

Space Weather Highlights
23 October – 29 October 2006

SEC PRF 1626
31 October 2006

Solar activity was at very low levels. Only a few low level B-class flares were observed during the period.

No greater than 10 MeV proton events were observed.

The greater than 2 MeV electron flux at geosynchronous orbit was at high levels on 23 – 27 October.

The geomagnetic field ranged from quiet to active levels at middle latitudes, while high latitudes experienced quiet to major storm conditions. The period began under the tail end of a coronal hole high speed stream. Solar wind speed at ACE was decreasing from a high around 525 km/s while the IMF Bz did not vary much beyond +/- 5 nT. As a result, the geomagnetic field was at quiet to unsettled levels. Wind speed continued to decrease to a low of approximately 300 km/s midday on 27 October. Late on the 27th, density, temperature and wind speed increased, all indicative of a co-rotating interaction region in advance of a coronal hole high speed stream. Early on 28 October, the IMF Bz began fluctuating between +/- 10 nT and by the end of 28 October, the geomagnetic field had responded with unsettled to active conditions at middle latitudes, and active to major storm conditions at high latitudes. By the end of the summary period, wind speed increased to near 600 km/s and the geomagnetic field remained at similar storm levels.

Space Weather Outlook
01 November – 27 November 2006

Solar activity is expected to be at very low to low levels.

No greater than 10 MeV proton events are expected.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at high levels on 01 – 03 November, 10 – 23 November, and 25 – 26 November.

The geomagnetic field is expected to be mostly quiet to unsettled for the majority of the forecast period. Recurrent coronal hole high speed wind streams are expected to rotate into geoeffective positions on 09 – 11 November, 17 November, and again on 24 – 25 November. Unsettled to minor storm periods are possible on 09 – 11 November and 24 – 25 November, while unsettled to active levels are expected on 17 November.



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 October	76	50	210	A3.4	0	0	0	0	0	0	0	0	0
24 October	75	35	170	A3.0	0	0	0	0	0	0	0	0	0
25 October	75	15	100	A2.9	0	0	0	0	0	0	0	0	0
26 October	72	0	0	A2.7	0	0	0	0	0	0	0	0	0
27 October	72	14	20	<A1.0	0	0	0	0	0	0	0	0	0
28 October	75	28	170	A1.6	0	0	0	0	0	0	0	0	0
29 October	73	0	0	A1.5	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 October	2.3E+6	1.6E+4	3.5E+3		1.2E+8
24 October	2.6E+6	1.7E+4	3.5E+3		1.4E+8	
25 October	1.3E+6	1.6E+4	3.6E+3		1.2E+8	
26 October	1.6E+6	1.6E+4	3.6E+3		1.7E+8	
27 October	2.3E+6	1.6E+4	3.8E+3		1.3E+8	
28 October	1.4E+6	1.6E+4	3.6E+3		1.1E+7	
29 October	1.5E+6	1.7E+4	3.6E+3		1.6E+7	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	23 October	2	0-0-0-1-0-1-1-1	3	2-0-0-2-2-1-1-0	3
24 October	3	0-0-2-1-1-1-1-1	4	0-0-2-1-3-0-1-1	4	0-1-2-1-1-1-1-1
25 October	4	2-2-2-1-1-1-0-0	2	0-1-2-1-0-0-0-0	4	1-2-2-1-0-0-0-0
26 October	1	0-0-1-1-1-0-0-0	3	0-0-1-2-2-1-0-0	1	0-0-1-0-1-0-0-0
27 October	3	1-0-0-1-1-1-2-2	2	0-0-0-2-1-0-1-1	2	1-0-0-1-0-0-1-2
28 October	12	1-2-3-3-2-3-2-4	28	1-1-4-6-4-5-2-4	14	1-2-3-4-2-3-3-4
29 October	13	3-3-3-2-3-2-3-3	36	4-4-6-5-5-4-3-3	21	3-4-4-3-3-3-4-4

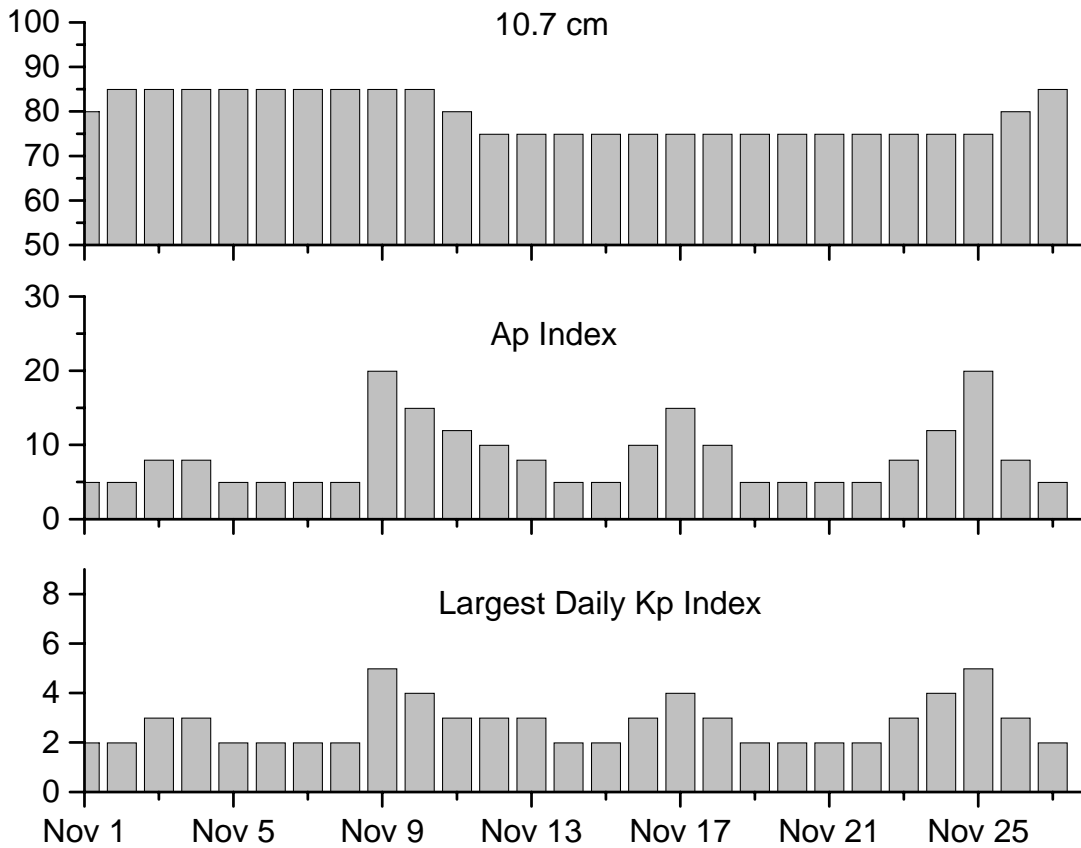


Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
23 Oct 0903	ALERT: Electron 2MeV Integral Flux >1000pfu	23 Oct 0845
24 Oct 0923	ALERT: Electron 2MeV Integral Flux >1000pfu	24 Oct 0905
25 Oct 0834	ALERT: Geomagnetic K=4	25 Oct 0833
25 Oct 0942	ALERT: Electron 2MeV Integral Flux >1000pfu	25 Oct 0920
26 Oct 0532	ALERT: Electron 2MeV Integral Flux >1000pfu	26 Oct 0500
27 Oct 1452	ALERT: Electron 2MeV Integral Flux >1000pfu	27 Oct 0900
28 Oct 1044	WARNING: Geomagnetic K=4	28 Oct 1100 – 1600
28 Oct 1055	ALERT: Geomagnetic K=4	28 Oct 1055
28 Oct 1555	EXTENDED WARNING: Geomagnetic K=4	28 Oct 1100 – 2359
28 Oct 2301	EXTENDED WARNING: Geomagnetic K=4	28 Oct 1100 – 29/1600
29 Oct 1933	WARNING: Geomagnetic K=4	29 Oct 1933 - 2359
29 Oct 1946	ALERT: Geomagnetic K=4	29 Oct 1940
29 Oct 2337	EXTENDED WARNING: Geomagnetic K=4	29 Oct 1933 – 30/1600



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
01 Nov	80	5	2	15 Nov	75	5	2
02	85	5	2	16	75	10	3
03	85	8	3	17	75	15	4
04	85	8	3	18	75	10	3
05	85	5	2	19	75	5	2
06	85	5	2	20	75	5	2
07	85	5	2	21	75	5	2
08	85	5	2	22	75	5	2
09	85	20	5	23	75	8	3
10	85	15	4	24	75	12	4
11	80	12	3	25	75	20	5
12	75	10	3	26	80	8	3
13	75	8	3	27	80	5	2
14	75	5	2				



Energetic Events

Date	Time		X-ray		Optical Information			Peak		Sweep Freq
	Begin	Max	1/2 Max	Integ	Imp/ Brtns	Location Lat CMD	Rgn #	Radio Flux		Intensity
								245	2695	II

No Events Observed

Flare List

Date	Begin	Time		Optical X-ray Class.	Rgn
		Max	End		
23 October	0003	0007	0014	B1.9	
24 October	No Flares Observed				
25 October	1859	1906	1913	B1.3	
	1930	1937	1943	B1.3	
26 October	No Flares Observed				
27 October	No Flares Observed				
28 October	0526	0532	0534	B1.4	
	0654	0658	0700	B1.2	
	1920	1924	1930	B1.0	
	2109	2113	2115	B2.5	
29 October	0436	0441	0450	B1.2	



Region Summary

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

Region 917

19 Oct	S05W04	344	0030	04	Bxo	004	B											
20 Oct	S05W20	347	0030	04	Bxo	005	B					1						
21 Oct	S05W33	347	0070	04	Cso	006	B											
22 Oct	S05W46	346	0200	08	Dac	008	Bg											
23 Oct	S05W60	347	0160	10	Dai	024	Bg											
24 Oct	S05W73	347	0140	11	Cao	013	B											
25 Oct	S05W86	347	0100	10	Cao	005	B											
											0	0	0	1	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 344

Region 918

23 Oct	S04W72	359	0050	04	Cro	006	B											
24 Oct	S04W85	359	0030	02	Hrx	002	A											
											0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 359

Region 919

27 Oct	S15W01	236	0020	04	Bxo	004	B											
28 Oct	S15W15	236	0020	04	Bxo	003	B											
29 Oct	S15W28	236																
											0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 236

Region 920

28 Oct	S07W82	303	0150	12	Eso	005	B											
											0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 303

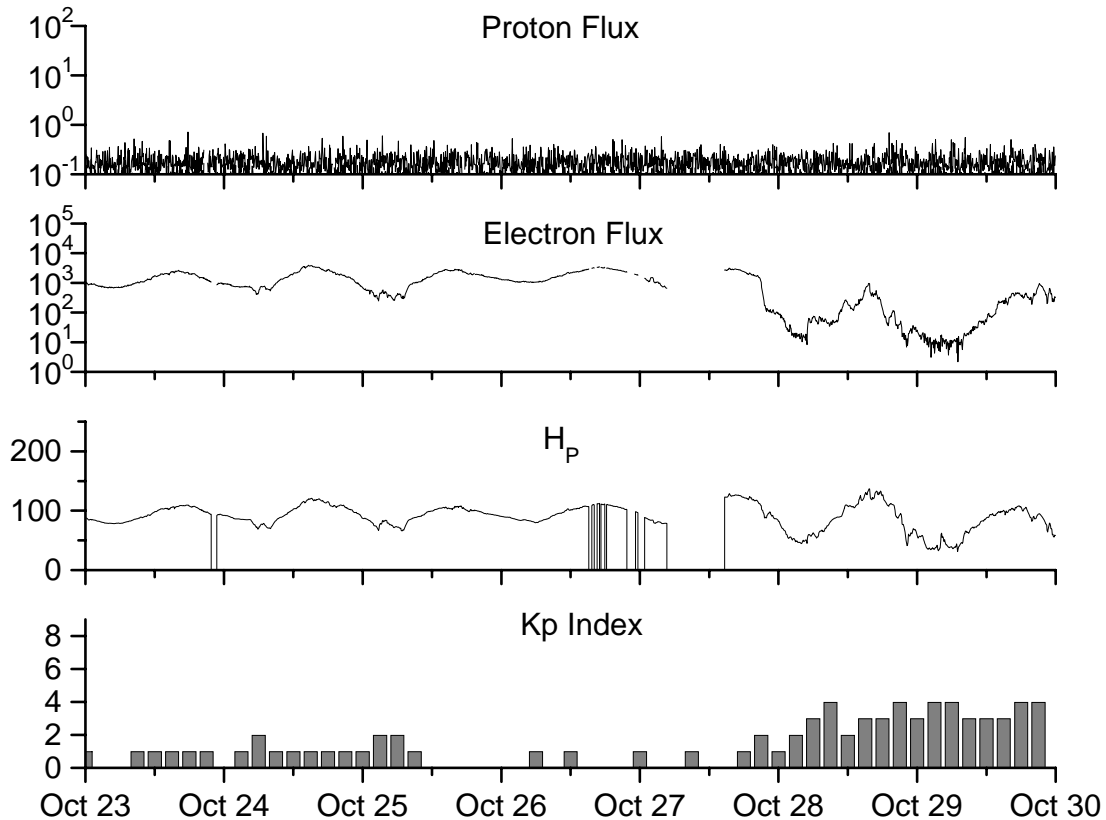


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

Month	Sunspot Numbers			Radio Flux		Geomagnetic			
	Observed values SEC	Ratio RI	Ratio RI/SEC	Smooth values SEC	Smooth values RI	*Penticton 10.7 cm	Smooth Value	Planetary Ap	Smooth Value
2004									
October	77.9	48.4	0.62	61.3	35.9	105.7	102.1	9	13.5
November	70.5	43.7	0.62	60.0	35.4	113.2	101.5	26	14.1
December	34.7	17.9	0.52	58.8	35.3	94.6	101.3	11	14.8
2005									
January	52.0	31.3	0.60	57.3	34.7	102.4	100.3	22	14.7
February	45.4	29.1	0.64	56.4	34.0	97.3	98.5	11	14.6
March	41.0	24.8	0.60	55.8	33.6	90.0	97.2	12	15.3
April	41.5	24.4	0.59	52.6	31.7	85.9	95.5	12	15.7
May	65.4	42.6	0.65	48.3	29.0	99.5	93.2	20	14.8
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			89.0		11	
May	39.6	22.2	0.56			81.0		8	
June	37.7	13.9	0.37			80.1		8	
July	22.6	12.2	0.54			75.8		7	
August	22.8	12.9	0.57			79.0		9	
September	25.2	14.5	0.58			77.8		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 23 October 2006

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.

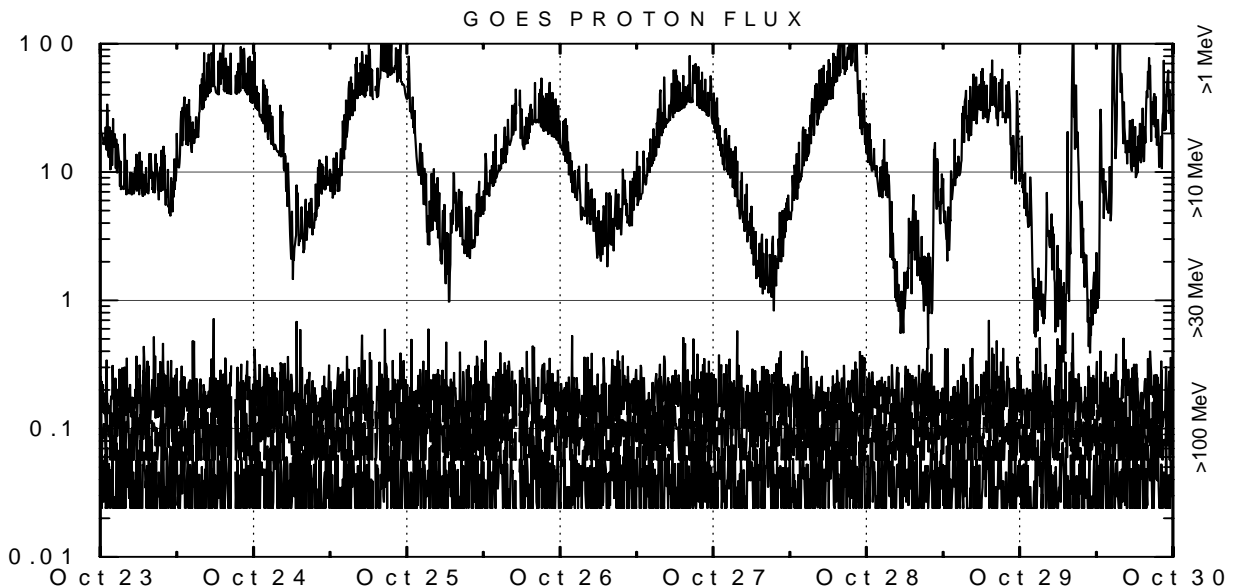
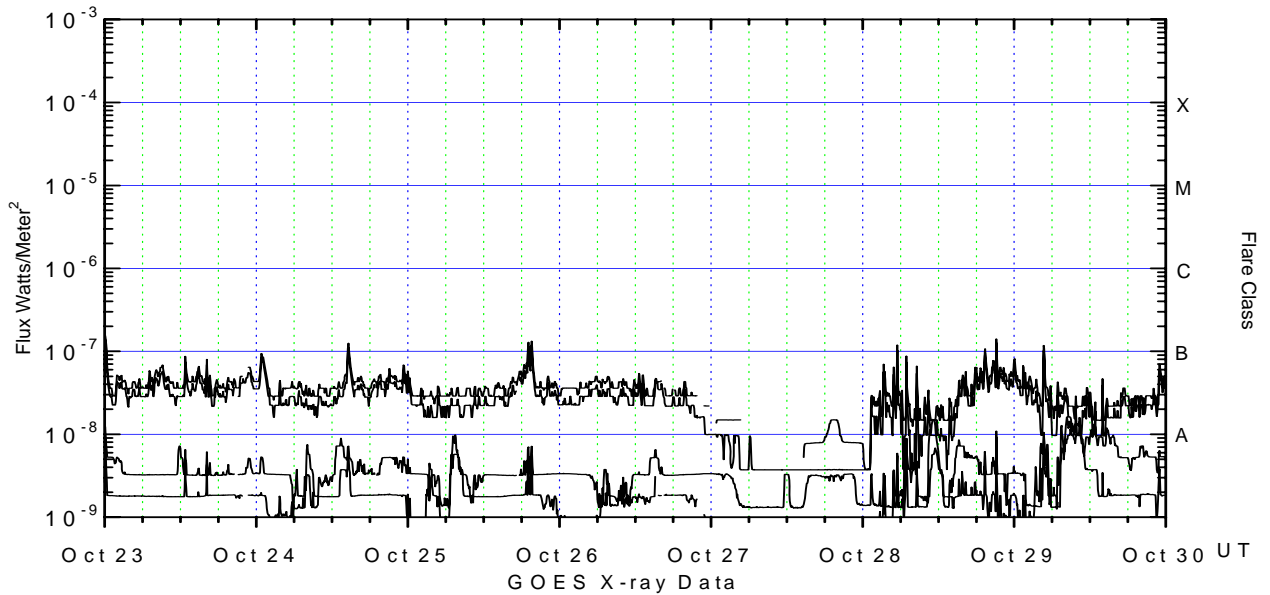
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV at GOES-12 (W075).

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.

K_p 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 K_p 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 K_p 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/m²) as measured by GOES 12 (W075) 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/cm²-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/cm²-sec-sr) at greater than 10 MeV.

