

Space Weather Highlights
27 September – 03 October 2004

SWO PRF 1518
05 October 2004

Solar activity was very low this period. Region 673 (S12, L=269, class/area, Eki/240 on 16 September) was the largest region on the disk, but rotated around the west limb on 28 September. All other regions on the disk were small and magnetically simple.

Solar wind data were available from the NASA Advanced Composition Explorer (ACE) spacecraft during most of the summary period. Solar wind speed ranged from a high of near 425 km/s early on 29 September to a low of near 310 km/s early on 27 September. The IMF Bz was generally weak with fluctuations not varying much beyond +/- 5 nT. Early on 02 October, a discontinuity in the solar wind speed, density, and temperature occurred while the IMF Bz indicated a southward enhancement to -8 nT., all indicative of a solar sector boundary change.

There were no greater than 10 MeV proton events at geo-synchronous orbit during the summary period.

The greater than 2 MeV electron flux at geosynchronous orbit reached high levels on 27 September.

The geomagnetic field was at mostly quiet to active levels. Isolated minor to major storming was observed at higher latitudes on 02 – 03 due to periods of sustained southward Bz.

Space Weather Outlook
06 October – 01 November 2004

Activity is expected to be very low to low. Isolated moderate activity is possible after the return of old Region 672 on 06 October.

A greater than 10 MeV proton event is not expected.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at high levels on 12 – 17 October.

The geomagnetic field is expected to range from mostly quiet to unsettled. From 11 – 15 October and from 29 – 31 October, recurrent high speed coronal hole wind streams are expected to produce occasional active to minor storm periods.



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
27 September	90	22	310	A6.2	0	0	0	0	0	0	0	0
28 September	90	22	160	A8.1	0	0	0	0	0	0	0	0
29 September	90	22	150	A6.1	0	0	0	0	0	0	0	0
30 September	88	36	190	A5.4	0	0	0	0	0	0	0	0
01 October	88	37	150	A4.0	0	0	0	0	0	0	0	0
02 October	88	35	140	A3.9	0	0	0	0	0	0	0	0
03 October	89	39	130	A4.5	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)		
	>1MeV	>10MeV	>100MeV	>.6MeV	>2MeV	>4MeV
	27 September	6.9E+5	1.4E+4	3.4E+3		4.5E+7
28 September	3.2E+5	1.5E+4	3.7E+3		1.9E+6	
29 September	4.6E+5	1.4E+4	3.8E+3		1.1E+7	
30 September	5.7E+5	1.4E+4	3.9E+3		1.3E+7	
01 October	6.6E+5	1.4E+4	3.7E+3		2.0E+7	
02 October	3.1E+5	1.5E+4	3.7E+3		4.2E+6	
03 October	8.6E+5	1.4E+4	3.7E+3		3.8E+6	

Daily Geomagnetic Data

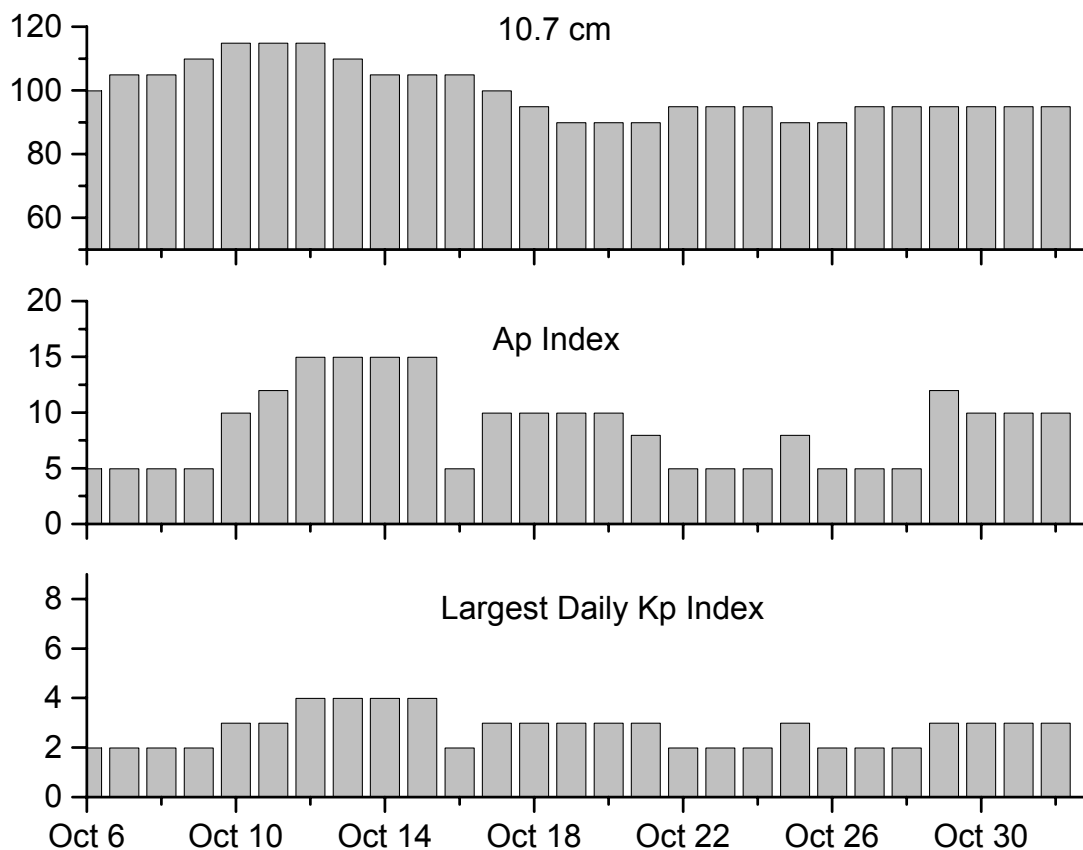
Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	27 September	2	0-0-0-0-2-1-1-0	5	1-0-0-2-3-2-1-1	5
28 September	5	2-2-2-1-1-1-1-2	5	1-2-3-2-0-0-1-1	8	2-2-3-2-1-1-2-3
29 September	3	1-0-1-0-2-1-1-2	*	*-*-*-*-*-*-*	5	2-1-0-1-2-2-2-2
30 September	2	1-0-0-0-1-1-1-0	1	2-0-0-0-0-0-0-0	4	2-1-0-0-1-2-2-2
01 October	2	0-0-0-0-1-0-2-2	1	0-0-0-0-0-0-1-1	4	1-1-1-0-1-2-2-2
02 October	8	2-2-3-2-3-1-2-1	16	1-2-4-5-4-3-1-0	12	2-3-3-3-4-3-2-2
03 October	7	0-1-2-2-3-2-2-2	33	0-1-4-6-6-5-3-2	15	1-2-3-4-4-3-3-3

Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UT
27 Sep 1156	ALERT: Electron 2MeV Integral Flux \geq 1000pfu	27 Sep 1135
03 Oct 1105	ALERT: Geomagnetic K = 4	03 Oct 1104
03 Oct 1352	ALERT: Geomagnetic K = 4	03 Oct 1345



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
06 Oct	100	5	2	20 Oct	90	10	3
07	105	5	2	21	90	8	3
08	105	5	2	22	95	5	2
09	110	5	2	23	95	5	2
10	115	10	3	24	95	5	2
11	115	12	3	25	90	8	3
12	115	15	4	26	90	5	2
13	110	15	4	27	95	5	2
14	105	15	4	28	95	5	2
15	105	15	4	29	95	12	3
16	105	5	2	30	95	10	3
17	100	10	3	31	95	10	3
18	95	10	3	01 Nov	95	10	3
19	90	10	3				



Energetic Events

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

No Events Observed

Flare List

Date	Time			X-ray Class.	Imp / Brtns	Optical Location Lat CMD	Rgn
	Begin	Max	End				
27 September	1150	1154	1156	B1.0			
	1700	1704	1712	B1.1			
28 September	1301	1312	1320	B1.9			673
29 September	0634	0640	0648	B1.5			675
30 September	<i>No Flares Observed</i>						
01 October	<i>No Flares Observed</i>						
02 October	1327	1332	1342	B1.5			675
	1413	1420	1424	B1.6			675
03 October	1814	1818	1822	B1.1			676
	2115	2120	2124	B3.7			676

Region Summary

Date	Location		Sunspot Characteristics					Flares									
	(° Lat ° CMD)	Helio Lon	Area (10 ⁻⁶ hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical						
								C	M	X	S	1	2	3	4		
<i>Region 673</i>																	
15 Sep	S13E72	272	0140	03	Hax	001	A	1									
16 Sep	S12E61	269	0240	10	Eki	015	Bg										
17 Sep	S13E51	267	0320	12	Eko	019	B										
18 Sep	S13E35	269	0360	13	Eso	014	B	1									
19 Sep	S13E22	269	0300	11	Eso	015	B										
20 Sep	S13E09	269	0310	10	Dho	018	B										
21 Sep	S13W04	269	0290	10	Dho	012	B										
22 Sep	S13W17	269	0260	10	Dao	014	B	1			1						
23 Sep	S13W31	269	0240	09	Dso	009	B										
24 Sep	S13W44	269	0240	08	Dso	005	B										
25 Sep	S13W57	269	0250	03	Hhx	003	A										
26 Sep	S14W73	272	0180	03	Hsx	001	A										
27 Sep	S15W88	274	0200	04	Hsx	001	A										
								3	0	0	1	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude:269



Region Summary - continued.

Date	Location		Sunspot Characteristics				Flares															
	(° Lat ° CMD)	Helio	Area (10 ⁻⁶ hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical											
		Lon						C	M	X	S	1	2	3	4							
<i>Region 675</i>																						
25 Sep	S08E75	137	0120	02	Hax	001	A															
26 Sep	S08E61	138	0090	03	Hsx	001	A															
27 Sep	S08E48	138	0110	03	Hsx	001	A															
28 Sep	S08E35	138	0100	02	Hax	001	A															
29 Sep	S08E22	137	0090	03	Hax	001	A															
30 Sep	S08E08	138	0100	03	Hsx	001	A															
01 Oct	S09W06	139	0090	03	Hsx	002	A															
02 Oct	S09W19	139	0090	03	Hsx	002	A															
03 Oct	S09W33	140	0070	03	Hsx	002	A															
									0	0	0	0	0	0	0	0	0	0	0	0		

Still on Disk.

Absolute heliographic longitude:139

<i>Region 676</i>																						
28 Sep	S11E76	097	0060	02	Hax	001	A															
29 Sep	S11E64	095	0060	02	Hax	001	A															
30 Sep	S12E52	094	0060	02	Hax	001	A															
01 Oct	S12E38	095	0050	02	Hsx	001	A															
02 Oct	S12E25	095	0040	02	Hsx	001	A															
03 Oct	S12E11	096	0040	04	Cso	005	B															
									0	0	0	0	0	0	0	0	0	0	0	0		

Still on Disk.

Absolute heliographic longitude:96

<i>Region 677</i>																						
30 Sep	N02E09	137	0030	05	Cso	004	B															
01 Oct	N01W06	139	0010	03	Bxo	004	B															
02 Oct	N02W21	141	0010	01	Axx	002	A															
03 Oct	N02W34	141	0000	00		000																
									0	0	0	0	0	0	0	0	0	0	0	0		

Still on Disk.

Absolute heliographic longitude:139

<i>Region 678</i>																						
03 Oct	N12W29	136	0020	04	Dso	002	B															
									0	0	0	0	0	0	0	0	0	0	0	0		

Still on Disk.

Absolute heliographic longitude:136

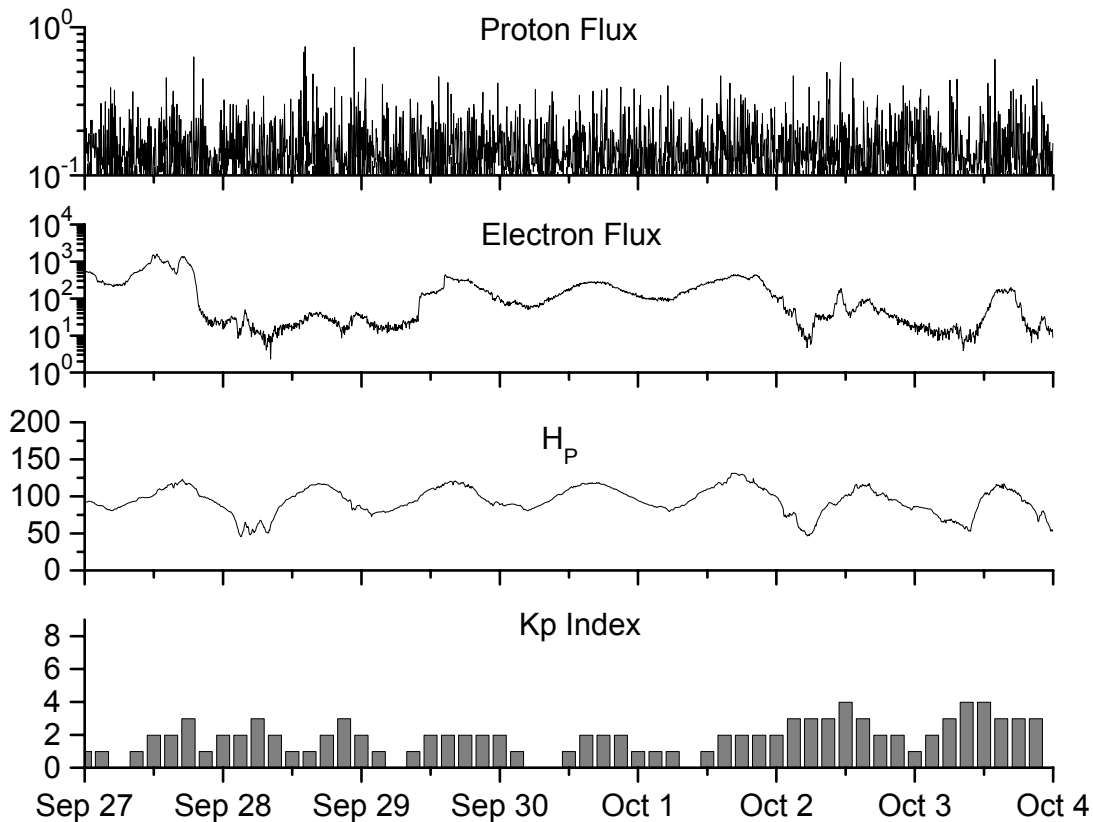


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

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
2002									
October	153.9	97.5	0.63	158.8	90.5	167.0	159.4	23	15.6
November	159.8	95.5	0.60	150.9	85.2	168.7	154.8	16	16.3
December	147.9	80.8	0.55	144.6	82.1	158.6	150.9	13	17.0
2003									
January	149.3	79.7	0.53	141.7	81.0	144.0	149.2	13	18.2
February	87.0	46.0	0.53	136.4	78.5	124.5	144.7	17	18.9
March	119.7	61.1	0.51	128.1	74.2	132.2	139.5	21	19.4
April	119.7	60.0	0.50	121.5	70.3	126.3	135.0	20	20.1
May	89.6	55.2	0.62	118.3	67.8	129.3	133.1	26	21.0
June	118.4	77.4	0.65	113.6	65.2	129.4	130.2	24	21.5
July	132.8	85.0	0.64	106.9	62.0	127.8	127.2	19	22.0
August	114.3	72.7	0.64	102.8	60.3	122.1	125.2	23	22.2
September	82.6	48.8	0.59	100.7	59.8	112.3	123.7	18	21.8
October	118.9	65.6	0.55	96.6	58.4	153.1	121.8	35	21.1
November	118.9	67.2	0.57	93.6	57.0	153.1	120.1	28	20.0
December	75.4	47.0	0.62	91.4	55.0	115.1	118.0	16	18.6
2004									
January	62.3	37.2	0.60	87.9	52.0	114.1	116.3	22	18.1
February	75.6	46.0	0.61	84.2	49.4	107.0	115.5	13	17.7
March	81.0	48.9	0.60	80.9	47.2	112.2	114.6	14	16.9
April	59.3	39.3	0.66			101.2		11	
May	77.3	41.5	0.54			99.8		8	
June	78.9	43.2	0.55			97.4		8	
July	87.8	51.0	0.58			118.5		23	
August	69.5	40.9	0.59			110.1		10	
September	50.0	27.7	0.55			103.1		10	

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 27 September 2004*

Protons plot contains the five-minute averaged integral proton flux (protons/cm²-sec -sr) as measured by GOES-11 (W100) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

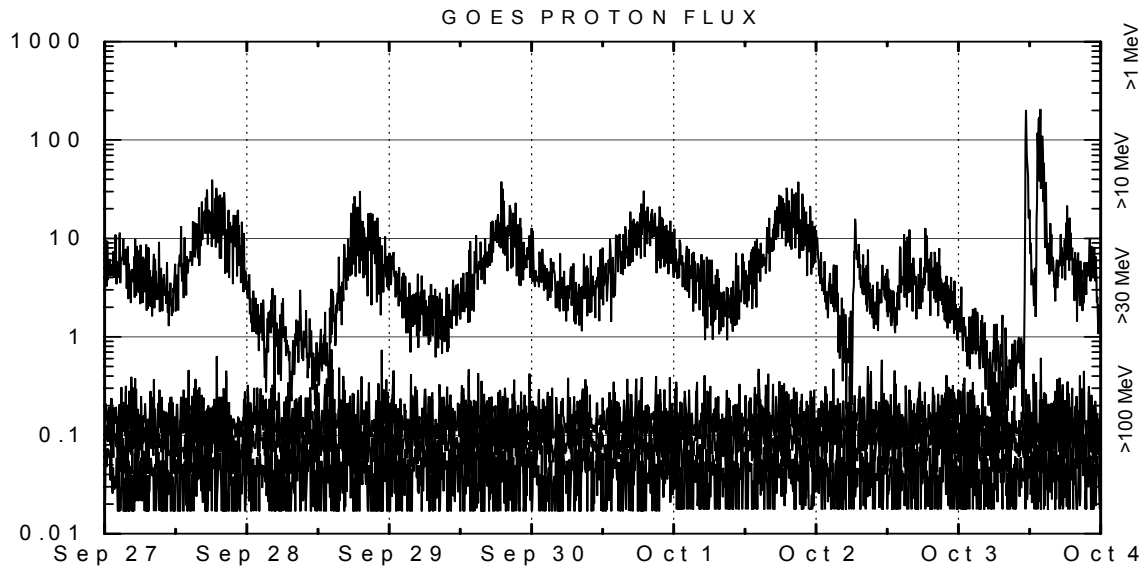
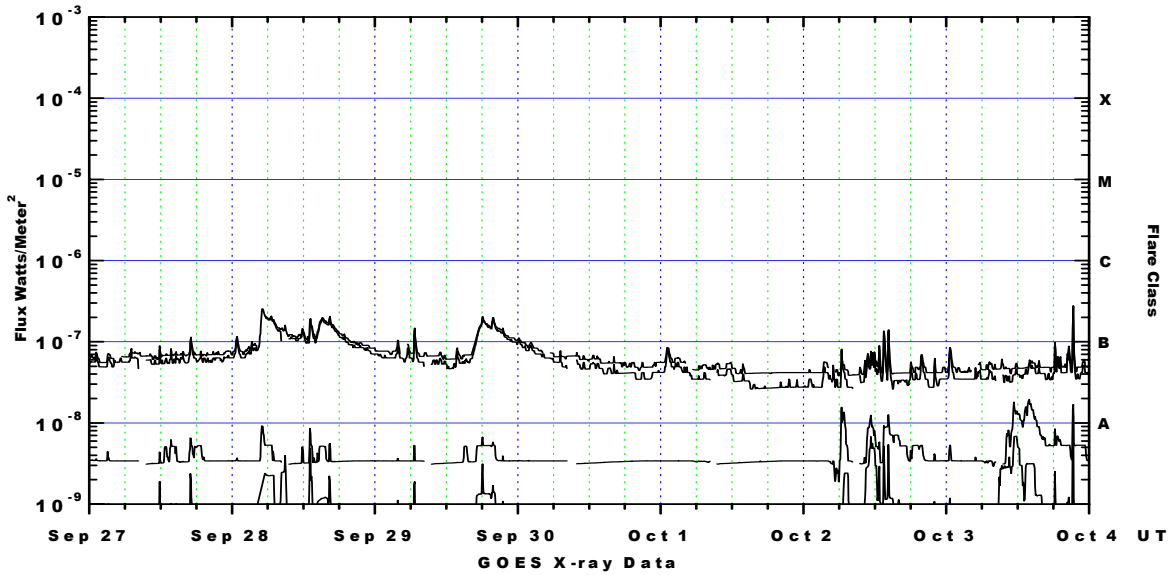
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV at GOES-12 (W74).

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 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_p are "global" parameters that are applicable to a first order approximation over large areas. H_p 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 (W75) and GOES 10 (W136) 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 (W100) 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.

