

**Space Weather Highlights**  
**31 August – 06 September 2009**

**SWO PRF 1775**  
**08 September 2009**

Solar activity was very low. Region 1025 (N17, L=170, class/area Bxo/010 on 01 September) was numbered on 31 August. Region 1025 remained inactive and decayed to spotless plage on 02 September.

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 predominantly quiet levels during the period. Unsettled to active periods were observed at high latitudes between 04/0000 UTC to 04/0900 UTC. Solar wind data at ACE indicated the increased activity was due to a recurrent coronal hole high speed stream (CH HSS). Velocities at ACE increased from a low of 342 km/s at 03/1259 UTC to a high of 504 km/s at 04/1831 UTC, before gradually decreasing to 371 km/s at the end of the period. Interplanetary magnetic field activity included an increase in Bt between 03/1344 UTC and 04/1208 UTC (maximum of 10 nT at 04/0150), while Bz varied between  $\pm 6$  nT. Density reached a maximum of 10 p/cc at 04/0528 UTC.

**Space Weather Outlook**  
**09 September – 05 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 to moderate flux levels during the period.

Geomagnetic field activity is expected to be mostly quiet, with isolated unsettled levels during 09 – 10 September due to a weak CH HSS. Quiet levels are expected during 11 – 14 September. Quiet to unsettled conditions, with isolated active levels are expected during 15 – 17 September due to a 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 CH HSS. Activity is expected to decrease to predominantly quiet levels during 27 September – 05 October.



### *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
31 August	68	12	10	<A1.0	0	0	0	0	0	0	0	0
01 September	69	12	10	<A1.0	0	0	0	0	0	0	0	0
02 September	68	0	0	<A1.0	0	0	0	0	0	0	0	0
03 September	69	0	0	<A1.0	0	0	0	0	0	0	0	0
04 September	68	0	0	<A1.0	0	0	0	0	0	0	0	0
05 September	69	0	0	<A1.0	0	0	0	0	0	0	0	0
06 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
	31 August	5.8e+05	1.9e+04	4.1e+03		2.3e+05
01 September	7.2e+05	1.9e+04	4.2e+03		8.2e+05	
02 September	7.1e+05	2.0e+04	4.3e+03		7.7e+05	
03 September	1.2e+06	2.1e+04	4.4e+03		1.2e+06	
04 September	4.7e+05	1.9e+04	4.2e+03		1.9e+05	
05 September	6.6e+05	1.9e+04	4.2e+03		2.7e+05	
06 September	8.2e+05	1.9e+04	4.4e+03		3.4e+05	

### *Daily Geomagnetic Data*

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	31 August	5	2-1-1-2-2-1-1-1	4	2-1-1-2-2-2-1-0	5
01 September	2	1-1-0-0-2-0-0-0	2	1-0-0-2-2-0-0-0	4	1-0-0-1-1-2-1-1
02 September	2	2-1-0-0-1-1-0-1	0	0-1-0-0-0-0-0-0	3	2-1-0-0-1-0-1-1
03 September	4	0-0-1-1-1-2-2-2	2	1-0-1-1-0-1-1-1	4	1-0-1-1-1-2-1-2
04 September	4	2-2-1-2-1-1-1-0	9	2-3-3-4-1-1-0-0	5	2-2-1-2-1-1-1-1
05 September	2	1-1-1-1-0-0-0-1	0	0-1-0-0-0-0-0-0	2	1-2-0-0-0-0-0-1
06 September	2	0-2-0-1-0-1-1-0	1	0-1-0-0-0-0-0-1	3	0-2-0-1-0-0-1-1

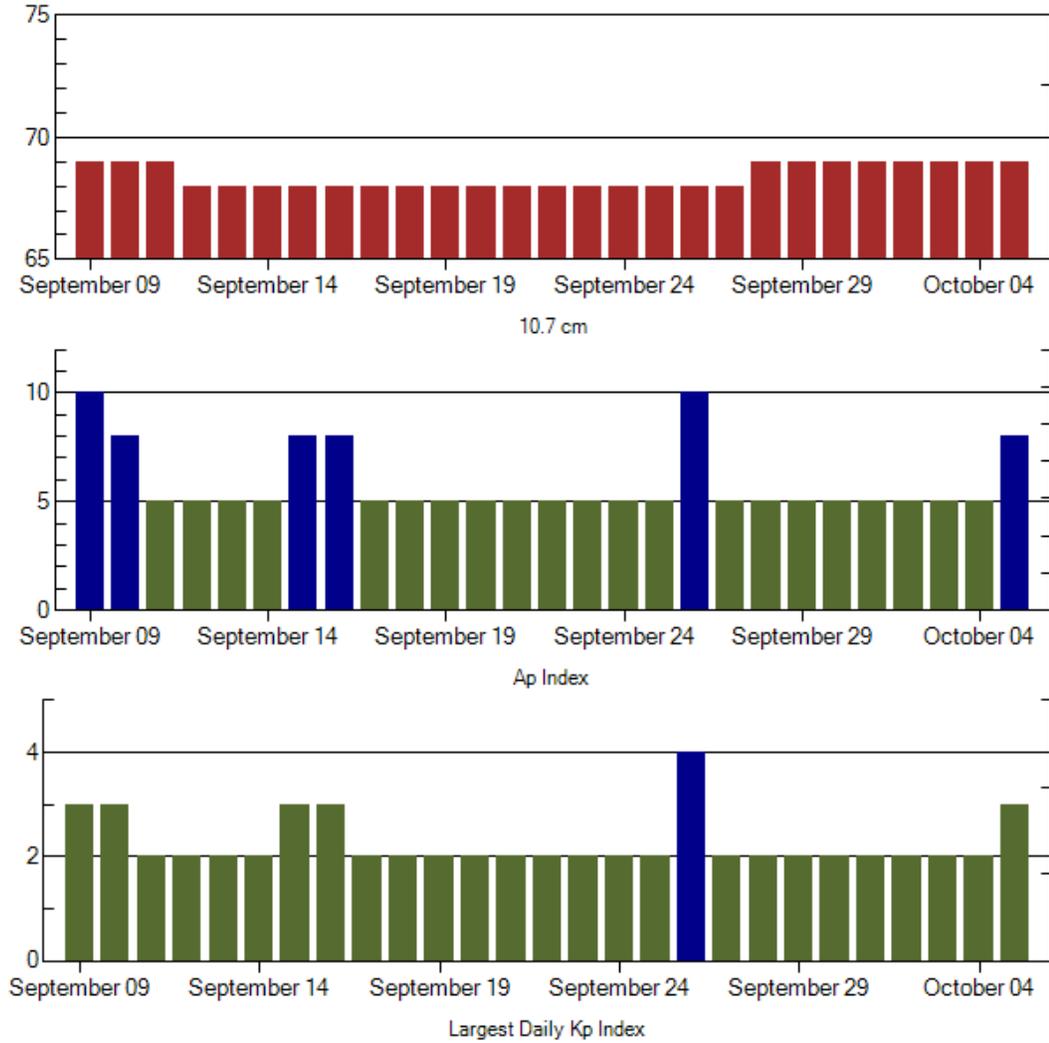
### *Alerts and Warnings Issued*

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
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*No Alerts Issued*



### 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
09 Sep	69	10	3	23 Sep	68	5	2
10	69	8	3	24	68	5	2
11	69	5	2	25	68	5	2
12	68	5	2	26	68	10	4
13	68	5	2	27	68	5	2
14	68	5	2	28	69	5	2
15	68	8	3	29	69	5	2
16	68	8	3	30	69	5	2
17	68	5	2	01 Oct	69	5	2
18	68	5	2	02	69	5	2
19	68	5	2	03	69	5	2
20	68	5	2	04	69	5	2
21	68	5	2	05	69	8	3
22	68	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
<i>No Events Observed</i>										

***Flare List***

Date	Time			X-ray	Imp /	Optical	Rgn
	Begin	Max	End	Class.	Brtns	Location Lat CMD	
31 August	No Flares Observed						
01 September	No Flares Observed						
02 September	No Flares Observed						
03 September	No Flares Observed						
04 September	No Flares Observed						
05 September	No Flares Observed						
06 September	No Flares Observed						

***Region Summary***

Date	Location		Sunspot Characteristics					Flares										
	Helio		Area (10 <sup>6</sup> hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical							
	(° Lat ° CMD)	Lon						C	M	X	S	1	2	3	4			
<i>Region 1025</i>																		
31 Aug	N17E32	169	10	3	BXO	2	B											
01 Sep	N17E18	170	10	3	BXO	2	B											
02 Sep	N17E05	170																
03 Sep	N17W08	170																
04 Sep	N17W21	170																
05 Sep	N17W34	170																
06 Sep	N17W47	170																
																		0

Still on Disk.  
Absolute heliographic longitude: 170



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

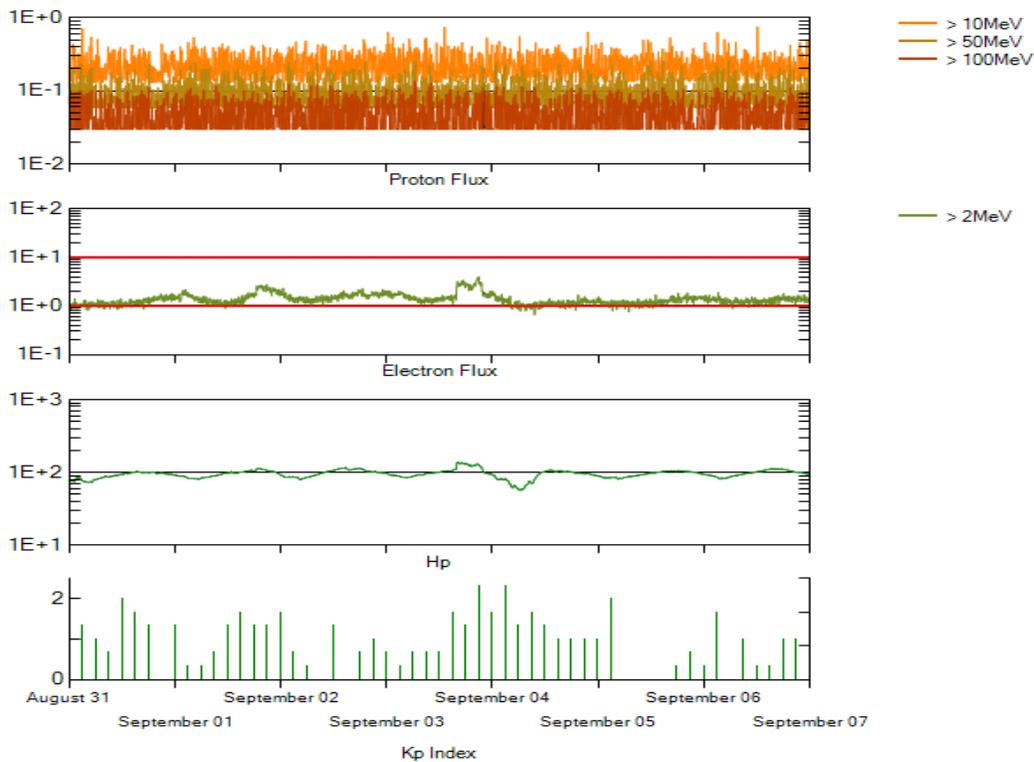
Month	Sunspot Numbers			Radio Flux		Geomagnetic			
	Observed values SEC	Ratio RI	Ratio RI/SEC	Smooth values SEC	Smooth values RI	*Penticton 10.7 cm	Smooth Value	Planetary Ap	Smooth Value
<b>2007</b>									
September	4.8	2.4	0.50	9.9	5.9	67.1	71.5	9	7.8
October	1.3	0.9	0.70	10.0	6.0	65.5	71.5	9	7.9
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 31 August 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.

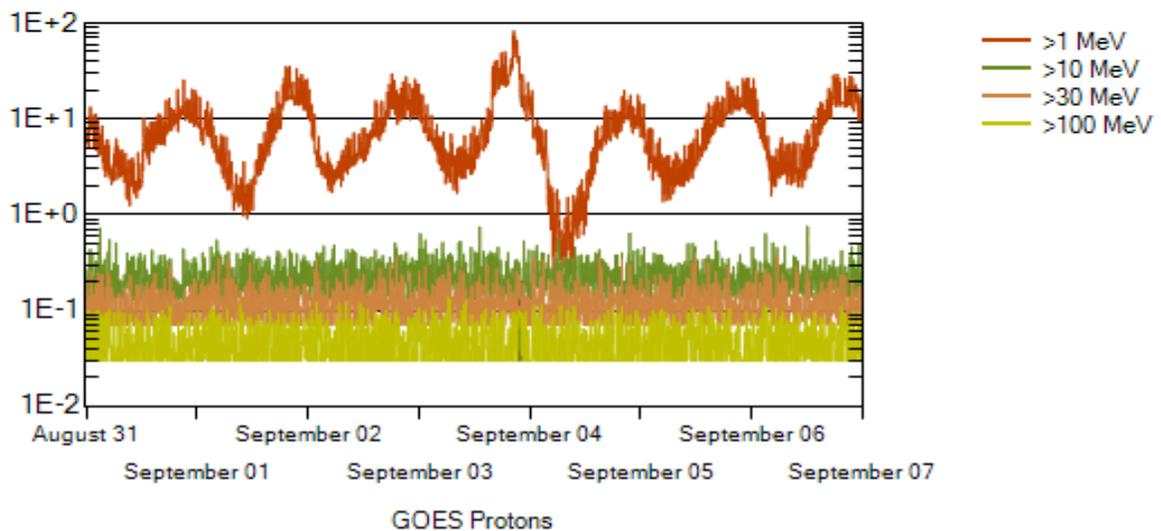
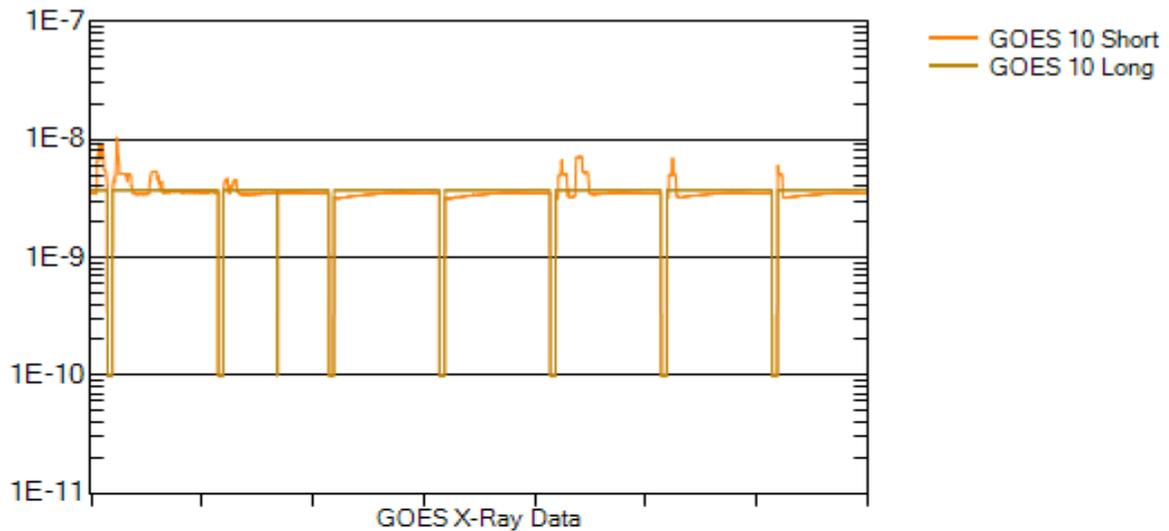
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm<sup>2</sup>-sec-sr) with energies greater than 2 MeV at GOES-11.

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 (watts/m<sup>2</sup>) 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/cm<sup>2</sup>-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/cm<sup>2</sup>-sec-sr) at greater than 10 MeV.

