

Space Weather Highlights
15 September - 21 September 2008

SEC PRF 1725
23 September 2008

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 reached high levels during 16 - 17 September.

Geomagnetic field activity ranged from quiet to active levels during 15 - 16 September with minor to major storm periods observed at high latitudes. Activity decreased to quiet to unsettled levels during 17 - 18 September, though active to major storm periods were observed at high latitudes on 18 September. Activity decreased to mostly quiet levels during 19 - 21 September. ACE solar wind data indicated a co-rotating interaction region (CIR) was in progress at the start of the period. The CIR, which preceded a recurrent coronal hole high-speed stream (HSS), commenced on 14 September and continued into 15 September. The HSS began on 15 September and reached a peak velocity of 620 km/sec at 15/1200 UTC. Velocities gradually decreased during the remainder of the period with a minimum of 295 km/sec observed at 21/2221 UTC. The proton density increase associated with the CIR reached a peak of 17 p/cc at 15/0426 UTC. Interplanetary magnetic field (IMF) activity associated with the CIR included increased Bt (peak 14 nT at 15/0627 UTC) and intermittent periods of southward Bz (minimum -10 nT at 15/0938 UTC). Bz settled into a range of + 5 to -5 nT following the CIR. Bt varied from 01 - 07 nT following the CIR.

Space Weather Outlook
24 September - 20 October 2008

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 reach high levels during 01 - 14 October.

Quiet geomagnetic conditions are expected during 24 - 29 September. Activity is expected to increase to unsettled levels on 30 September. A further increase to active to minor storm levels is expected during 01 October with a chance for major storm levels due to a recurrent coronal hole high-speed stream (HSS). Activity is expected to decrease to unsettled levels during 02 - 05 October as the HSS subsides. Quiet conditions are expected during 06 - 11 October. Activity is expected to increase to active levels on 12 October due to a recurrent coronal hole HSS. Activity is expected to decrease to quiet levels during the remainder of the period as the HSS subsides.



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	
15 September	68	0	0	<A1.0	0	0	0	0	0	0	0	0	0
16 September	69	0	0	<A1.0	0	0	0	0	0	0	0	0	0
17 September	67	0	0	<A1.0	0	0	0	0	0	0	0	0	0
18 September	67	0	0	<A1.0	0	0	0	0	0	0	0	0	0
19 September	68	0	0	<A1.0	0	0	0	0	0	0	0	0	0
20 September	68	0	0	<A1.0	0	0	0	0	0	0	0	0	0
21 September	68	0	0	<A1.0	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
	15 September	1.3E+6	1.9E+4	4.2E+3		3.0E+6
16 September	1.3E+6	1.9E+4	4.2E+3		7.3E+7	
17 September	1.2E+6	1.7E+4	4.0E+3		2.4E+8	
18 September	7.8E+5	1.8E+4	4.1E+3		2.6E+7	
19 September	7.4E+5	1.9E+4	4.5E+3		1.4E+7	
20 September	6.2E+5	1.8E+4	4.1E+3		1.0E+7	
21 September	8.8E+5	1.7E+4	4.2E+3		1.4E+7	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	15 September	11	2-2-3-4-2-2-2-2	29	3-3-6-5-5-3-2-1	15
16 September	7	0-3-3-2-1-1-2-1	15	1-2-5-5-2-1-1-1	9	1-4-3-2-1-1-1-2
17 September	3	2-3-0-0-0-0-0-1	1	1-1-0-0-0-0-0-0	3	2-3-0-0-0-0-0-1
18 September	5	2-2-2-2-2-1-0-0	21	1-2-6-5-4-1-0-0	9	1-2-3-3-3-1-0-1
19 September	3	0-2-2-2-0-1-1-0	8	0-1-3-4-3-1-1-0	5	0-1-2-2-2-1-1-2
20 September	1	2-1-0-0-0-0-0-0	1	1-1-0-0-0-0-0-0	3	2-2-0-0-0-1-0-0
21 September	1	0-0-0-0-1-0-0-1	1	0-0-0-0-0-1-1-0	2	1-0-0-0-1-1-0-2

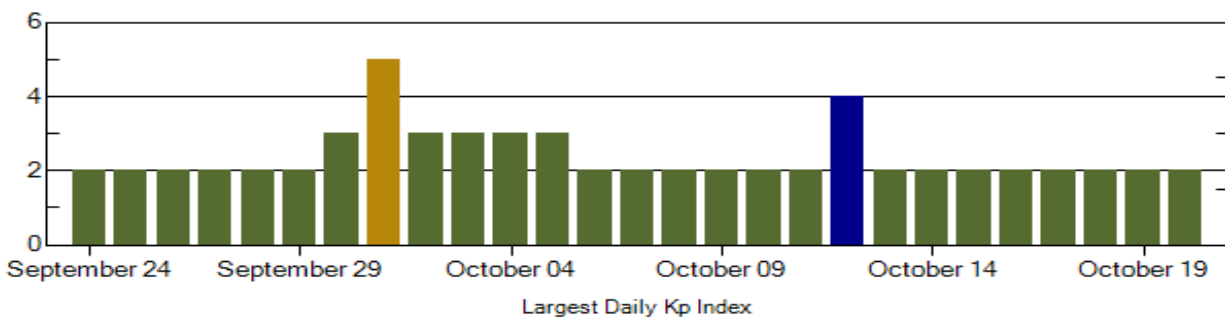
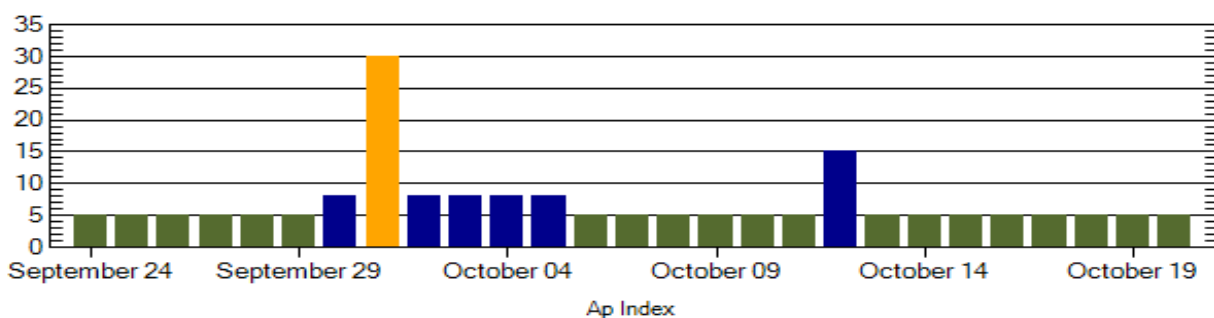
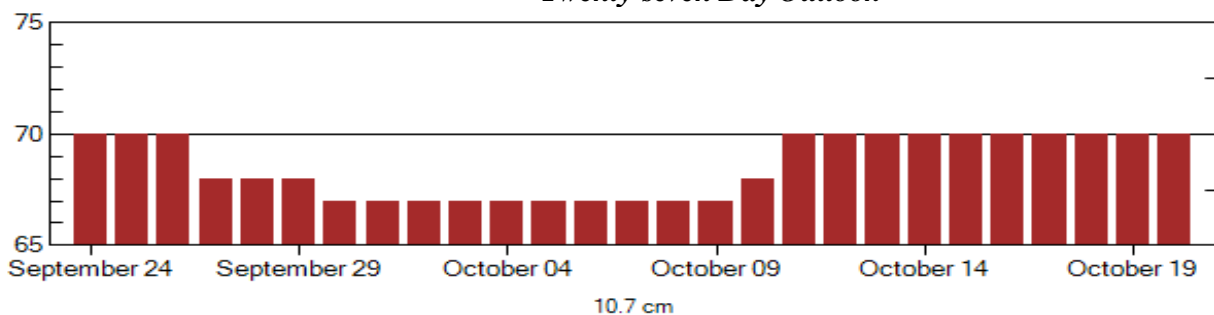


Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
15 Sep 1700	EXTENDED WARNING: Geomagnetic K=4	14 Sep 2215 -2359
16 Sep 0526	ALERT: Geomagnetic K=4	16 Sep 0522
16 Sep 1324	ALERT: Electron 2MeV Integral Flux > 1000pfu	16 Sep 1315
17 Sep 0525	ALERT: Electron 2MeV Integral Flux > 1000pfu	17 Sep 0510
18 Sep 1135	ALERT: Geomagnetic K=4	18 Sep 1134



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
24 Sep	70	5	2	08 Oct	67	5	2
25	70	5	2	09	67	5	2
26	70	5	2	10	68	5	2
27	68	5	2	11	70	5	2
28	68	5	2	12	70	15	4
29	68	5	2	13	70	5	2
30	67	8	3	14	70	5	2
01 Oct	67	30	5	15	70	5	2
02	67	8	3	16	70	5	2
03	67	8	3	17	70	5	2
04	67	8	3	18	70	5	2
05	67	8	3	19	70	5	2
06	67	5	2	20	70	5	2
07	67	5	2				



Energetic Events

Date	Time		X-ray		Optical Information			Peak		Sweep Freq
	Begin	Max	Max	Class	Flux	Imp/	Location	Radio Flux		Intensity
						Brtns	Lat CMD	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		
15 Sep	<i>No Flares Observed</i>							
16 Sep	<i>No Flares Observed</i>							
17 Sep	<i>No Flares Observed</i>							
18 Sep	<i>No Flares Observed</i>							
19 Sep	<i>No Flares Observed</i>							
20 Sep	<i>No Flares Observed</i>							
21 Sep	<i>No Flares Observed</i>							

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

Region 1001

11 Sep	N06E14	179	0020	03	Bxo	002	B											
12 Sep	N06E01	179																
13 Sep	N06W12	179																
14 Sep	N06W25	179																
15 Sep	N06W38	179																
16 Sep	N06W51	179																
17 Sep	N06W64	179																
18 Sep	N06W77	179																
19 Sep	N06W90	179																

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 179



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

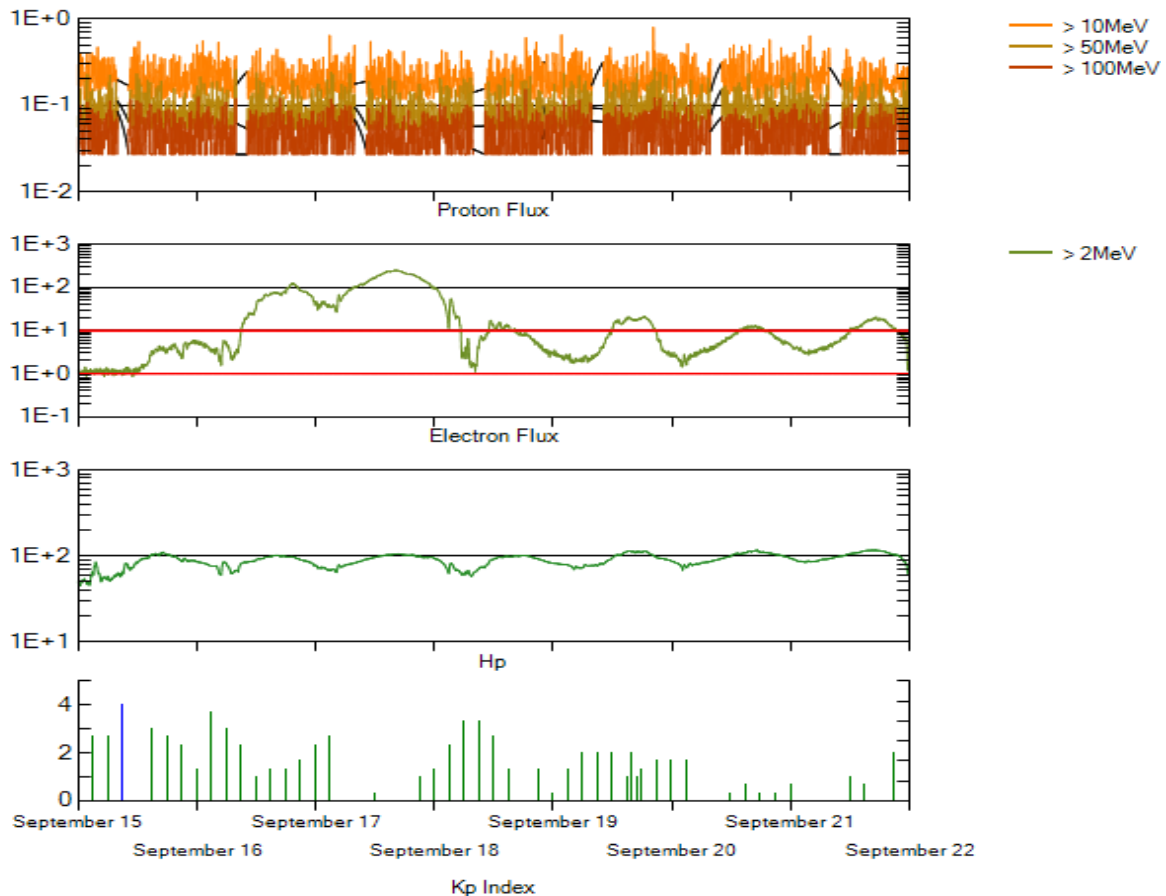
Month	Sunspot Numbers			Radio Flux		Geomagnetic			
	Observed values SEC	Ratio RI	Ratio RI/SEC	Smooth values SEC	Smooth values RI	*Penticton 10.7 cm	Smooth Value	Planetary Ap	Smooth Value
2006									
October	15.7	10.4	0.66	25.2	14.2	74.3	79.4	8	8.6
November	31.5	21.5	0.68	22.3	12.7	86.4	78.5	9	8.5
December	22.2	13.6	0.61	20.7	12.1	84.3	77.9	15	8.5
2007									
January	26.6	16.9	0.64	19.7	12.0	83.5	77.5	6	8.4
February	17.2	10.6	0.62	18.9	11.6	77.8	76.9	6	8.4
March	9.7	4.8	0.49	17.5	10.8	72.3	76.0	8	8.4
April	6.9	3.7	0.54	16.0	9.9	72.4	75.2	9	8.5
May	19.4	11.7	0.60	14.2	8.7	74.5	74.2	9	8.4
June	20.0	12.0	0.60	12.8	7.7	73.7	73.2	7	7.8
July	15.6	10.0	0.64	11.6	7.0	71.6	72.5	8	7.4
August	9.9	6.2	0.63	10.2	6.1	69.2	71.8	7	7.6
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	6.1	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	5.0	78.6	70.5	4	7.8
2008									
January	5.1	3.4	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			72.9		10	
April	4.9	2.9	0.59			70.3		9	
May	5.7	2.9	0.51			68.4		6	
June	4.2	3.1	0.74			65.9		7	
July	1.0	0.5	0.50			65.8		6	
August	0.0	0.5	**			66.4		5	

NOTE: All smoothed values after September 2002 and monthly values after March 2003 are preliminary estimates. The lowest smoothed sunspot index number for Cycle 22, RI = 8.0, occurred in May 1996. The highest smoothed sunspot number for Cycle 23, RI= 120.8, occurred April 2000.

*After June 1991, the 10.7 cm radio flux data source is Penticton, B.C. Canada. Prior to that, it was Ottawa.

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





*Weekly Geosynchronous Satellite Environment Summary
Week Beginning 15 September 2008*

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.

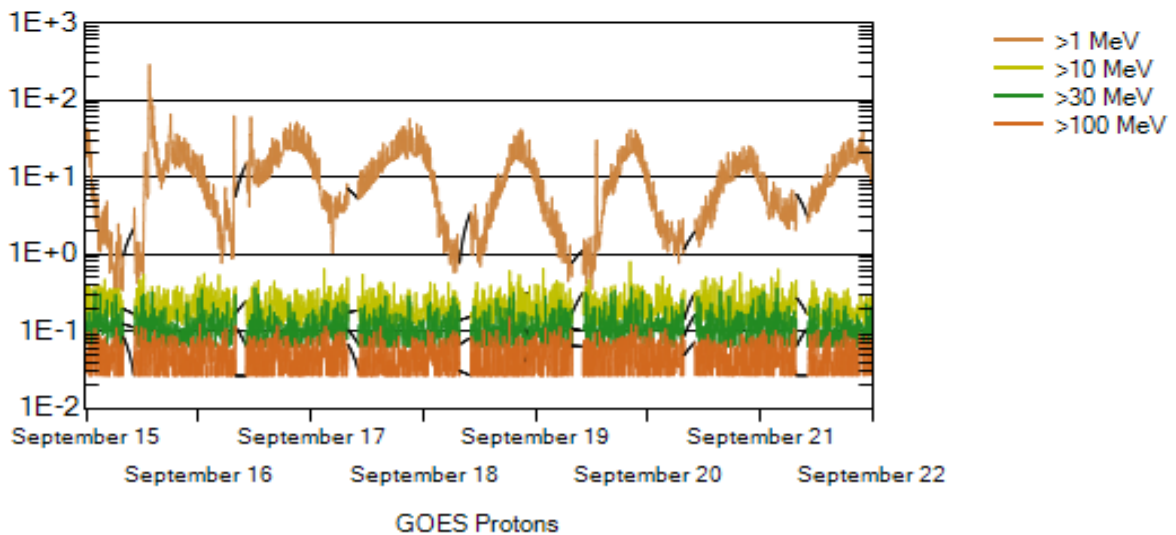
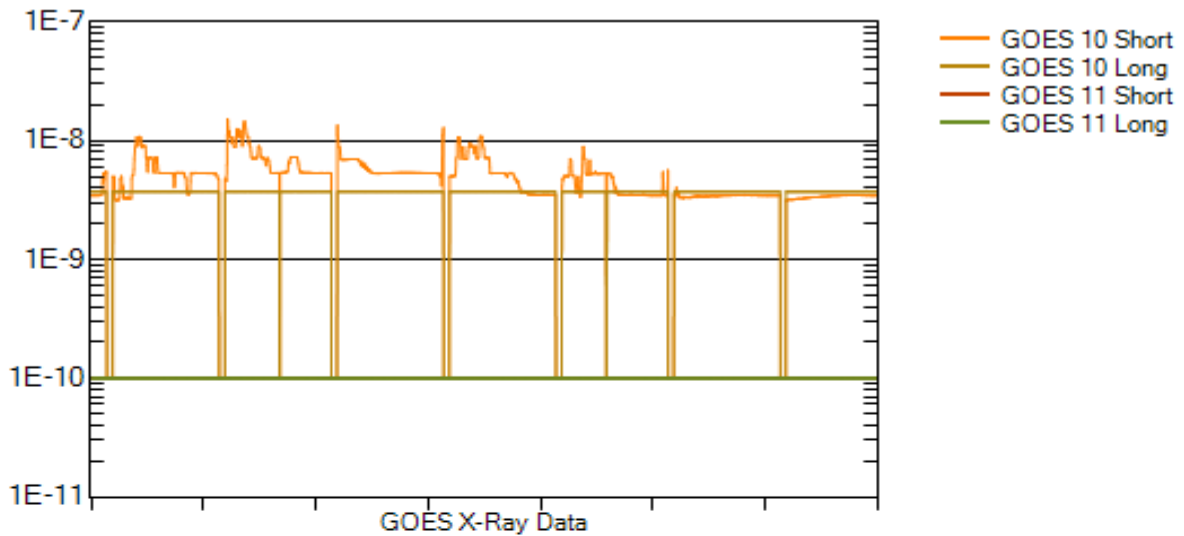
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV at GOES-12 (W075).

Hp plot contains the five minute averaged magnetic field H - component in nanoteslas (nT) as measured by GOES-12. 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 SEC 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^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 (W135) 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.

