

Space Weather Highlights
23 – 29 June 2008

SEC PRF 1713
01 July 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 23 - 24, 27, and 29 June.

Geomagnetic field activity was at quiet levels until late on 24 June when activity increased to unsettled levels. A further increase to active levels occurred during 25 - 26 June with minor to major storm levels at high latitudes. Activity decreased to quiet to unsettled levels for the remainder of the period. ACE solar wind measurements indicated a co-rotating interaction region (CIR) occurred during 24 - 25 June in advance of a recurrent coronal hole high-speed stream (HSS). The CIR was associated with increased proton densities (peak 20 p/cc at 24/2251 UTC), a solar sector boundary crossing (toward (-) to away (+)), and changes in the interplanetary magnetic field (IMF). IMF changes included increased B_t (peak 15 nT at 25/1710 UTC) and intermittent periods of southward B_z (minimum -10 nT at 25/1735 UTC). The HSS commenced on 25 June, reached a peak velocity of 686 km/sec at 26/1846 UTC, then began to gradually subside on 28 June. Solar wind velocities decreased to a low of 470 km/sec by the end of the period.

Space Weather Outlook
02 – 28 July 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 13 - 21 July.

Geomagnetic field activity is expected to be at quiet to unsettled levels during 02 - 11 July. Activity is expected to increase to active levels during 12 - 13 July with storm levels possible at high latitudes due to a recurrent coronal hole high-speed stream. Activity is expected to decrease to unsettled levels during 14 - 17 July as the high-speed stream gradually subsides. Activity is expected to decrease to quiet levels during 18 - 21 July. Activity is expected to increase to unsettled levels during 22 - 24 July due to recurrence. Activity is expected to decrease to quiet levels during 25 - 28 July.



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
23 June	65	0	0	<A1.0	0	0	0	0	0	0	0	0
24 June	66	0	0	<A1.0	0	0	0	0	0	0	0	0
25 June	66	0	0	<A1.0	0	0	0	0	0	0	0	0
26 June	65	0	0	<A1.0	0	0	0	0	0	0	0	0
27 June	66	0	0	<A1.0	0	0	0	0	0	0	0	0
28 June	66	0	0	<A1.0	0	0	0	0	0	0	0	0
29 June	67	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
	23 June	6.0E+5	1.8E+4	4.3E+3		7.3E+7
24 June	9.9E+5	1.8E+4	4.3E+3		8.3E+7	
25 June	4.3E+5	1.8E+4	4.7E+3		1.4E+6	
26 June	1.2E+6	1.7E+4	3.9E+3		4.8E+6	
27 June	1.2E+6	1.8E+4	4.1E+3		3.6E+7	
28 June	1.0E+6	1.7E+4	4.2E+3		3.8E+7	
29 June	1.1E+6	1.8E+4	4.1E+3		4.2E+7	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	23 June	2	1-2-0-0-0-1-0	4	1-1-1-3-2-0-0-0	3
24 June	3	0-0-0-0-0-1-2-3	2	1-1-0-0-0-1-1-2	4	1-1-0-0-0-1-2-3
25 June	10	3-3-3-1-1-2-2-3	10	2-3-3-2-1-2-3-2	12	4-3-3-1-1-2-3-3
26 June	17	4-4-2-4-4-2-2-2	23	3-3-3-6-5-1-2-1	16	4-4-2-4-3-2-3-2
27 June	7	3-2-1-2-2-2-2-1	16	3-2-2-5-4-3-1-2	8	3-2-2-2-2-2-2-2
28 June	6	1-2-1-1-1-1-3-2	6	1-2-1-2-2-3-1-1	7	2-2-1-2-1-2-3-2
29 June	7	2-2-1-2-2-1-2-3	8	2-3-1-3-2-1-2-2	8	2-3-1-2-1-1-2-3

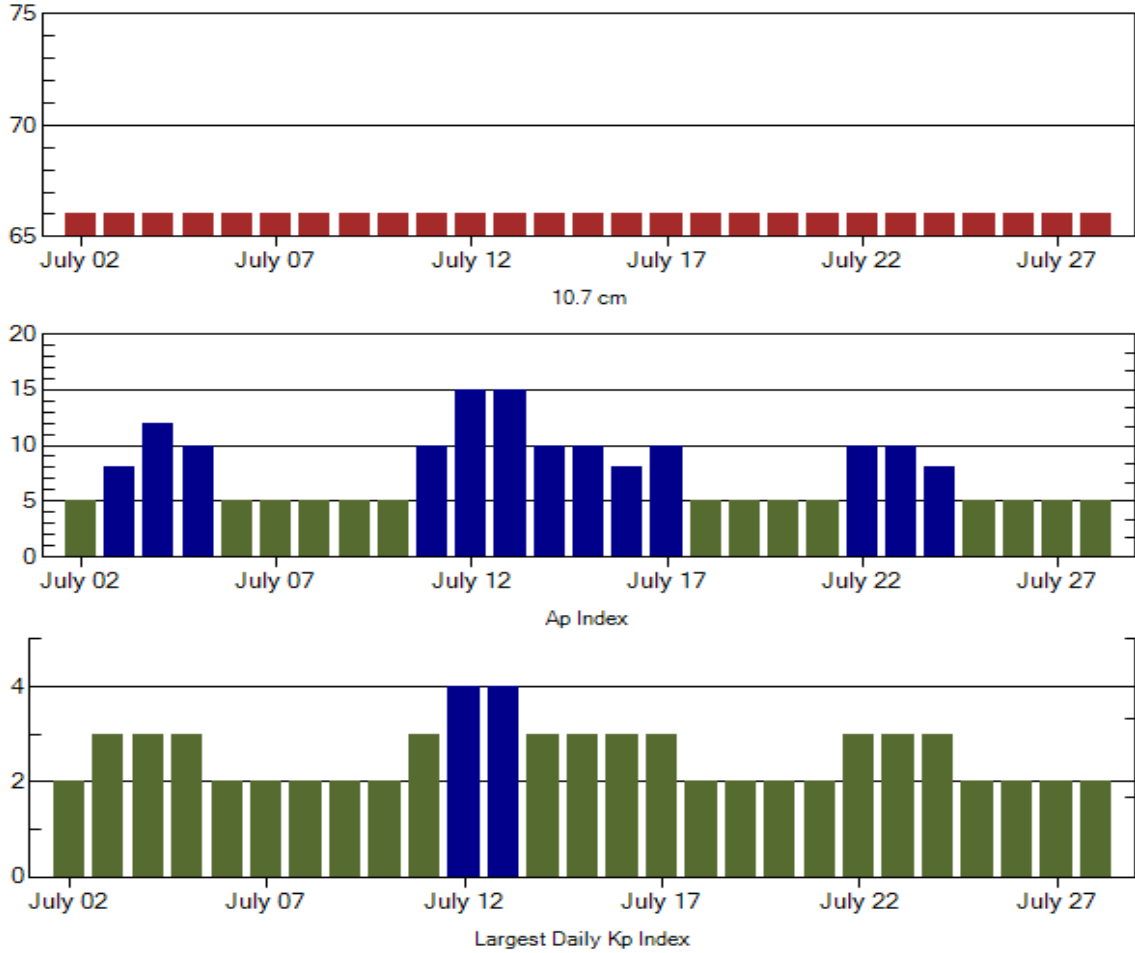


Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
23 Jun 1237	ALERT: Electron 2MeV Integral Flux >1000pfu	23 Jun 1215
24 Jun 1201	ALERT: Electron 2MeV Integral Flux >1000pfu	24 Jun 1140
25 Jun 0430	WARNING: Geomagnetic K=4	25 Jun 0431 – 1600
25 Jun 0542	ALERT: Geomagnetic K=4	25 Jun 0541
25 Jun 1928	WARNING: Geomagnetic K=4	25 Jun 1930 - 2359
26 Jun 0242	WARNING: Geomagnetic K=4	26 Jun 0242 - 0700
26 Jun 0246	ALERT: Geomagnetic K=4	26 Jun 0244
26 Jun 0438	ALERT: Geomagnetic K=4	26 Jun 0435
26 Jun 0916	WARNING: Geomagnetic K=4	26 Jun 0915 - 1600
26 Jun 0919	ALERT: Geomagnetic K=4	26 Jun 0918
27 Jun 0225	WARNING: Geomagnetic K=4	27 Jun 0226 - 0700
27 Jun 0245	ALERT: Geomagnetic K=4	27 Jun 0245
27 Jun 1421	ALERT: Electron 2MeV Integral Flux >1000pfu	27 Jun 1405
29 Jun 1421	ALERT: Electron 2MeV Integral Flux >1000pfu	29 Jun 1405



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
02 Jul	66	5	2	16 Jul	66	8	3
03	66	8	3	17	66	10	3
04	66	12	3	18	66	5	2
05	66	10	3	19	66	5	2
06	66	5	2	20	66	5	2
07	66	5	2	21	66	5	2
08	66	5	2	22	66	10	3
09	66	5	2	23	66	10	3
10	66	5	2	24	66	8	3
11	66	10	3	25	66	5	2
12	66	15	4	26	66	5	2
13	66	15	4	27	66	5	2
14	66	10	3	28	66	5	2
15	66	10	3				



Energetic Events

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

No Events Observed

Flare List

Date	Time			Optical	Imp / Brtns	Location	Rgn
	Begin	Max	End	Class.		Lat	
23 Jun	<i>No Flares Observed</i>						
24 Jun	<i>No Flares Observed</i>						
25 Jun	<i>No Flares Observed</i>						
26 Jun	<i>No Flares Observed</i>						
27 Jun	<i>No Flares Observed</i>						
28 Jun	<i>No Flares Observed</i>						
29 Jun	<i>No Flares Observed</i>						

Region Summary

Date	Location		Sunspot Characteristics												
	(° Lat ° CMD)	Helio Lon	Flares					X-ray				Optical			
			Area	Extent	Spot	Spot	Mag	C	M	X	S	1	2	3	4
			(10 ⁻⁶ hemi)	(helio)	Class	Count	Class								

Region 999

16 Jun	S02E60	204	0020	01	Axx	001	A										
17 Jun	S02E46	205	0020	01	Hsx	001	A										
18 Jun	S03E37	204	0010	01	Hsx	001	A										
19 Jun	S03E20	205	0010	01	Axx	001	A										
20 Jun	S02E06	206	0010	01	Hsx	001	A										
21 Jun	S02W08	207	0010	01	Hsx	001	A										
22 Jun	S02W22	207	0010	01	Hsx	001	A										
23 Jun	S02W35	207															
24 Jun	S02W48	207															
25 Jun	S02W61	207															
26 Jun	S02W74	206															
27 Jun	S02W87	206															

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 206



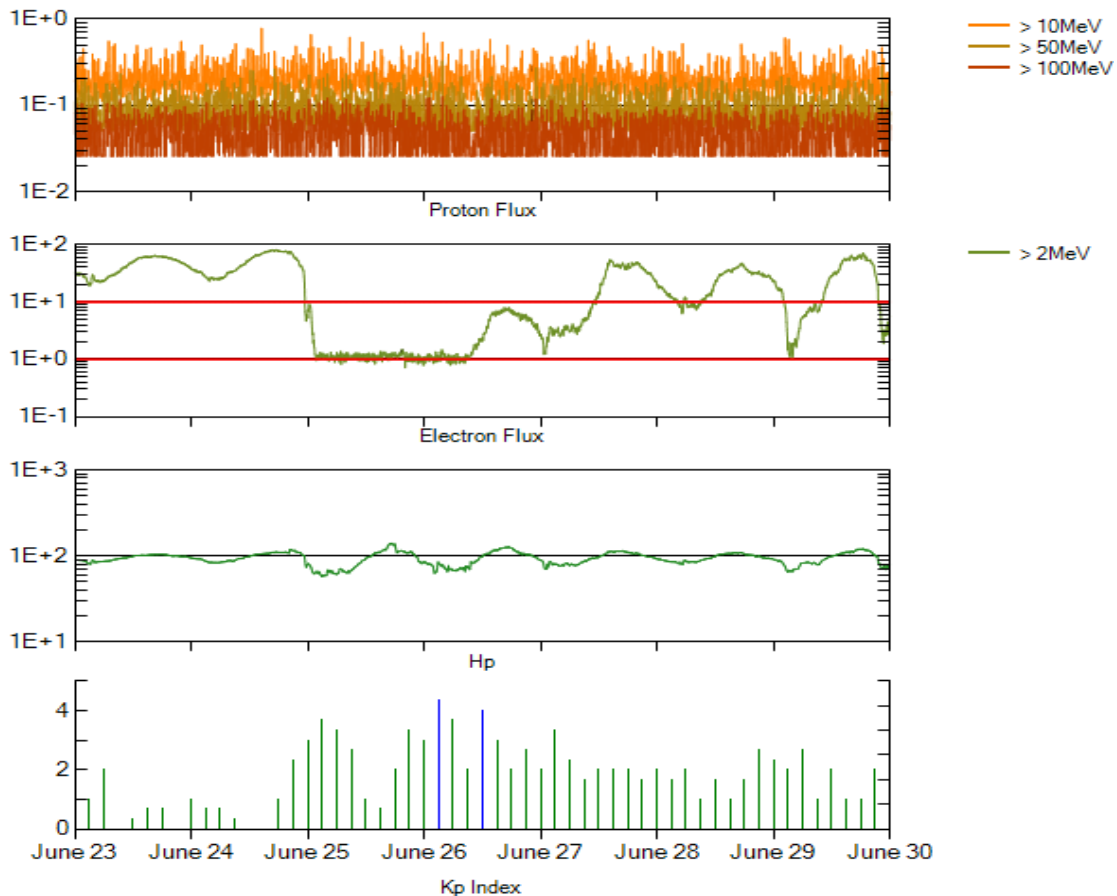
Recent Solar Indices (preliminary)
Of the observed monthly mean values

Month	Sunspot Numbers			Radio Flux		Geomagnetic			
	Observed SEC	values RI	Ratio RI/SEC	Smooth SEC	values RI	*Penticton 10.7 cm	Smooth Value	Planetary Ap	Smooth Value
2006									
August	22.8	12.9	0.57	27.6	15.6	79.0	80.3	9	8.7
September	25.2	14.5	0.58	27.7	15.6	77.8	80.2	8	8.7
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			78.6		4	
2008									
January	5.1	3.4	0.67			72.1		6	
February	3.8	2.1	0.55			71.2		9	
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	

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.





*Weekly Geosynchronous Satellite Environment Summary
Week Beginning 23 June 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.

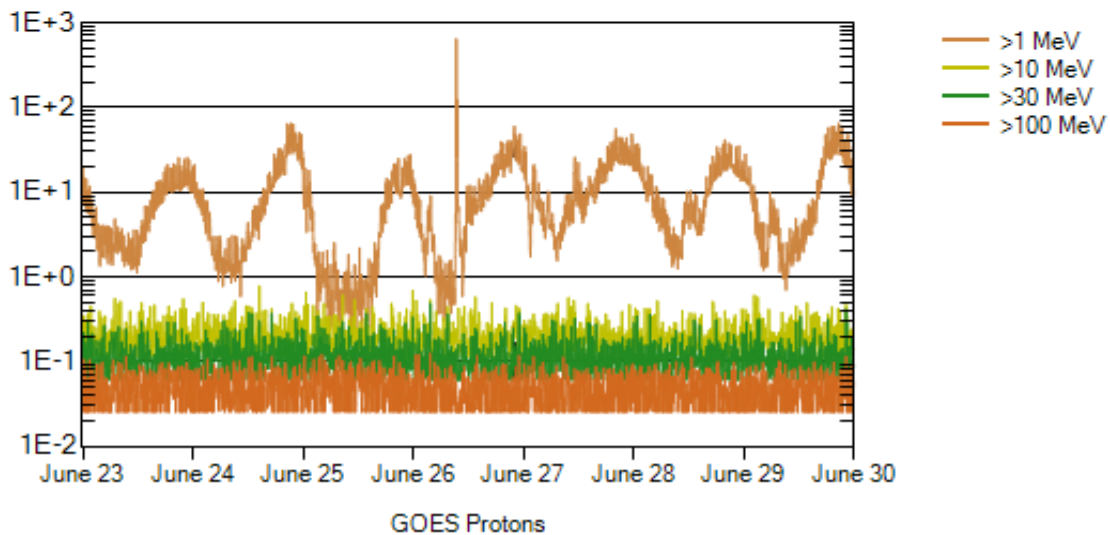
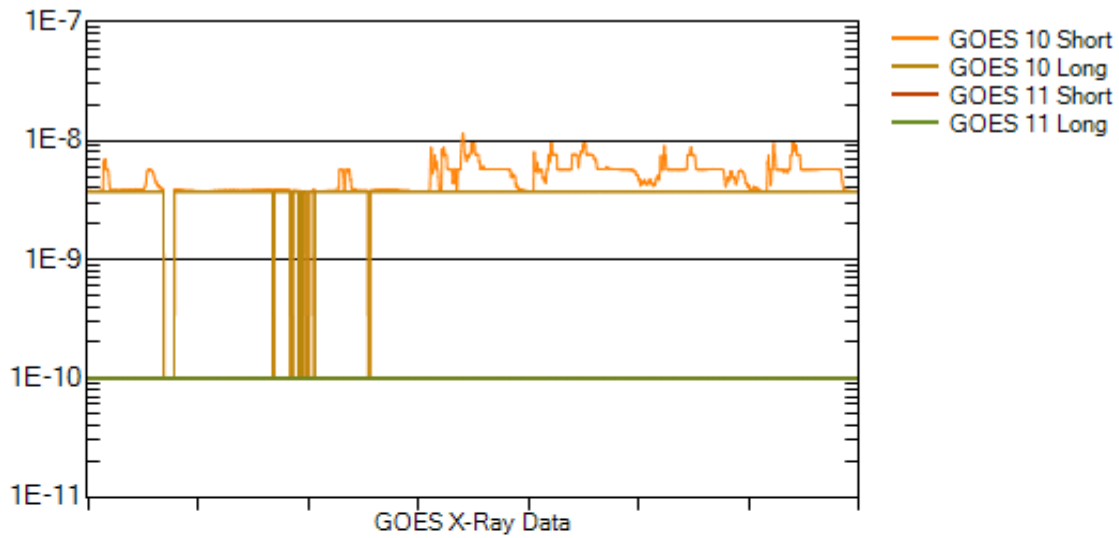
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV at GOES-12 (W075).

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.



M5 or Greater X-Ray Flares



Space Environment Center

June 2008
(Month 141)

Preliminary data

Comparison of Cycles at current month in cycle

