Space Weather Highlights **SEC PRF 1659**
11 – 17 June 2007 **19 June 2007**

Solar activity was very low. Old Region 960 (S07, L = 176, class/area Fkc/540 on 03 June) produced isolated B-class flares before it departed the visible disk on 14 June.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at normal levels.

The geomagnetic field was at quiet to unsettled levels during 11 – 13 June. Field activity increased to quiet to active levels on 14 June with brief, localized storm periods detected at middle and high latitudes. Quiet to unsettled levels occurred during the rest of the period with brief active periods detected at middle and high latitudes. ACE data indicated a solar sector boundary crossing on 13 June followed shortly thereafter by a recurrent coronal hole high-speed stream. The boundary crossing (toward (-) to away (+)) occurred at around 13/1800 UTC and was accompanied by increased proton densities (peak 16 p/cc at 13/1807 UTC) as well as increased total IMF field intensity (peak 12 nT at 14/0136 UTC) and Bz variability (minimum – 11 nT at 14/0016 UTC). The recurrent high speed stream commenced during the latter half of 13 June and eventually reached a peak of 628 km/sec at 15/0016 UTC followed by a gradual decrease in velocities.

Space Weather Outlook
20 June – 16 July 2007

Solar activity is expected to be at very low to low levels. Isolated C-class flares are possible during 28 June – 11 July.

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 20 June – 05 July.

Activity is expected to be at unsettled to minor storm levels during 20 – 22 June due to a recurrent coronal hole high-speed stream. Activity is expected to decrease to mostly quiet levels during 23 – 29 June. Quiet to active conditions are expected during 30 June – 01 July as another recurrent coronal hole high-speed stream affects the field. Mostly quiet levels are expected during 02 – 10 July. Field activity is expected to increase to quiet to active levels on 11 July due to a recurrent coronal hole high-speed stream. Mostly quiet conditions are expected 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 C	M	X	Flares: Optical S	1	2	3	4
11 June	73	13	80	A2.1	0	0	0	1	0	0	0	0
12 June	70	12	80	A1.6	0	0	0	0	0	0	0	0
13 June	71	12	70	A1.3	0	0	0	0	0	0	0	0
14 June	69	0	0	<A1.0	0	0	0	0	0	0	0	0
15 June	69	0	0	<A1.0	0	0	0	0	0	0	0	0
16 June	68	0	0	<A1.0	0	0	0	0	0	0	0	0
17 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) >1 MeV	>10 MeV	>100 MeV	Electron Fluence (electrons/cm^2-day-sr) >.6 MeV	>2MeV	>4 MeV
11 June	8.9E+5	1.7E+4	4.3E+3		1.1E+7	
12 June	1.0E+6	1.9E+4	4.1E+3		1.4E+7	
13 June	1.3E+6	1.8E+4	4.0E+3		1.9E+7	
14 June	1.3E+6	1.9E+4	4.2E+3		3.6E+6	
15 June	8.8E+5	1.7E+4	3.7E+3		8.6E+6	
16 June	6.0E+5	1.7E+4	3.9E+3		1.6E+7	
17 June	6.2E+5	1.7E+4	4.2E+3		2.4E+7	

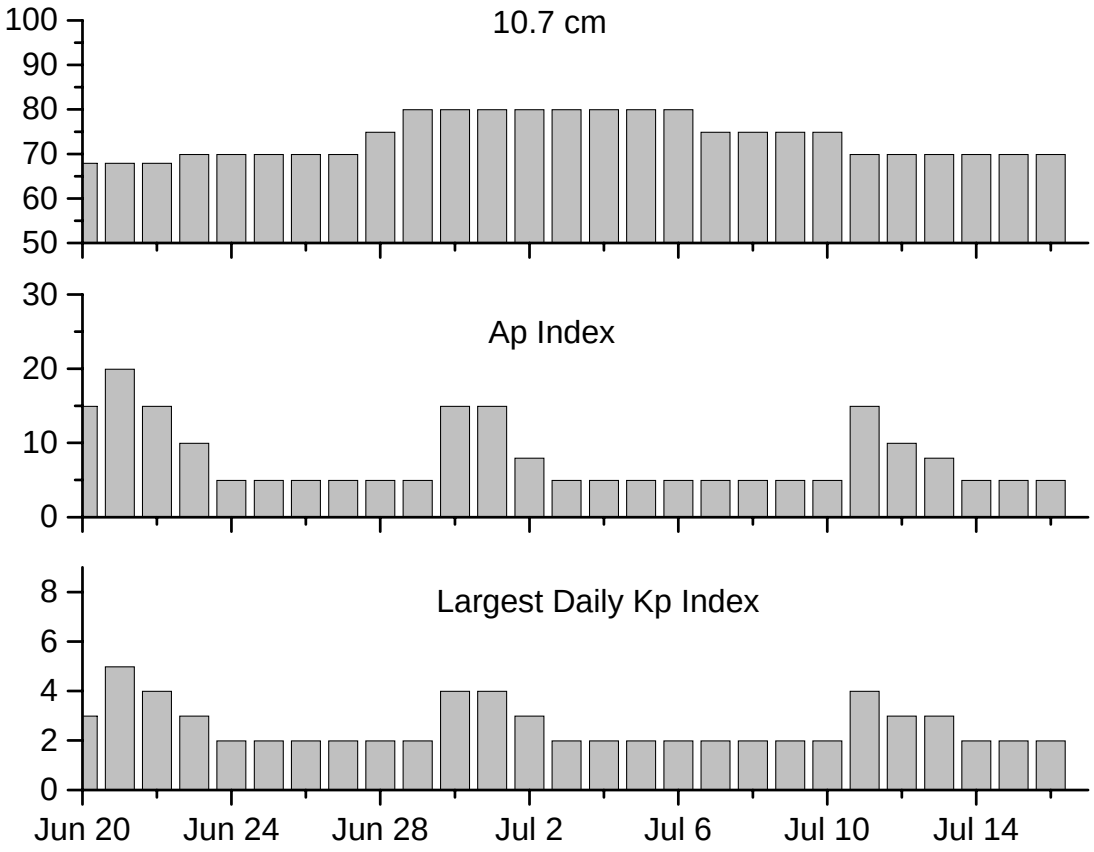
Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg A	K-indices	High Latitude College A	K-indices	Estimated Planetary A	K-indices
11 June	1	1-0-0-0-0-0-1-0	0	1-0-0-0-0-0-0-0	2	1-0-0-0-0-1-1-1
12 June	3	1-1-0-0-1-0-1-1	2	0-1-1-0-0-0-1-0	4	1-1-1-0-1-1-1-2
13 June	5	1-0-1-0-2-2-3-2		1-0-0-3-1-*-*-1	5	1-0-1-1-1-2-2-2
14 June	13	2-3-3-3-3-2-3-3	27	3-4-3-6-4-4-3-2	20	3-4-3-4-2-4-4-3
15 June	7	2-3-2-1-2-1-1-2	9	2-3-2-3-3-2-1-1	8	2-3-2-1-2-2-1-2
16 June	4	1-1-0-1-2-1-2-1	9	2-2-1-2-4-2-2-1	7	3-2-1-1-3-2-2-1
17 June	3	1-1-1-1-2-1-1-0	9	2-2-1-3-4-1-1-1	6	1-1-1-1-2-2-1-1

Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
14 Jun 0527	ALERT: Geomagnetic K=4	14 Jun 0525
14 Jun 0530	WARNING: Geomagnetic K=4	14 Jun 0530 - 1600
14 Jun 0534	WARNING: Geomagnetic K=5	14 Jun 0535 - 1600
14 Jun 1038	ALERT: Geomagnetic K=5	14 Jun 1036
14 Jun 1552	EXTENDED WARNING: Geomagnetic K=4	14 Jun 0530 -2359
14 Jun 2356	EXTENDED WARNING: Geomagnetic K=4	14 Jun 0530 - 15/1600

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
20 June	68	15	3	04 July	80	5	2
21	68	20	5	05	80	5	2
22	68	15	4	06	80	5	2
23	70	10	3	07	75	5	2
24	70	5	2	08	75	5	2
25	70	5	2	09	75	5	2
26	70	5	2	10	75	5	2
27	70	5	2	11	70	15	4
28	75	5	2	12	70	10	3
29	80	5	2	13	70	8	3
30	80	15	4	14	70	5	2
01 July	80	15	4	15	70	5	2
02	80	8	3	16	70	5	2
03	80	5	2				

Energetic Events

Date	Time			X-ray		Optical Information				Peak Radio Flux		Sweep Freq Intensity	
	Begin	Max	½ Max	Class	Integ Flux	Imp/ Brtns	Location Lat	CMD	Rgn #	245	2695	II	IV

No Events Observed

Flare List

Date	Time Begin	Max	End	Optical X-ray Class.	Imp / Brtns	Location Lat CMD	Rgn
11 June	0357	0359	0404	B1.3	Sf	S09W47	960
	1255	1259	1302	B2.4			
	2141	2145	2153	B1.0			
12 June	1914	1931	1947	B3.1			
13 June	1318	1347	1403	B4.2			
14 June	No Flares Observed						
15 June	0435	0447	0518	B2.0			
16 June	No Flares Observed						
17 June	No Flares Observed						

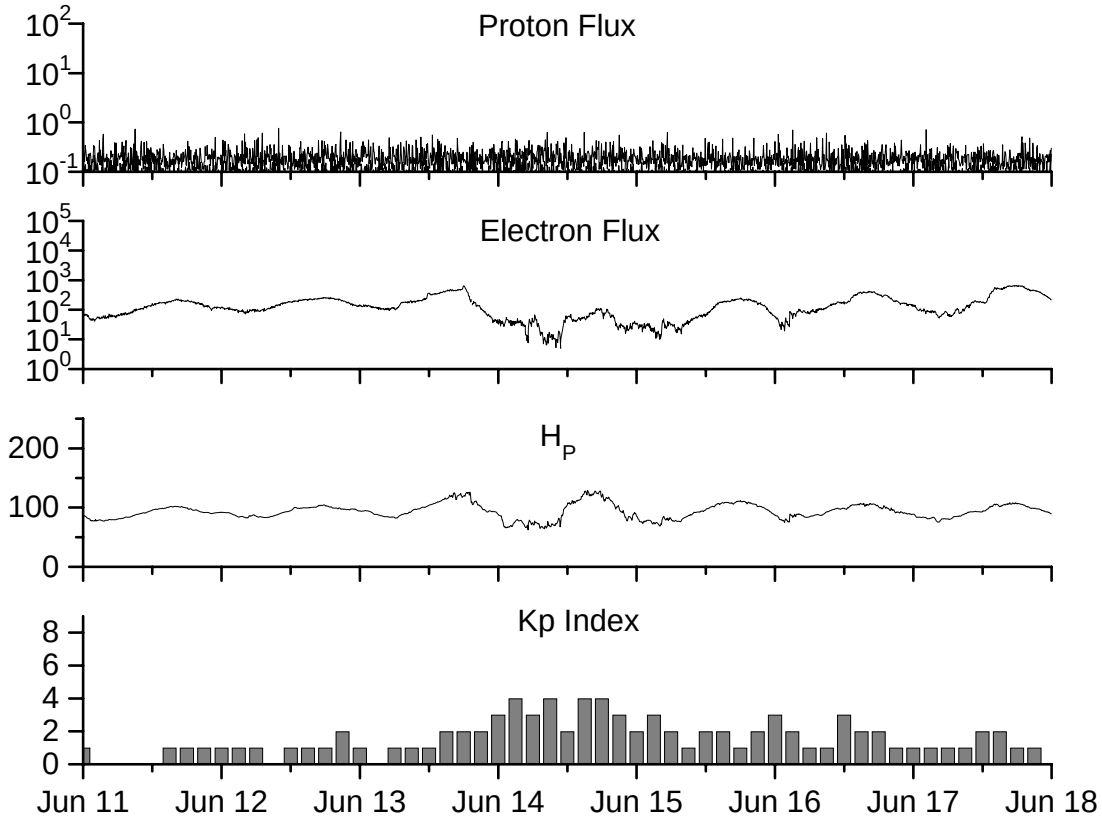
Region Summary

Date	Location (° Lat ° CMD)	Helio Lon	Sunspot Characteristics Area (10^{-6} hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	Flares X-ray C	M	X	Optical S	1	2	3	4
			Region 959												
01 Jun	S12E49	205	0010	04	Bxo	002	B								
02 Jun	S12E36	204	0030	04	Cso	002	B								
03 Jun	S10E27	200	0020	04	Bxo	003	B								
04 Jun	S10E11	203	0010	01	Axx	001	A								
05 Jun	S11W04	205													
06 Jun	S11W17	205													
07 Jun	S11W31	204	0030	05	Bxi	009	B								
08 Jun	S10W44	204	0010	06	Bxo	005	B								
09 Jun	S10W57	204													
10 Jun	S10W70	204													
11 Jun	S10W83	204													
12 Jun	S10W96	204													
								0	0	0	0	0	0	0	0
Crossed West Limb.															
Absolute heliographic longitude: 205															
			Region 960												
01 Jun	S06E73	181	0320	10	Dki	005	B	1	3		2				
02 Jun	S07E62	178	0480	16	Fkc	012	Bgd		1		1				
03 Jun	S09E50	177	0540	16	Fkc	023	Bgd		2		2				
04 Jun	S08E38	176	0480	16	Fkc	037	Bgd		1		3	1		1	
05 Jun	S07E24	177	0410	15	Ekc	039	Bgd	1			7	1			
06 Jun	S07E11	177	0280	15	Esi	024	Bg	1					1		
07 Jun	S07W03	176	0270	14	Esi	019	Bg				2				
08 Jun	S08W17	177	0240	12	Esc	015	B	2			3				
09 Jun	S06W32	179	0150	10	Dao	009	B		1				1		
10 Jun	S05W46	180	0130	08	Dso	004	B	1			3				
11 Jun	S05W59	180	0080	07	Dso	003	B				1				
12 Jun	S05W71	179	0080	05	Hsx	002	A								
13 Jun	S05W85	179	0070	04	Cao	002	B								
								6	8	0	24	2	2	1	0
Crossed West Limb.															
Absolute heliographic longitude: 176															

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

	Sunspot Numbers					Radio Flux		Geomagnetic	
	Observed values		Ratio	Smooth values		*Penticton	Smooth	Planetary	Smooth
Month	SEC	RI	RI/SEC	SEC	RI	10.7 cm	Value	Ap	Value
				2005					
June	59.8	39.6	0.66	47.9	28.9	93.7	91.9	13	13.9
July	71.0	39.9	0.56	48.1	29.2	96.6	90.9	16	13.1
August	65.6	36.4	0.55	45.4	27.5	90.7	89.3	16	12.2
September	39.2	22.1	0.56	42.9	25.9	90.8	87.8	21	11.8
October	13.0	8.5	0.65	42.6	25.5	76.7	87.4	7	11.6
November	32.2	18.0	0.56	42.1	24.9	86.3	86.7	8	11.1
December	62.6	41.2	0.66	40.1	23.0	90.8	85.4	7	10.4
				2006					
January	28.0	15.4	0.55	37.2	20.8	83.8	84.0	6	9.9
February	5.3	4.7	0.89	33.4	18.7	76.6	82.6	6	9.2
March	21.3	10.8	0.51	31.0	17.4	75.5	81.6	8	8.4
April	55.2	30.2	0.55	30.6	17.1	89.0	80.9	11	7.9
May	39.6	22.2	0.56	30.7	17.3	81.0	80.8	8	7.9
June	37.7	13.9	0.37	28.9	16.3	80.1	80.6	9	8.3
July	22.6	12.2	0.54	27.2	15.3	75.8	80.3	7	8.7
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			84.3		15	
				2007					
January	26.6	16.9	0.64			83.5		6	
February	17.2	10.6	0.62			77.8		6	
March	9.7	4.8	0.49			72.3		7	
April	6.9	3.7	0.54			72.4		9	
May	19.4	11.7	0.60			74.5		8	

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 11June 2007

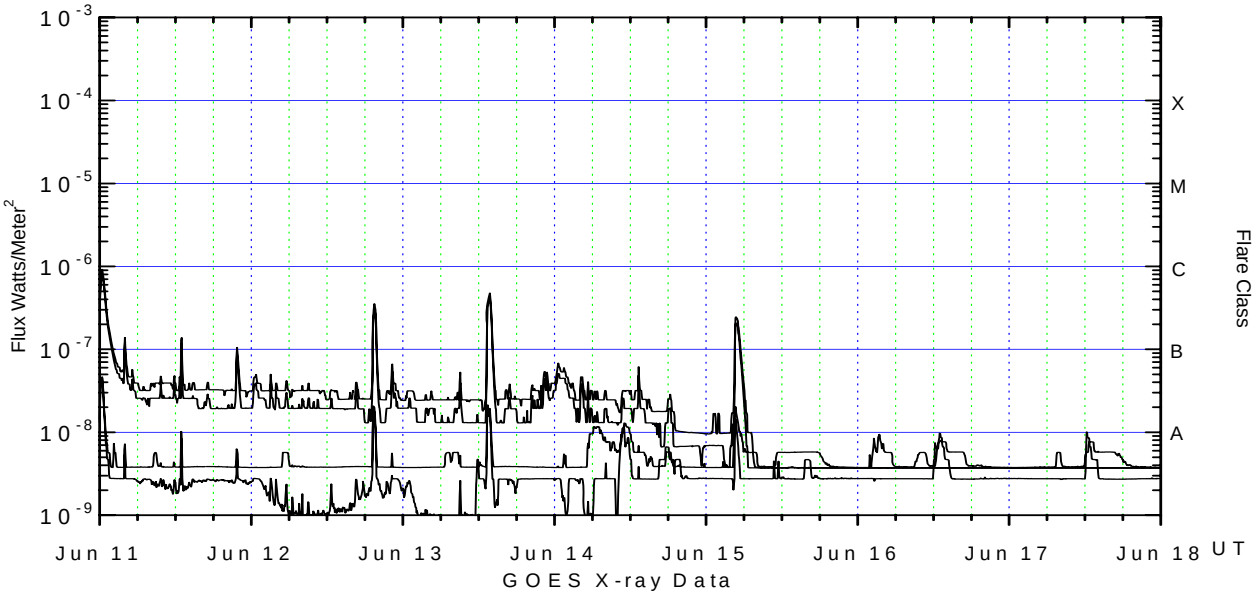
Protons plot contains the five-minute averaged integral proton flux (protons/cm^2 –sec –sr) as measured by GOES-11 (W135) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

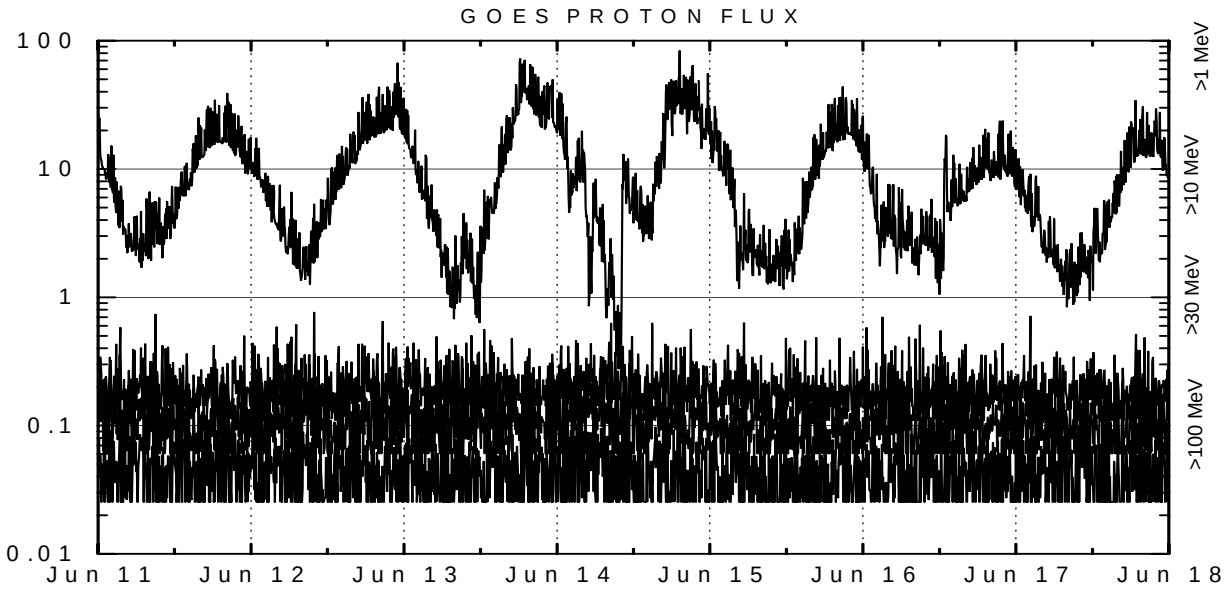
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm^2 –sec –sr) with energies greater than 2 MeV at GOES-12 (W075).

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 (protons/cm^2 –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 (protons/cm^2-sec-sr) at greater

than 10 MeV.