic Events

Date	Time		X-ray		Optical Information			Peak		Sweep Freq
	Begin	Max	Class	Flux	Imp/ Brtns	Location Lat CMD	Rgn #	Radio Flux		Intensity
								1/2	Integ	245
<i>No Events Observed</i>										

Flare List

Date	Time			X-ray Class.	Imp / Brtns	Optical		Rgn
	Begin	Max	End			Location Lat CMD		
05 October	No Flares Observed							
06 October	No Flares Observed							
07 October	No Flares Observed							
08 October	No Flares Observed							
09 October	No Flares Observed							
10 October	No Flares Observed							
11 October	No Flares Observed							

Region Summary

Date	Location		Sunspot Characteristics					Flares			
	° Lat	° CMD	Area (10 ⁶ hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray		Optical	
								C	M	X	S
<i>No Active Regions</i>											



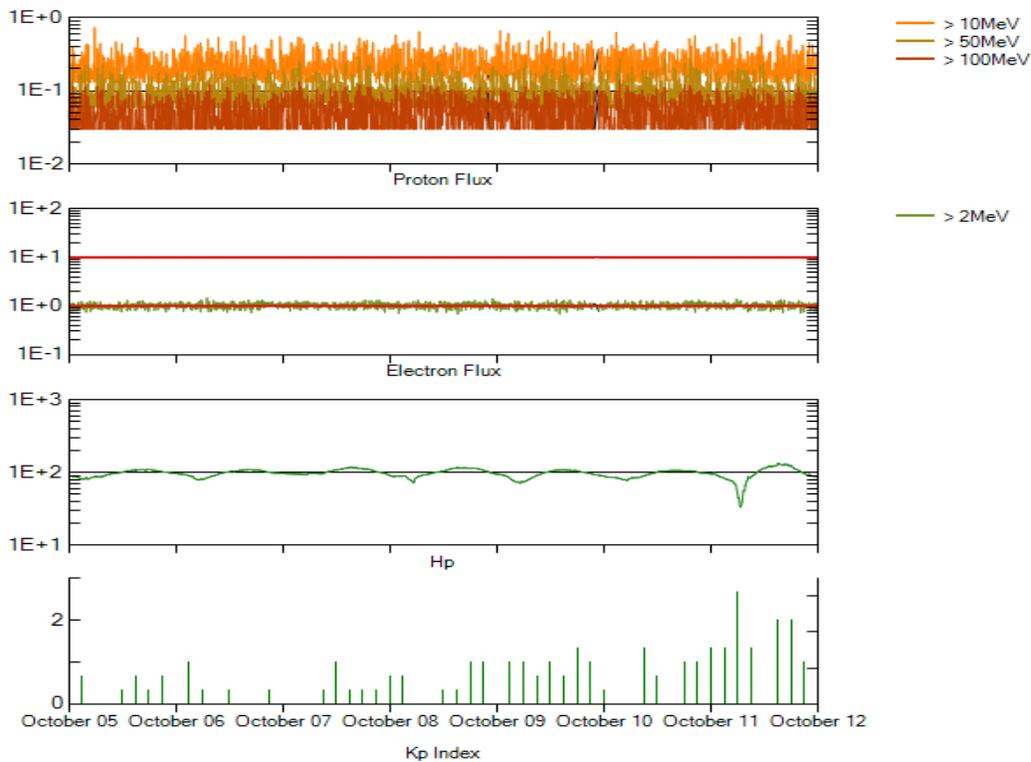
Recent Solar Indices (preliminary)
Of the observed monthly mean values

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
2007									
October	1.3	0.9	0.69	10.0	6.0	67.5	71.8	7	7.9
November	2.5	1.7	0.68	9.4	5.7	69.6	71.4	7	7.8
December	16.2	10.1	0.62	8.1	4.9	78.5	70.8	6	7.8
2008									
January	5.1	3.3	0.65	6.9	4.2	74.3	70.3	8	7.8
February	3.8	2.1	0.55	5.9	3.6	71.1	69.9	11	7.6
March	15.9	9.3	0.58	5.3	3.3	72.9	69.8	11	7.5
April	4.9	2.9	0.59	5.3	3.4	70.2	69.8	9	7.3
May	5.7	3.2	0.56	5.7	3.5	68.4	69.8	6	7.2
June	4.2	3.4	0.81	5.2	3.3	65.9	69.4	7	7.0
July	1.0	0.8	0.80	4.5	2.8	65.7	68.8	5	6.8
August	0.0	0.5	**	4.4	2.7	66.3	68.6	5	6.3
September	1.5	1.1	0.73	3.7	2.3	67.1	68.4	6	5.8
October	5.2	2.9	0.56	2.9	1.9	68.3	68.2	7	5.4
November	6.8	4.1	0.60	2.7	1.8	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	68.9	5	4.7
March	0.7	0.7	1.00	3.4	2.0	69.2	69.0	5	4.5
April	1.2	1.2	1.00			69.7		4	
May	3.9	2.9	0.74			70.5		4	
June	6.6	2.6	0.39			68.6		4	
July	5.0	3.5	0.70			68.2		4	
August	0.3	0.0	0.00			67.4		5	
September	6.6	4.2	0.64			70.4		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.

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





*Weekly Geosynchronous Satellite Environment Summary
Week Beginning 05 October 2009*

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.

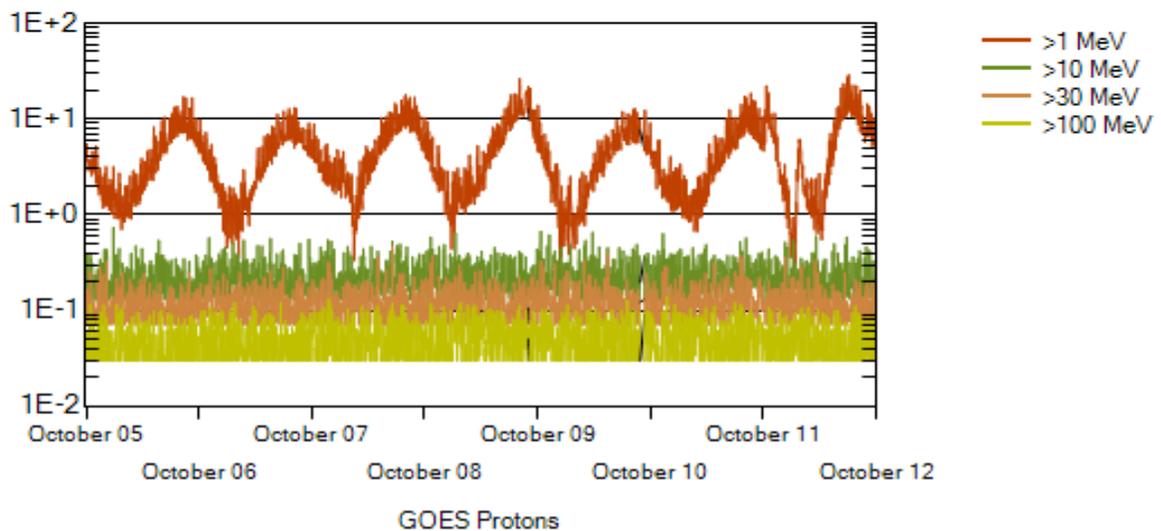
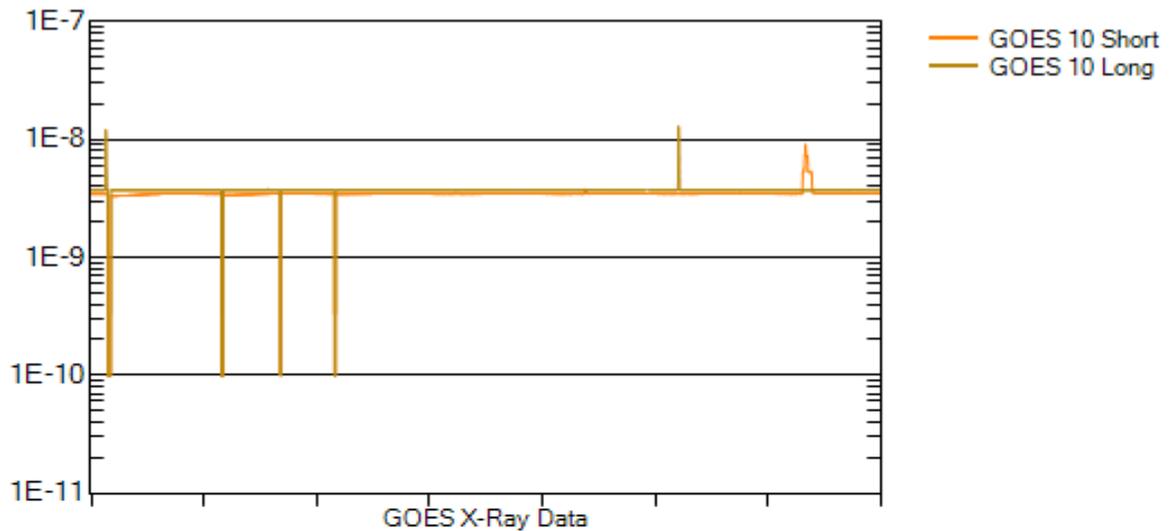
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV at GOES-11.

Hp plot contains the five minute averaged magnetic field H - component in nanoteslas (nT) as measured by GOES-11. 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/m²) 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 (protons/cm²-sec-sr) as measured by GOES-11 for each of the energy thresholds: >1, >10, >30 and >100 MeV. P10 event threshold is 10 pfu (protons/cm²-sec-sr) at greater than 10 MeV.

