

**Space Weather Highlights**  
**24 - 30 October 2005**

**SWO PRF 1574**  
**01 November 2005**

Solar activity was at very low levels. There were no spots observed on the visible disk until 29 October when a small sunspot group developed on the east limb. This region was numbered as Region 818 (S08, L=287, class/area, D<sub>so</sub>/40 on 31 October) and grew slightly by the end of the period. No significant flare activity was observed during this reporting period.

No greater than 10 MeV proton events were observed this period.

No greater than 2 MeV electron events were observed this period.

The geomagnetic field ranged from quiet to active levels with minor storm periods at high latitudes. Solar wind speed ranged from a high of about 560 km/s midday on 26 October to a low of 320 km/s on 30 October. The period began with a wind speed around 350 km/s and the IMF B<sub>z</sub> not varying much beyond +/- 5 nT. This continued until late on 24 October when a solar sector boundary crossing was observed followed by an increase in solar wind speed and density. The IMF B<sub>z</sub> fluctuated between +/- 9 nT early on 25 October as a coronal hole high speed stream moved into geoeffective position. The geomagnetic field responded with unsettled to minor storm periods at mid latitudes with a period of major storming at high latitudes. By 26 October, wind speed reached a maximum around 560 km/s before beginning a slow decline that would last through the end of the period. Several periods of minor storming were observed at high latitudes from 26 - 28 October. The geomagnetic field returned to mostly quiet conditions after 28 October. The period ended with the solar wind speed around 380 km/s.

**Space Weather Outlook**  
**02 November - 28 November 2005**

Solar activity is expected to be very low to low.

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 02 November, 05 – 11 November, and 16 – 17 November.

The geomagnetic field is expected to range from quiet to minor storm levels. Unsettled to active conditions are expected on 13 November; unsettled to minor storm levels are possible on 04 November and 21 November due to recurrent coronal hole high speed wind streams. Otherwise, expect quiet to unsettled conditions.



### 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
24 October	73	0	0	<A1.0	0	0	0	0	0	0	0	0
25 October	73	0	0	<A1.0	0	0	0	0	0	0	0	0
26 October	72	0	0	<A1.0	0	0	0	0	0	0	0	0
27 October	72	0	0	<A1.0	0	0	0	0	0	0	0	0
28 October	73	0	0	<A1.0	0	0	0	0	0	0	0	0
29 October	74	11	10	A1.4	0	0	0	0	0	0	0	0
30 October	76	14	40	A2.6	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
	24 October	3.7E+5	1.5E+4	3.5E+3		7.3E+5
25 October	6.6E+5	1.5E+4	3.5E+3		9.0E+5	
26 October	4.8E+5	1.4E+4	3.1E+3		8.0E+6	
27 October	5.2E+5	1.3E+4	3.0E+3		2.2E+7	
28 October	4.3E+5	1.4E+4	3.1E+3		2.0E+7	
29 October	4.0E+5	1.5E+4	3.1E+3		2.9E+7	
30 October	3.6E+5	1.3E+4	3.3E+3		1.6E+7	

### Daily Geomagnetic Data

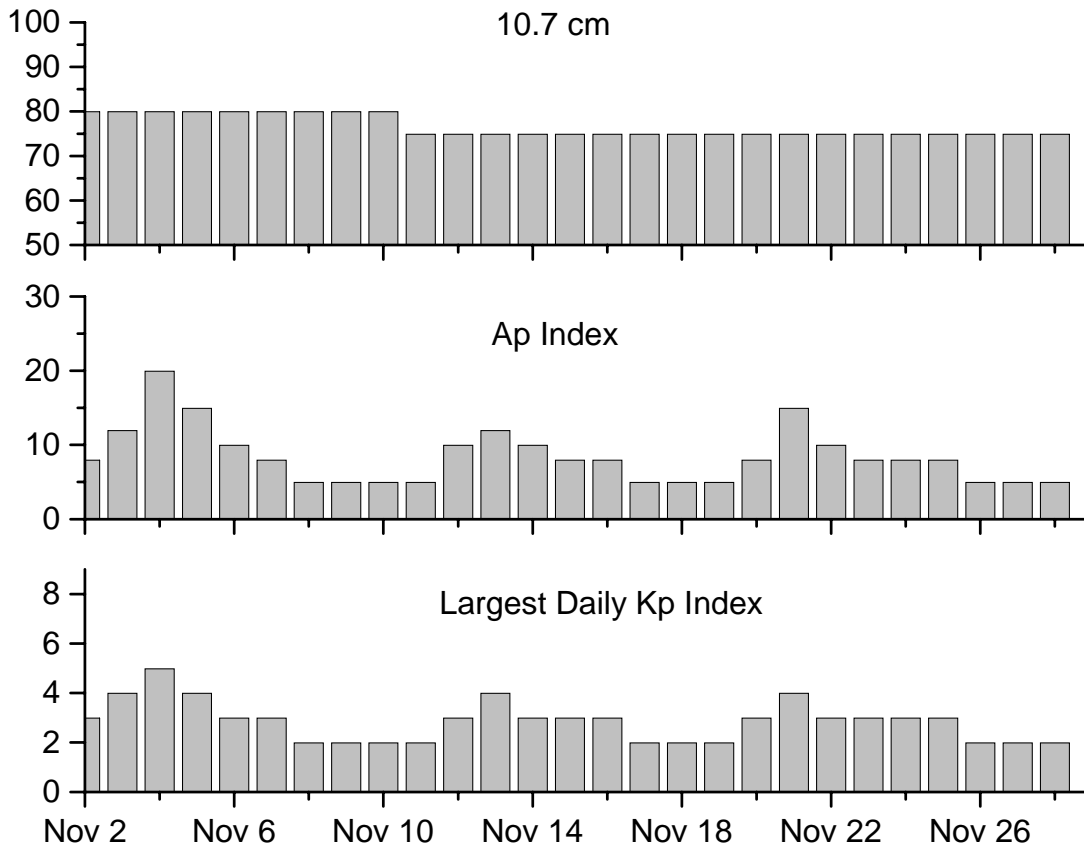
Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	24 October	3	1-0-0-0-2-1-2-2	4	0-0-0-1-3-2-1-1	4
25 October	17	4-3-5-3-2-2-1-3	27	2-3-4-6-4-4-2-4	19	4-3-4-4-2-3-3-3
26 October	8	2-2-3-2-2-2-2-1	16	2-2-5-3-3-3-3-1	8	1-2-3-2-1-2-1-1
27 October	5	3-1-0-1-2-2-1-0	12	1-1-1-2-5-4-2-0	6	3-0-0-1-3-2-1-1
28 October	4	0-0-1-2-2-1-2-1	17	0-0-4-5-5-2-1-0	5	1-0-2-2-2-1-1-1
29 October	1	0-0-1-0-0-1-1-0	2	1-0-2-0-0-1-1-0	2	1-0-1-0-0-1-0-1
30 October	3	1-1-0-1-1-1-1-1	4	0-2-0-1-3-1-1-1	5	2-2-0-0-1-0-1-2

### Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
25 Oct 0238	ALERT: Geomagnetic K=4	25 Oct 0230
25 Oct 0253	WARNING: Geomagnetic K=4	25 Oct 0255 - 1600
25 Oct 0930	WARNING: Geomagnetic K=5	25 Oct 0930 - 1230
26 Oct 0841	ALERT: Geomagnetic K=4	26 Oct 0839



### 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
02 Nov	80	8	3	16 Nov	75	8	3
03	80	12	3	17	75	5	2
04	80	20	5	18	75	5	2
05	80	15	4	19	75	5	2
06	80	10	3	20	75	8	3
07	80	8	3	21	75	15	4
08	80	5	2	22	75	10	3
09	80	5	2	23	75	8	3
10	70	5	2	24	75	8	3
11	75	5	2	25	75	8	3
12	75	10	3	26	75	5	2
13	75	12	3	27	75	5	2
14	75	10	3	28	75	5	2
15	75	8	3				



***Energetic Events***

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

***No Events Observed***

***Flare List***

Date	Time			Optical	Imp / Brtns	Location Lat CMD	Rgn
	Begin	Max	End	X-ray Class.			
24 October	No Flares Observed						
25 October	No Flares Observed						
26 October	No Flares Observed						
27 October	No Flares Observed						
28 October	No Flares Observed						
29 October	No Flares Observed						
30 October	No Flares Observed						

***Region Summary***

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

*Region 815*

14 Oct	N08E75	109	0050	03	Hax	001	A											
15 Oct	N08E60	111	0070	02	Hsx	001	A											
16 Oct	N08E47	111	0050	02	Hax	001	A											
17 Oct	N08E33	112	0040	02	Hsx	001	A											
18 Oct	N08E20	112	0030	01	Hax	001	A											
19 Oct	N08E08	110	0030	04	Cao	007	B											
20 Oct	N07W06	111	0020	04	Cso	005	B											
21 Oct	N07W19	111	0020	03	Cao	005	B											
22 Oct	N07W32	111	0020	03	Cao	003	B											
23 Oct	N07W45	111																
24 Oct	N07W58	111																
25 Oct	N07W71	111																
26 Oct	N07W84	111																
27 Oct	N07W97	111																

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 111



**Region Summary - continued.**

Date	Location		Sunspot Characteristics				Flares										
	( ° Lat ° CMD)	Helio	Area (10 <sup>-6</sup> hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical						
		Lon						C	M	X	S	1	2	3	4		
<i>Region 816</i>																	
19 Oct	S14W29	147	0020	03	Bxo	003	B										
20 Oct	S14W42	147															
21 Oct	S14W55	147															
22 Oct	S14W68	147															
23 Oct	S14W81	147															
24 Oct	S14W94	147															
								0	0	0	0	0	0	0	0	0	0
Crossed West Limb.																	
Absolute heliographic longitude: 147																	
<i>Region 817</i>																	
23 Oct	N04E21	045	0010	01	Axx	001	A										
24 Oct	N04E08	045															
25 Oct	N04W05	045															
								0	0	0	0	0	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 045																	
<i>Region 818</i>																	
29 Oct	S08E66	284	0010	01	Axx	001	A										
30 Oct	S06E47	285	0040	06	Cso	004	B										
								0	0	0	0	0	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 285																	

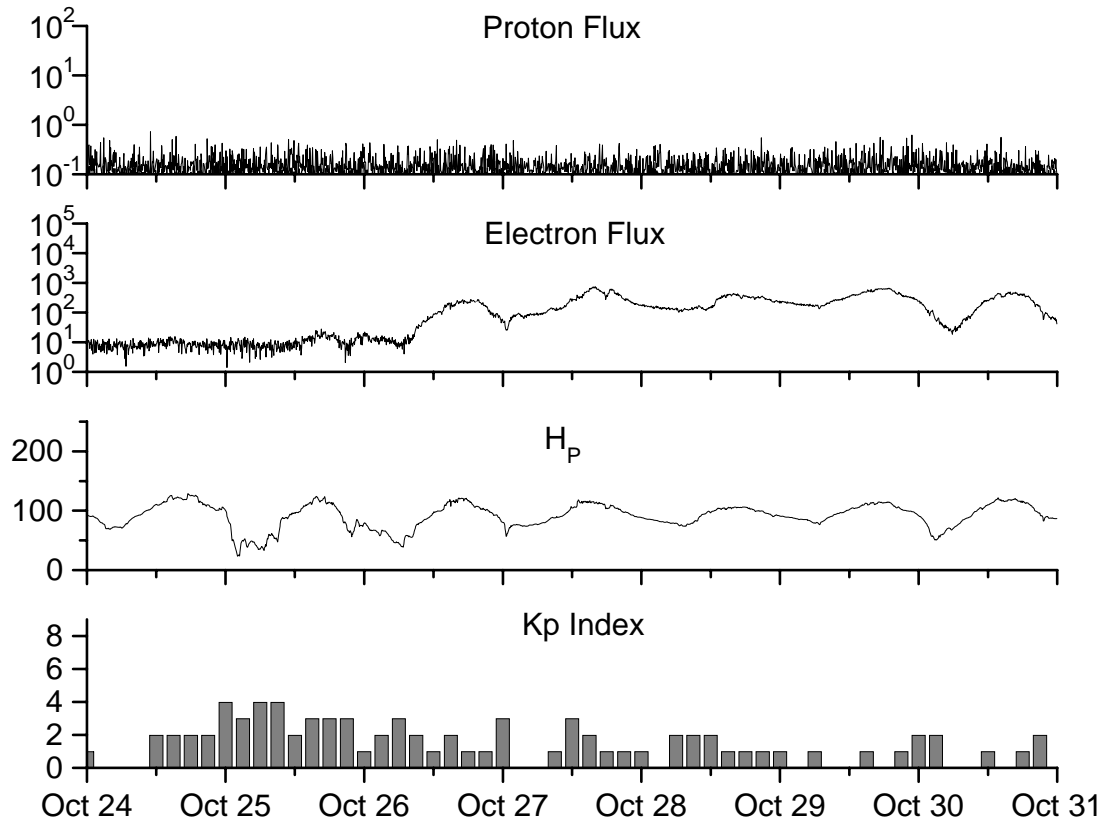


**Recent Solar Indices (preliminary)  
of the observed monthly mean values**

Month	Sunspot Numbers			Radio Flux		Geomagnetic			
	Observed values SWO	Ratio RI	Ratio RI/SWO	Smooth values SWO	Smooth values RI	*Penticton 10.7 cm	Smooth Value	Planetary Ap	Smooth Value
<b>2003</b>									
October	118.9	65.5	0.55	96.6	58.4	153.1	121.8	35	21.1
November	118.9	67.3	0.57	93.6	57.0	153.1	120.1	28	20.0
December	75.4	46.5	0.62	91.4	55.0	115.1	118.0	16	18.6
<b>2004</b>									
January	62.3	37.7	0.61	87.9	52.0	114.1	116.3	22	18.1
February	75.6	45.8	0.61	84.2	49.4	107.0	115.5	13	17.7
March	81.0	49.1	0.61	80.9	47.2	112.2	114.6	14	16.9
April	59.3	39.3	0.66	77.9	45.6	101.2	112.3	11	15.5
May	77.3	41.5	0.54	74.1	43.9	99.8	109.2	8	14.3
June	78.9	43.2	0.55	70.4	41.7	97.4	107.2	8	14.0
July	87.8	51.0	0.58	68.3	40.2	118.5	105.9	23	13.8
August	69.5	40.9	0.59	66.6	39.3	110.1	105.0	11	13.8
September	50.0	27.7	0.55	63.7	37.6	103.1	103.7	10	13.6
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
<b>2005</b>									
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			85.9		12	
May	65.4	42.6	0.65			99.5		20	
June	59.8	39.6	0.66			93.7		13	
July	71.0	39.9	0.56			96.6		16	
August	65.6	36.4	0.55			90.7		16	
September	39.2	22.1	0.56			90.8		21	

**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 24 October 2005*

*Protons* plot contains the five-minute averaged integral proton flux (protons/cm<sup>2</sup>-sec -sr) as measured by GOES-11 (W112) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

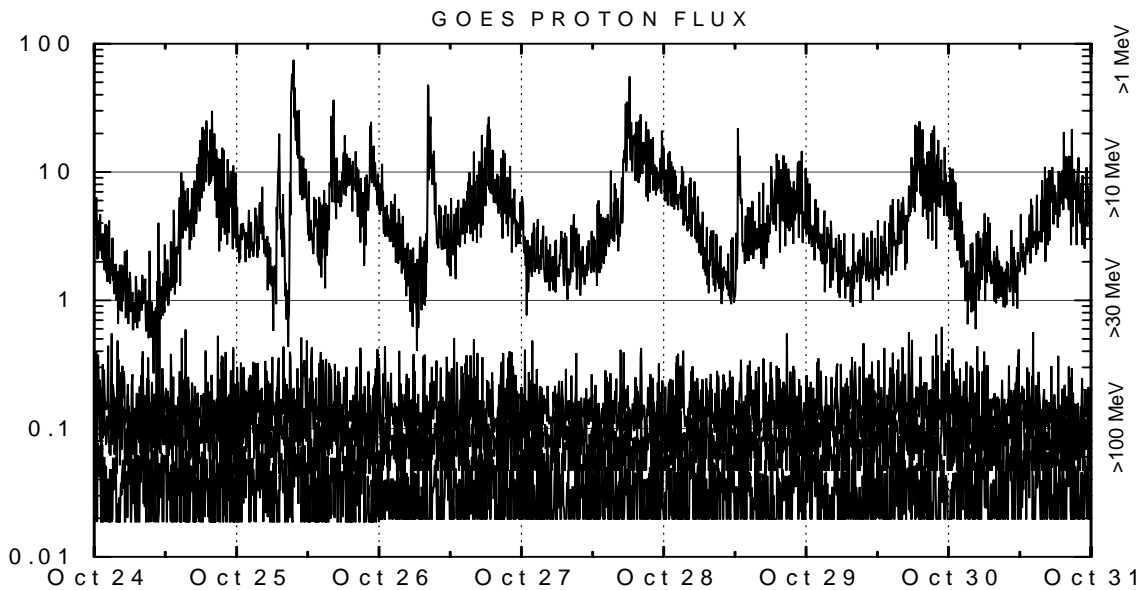
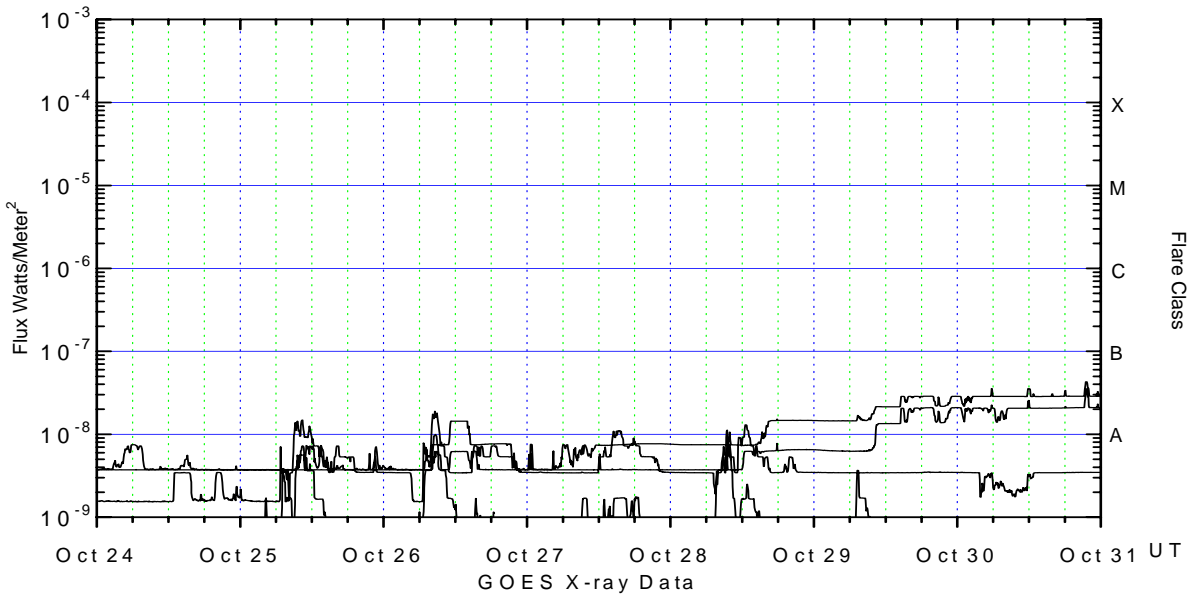
*Electrons* plot contains the five-minute averaged integral electron flux (electrons/cm<sup>2</sup>-sec -sr) with energies greater than 2 MeV at GOES-12 (W76).

*H<sub>p</sub>* 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<sub>p</sub>* 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<sub>p</sub> values derived from a more extensive network of magnetometers.

The data included here are those now available in real time at the SWO 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<sub>p</sub> 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 12 (W76) and GOES 10 (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 (W112) 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.

