

Space Weather Highlights
06 September - 12 September 2010

SWPC PRF 1828
14 September 2010

Solar activity was as at very low to low levels during the period. Activity was very low during 07 September and 09-12 September, with occasional low to moderate B-class flares from Region 1105 ((N19, L=049, class/area Cai/150 on 06 September) and Region 1106 (S19, L=209, class/area Cso/100 on 13 September). Activity was at low levels on 06 and 08 September, with two C-class flares from Region 1105, including a long-duration C3 flare at 08/2333 UTC. An 11-degree solar filament near N11E19 disappeared sometime between 07/1359-1439 UTC. A 20-degree filament eruption was observed near N25E25 on SDO/AIA 193 imagery at 11/0204 UTC. An associated partial-halo coronal mass ejection (CME) was observed on SOHO LACO C3 imagery. The majority of the CME was observed over the northeast limb.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit reached moderate levels during 06-08 September. Normal levels were observed for the rest of the period.

Geomagnetic field activity was at predominantly to unsettled levels during 06-09 September, with isolated active to major storm levels at high latitudes. The increased activity was due to a recurrent coronal hole high-speed stream (CH HSS). Solar wind observations from ACE showed increased solar wind velocities (peak 427 km/s), increased IMF Bt (peak 9nT), and intervals of southward IMF Bz (minimum -6nT). Activity decreased to quiet levels for the rest of the period.

Space Weather Outlook
15 September – 11 October 2010

Solar activity is expected to be at very low to low levels.

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 levels from 15-20 September. High levels are expected from 21-29 September. Normal to moderate levels are expected for the remainder of the period.

Geomagnetic field activity is expected to be quiet on 15 September. Activity is expected to increase to quiet to unsettled levels, with isolated active periods on 16 September through early on 18 September. The increase in activity is due to the effects from the CME observed on 11 September and a weak recurrent CH HSS. Quiet levels are expected on 19 September. Activity is expected to increase to quiet to unsettled levels with a chance for active periods during 20-22 September, due to a recurrent CH HSS. Quiet levels are expected for the remainder of the period.



Daily Solar Data

Date	Radio	Sun	Sunspot	X-ray	Flares							
	Flux	spot	Area	Background	X-ray Flux			Optical				
	10.7 cm	No.	(10 ⁻⁶ hemi.)		C	M	X	S	1	2	3	4
06 September	80	24	150	B1.1	1	0	0	0	0	0	0	0
07 September	76	16	40	A8.0	0	0	0	1	0	0	0	0
08 September	75	11	10	A7.5	1	0	0	0	0	0	0	0
09 September	74	0	0	A9.4	0	0	0	0	0	0	0	0
10 September	75	11	50	B1.4	0	0	0	0	0	0	0	0
11 September	78	11	50	B1.5	0	0	0	0	0	0	0	0
12 September	78	26	90	B1.2	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
06 September	1.8e+06	1.5e+04	3.4e+03		1.2e+07	
07 September	6.8e+05	1.4e+04	3.4e+03		1.4e+07	
08 September	3.0e+05	1.4e+04	3.3e+03		7.5e+06	
09 September	7.2e+05	2.1e+04	3.7e+03		1.7e+06	
10 September	4.4e+05	1.5e+04	3.5e+03		2.6e+06	
11 September	5.2e+05	1.5e+04	3.6e+03		3.5e+06	
12 September	7.2e+05	1.4e+04	3.5e+03		4.8e+06	

Daily Geomagnetic Data

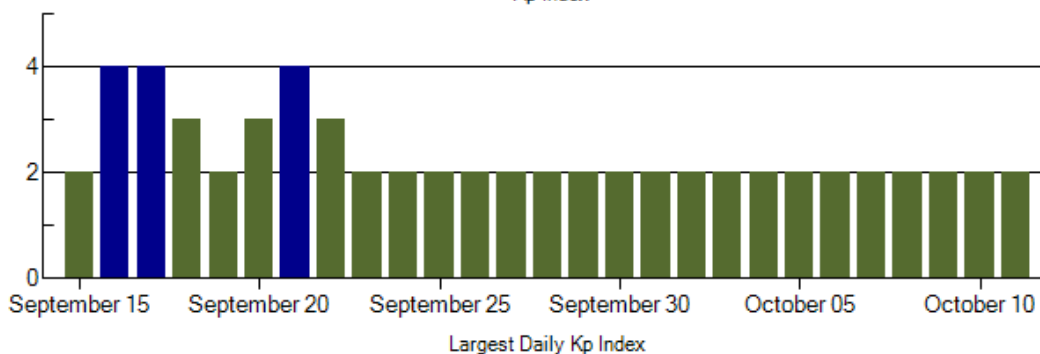
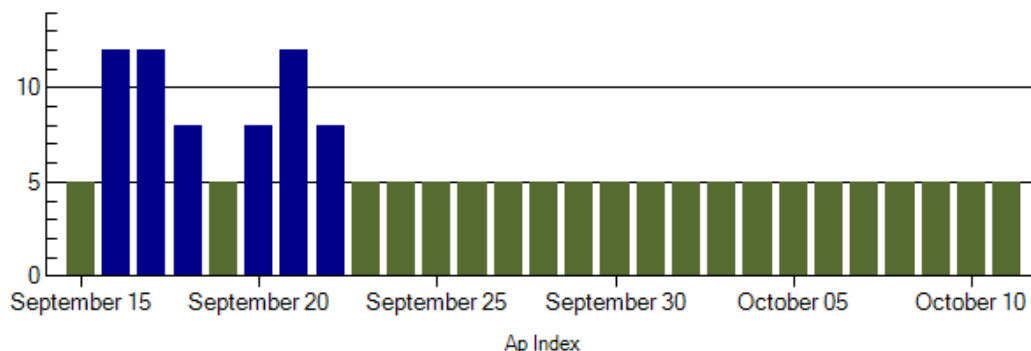
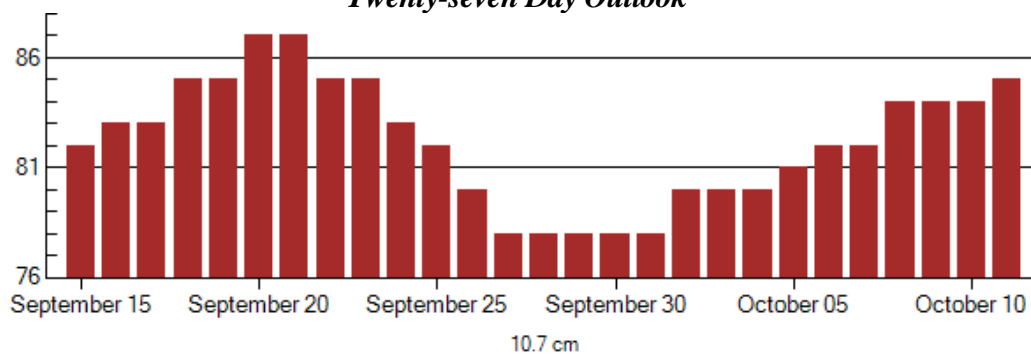
Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
06 September	6	1-3-2-2-1-1-1-2	8	2-4-2-2-2-1-0-1	8	2-3-1-1-1-1-2-2
07 September	7	2-2-2-2-2-2-2-2	10	2-2-1-4-3-2-2-2	9	2-2-1-3-2-3-2-2
08 September	8	2-3-1-2-3-2-2-1	21	2-2-1-3-6-5-2-0	10	2-3-0-2-3-3-2-2
09 September	4	1-0-0-1-2-3-1-1	6	1-0-0-1-4-3-0-1	4	1-0-0-1-2-2-0-2
10 September	2	1-1-0-1-0-1-0-0	1	2-0-0-0-0-0-0-0	2	1-1-0-0-0-0-0-0
11 September	1	0-0-0-0-1-1-0-0	0	0-0-0-0-0-0-0-0	1	0-0-0-0-1-0-1-1
12 September	1	0-0-1-0-0-1-0-0	0	0-0-0-0-0-0-0-0	1	0-0-0-0-0-0-0-1

Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
06 Sep 0505	ALERT: Geomagnetic K = 4	06 Sep 0502
07 Sep 0942	WARNING: Geomagnetic K = 4	07 Sep 0945 - 1600
07 Sep 1121	ALERT: Geomagnetic K = 4	07 Sep 1120



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
15 Sep	82	5	2	29 Sep	78	5	2
16	83	12	4	30	78	5	2
17	83	12	4	01 Oct	78	5	2
18	85	8	3	02	80	5	2
19	85	5	2	03	80	5	2
20	87	8	3	04	80	5	2
21	87	12	4	05	81	5	2
22	85	8	3	06	82	5	2
23	85	5	2	07	82	5	2
24	83	5	2	08	84	5	2
25	82	5	2	09	84	5	2
26	80	5	2	10	84	5	2
27	78	5	2	11	85	5	2
28	78	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	Max	Class	Brtns	Lat CMD	#	245	2695	II	IV

No Events Observed

Flare List

Date	Time			X-ray Class.	Imp / Brtns	Optical		Rgn
	Begin	Max	End			Location Lat CMD		
06 September	0026	0034	0042	B2.1				
	0249	0252	0257	B1.5				
	0510	0515	0519	B2.5				
	0632	0922	0934	B5.0				
	0909	0922	0930	B5.3				
	1458	1459	1516	C2.5	SF	N17W60		1105
	1605	1627	1641	B3.5				1105
07 September	0427	0435	0442	B1.3				
	0520	0528	0549	B4.4				
	0617	0617	0623		SF	N20W66		1105
	0856	0857	0901	B2.1	SF	N18W11		
08 September	0036	0048	0057	B2.3				1105
	2305	2333	0010	C3.3				1105
09 September	No Flares Observed							
10 September	0252	0302	0318	B3.2				
	0036	0052	0056	B2.3				1105
	0532	0536	0543	B2.0				
	0611	0617	0619	B2.1				
	0715	0723	0727	B4.2				1105
	1519	1523	1535	B2.4				1106
	1615	1619	1622	B2.9				1106
	2115	2118	2121	B4.2				1106
	2309	2325	2346	B5.5				1106
11 September	0111	0115	0117	B3.1				1106
	0320	0328	0337	B4.3				1106
	0810	0814	0818	B5.0				1106
	1030	1033	1039	B2.1				1106
	1801	1805	1810	B3.6				1106
12 September	1620	1629	1633	B1.7				
	2110	2114	2118	B1.9				1106



Region Summary

Date	Location		Sunspot Characteristics					Flares							
	° Lat ° CMD	Helio	Area (10 ⁻⁶ hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical				
		Lon						C	M	X	S	1	2	3	4
Region 1105															
02 Sep	N19W09	49	10	3	BXO	4	B								
03 Sep	N18W22	50	30	6	BXO	8	B								
04 Sep	N18W36	50	70	8	DRI	20	B					4			
05 Sep	N19W52	48	130	8	DRI	26	B					3			
06 Sep	N19W64	49	150	10	CAI	14	B	1							
07 Sep	N19W77	53	40	5	HAX	6	A					1			
08 Sep	N19W90	49	10	2	AXX	1	A	1							
								2	0	0	8	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 49

<i>Region 1106</i>															
10 Sep	S18E72	220	50	1	HRX	1	A								
11 Sep	S18E64	215	50	1	HSX	1	A								
12 Sep	S19E57	209	80	14	CSO	5	B								
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 209

<i>Region 1107</i>															
12 Sep	N33E62	204	10	1	AXX	1	A								
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 204



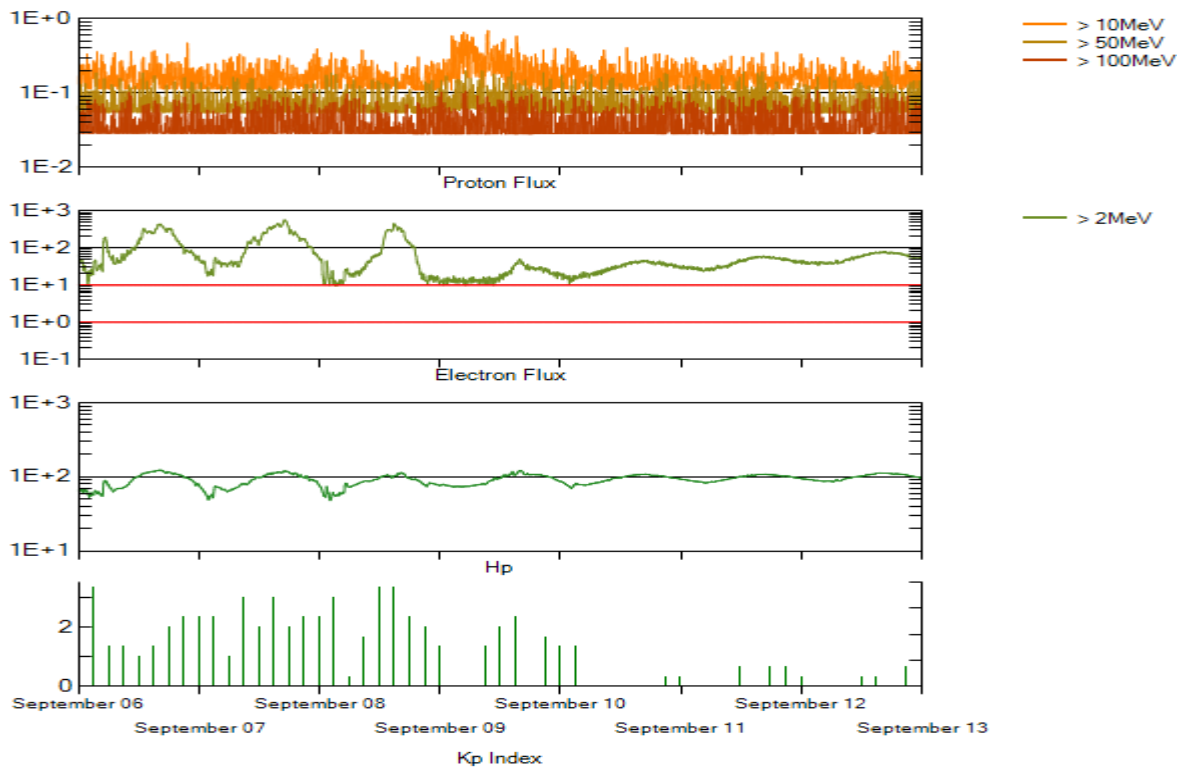
Recent Solar Indices (preliminary)
Of the observed monthly mean values

Month	Sunspot Numbers				Radio Flux		Geomagnetic		
	Observed values	Ratio	Smooth values		*Penticton	Smooth	Planetary	Smooth	
	SEC	RI	RI/SEC	SEC	RI	10.7 cm	Value	Ap	Value
2008									
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	1.8	68.3	68.2	7	5.4
November	6.8	4.1	0.60	2.7	1.7	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	68.8	5	4.7
March	0.7	0.7	1.00	3.4	2.0	69.2	69.0	5	4.6
April	1.2	0.8	1.00	3.7	2.2	69.7	69.3	4	4.3
May	3.9	2.9	0.74	3.8	2.3	70.5	69.7	4	4.1
June	6.6	2.9	0.39	4.4	2.7	68.6	70.2	4	4.0
July	5.0	3.2	0.70	5.8	3.6	68.2	71.0	4	3.9
August	0.3	0.0	0.00	7.7	4.8	67.4	72.1	5	3.8
September	6.6	4.3	0.64	9.9	6.2	70.5	73.3	4	3.8
October	7.0	4.8	0.66	11.3	7.1	72.3	74.1	3	4.1
November	7.7	4.1	0.55	12.4	7.6	73.6	74.5	3	4.5
December	15.7	10.8	0.68	13.6	8.3	76.8	74.9	2	4.8
2010									
January	21.3	13.2	0.62	14.8	9.3	81.1	75.5	3	5.0
February	31.0	18.8	0.60	16.7	10.6	84.7	76.5	5	5.1
March	24.7	15.4	0.62			83.3		5	
April	11.2	7.9	0.71			75.9		10	
May	19.9	8.8	0.44			73.8		8	
June	17.9	13.5	0.75			72.6		7	
July	23.1	16.1	0.70			79.9		5	
August	28.2	19.6	0.70			79.7		8	

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 zero, so a ratio could not be computed.





Weekly Geosynchronous Satellite Environment Summary
Week Beginning 06 September 2010

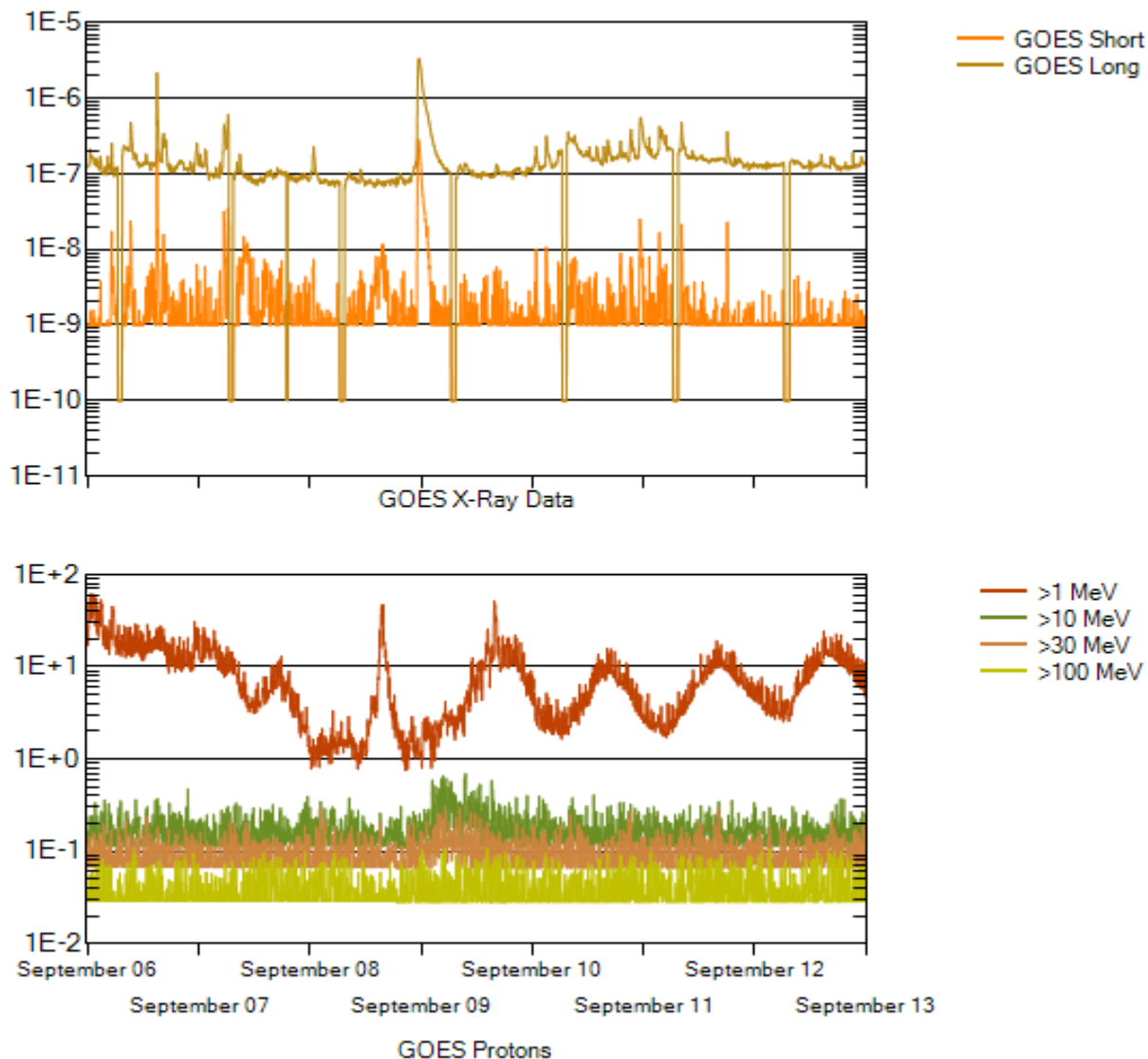
The proton flux plot contains the five-minute averaged integral proton flux (protons/cm²–sec–sr) as measured by GOES-13 (W75) for each of three energy thresholds: greater than 10, 50, and 100 MeV. The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm²–sec–sr) with energies greater than 2 MeV at GOES-13.

The Hp plot contains the five minute averaged Hp magnetic field component in nanoteslas (nT) as measured by GOES-13. The Hp 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

The x-ray plot contains five-minute averaged x-ray flux (Watts/m^2) as measured by GOES 14 (W105) in two wavelength bands, 0.05 - 0.4 and 0.1 - 0.8 nm. The letters A, B, C, M and X refer to x-ray event levels for the 0.1 - 0.8 nm band.

The proton plot contains the five-minute averaged integral proton flux ($\text{protons/cm}^2\text{-sec-sr}$) as measured by GOES-13 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.

