

Space Weather Highlights
14 – 20 September 2009

SWO PRF 1777
22 September 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 during most of the period with brief unsettled periods detected on 14, 17, and 20 September. ACE solar wind measurements indicated a recurrent coronal hole high-speed stream was in progress from the start of the period through midday on 18 September. Velocities ranged from 309 to 504 km/sec. IMF Bz was variable in the +5 to -5 nT range during most of the period.

Space Weather Outlook
23 September – 19 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 through the period.

Geomagnetic field activity is expected to be at quiet levels during 23 - 25 September. Activity is expected to increase to quiet to unsettled levels during 26 - 27 September with a chance for brief active periods due to a recurrent coronal hole high-speed stream. Quiet conditions are expected during 28 September - 19 October.



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
14 September	69	0	0	<A1.0	0	0	0	0	0	0	0	0
15 September	69	0	0	<A1.0	0	0	0	0	0	0	0	0
16 September	69	0	0	<A1.0	0	0	0	0	0	0	0	0
17 September	69	0	0	<A1.0	0	0	0	0	0	0	0	0
18 September	69	0	0	<A1.0	0	0	0	0	0	0	0	0
19 September	71	0	0	<A1.0	0	0	0	0	0	0	0	0
20 September	71	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
	14 September	5.4e+05	2.0e+04	4.1e+03		5.1e+04
15 September	5.9e+05	1.9e+04	4.0e+03		6.0e+04	
16 September	8.3e+05	1.9e+04	3.8e+03		8.1e+04	
17 September	4.8e+05	1.9e+04	4.1e+03		6.1e+04	
18 September	4.1e+05	1.9e+04	4.2e+03		6.8e+04	
19 September	5.1e+05	2.0e+04	4.3e+03		8.1e+04	
20 September	9.8e+05	2.0e+04	4.3e+03		1.0e+05	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	14 September	4	2-2-1-1-1-1-1-1	3	2-1-1-1-0-1-1-0	5
15 September	4	1-2-2-1-1-1-1-1	*	*-*-*-1-*-**	5	1-2-2-1-1-2-1-2
16 September	5	2-2-2-2-1-0-1-1	4	1-1-3-2-0-0-0-0	6	2-2-2-1-1-1-2-1
17 September	6	3-3-2-0-1-1-1-1	3	1-2-2-2-1-0-0-0	8	3-3-2-1-1-2-2-2
18 September	2	1-1-0-0-1-0-1-1	0	1-0-0-0-0-0-0-0	3	2-1-0-0-1-1-1-1
19 September	1	0-0-1-1-0-0-0-0	1	0-0-1-1-0-0-0-0	2	1-0-1-0-1-1-0-1
20 September	3	0-0-0-0-1-1-2-2	2	0-0-0-1-1-0-2-2	4	0-1-0-0-1-0-2-3

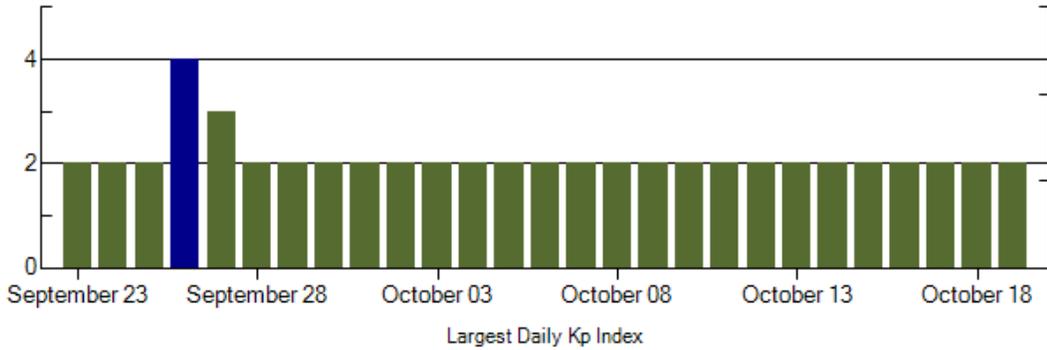
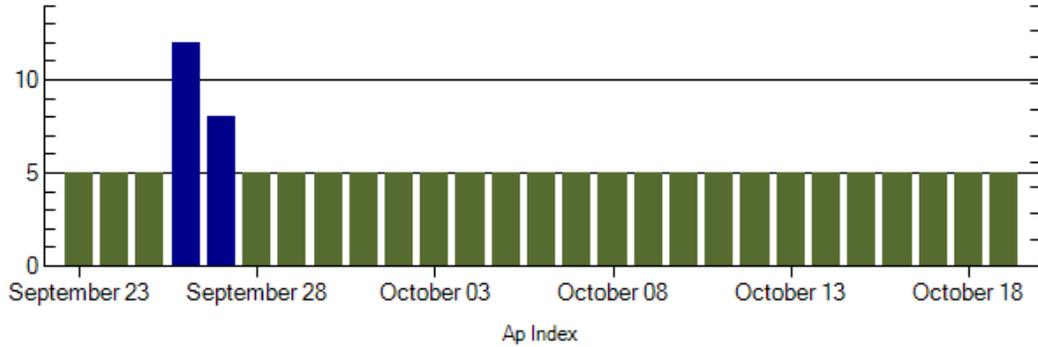
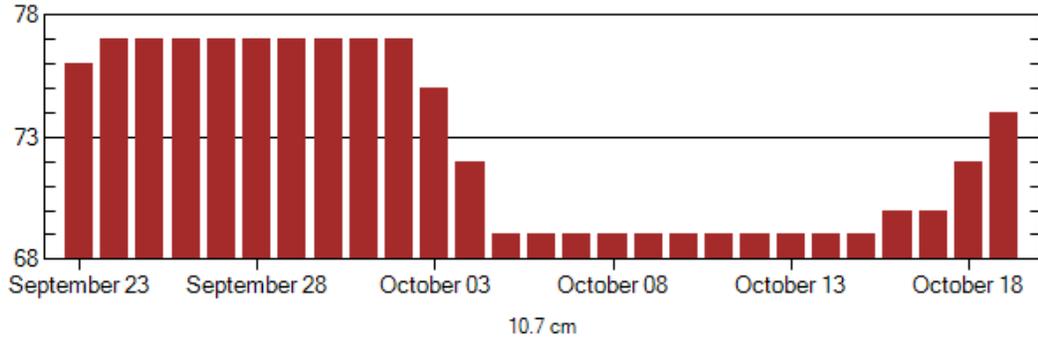
Alerts and Warnings Issued

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
23 Sep	76	5	2	07 Oct	69	5	2
24	77	5	2	08	69	5	2
25	77	5	2	09	69	5	2
26	77	12	4	10	69	5	2
27	77	8	3	11	69	5	2
28	77	5	2	12	69	5	2
29	77	5	2	13	69	5	2
30	77	5	2	14	69	5	2
01 Oct	77	5	2	15	69	5	2
02	77	5	2	16	70	5	2
03	75	5	2	17	70	5	2
04	72	5	2	18	72	5	2
05	69	5	2	19	74	5	2
06	69	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
								245	2695	II
<i>No Events Observed</i>										

Flare List

Date	Time			X-ray Class.	Imp / Brtns	Optical		Rgn
	Begin	Max	End			Location Lat CMD		
14 September	No Flares Observed							
15 September	No Flares Observed							
16 September	No Flares Observed							
17 September	No Flares Observed							
18 September	No Flares Observed							
19 September	No Flares Observed							
20 September	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	1	2	3
<i>No Active Regions</i>														



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

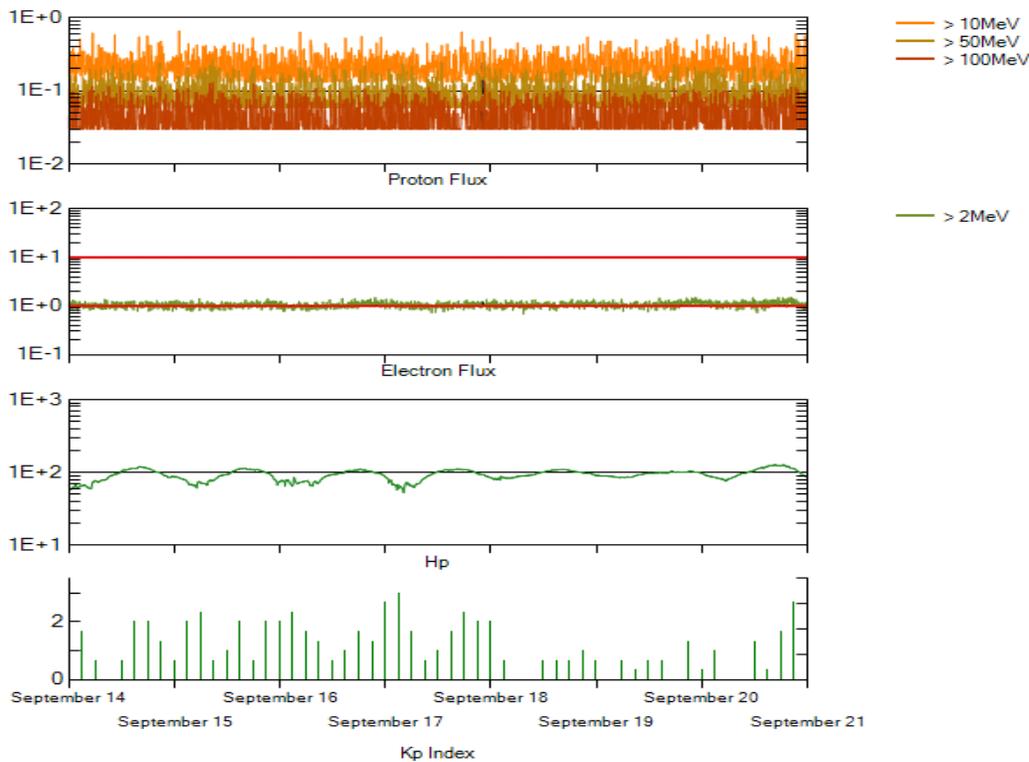
Month	Sunspot Numbers			Smooth values		Radio Flux		Geomagnetic	
	Observed SEC	values RI	Ratio RI/SEC	SEC	RI	*Penticton 10.7 cm	Smooth Value	Planetary Ap	Smooth Value
2007									
September	4.8	2.4	0.50	9.9	5.9	67.1	71.5	9	7.8
October	1.3	0.9	0.70	10.0	6.0	65.5	71.5	9	7.9
November	2.5	1.7	0.68	9.4	5.7	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
2008									
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
2009									
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 14 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/cm²-sec -sr) as measured by GOES-11 (W135) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

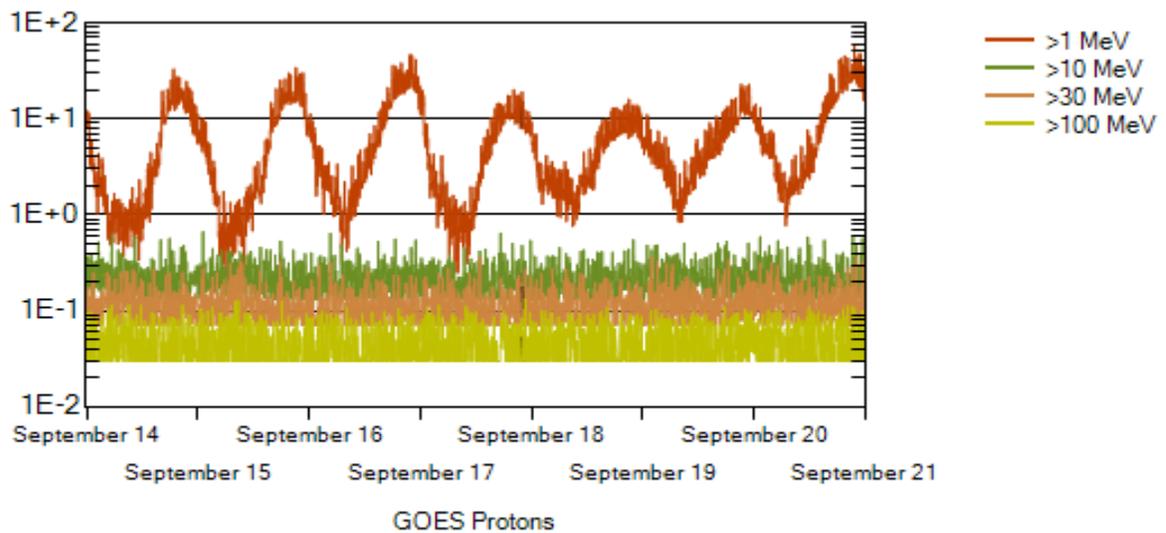
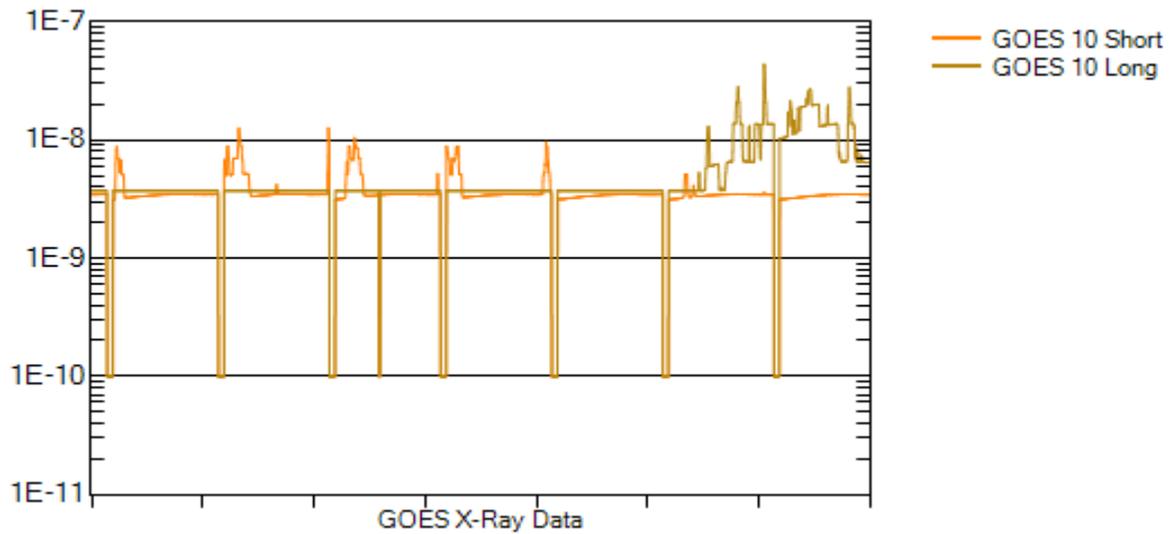
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV at GOES-11.

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.

