

**Space Weather Highlights**  
**07 – 13 September 2009**

**SWO PRF 1776**  
**15 September 2009**

Solar activity was very low. A single low-level B flare occurred on 08 September. 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 during the period. Solar wind velocities at ACE ranged from 279 to 372 km/s. Interplanetary magnetic field activity showed intermittent periods of southward Bz from approximately 11/0557 UTC through the end of the period. Density reached a maximum of 10 p/cc at 13/1605 UTC.

**Space Weather Outlook**  
**16 September – 12 October 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 during the period.

Geomagnetic field activity is expected to be at quiet to unsettled levels, with isolated active periods during 16 – 17 September due to a recurrent coronal hole high-speed stream (CH HSS). Predominantly quiet levels are expected during 18 – 25 September. Quiet to unsettled conditions, with isolated active levels are expected on 26 September due to a recurrent CH HSS. Activity will decrease to predominantly quiet levels during 27 September – 11 October. Quiet levels, with isolated unsettled periods, are expected on 12 October, due to a recurrent CH HSS.



### 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
07 September	69	0	0	<A1.0	0	0	0	0	0	0	0	0
08 September	69	0	0	<A1.0	0	0	0	0	0	0	0	0
09 September	69	0	0	<A1.0	0	0	0	0	0	0	0	0
10 September	69	0	0	<A1.0	0	0	0	0	0	0	0	0
11 September	69	0	0	<A1.0	0	0	0	0	0	0	0	0
12 September	69	0	0	<A1.0	0	0	0	0	0	0	0	0
13 September	69	0	0	<A1.0	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
	07 September	8.0e+05	1.9e+04	4.2e+03		3.6e+05
08 September	9.7e+05	2.0e+04	4.6e+03		4.3e+05	
09 September	8.9e+05	2.0e+04	4.5e+03		2.7e+05	
10 September	7.9e+05	1.9e+04	4.4e+03		2.3e+05	
11 September	6.5e+05	2.0e+04	4.3e+03		1.3e+05	
12 September	6.4e+05	2.0e+04	4.4e+03		1.5e+05	
13 September	9.9e+05	2.1e+04	4.7e+03		9.1e+04	

### Daily Geomagnetic Data

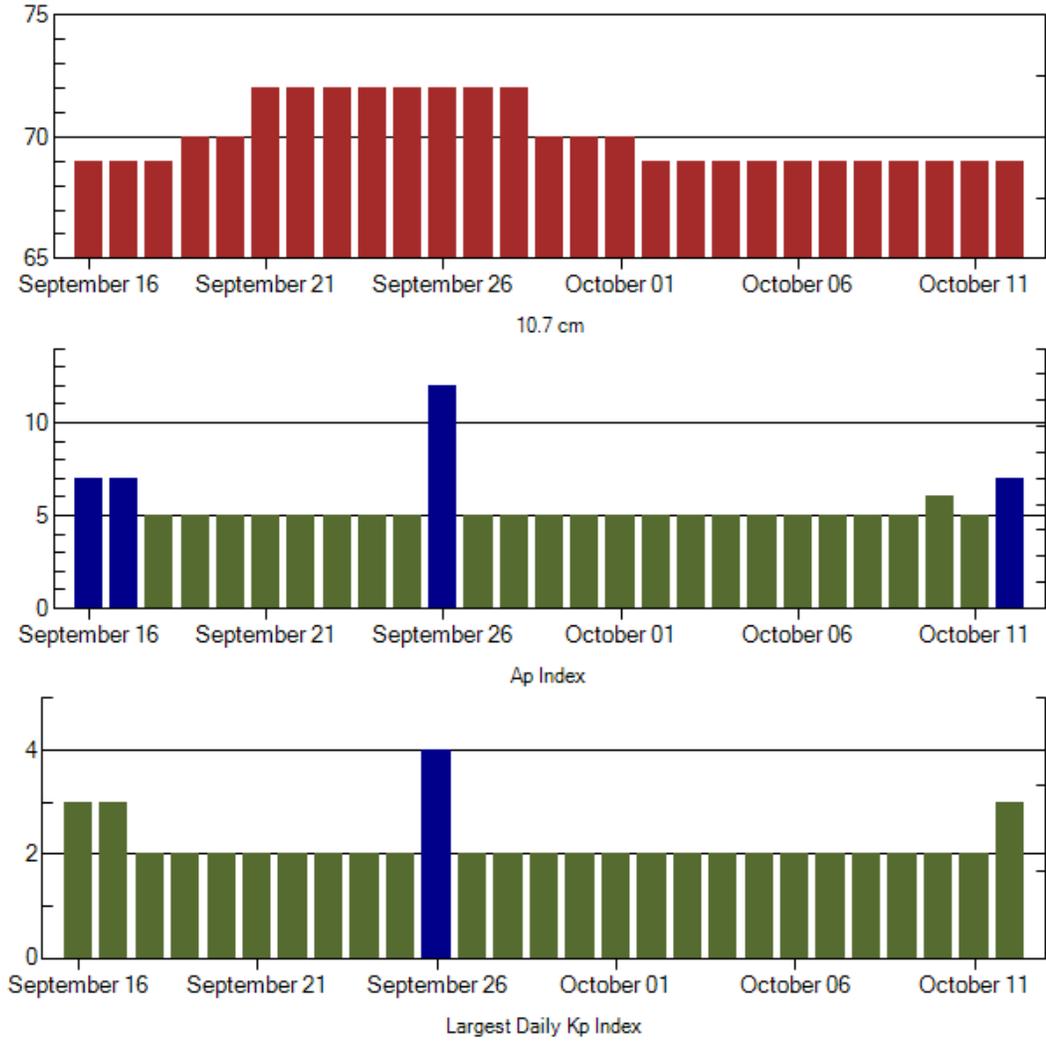
Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	07 September	3	0-0-0-1-2-2-0-0	2	0-0-0-2-1-0-0-0	3
08 September	2	0-0-0-0-1-1-1-0	2	1-0-0-0-0-1-1-0	2	1-0-0-0-0-0-0-1
09 September	2	1-0-0-1-1-0-1-0	0	0-0-0-0-0-0-0-0	1	1-0-0-0-0-0-0-1
10 September	2	0-0-0-1-2-0-1-0	0	0-0-0-0-0-0-0-0	2	0-0-0-0-1-1-1-1
11 September	2	0-1-0-0-2-1-1-1	3	0-0-0-1-2-2-0-1	4	0-1-1-1-1-1-1-2
12 September	1	0-1-0-0-1-0-0-1	1	0-0-0-1-2-0-0-0	4	0-1-1-1-1-1-2-2
13 September	4	1-1-1-1-1-1-2-2	4	0-0-2-2-1-2-1-1	6	1-1-2-1-1-3-2-2

### Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
<i>No Alerts Issued</i>		



### 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
16 Sep	69	7	3	30 Sep	70	5	2
17	69	7	3	01 Oct	70	5	2
18	69	5	2	02	69	5	2
19	70	5	2	03	69	5	2
20	70	5	2	04	69	5	2
21	72	5	2	05	69	5	2
22	72	5	2	06	69	5	2
23	72	5	2	07	69	5	2
24	72	5	2	08	69	5	2
25	72	5	2	09	69	5	2
26	72	12	4	10	69	6	2
27	72	5	2	11	69	5	2
28	72	5	2	12	69	7	3
29	70	5	2				



***Energetic Events***

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

*No Events Observed*

***Flare List***

Date	Time			X-ray Class.	Imp / Brtns	Optical		Rgn
	Begin	Max	End			Location Lat CMD		
07 September	No Flares Observed							
08 September	1701	1705	1710	B2.2				
09 September	No Flares Observed							
10 September	No Flares Observed							
11 September	No Flares Observed							
12 September	No Flares Observed							
13 September	No Flares Observed							

***Region Summary***

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

*No Active Regions*



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

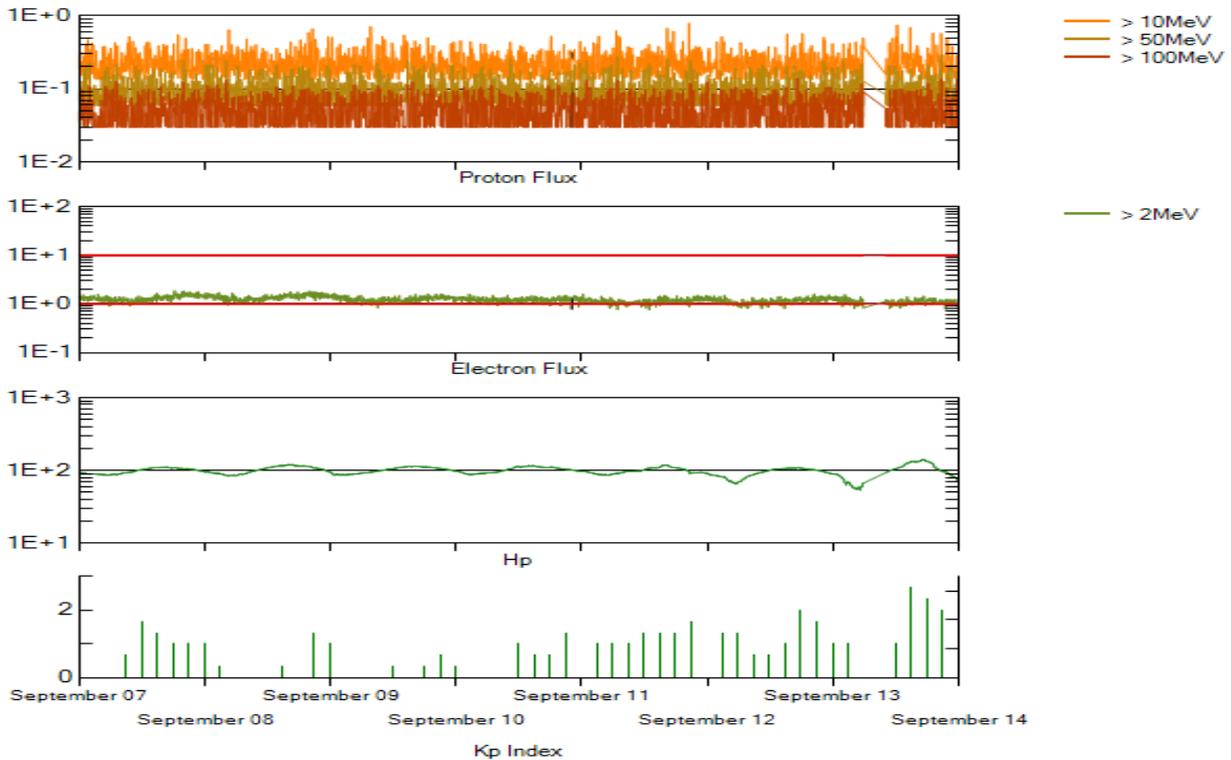
Month	Sunspot Numbers			Smooth values		Radio Flux		Geomagnetic	
	Observed SEC	values RI	Ratio RI/SEC	SEC	RI	*Penticton 10.7 cm	Smooth Value	Planetary Ap	Smooth Value
<b>2007</b>									
September	4.8	2.4	0.50	9.9	5.9	67.1	71.5	9	7.8
October	1.3	0.9	0.70	10.0	6.0	65.5	71.5	9	7.9
November	2.5	1.7	0.68	9.4	5.7	69.7	71.1	5	7.8
December	16.2	10.1	0.62	8.1	4.9	78.6	70.5	4	7.8
<b>2008</b>									
January	5.1	3.3	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	3.4	70.3	69.6	9	7.1
May	5.7	3.2	0.51	5.7	3.5	68.4	69.7	6	6.9
June	4.2	3.4	0.74	5.2	3.3	65.9	69.2	7	6.8
July	1.0	0.8	0.50	4.5	2.8	65.8	68.8	6	6.6
August	0.0	0.5	-1.00	4.4	2.7	66.4	68.6	5	6.2
September	1.5	1.1	0.73	3.7	2.3	67.1	68.4	5	5.8
October	5.2	2.9	0.56	2.9	1.9	68.3	68.2	6	5.4
November	6.8	4.1	0.60	2.7	1.8	68.6	68.3	3	5.1
December	1.3	0.8	0.62	2.7	1.7	69.2	68.5	2	4.9
<b>2009</b>									
January	2.8	1.3	0.54	3.0	1.8	69.8	68.7	3	4.8
February	2.5	1.4	0.56	3.1	1.9	70.0	68.9	4	4.7
March	0.7	0.7	1.00			69.2		4	
April	1.2	1.2	1.00			69.7		4	
May	3.9	2.9	0.74			70.6		4	
June	6.6	2.6	0.39			68.6		5	
July	5.0	3.5	0.70			68.3		5	
August	0.3	0.0	0.00			67.3		5	

**NOTE:** All values are preliminary estimates except for RI Sunspot Numbers which are final values when available.

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 07 September 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/cm<sup>2</sup>-sec-sr) as measured by GOES-11 (W135) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

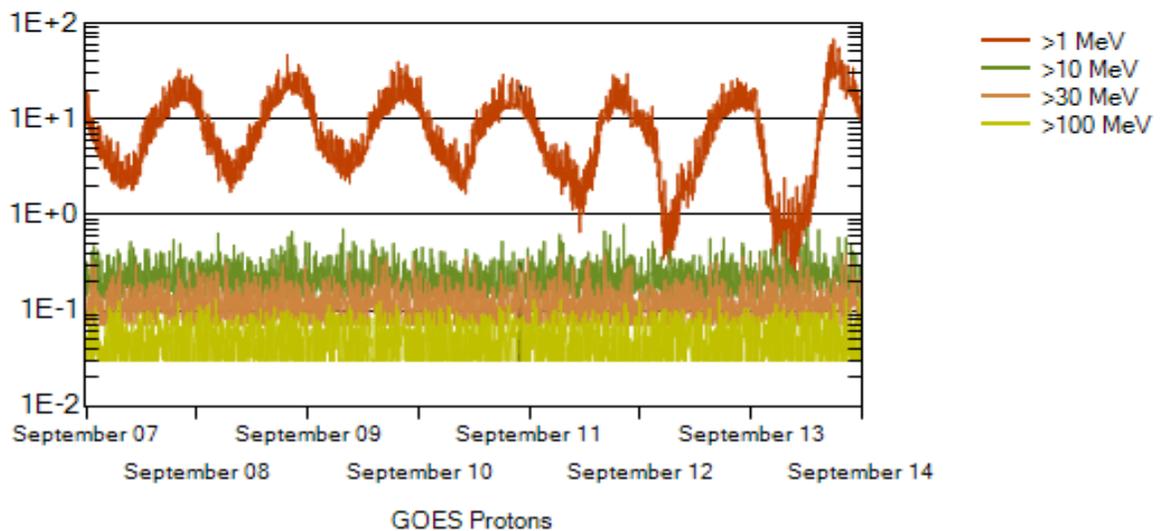
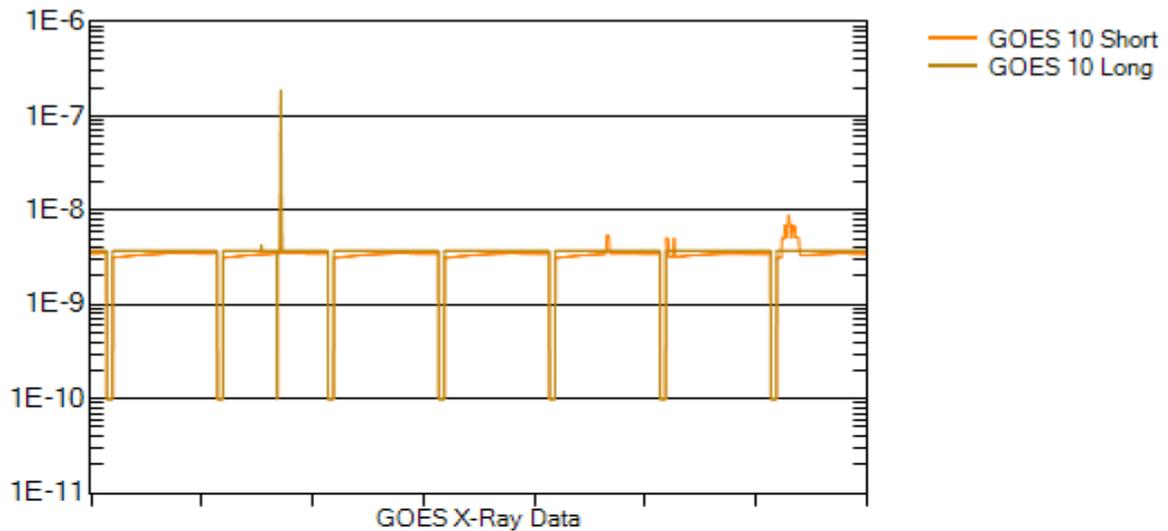
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm<sup>2</sup>-sec-sr) with energies greater than 2 MeV at GOES-11.

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 ( $\text{watts/m}^2$ ) 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 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.

