

Space Weather Highlights
16 – 22 June 2008

SEC PRF 1712
24 June 2008

Solar activity was very low. No flares were detected. Region 999 (S02, L=206, class/area Hsx/020 on 17 June) was the only spotted region on the disk during the summary period.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit reached high levels during 16 - 19 June and 22 June.

Geomagnetic field activity was at quiet to active levels on 16 June. Activity decreased to quiet to unsettled levels during 17 - 19 June. Activity increased to quiet to active levels on 20 June. Activity decreased to mostly quiet levels for the rest of the period. ACE solar wind measurements indicated a recurrent coronal hole high-speed stream occurred during the period. Velocities increased through early 17 June with a peak of 784 km/sec detected at 17/0248 UTC, then gradually decreased through 19 June. Another brief increase in velocities occurred from late 19 June into early 20 June with a peak of 613 km/sec detected at 20/1032 UTC. The velocity increase was accompanied by increased IMF B_t (peak 9 nT at 19/2340 UTC), periods of enhanced southward IMF B_z (minimum -8 nT at 20/0222 UTC), and a minor increase in proton densities. Velocities gradually decreased for the rest of the period and reached a minimum of 408 km/sec by the close of the period.

Space Weather Outlook
25 June – 21 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 25 June and 13 - 21 July.

Geomagnetic field activity is expected to be at quiet to unsettled levels during 25 June - 11 July. Activity is expected to increase to active levels during 12 - 13 July 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 for the rest of the period.



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
16 June	65	11	20	<A1.0	0	0	0	0	0	0	0	0
17 June	66	11	20	<A1.0	0	0	0	0	0	0	0	0
18 June	65	11	10	<A1.0	0	0	0	0	0	0	0	0
19 June	65	11	10	<A1.0	0	0	0	0	0	0	0	0
20 June	65	11	10	<A1.0	0	0	0	0	0	0	0	0
21 June	65	11	10	<A1.0	0	0	0	0	0	0	0	0
22 June	65	11	10	<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
	16 June	3.2E+6	1.7E+4	3.6E+3		9.6E+7
17 June	1.6E+6	1.6E+4	3.6E+3		2.7E+8	
18 June	3.8E+6	1.7E+4	3.6E+3		4.3E+8	
19 June	3.4E+6	1.7E+4	3.7E+3		4.8E+8	
20 June	1.1E+6	1.7E+4	3.8E+3		3.7E+7	
21 June	5.8E+5	1.7E+4	3.7E+3		4.3E+7	
22 June	5.7E+5	1.8E+4	4.0E+3		6.0E+7	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	16 June	10	3-2-2-2-2-3-3	23	3-2-2-6-4-3-3-3	13
17 June	8	3-2-2-2-2-2-2	17	3-4-4-4-3-2-2-2	9	3-2-3-2-2-2-2-2
18 June	8	3-3-2-2-2-1-1-1	18	3-5-3-4-4-1-1-1	9	3-3-2-2-2-1-0-2
19 June	5	2-1-0-1-2-1-2-2	6	1-1-0-1-3-3-2-1	6	2-1-1-1-2-1-2-3
20 June	8	3-3-2-2-1-1-2-2	15	3-4-4-4-3-1-1-1	11	3-4-3-2-1-2-2-3
21 June	4	1-1-1-1-1-2-1-2	5	2-1-1-3-0-1-1-1	5	2-1-1-1-1-1-1-2
22 June	2	1-0-0-1-1-0-1-1	1	2-1-0-0-0-0-0-0	4	1-1-0-0-1-1-1-2

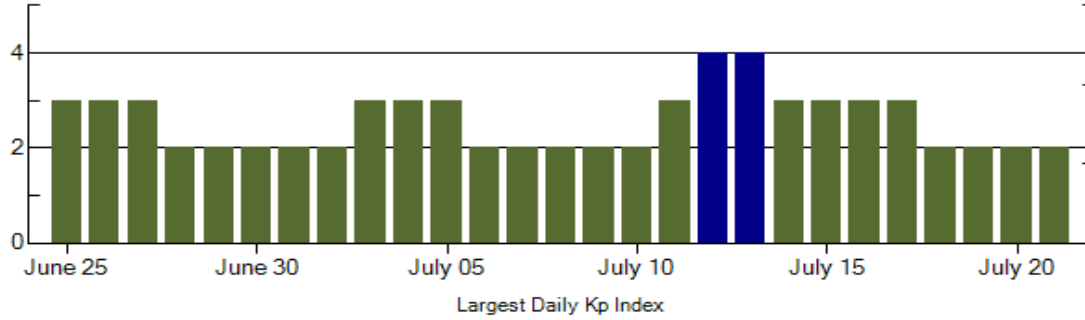
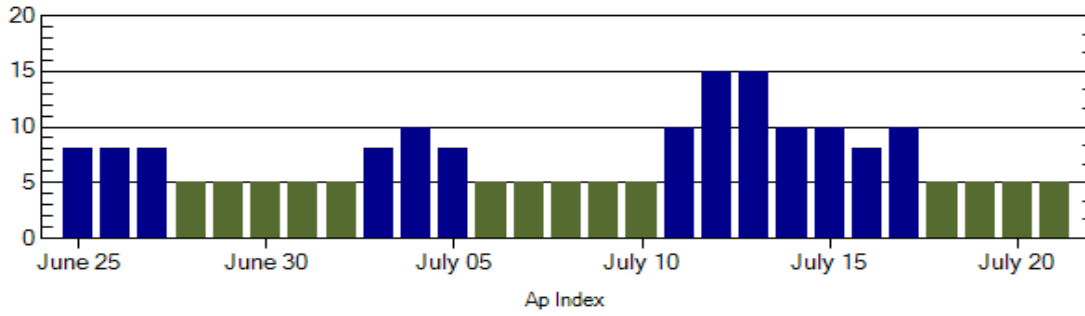
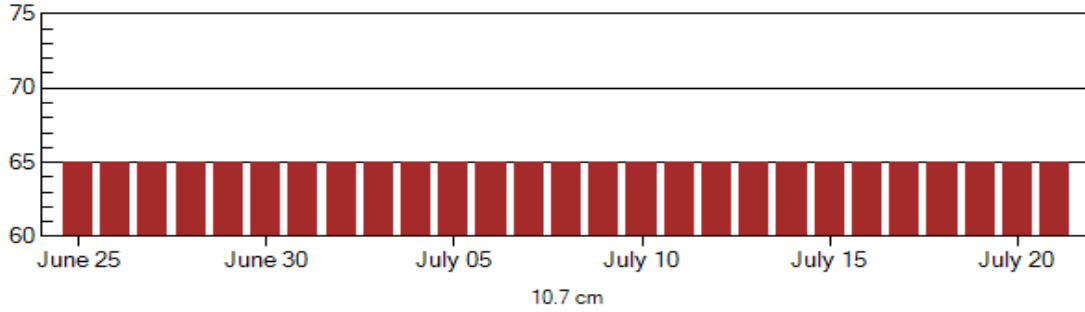


Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
16 Jun 1211	ALERT: Electron 2MeV Integral Flux >1000pfu	16 Jun 1150
16 Jun 2041	WARNING: Geomagnetic K=4	16 Jun 2045 - 17/1600
17 Jun 0217	ALERT: Geomagnetic K=4	17 Jun 0212
17 Jun 0851	ALERT: Electron 2MeV Integral Flux >1000pfu	17 Jun 0830
18 Jun 0516	ALERT: Electron 2MeV Integral Flux >1000pfu	18 Jun 0500
19 Jun 0517	ALERT: Electron 2MeV Integral Flux >1000pfu	19 Jun 0500
20 Jun 0433	ALERT: Geomagnetic K=4	20 Jun 0429
20 Jun 0434	WARNING: Geomagnetic K=4	20 Jun 0434 - 1600
22 Jun 1456	ALERT: Electron 2MeV Integral Flux >1000pfu	22 Jun 1440



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
25 Jun	65	8	3	09 Jul	65	5	2
26	65	8	3	10	65	5	2
27	65	8	3	11	65	10	3
28	65	5	2	12	65	15	4
29	65	5	2	13	65	15	4
30	65	5	2	14	65	10	3
01 Jul	65	5	2	15	65	10	3
02	65	5	2	16	65	8	3
03	65	8	3	17	65	10	3
04	65	10	3	18	65	5	2
05	65	8	3	19	65	5	2
06	65	5	2	20	65	5	2
07	65	5	2	21	65	5	2
08	65	5	2				



Energetic Events

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

No Events Observed

Flare List

Date	Time			Optical	Imp / Brtns	Location	Rgn
	Begin	Max	End	Class.		Lat CMD	
16 Jun	<i>No Flares Observed</i>						
17 Jun	<i>No Flares Observed</i>						
18 Jun	<i>No Flares Observed</i>						
19 Jun	<i>No Flares Observed</i>						
20 Jun	<i>No Flares Observed</i>						
21 Jun	<i>No Flares Observed</i>						
22 Jun	<i>No Flares Observed</i>						

Region Summary

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

Region 998

10 Jun	S09E53	291	0040	04	Cro	004	B								
11 Jun	S09E38	292	0020	01	Hsx	001	A								
12 Jun	S09E26	291	0030	04	Cso	003	B								
13 Jun	S10E12	292	0020	02	Cso	003	B								
14 Jun	S10W01	292													
15 Jun	S10W14	292													
16 Jun	S10W27	292													
17 Jun	S10W40	292													
18 Jun	S10W53	292													
19 Jun	S10W66	291													
20 Jun	S10W79	291													

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 292



Region Summary-Continued

Location		Sunspot Characteristics						Flares			X-ray				Optical			
Date	(° 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 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												

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 206



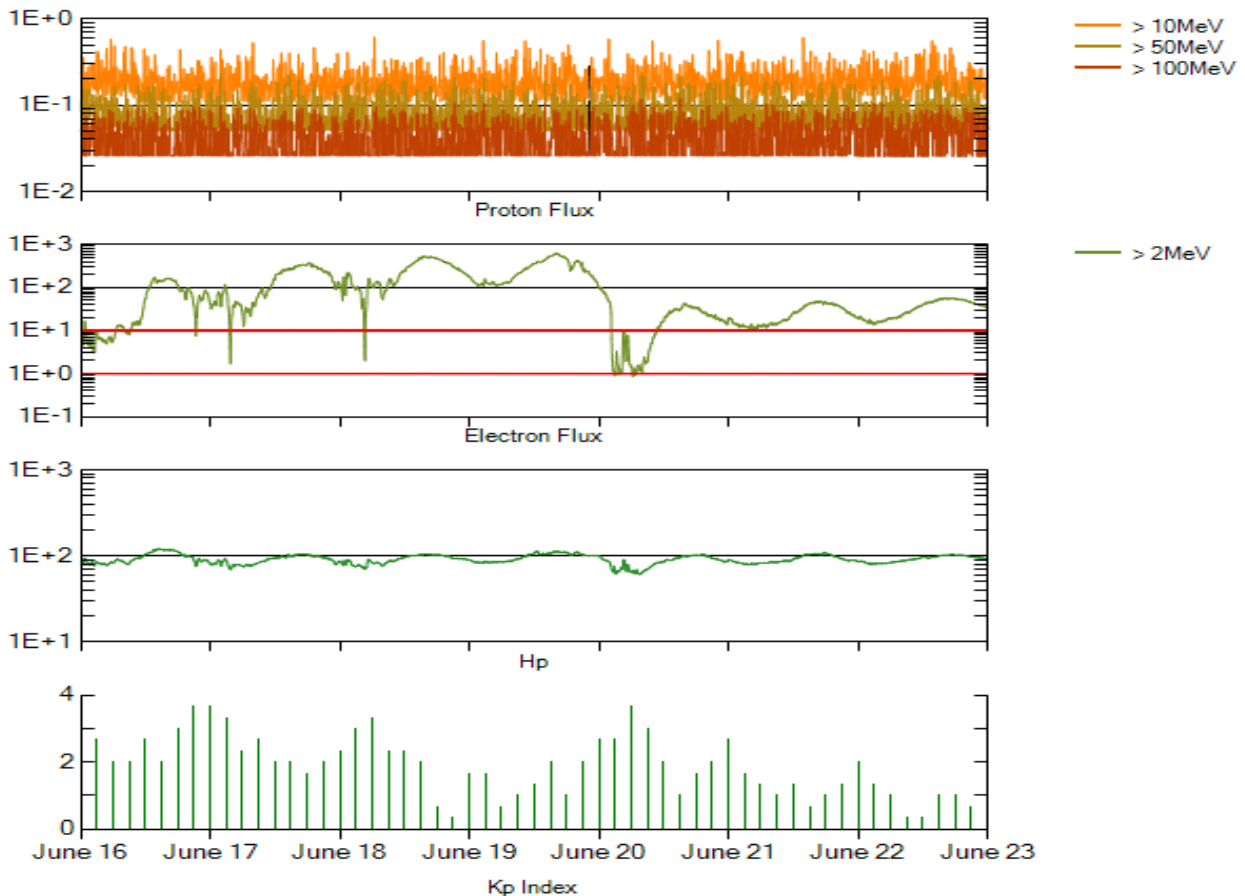
Recent Solar Indices (preliminary)
Of the observed monthly mean values

Month	Sunspot Numbers			Radio Flux		Geomagnetic			
	Observed values SEC	Ratio RI	Ratio RI/SEC	Smooth values SEC	Smooth Value	*Penticton 10.7 cm	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 16 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.

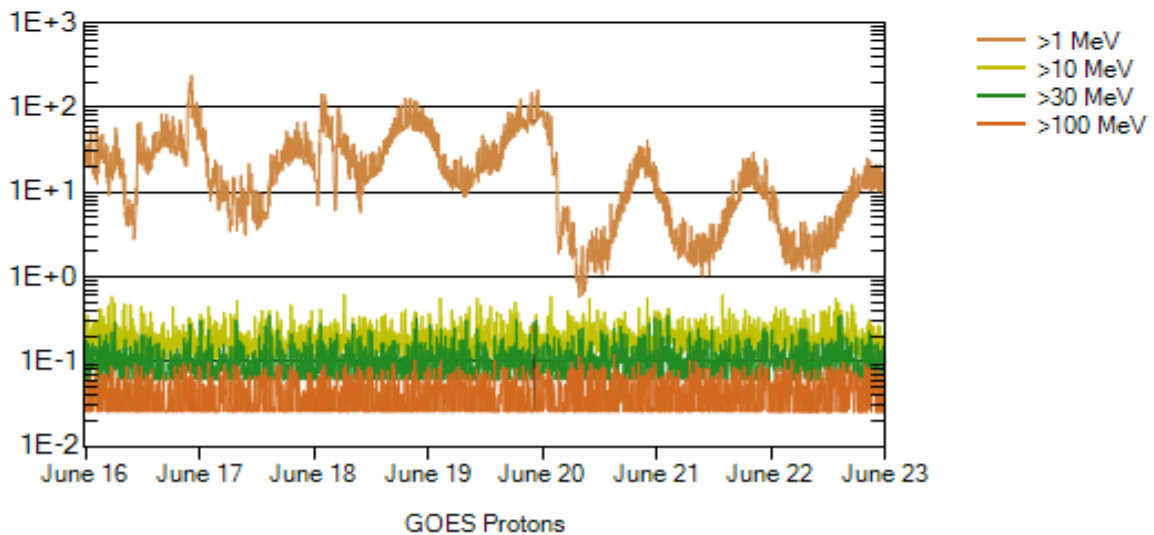
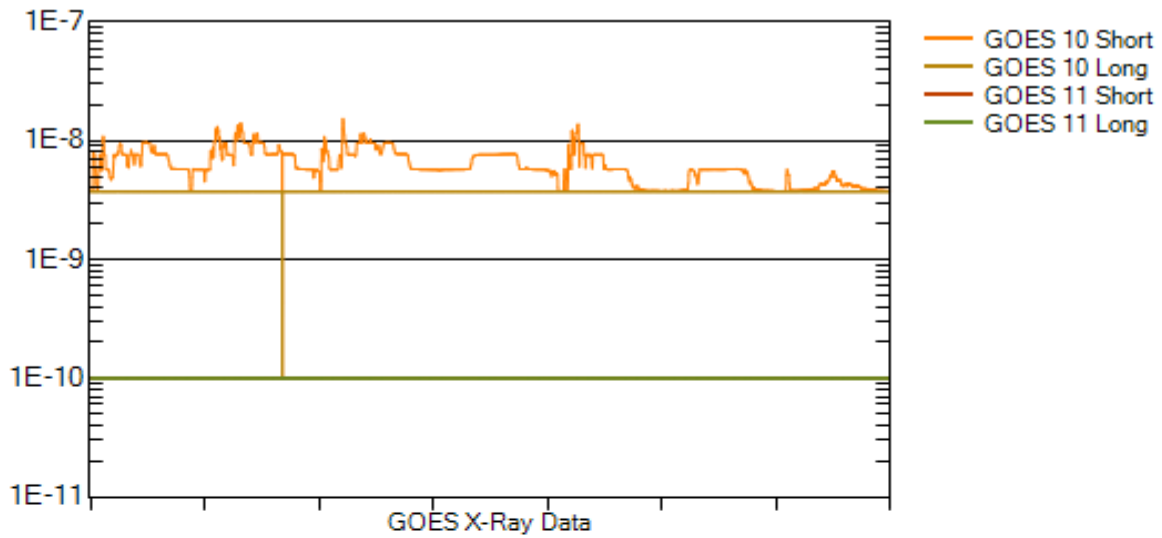
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV at GOES-12 (W075).

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.

