

**Space Weather Highlights**  
**17 – 23 September 2007**

**SEC PRF 1673**  
**25 September 2007**

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 was at normal levels.

The geomagnetic field was quiet during 17 – 19 September. Activity increased to quiet to active levels during the rest of the period. ACE real-time solar wind measurements indicated the increased activity was due to a recurrent coronal hole high-speed wind stream. The high-speed stream commenced around 20/0900 UTC. Velocities gradually increased to a peak of 728 km/sec at 23/0836 UTC, then gradually declined during the rest of the summary period. IMF changes associated with the onset of the high-speed stream included a solar sector boundary crossing (Away (+) to Toward (-)) at around 20/1400 UTC, a peak total field intensity of 13.1 nT at 20/1336 UTC, and a minimum southward Bz reading of -9.1 nT at 20/1330 UTC. The proton density increase associated with the onset of the high-speed stream reached a peak of 20.4 p/cc at 20/2002 UTC.

**Space Weather Outlook**  
**26 September – 22 October 2007**

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 26 September – 10 October and 21 – 22 October.

Geomagnetic activity is expected to be at quiet to unsettled levels during 26 – 27 September. Activity is expected to increase to unsettled to minor storm levels during 28 – 30 September due to a recurrent coronal hole high-speed stream. Activity is expected to decrease to quiet to unsettled levels during 01 – 02 October. Activity is expected to increase to unsettled to active levels during 03 – 04 October due to another recurrent coronal hole high-speed stream. Quiet conditions are expected during 05 – 16 October. An increase to quiet to unsettled levels is expected during 17 – 19 October. A further increase to unsettled to active levels is forecast for 20 October as another recurrent coronal hole high-speed stream affects the field. Activity is expected to decrease to quiet to unsettled levels during the remainder of the period as the high-speed stream subsides.



### *Daily Solar Data*

Date	Radio Flux 10.7 cm	Sun spot No.	Sunspot Area (10 <sup>-6</sup> hemi.)	X-ray Background	Flares							
					X-ray Flux			Optical				
					C	M	X	S	1	2	3	4
17 September	67	0	0	<A1.0	0	0	0	0	0	0	0	0
18 September	67	0	0	<A1.0	0	0	0	0	0	0	0	0
19 September	67	0	0	<A1.0	0	0	0	0	0	0	0	0
20 September	67	0	0	<A1.0	0	0	0	0	0	0	0	0
21 September	67	0	0	<A1.0	0	0	0	0	0	0	0	0
22 September	67	0	0	<A1.0	0	0	0	0	0	0	0	0
23 September	66	0	0	<A1.0	0	0	0	0	0	0	0	0

### *Daily Particle Data*

Date	Proton Fluence (protons/cm <sup>2</sup> -day-sr)			Electron Fluence (electrons/cm <sup>2</sup> -day-sr)		
	>1 MeV	>10 MeV	>100 MeV	>.6 MeV	>2MeV	>4 MeV
17 September	8.5E+5	1.7E+4	4.0E+3		7.2E+6	
18 September	6.5E+5	1.8E+4	4.0E+3		8.8E+6	
19 September	6.9E+5	1.8E+4	4.0E+3		9.3E+6	
20 September	1.5E+6	1.8E+4	3.9E+3		8.8E+6	
21 September	7.0E+5	1.8E+4	4.0E+3		9.8E+5	
22 September	1.4E+6	1.7E+4	3.8E+3		1.3E+6	
23 September	1.6E+6	1.7E+4	3.7E+3		2.2E+7	

### *Daily Geomagnetic Data*

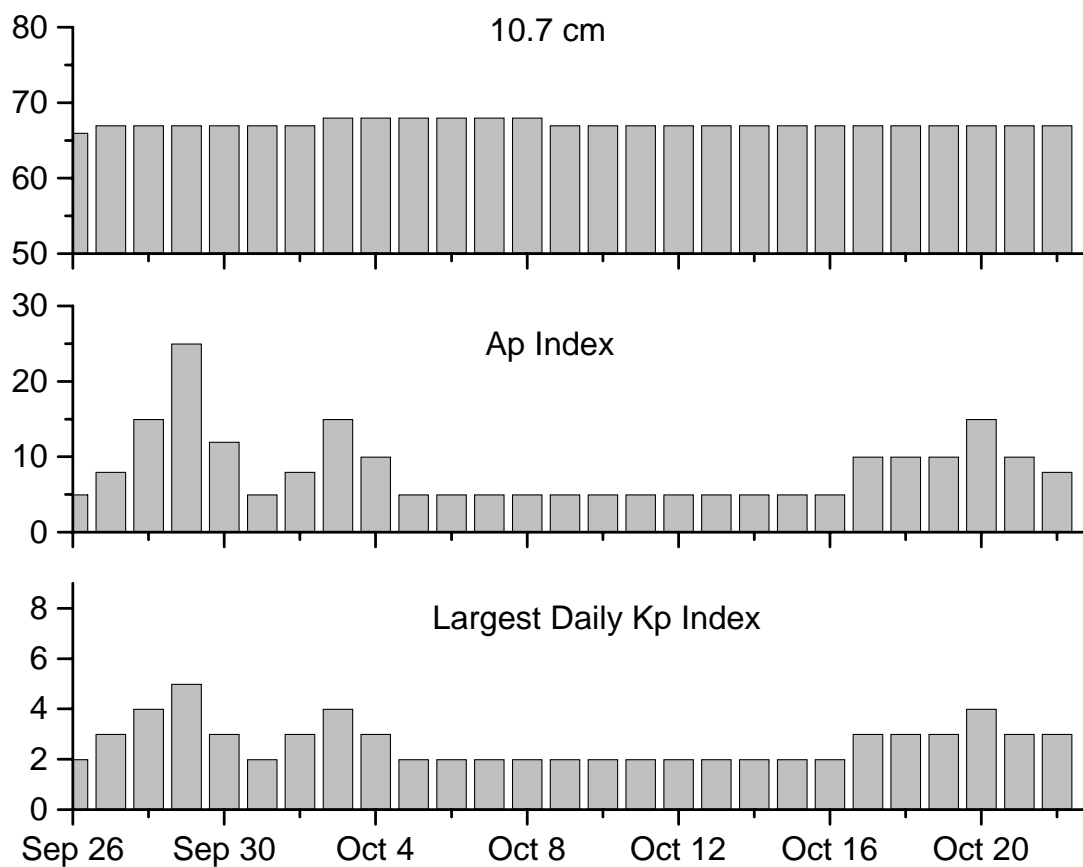
Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
17 September	1	0-0-0-0-0-1-2	1	0-0-0-0-1-0-1-1	2	0-0-0-0-1-1-1-2
18 September	2	2-1-0-0-1-0-0-0	2	2-1-0-0-1-0-0-0	3	2-1-0-0-1-2-1-1
19 September	2	0-2-0-0-1-0-1-0	1	0-1-0-1-1-0-0-0	4	0-2-0-1-1-1-1-1
20 September	6	0-1-0-1-3-2-3-2	8	0-0-0-2-2-4-3-2	10	0-1-0-2-3-3-4-3
21 September	7	2-1-1-2-2-1-2-3	6	2-2-2-2-2-1-1-2	9	2-2-1-2-2-2-2-4
22 September	10	3-2-3-1-2-2-3-2	15	3-2-4-3-3-4-2-2	11	3-2-3-1-2-2-4-3
23 September	11	3-3-3-2-2-1-2-3	20	3-4-4-5-4-2-1-2	15	3-4-4-2-2-1-2-3

### *Alerts and Warnings Issued*

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
20 Sep 1618	ALERT: Geomagnetic K=4	20 Sep 1617
21 Sep 2213	WARNING: Geomagnetic K=4	21 Sep 2213 - 22/1600
21 Sep 2219	ALERT: Geomagnetic K=4	21 Sep 2219
22 Sep 2017	WARNING: Geomagnetic K=4	22 Sep 2030 - 23/1600
23 Sep 0505	ALERT: Geomagnetic K=4	23 Sep 0502



# *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
26 Sep	66	5	2	10 Oct	67	5	2
27	67	8	3	11	67	5	2
28	67	15	4	12	67	5	2
29	67	25	5	13	67	5	2
30	67	12	3	14	67	5	2
01 Oct	67	5	2	15	67	5	2
02	67	8	3	16	67	5	2
03	68	15	4	17	67	10	3
04	68	10	3	18	67	10	3
05	68	5	2	19	67	10	3
06	68	5	2	20	67	15	4
07	68	5	2	21	67	10	3
08	68	5	2	22	67	8	3
09	67	5	2				



### ***Energetic Events***

Energy Events												
Date	Time			X-ray		Optical Information				Peak		Sweep Freq
	$\frac{1}{2}$			Integ		Imp/	Location		Rgn	Radio Flux		Intensity
	Begin	Max	Max	Class	Flux	Brtns	Lat	CMD	#	245	2695	II
<i>No Events Observed</i>												

***No Events Observed***

### ***Flare List***

Date	Time			Optical	Imp / Brtns	Location Lat CMD	Rgn
	Begin	Max	End	X-ray Class.			
17 September	No Flares Observed						
18 September	No Flares Observed						
19 September	No Flares Observed						
20 September	No Flares Observed						
21 September	No Flares Observed						
22 September	No Flares Observed						
23 September	No Flares Observed						

### ***Region Summary***

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

***No active regions.***

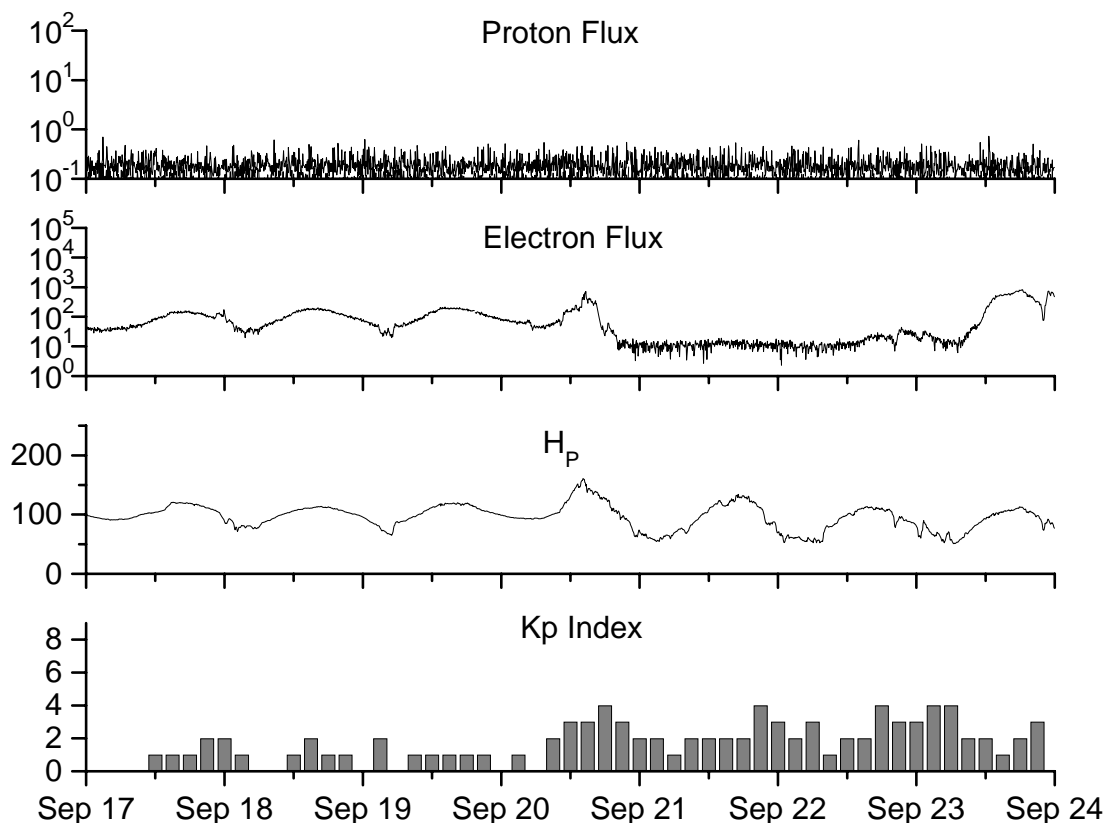


**Recent Solar Indices (preliminary)**  
**Of the observed monthly mean values**

Month	by the observed monthly mean values					Radio Flux		Geomagnetic	
	Sunspot Numbers								
	Observed values	Ratio		Smooth values		*Penticton	Smooth	Planetary	Smooth
	SEC	RI	RI/SEC	SEC	RI	10.7 cm	Value	Ap	Value
2005									
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	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			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	
June	20.0	12.0	0.60			73.7		7	
July	15.6	10.0	0.64			71.6		7	
August	9.9	6.2	0.63			69.2		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 17 September 2007*

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

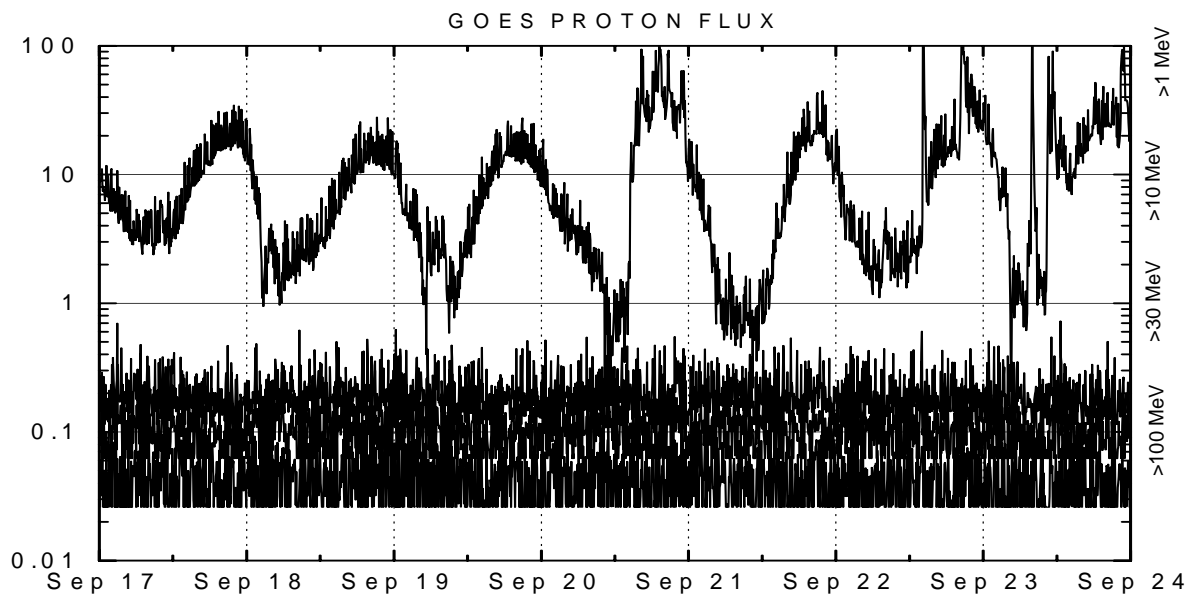
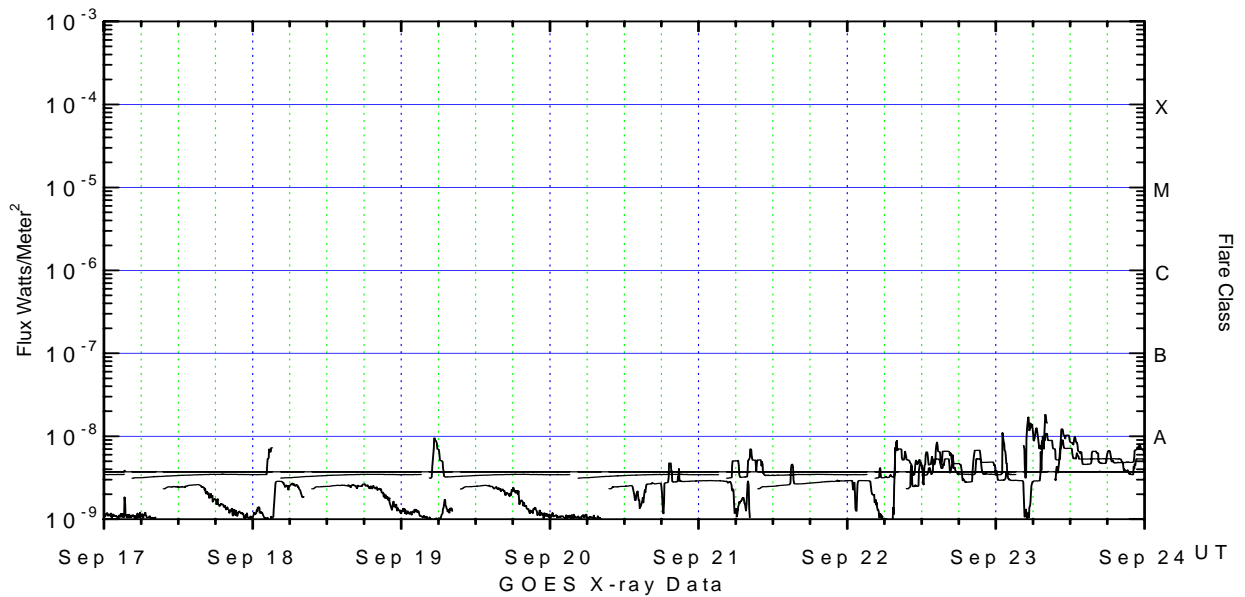
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm<sup>2</sup>-sec-sr) with energies greater than 2 MeV at GOES-12 (W075).

$H_P$  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<sup>2</sup>) 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<sup>2</sup>-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<sup>2</sup>-sec-sr) at greater than 10 MeV.

