

Space Weather Highlights

01 – 07 August 2005

SWO PRF 1562
09 August 2005

Solar activity ranged from very low to moderate levels. The most active sunspot group on the disk was Region 792 (N12, L=056, class/area, Dac/440 on 30 July), which produced seven C-class and one M-class x-ray events during the summary period. The most significant event from Region 792 was a long duration C2.6/Sf at 05/0805 UTC. Associated with this event was a front sided, partial halo CME first seen in LASCO C2 imagery at 05/0854 UTC. The largest x-ray event of the period was observed from Region 794 (S13, L=024, class/area, Dai/230 on 05 August), which produced an M4.2/1n at 02/1831 UTC. Associated with this flare was a 160sfu Tenflare, a Type II radio sweep (2528 km/s), and a partial halo CME centered near the east limb. The remainder of the disk and limb was quiet and stable.

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 low of near 390 km/s late on 04 August to a high of near 800 km/s early on 07 August. The period began with the Bz component of the IMF weak at +/- 3 nT, and wind speed slow at about 440 km/s. At about 01/0500 UTC, effects from the X1 CME observed on 30 July arrived at Earth. Wind speed began to increase, and rose to near 600 km/s by midday on 01 August, while the IMF Bz fluctuated between +/- 8 nT. By midday on 01 August, wind speed began a gradual decay through late on 05 August. During this period, the IMF Bz did not vary much beyond +/- 5 nT. At about 05/2200 UTC, temperature and wind speed increased, indicating the passage of a co-rotating interaction region in advance of a coronal hole high speed wind stream. Through about 07/0600 UTC, solar wind speed increased to around 800 km/s, while the IMF Bz varied between +7 to -10 nT. The period ended with solar wind speed around 550 km/s and weak southward IMF Bz at -3 nT.

The greater than 10 MeV proton event that began at 27/2300 UTC, and peaked at 41 pfu at 29/1715 UTC, finally ended at 01/1040 UTC.

The greater than 2 MeV electron flux at geosynchronous orbit reached high levels on 06 and 07 August.

The geomagnetic field ranged from quiet to severe storm levels. The period began with active to minor storm conditions as effects from the X1 CME, which was observed on 30 July, became geoeffective. By late on 01 August, geomagnetic conditions were generally quiet to unsettled. At middle latitudes, these conditions persisted through early on 06 August. The higher latitudes observed an isolated period of major storm levels midday on 02 August, and an isolated period of minor storm levels midday on 04 August. By 06 August, activity increased to active to minor storm levels at the middle latitudes, while the higher latitudes saw active to severe storm levels, as a recurrent coronal hole high speed wind stream became geoeffective. By midday on 07 August, the geomagnetic field relaxed to quiet to unsettled, and remained so through the balance of the summary period.

Space Weather Outlook

10 August - 05 September 2005

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 10 – 12 August, 17 – 22 August, 26 – 27 August, and 02 – 05 September.

The geomagnetic field is expected to range from quiet to minor storm levels. Recurrent coronal hole high speed wind streams are expected to produce active to minor storm levels on 16 – 17 August, and again on 23 – 26 August. Otherwise, expect mostly quiet to unsettled conditions.



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
01 August	111	102	780	B2.0	2	1	0	1	1	0	0	0
02 August	110	112	660	B2.4	3	1	0	1	1	0	0	0
03 August	109	102	570	B1.8	3	1	0	3	1	0	0	0
04 August	106	85	500	B1.8	2	0	0	3	0	0	0	0
05 August	99	74	480	B1.4	2	0	0	1	0	0	0	0
06 August	93	54	420	B1.2	0	0	0	1	0	0	0	0
07 August	92	67	400	B1.5	1	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
01 August	5.9E+7	9.3E+5	3.7E+3		1.6E+7	
02 August	5.3E+7	2.1E+5	2.9E+3		1.0E+7	
03 August	6.7E+6	3.8E+4	2.9E+3		2.8E+7	
04 August	4.7E+6	3.6E+4	3.2E+3		1.3E+7	
05 August	2.1E+6	2.5E+4	3.3E+3		1.5E+7	
06 August	3.9E+6	1.6E+4	2.9E+3		4.6E+7	
07 August	1.4E+6	1.1E+4	2.4E+3		8.8E+8	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	01 August	18	4-5-3-3-2-2-2-3	21	3-2-5-4-4-4-2-2	16
02 August	9	2-3-1-2-2-2-3-2	18	2-3-2-6-4-1-1-1	12	3-3-2-3-3-2-2-2
03 August	6	1-2-1-1-1-2-2-3	7	3-2-1-1-1-2-2-2	11	2-3-2-1-2-3-3-3
04 August	9	3-2-3-3-2-1-1-2	19	3-3-4-5-4-2-1-2	14	3-3-4-3-2-2-2-3
05 August	6	1-2-1-2-2-2-2-2	9	1-1-2-1-3-3-3-2	9	2-2-1-1-2-3-3-3
06 August	25	4-5-4-4-3-3-4-3	57	4-5-7-6-6-5-3-3	34	5-5-5-5-4-3-4-3
07 August	12	2-3-3-4-3-1-2-2	24	3-4-4-6-3-3-2-2	18	3-5-4-4-2-2-2-3

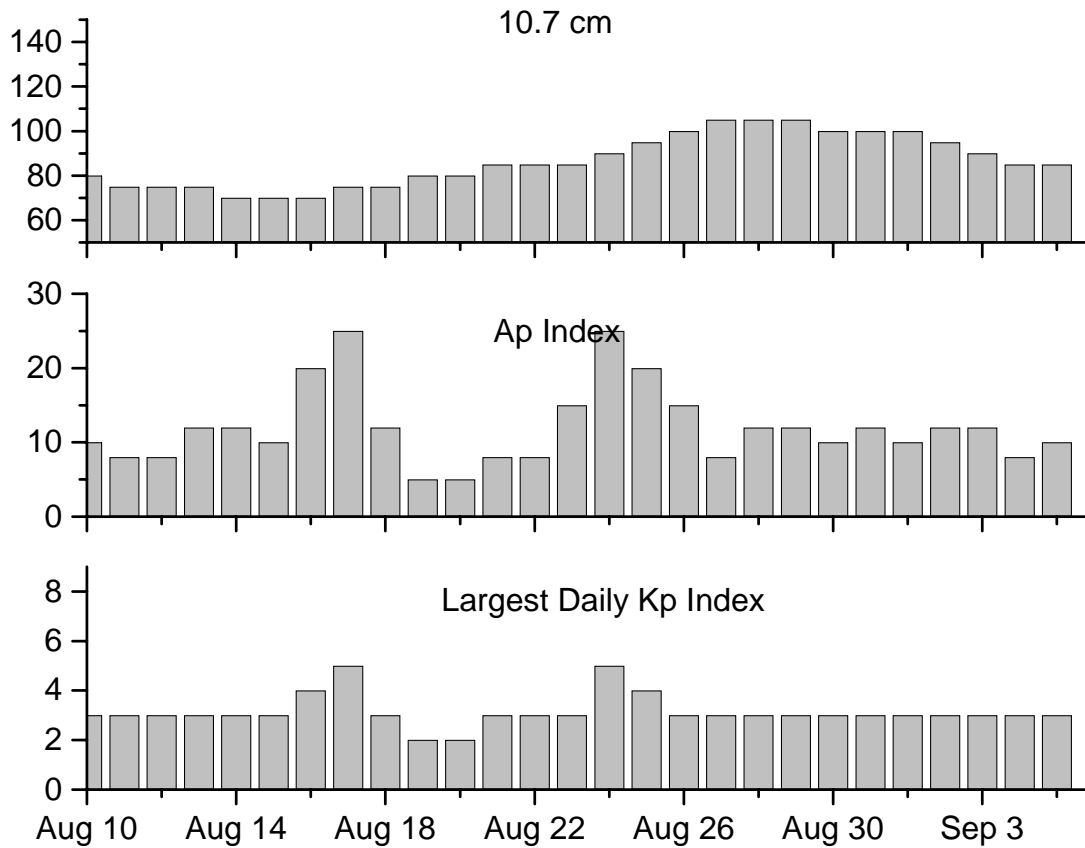


Alerts and Warnings Issued

<u>Date & Time of Issue</u>	<u>Type of Alert or Warning</u>	<u>Date & Time of Event UTC</u>
01 Aug 0100	CONT ALERT: Proton Event 10MeV Integral Flux . 10pfu	27 Jul 2300
01 Aug 0138	WARNING: Geomagnetic K = 4	01 Aug 0139 - 1500
01 Aug 0143	ALERT: Geomagnetic K = 4	01 Aug 0141
01 Aug 0354	EXT WARNING: Proton 10MeV Integral Flux > 10pfu	27 Jul 2305 - 1500
01 Aug 0626	WARNING: Geomagnetic Sudden Impulse	01 Aug 0627 - 0800
01 Aug 0647	SUMMARY: Geomagnetic Sudden Impulse	01 Aug 0641
01 Aug 1245	SUMMARY: 10cm Radio Burst	01 Aug 1217
01 Aug 1443	ALERT: Type IV Radio Emission	01 Aug 1349
01 Aug 1446	SUMMARY: 10cm Radio Burst	01 Aug 1329
01 Aug 1815	SUMMARY: Proton Event 10MeV Integral Flux > 10pfu	27 Jul 2300
02 Aug 0006	4 – 245 MHz Radio Bursts	01 Aug
02 Aug 1302	SUMMARY: 10cm Radio Burst	02 Aug 1240
02 Aug 1319	ALERT: Type IV Radio Emission	02 Aug 1250
02 Aug 1859	ALERT: Type II Radio Emission	02 Aug 1824
02 Aug 1901	SUMMARY: 10cm Radio Burst	02 Aug 1825
02 Aug 2104	SUMMARY: 10cm Radio Burst	02 Aug 2015
03 Aug 0008	7 – 245 MHz Radio Bursts	02 Aug
03 Aug 0307	ALERT: Type IV Radio Emission	03 Aug 0239
03 Aug 0517	ALERT: Type II Radio Emission	03 Aug 0502
04 Aug 0007	2 – 245 MHz Radio Bursts	03 Aug
04 Aug 1054	WARNING: Geomagnetic K = 4	04 Aug 1055 - 1500
05 Aug 0026	3 – 245 MHz Radio Bursts	04 Aug
06 Aug 0007	WARNING: Geomagnetic K = 4	06 Aug 0010 – 1500
06 Aug 0238	ALERT: Geomagnetic K = 4	06 Aug 0237
06 Aug 0242	WARNING: Geomagnetic K = 5	06 Aug 0243 - 1500
06 Aug 0246	ALERT: Geomagnetic K = 5	06 Aug 0245
06 Aug 1447	EXTENDED WARNING: Geomagnetic K = 4	06 Aug 0010 - 2359
06 Aug 1535	ALERT: Electron 2MeV Integral Flux > 1000pfu	06 Aug 1515
06 Aug 2344	EXTENDED WARNING: Geomagnetic K = 4	06 Aug 0010 -07 Aug 1500
07 Aug 0613	ALERT: Electron 2MeV Integral Flux > 1000pfu	07 Aug 0550
07 Aug 1455	EXTENDED WARNING: Geomagnetic K = 4	06 Aug 0010 - 07 Aug 2359
07 Aug 2354	EXTENDED WARNING: Geomagnetic K = 4	06 Aug 0010 - 08 Aug 1500



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
10 Aug	80	10	3	24 Aug	90	25	5
11	75	8	3	25	95	20	4
12	75	8	3	26	100	15	3
13	75	12	3	27	105	8	3
14	70	12	3	28	105	12	3
15	70	10	3	29	105	12	3
16	70	20	4	30	100	10	3
17	75	25	5	31	100	12	3
18	75	12	3	01 Sep	100	10	3
19	80	5	2	02	95	12	3
20	80	5	2	03	90	12	3
21	85	8	3	04	85	8	3
22	85	8	3	05	85	10	3
23	85	15	3				



Energetic Events

Date	Time			X-ray		Optical Information			Peak		Sweep Freq	
	Begin	Max	Max	Class	Flux	Imp/ Brtns	Location		Radio Flux		Intensity	
							Lat	CMD	245	2695	II	IV
01 Aug	1300	1351	1429	M1.0	.029	1f	N15E30	792	100	290		1
02 Aug	1822	1831	1837	M4.2	.020	1n	S12E47	794	1100	160		3
03 Aug	0454	0506	0511	M3.4	.018	1n	S11E36	794	200	120		1

Flare List

Date	Time			Optical X-ray Class.	Imp / Brtns	Location Lat CMD	Rgn
	Begin	Max	End				
01 August	0116	0120	0122	B6.0			795
	0320	0324	0327	B4.8			792
	0517	0518	0525	C1.4	Sf	N12E35	792
	0633	0636	0638	B2.9			792
	1101	1107	1113	B5.0			792
	1214	1221	1227	C5.8			794
	1337	1340	1439	M1.0	1f	N15E30	792
	2002	2007	2012	B4.4			
	2149	2153	2155	B3.9			792
	2325	2328	2330	B4.5			792
02 August	0251	0254	0257	B3.4			792
	0733	0746	0756	C2.9			794
	0947	0958	1005	B4.7			792
	1120	1124	1127	B3.4			792
	1135	1140	1145	B4.4			792
	1209	1222	1232	B5.9			792
	1238	1245	1301	C8.7			
	1825	1831	1903	M4.2	1n	S12E47	794
	2015	2015	2027	C6.7	Sn	N12E14	792
	2049	2054	2058	B8.2			792
03 August	2309	2312	2316	B4.4			792
	0124	0131	0138	B5.3			792
	0230	0236	0240	B8.3			792
	0241	0245	0250	C1.7			792
	0458	0503	A0533	M3.4	1n	S11E36	794
	B0525	0525	0535		Sf	S13E42	794
	0600	0604	0609	B5.9			792
	1012	1017	1021	B3.0			794
	1207	1221	1228	B3.9			794
	1354	1407	1437	C9.3	Sf	S12E37	794
04 August	1752	1811	1821	B6.5			792
	2021	2022	2029	B5.1	Sf	N08W08	792
	2054	2108	2130	C2.1			792
	0307	0314	0320	C1.1			792
	0501	0505	0509	B3.5			794
	0528	0532	0538		Sf	N12W05	792
	0544	0558	0626	C8.4	Sf	S11E22	794



Flare List

Date	Time			Optical	Imp / Brtns	Location Lat CMD	Rgn
	Begin	Max	End	X-ray Class.			
04 August	1238	1242	1248	B9.8	794	S11E19	794
	1345	1352	1403	B7.4			
	1527	1536	1603	B4.0			
	1734	1739	1746	B3.2			
	1853	1853	1900	B7.9			
	2050	2054	2058	B2.9			
	2206	0038	0113	B5.4			
05 August	0614	0623	0634	B4.3	Sf	N12W19	794
	0710	0714	0803	C2.6			792
	1754	1800	1818	B3.9			794
	1954	2000	2008	B9.5			794
	2022	2044	2053	C1.1			794
06 August	0202	0210	0223	B3.6	Sf	N12W33	792
	0806	0806	0808	B6.8			
07 August	0101	0106	0109	B2.3			793
	1143	1249	1410	C1.4			792
	2315	2320	2329	B2.8			794

Region Summary

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

Region 791

23 Jul	N13E50	151	0090	06	Dai	010	B										
24 Jul	N13E36	151	0110	07	Dao	008	B										
25 Jul	N13E22	152	0130	07	Dao	013	B										
26 Jul	N13E09	152	0160	08	Dai	019	B										
27 Jul	N13W06	154	0130	08	Cso	009	B										
28 Jul	N14W20	155	0120	03	Hsx	002	A										
29 Jul	N14W33	154	0080	05	Cao	006	B										
30 Jul	N14W48	156	0070	04	Cso	004	B										
31 Jul	N12W62	157	0040	02	Cao	002	B	1			2						
01 Aug	N12W75	157	0080	02	Hsx	002	A										
02 Aug	N12W88	157	0060	02	Hsx	001	A										
								1	0	0	2	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude:154



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

Region 792

28 Jul	N12E78	057	0220	09	Dso	007	B	1	2		1						
29 Jul	N11E66	055	0430	11	Ekc	028	Bg	1									
30 Jul	N12E52	056	0440	09	Dac	019	Bgd	2			1	1	1	2			
31 Jul	N12E38	057	0420	09	Dkc	040	Bgd		1								
01 Aug	N12E25	057	0420	11	Ekc	034	Bgd	1	1		1	1					
02 Aug	N12E12	057	0330	09	Dkc	043	Bgd	1			1						
03 Aug	N11W01	057	0240	08	Dkc	026	Bg	2			1						
04 Aug	N11W14	057	0180	07	Dki	018	Bg	1			1						
05 Aug	N11W28	056	0160	07	Dso	018	Bg	1			1						
06 Aug	N10W41	056	0130	05	Cso	009	Bg				1						
07 Aug	N10W54	056	0110	06	Cso	008	B	1									
									11	4	1	8	2	2	0	0	

Still on Disk.

Absolute heliographic longitude: 057

Region 793

29 Jul	N14E11	110	0030	04	Dso	005	B										
30 Jul	N14W01	109	0070	09	Dso	009	B										
31 Jul	N13W16	111	0080	08	Dao	014	B										
01 Aug	N13W29	111	0060	07	Cso	008	B										
02 Aug	N13W42	111	0030	04	Dao	007	B										
03 Aug	N13W55	111	0020	04	Cso	004	B										
04 Aug	N13W68	111															
05 Aug	N13W81	111															
06 Aug	N13W94	111															
									0	0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 109

Region 794

31 Jul	S11E73	022	0060	03	Hax	002	A										
01 Aug	S11E60	022	0110	06	Dao	007	B	1									
02 Aug	S11E47	022	0150	06	Dao	008	B	1	1			1					
03 Aug	S11E34	022	0210	08	Dsi	018	Bg	1	1		2	1					
04 Aug	S11E19	022	0220	10	Dsi	029	Bg	1			2						
05 Aug	S13E04	024	0230	10	Dai	024	Bg	1									
06 Aug	S12W10	025	0220	08	Dho	011	Bg										
07 Aug	S13W23	025	0170	08	Dso	010	Bg										
									5	2	0	4	2	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 024



Region Summary

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

Region 795

31 Jul	N15E77	018	0060	02	Hax	002	A											
01 Aug	N15E64	018	0110	02	Hax	001	A											
02 Aug	N15E51	018	0090	02	Hsx	003	A											
03 Aug	N15E38	018	0090	02	Hsx	002	A											
04 Aug	N13E27	014	0100	06	Cao	008	B											
05 Aug	N13E14	014	0090	03	Hsx	002	A											
06 Aug	N12E00	015	0070	04	Cso	004	B											
07 Aug	N12W13	015	0060	04	Cso	004	B											
										0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 015

Region 796

03 Aug	S07E05	051	0010	03	Cso	002	B											
04 Aug	S07W08	051																
05 Aug	S07W21	051																
06 Aug	S07W34	051																
07 Aug	S09W50	052	0060	04	Bxo	005	B											
										0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 051

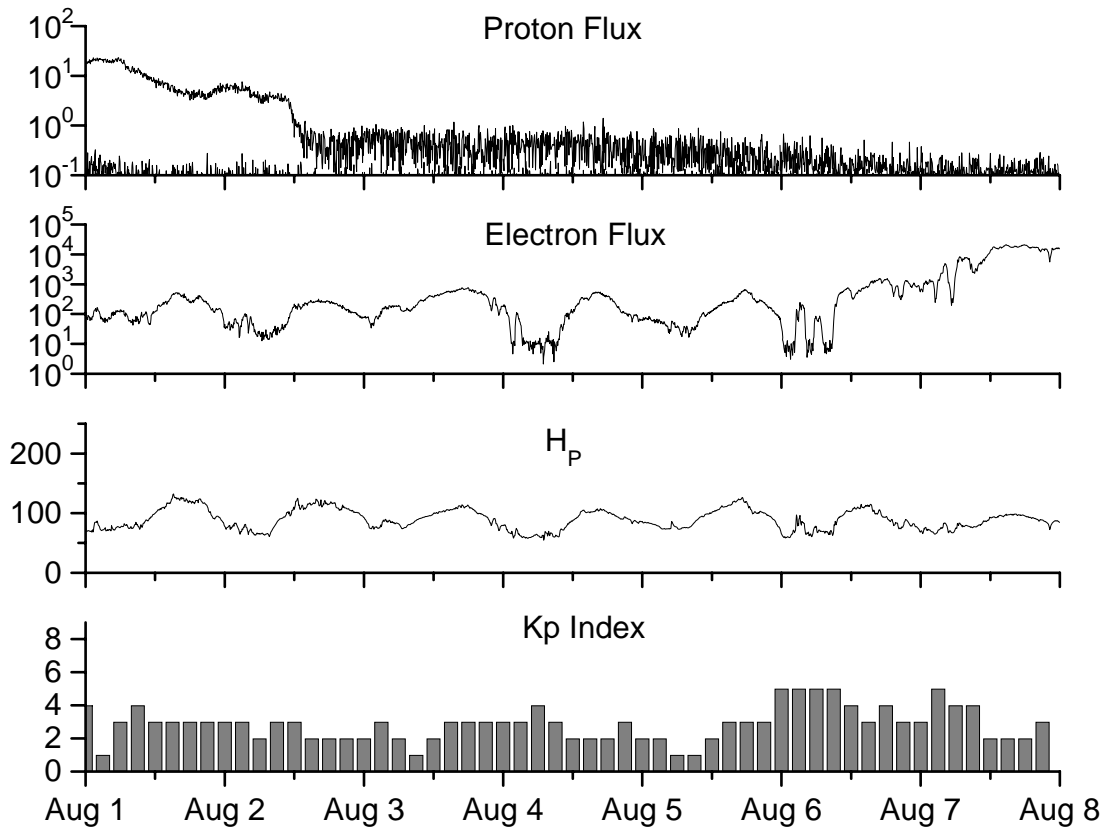


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

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
2003									
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	65.5	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
2004									
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
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			97.3		11	
March	41.0	24.8	0.60			90.0		12	
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	

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 01 August 2005*

Protons plot contains the five-minute averaged integral proton flux (protons/cm²-sec -sr) as measured by GOES-11 (W113) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

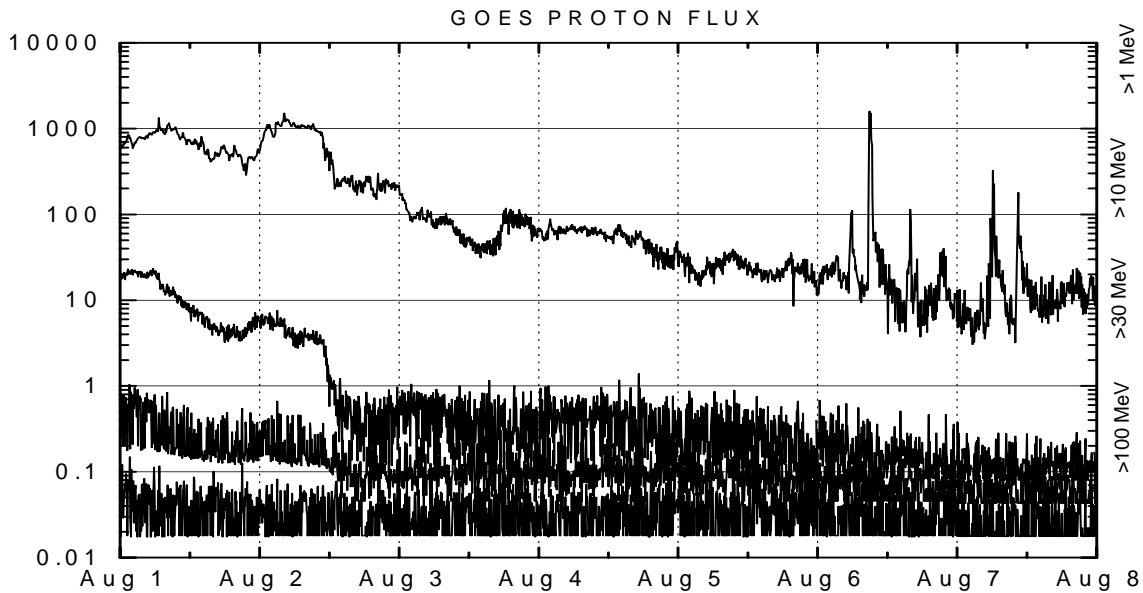
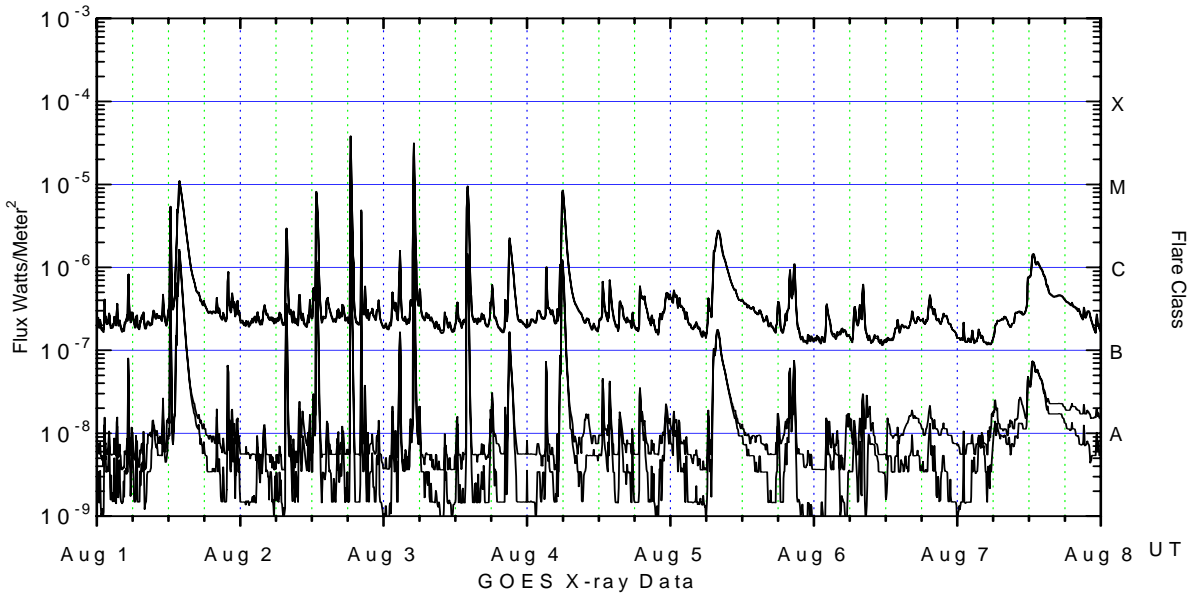
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV at GOES-12 (W75).

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 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 (W75) 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/cm²-sec-sr) as measured by GOES-11 (W113) 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.

