

Note:

Format on Weekly Plots has changed.

Space Weather Highlights 15 – 21 October 2007

**SEC PRF 1677
23 October 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 reached high levels during 20 - 21 October.

The geomagnetic field was quiet during 15 - 17 October. Activity increased to quiet to unsettled levels on 18 October. A further increase to quiet to minor storm levels occurred on 19 October with a brief period of major storming detected at high latitudes. Activity decreased to quiet to active levels on 20 October with a brief period of minor storming detected at high latitudes. Field activity decreased to quiet levels on the last day of the period. ACE solar wind data indicated the increased activity during 18 - 20 October was due to a recurrent coronal hole high-speed stream. The high-speed stream began on 18 October and ended on 21 October. A co-rotating interaction region (CIR) began late on 17 October in advance of the high-speed stream. IMF changes associated with the CIR included increased Bt (peak 14.1 nT at 18/1942 UTC) and increased Bz variability (minimum -11.4 nT at 18/1929 UTC). A minor proton density increase was also associated with the CIR. Solar wind velocities increased during 18 - 20 October and reached a peak of 697.3 km/sec at 20/0310 UTC. The high-speed stream began to gradually subside around midday on 20 October.

Space Weather Outlook 24 October – 19 November 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 24 October – 08 November and 16 - 19 November.

Activity is expected to be at unsettled to minor storm levels from 24 October through midday on 27 October due to a recurrent coronal hole high-speed stream. Activity is expected to decrease to quiet to unsettled levels from midday on the 27th through the 29th. Activity is expected to increase to unsettled to active levels during 30 - 31 October as another recurrent coronal hole high-speed stream affects the field. Quiet conditions are expected during 01 – 13 November. Activity is expected to increase to quiet to unsettled levels during 14 – 15 November. A further increase to unsettled to active levels is forecast for 16 November due to a recurrent coronal hole high-speed stream. Quiet to unsettled 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			Optical				
					C	M	X	S	1	2	3	4
15 October	67	0	0	<A1.0	0	0	0	0	0	0	0	0
16 October	67	0	0	<A1.0	0	0	0	0	0	0	0	0
17 October	67	0	0	<A1.0	0	0	0	0	0	0	0	0
18 October	68	0	0	<A1.0	0	0	0	0	0	0	0	0
19 October	67	0	0	<A1.0	0	0	0	0	0	0	0	0
20 October	67	0	0	<A1.0	0	0	0	0	0	0	0	0
21 October	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
15 October	5.7E+5	1.9E+4	4.2E+3		2.2E+6	
16 October	5.4E+5	1.8E+4	3.9E+3		3.9E+6	
17 October	7.0E+5	1.8E+4	3.9E+3		3.3E+6	
18 October	1.4E+6	1.8E+4	3.9E+3		4.1E+6	
19 October	9.8E+5	1.7E+4	3.4E+3		3.5E+6	
20 October	1.5E+6	1.7E+4	3.6E+3		8.9E+7	
21 October	1.2E+6	1.7E+4	3.4E+3		8.7E+7	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
15 October	1	1-0-0-0-1-0-0-0	0	0-0-0-1-0-0-0-0	2	1-0-0-0-0-1-0-1
16 October	1	0-0-0-1-1-0-0-0	5	0-0-0-2-3-3-0-0	2	0-0-0-1-1-1-0-1
17 October	0	1-0-0-0-0-0-0-0	0	0-0-0-0-0-0-0-0	1	1-0-0-0-0-0-0-1
18 October	11	1-3-3-3-2-2-3-2	13	0-2-3-5-2-1-2-3	10	1-2-3-3-2-1-3-3
19 October	11	3-2-2-2-3-2-3-3	20	2-2-3-3-6-3-3-2	15	3-2-2-2-5-3-3-3
20 October	8	3-3-2-2-1-1-2-1	17	2-4-4-5-3-2-2-0	12	4-4-3-3-2-3-2-1
21 October	5	1-2-2-1-1-1-2-2	3	0-1-1-2-2-0-1-1	4	0-1-1-1-1-1-1-2

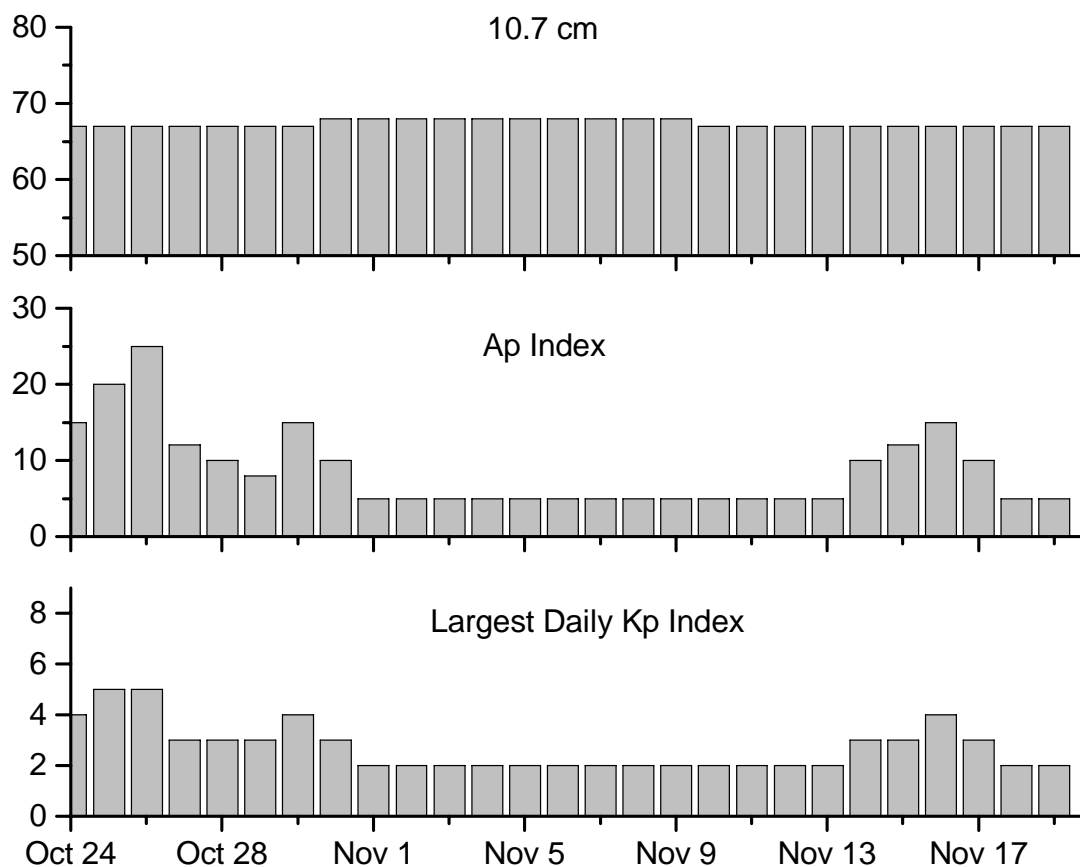


Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
18 Oct 1118	WARNING: Geomagnetic K=4	18 Oct 1118 - 1400
18 Oct 1122	ALERT: Geomagnetic K=4	18 Oct 1122
19 Oct 1348	WARNING: Geomagnetic K=4	19 Oct 1340 - 1600
19 Oct 1420	ALERT: Geomagnetic K=4	19 Oct 1418
20 Oct 0022	WARNING: Geomagnetic K=4	20 Oct 0023 - 1600
20 Oct 0118	ALERT: Geomagnetic K=4	20 Oct 0116
20 Oct 1123	ALERT: Electron 2MeV Integral Flux >1000pfu	20 Oct 1105
21 Oct 1139	ALERT: Electron 2MeV Integral Flux >1000pfu	21 Oct 1120



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 Oct	67	15	4	07 Nov	68	5	2
25	67	20	5	08	68	5	2
26	67	25	5	09	68	5	2
27	67	12	3	10	67	5	2
28	67	10	3	11	67	5	2
29	67	8	3	12	67	5	2
30	67	15	4	13	67	5	2
31	68	10	3	14	67	10	3
01 Nov	68	5	2	15	67	12	3
02	68	5	2	16	67	15	4
03	68	5	2	17	67	10	3
04	68	5	2	18	67	5	2
05	68	5	2	19	67	5	2
06	68	5	2				



Energetic Events

Date	Time		X-ray		Optical Information			Peak		Sweep Freq	
	$\frac{1}{2}$		Integ		Imp/	Location		Radio Flux		Intensity	
	Begin	Max	Max	Class	Flux	Brtns	Lat CMD	#	245	2695	II IV

No Events Observed

Flare List

Date	Time			Optical	Imp / Brtns	Location		Rgn
	Begin	Max	End	Class.		Lat	CMD	

08 October	No Flares Observed							
09 October	No Flares Observed							
10 October	No Flares Observed							
11 October	No Flares Observed							
12 October	No Flares Observed							
13 October	No Flares Observed							
14 October	No Flares Observed							

Region Summary

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

Region 972

06 Oct	S05W06	020	0060	06	Cro	005	B				
07 Oct	S06W19	020	0020	06	Bxo	003	B				
08 Oct	S06W33	021									
09 Oct	S06W46	021									
10 Oct	S06W59	021									
11 Oct	S06W72	021									
12 Oct	S06W85	021									
13 Oct	S06W98	021									

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 020

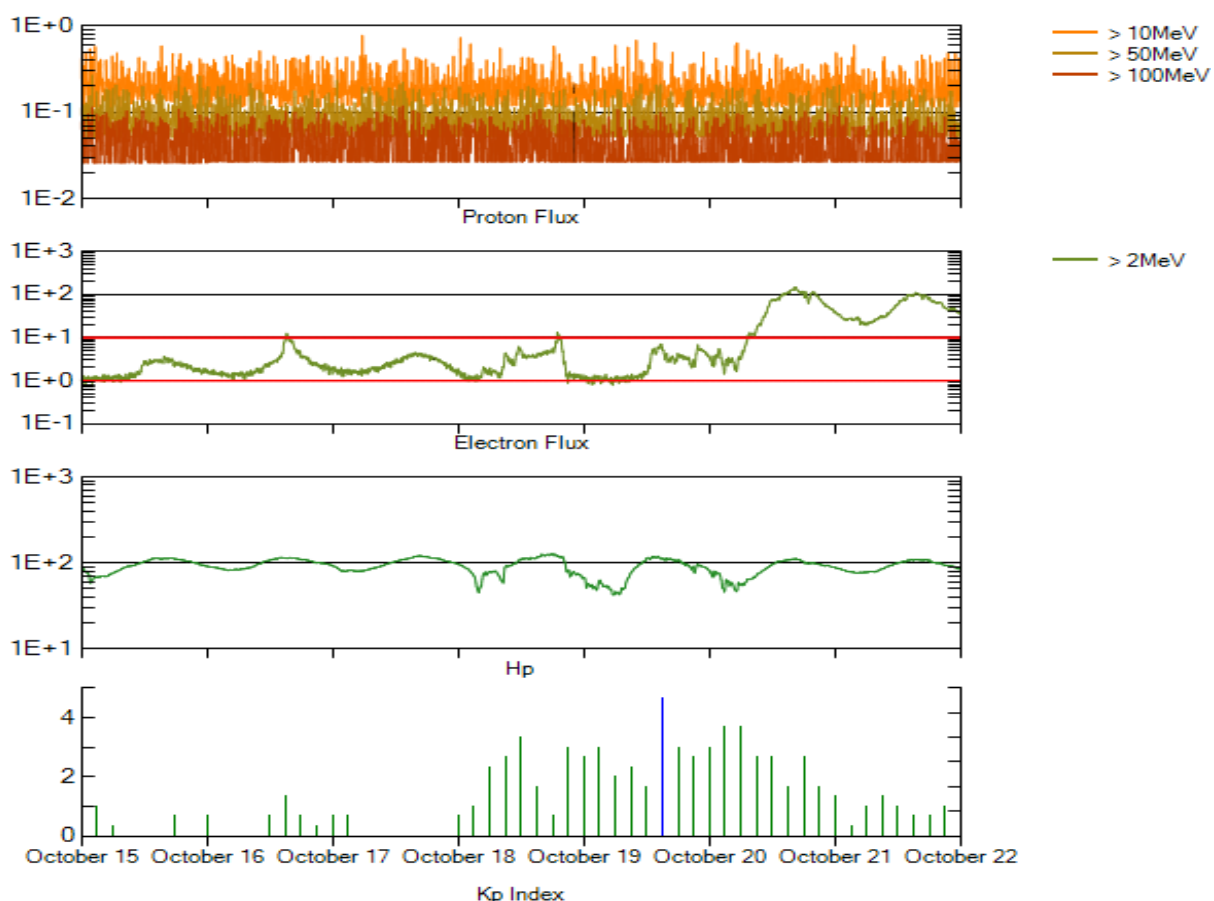


Recent Solar Indices (preliminary)
Of the observed monthly mean values

Month	Sunspot Numbers			Radio Flux		Geomagnetic			
	Observed values	Ratio	Smooth values	*Penticton	Smooth	Planetary	Smooth		
	SEC	RI	RI/SEC	SEC	RI	10.7 cm	Value	Ap	Value
2005									
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	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			72.4		9	
May	19.4	11.7	0.60			74.5		9	
June	20.0	12.0	0.60			73.7		7	
July	15.6	10.0	0.64			71.6		8	
August	9.9	6.2	0.63			69.2		7	
September	4.8	2.4	0.50			67.1		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 15 October 2007

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.

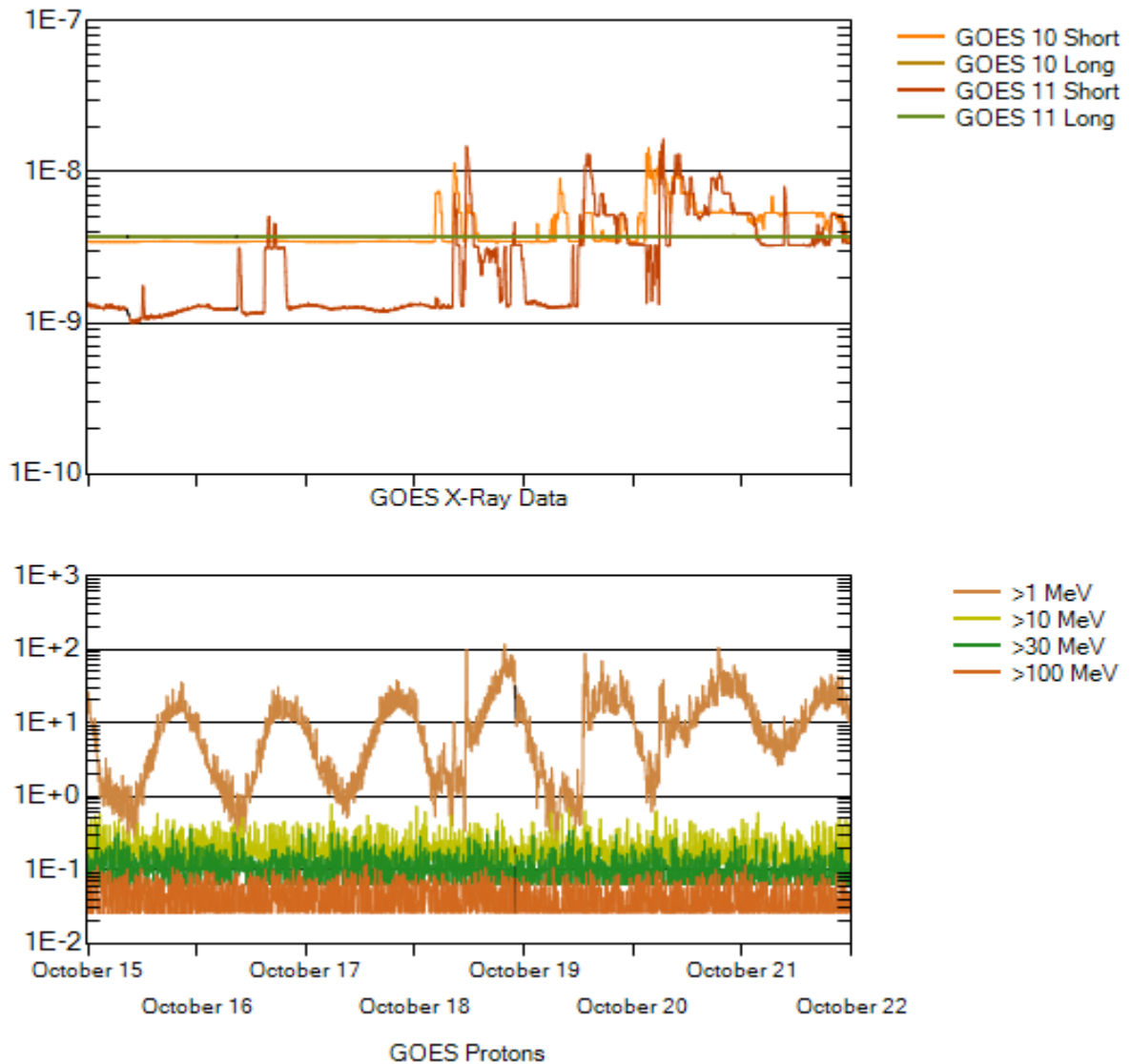
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²–sec –sr) with energies greater than 2 MeV at GOES-12 (W075).

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.

