Space Weather Highlights **SWO PRF 1509**
26 July – 01 Aug 2004 **03 Aug 2004**

Solar activity levels ranged from very low to moderate. The summary period began with moderate activity on 26 and 27 July as Region 652 (N08, L=345, class/area, Fkc/1060 on 26 July) produced minor M-class flares. Early on 28 July, a long duration (~5.5 hours) C4 enhancement that peaked at 0609 UTC was observed from Region 652. LASCO imagery showed a large CME off the west limb with some of the westward-directed ejecta Earth bound. By 29 July, activity levels returned to moderate as an M2 x-ray event was observed at 29/0006 UTC. The most significant event of the day was a long duration C2 flare from Region 652 with an associated Earth-directed partial halo CME. Activity levels decreased to low on 30 July as Region 652 rotated around the west limb. By 31 July, old Region 652 had rotated further beyond the west limb, yet produced a C8 long duration (~4 hours) x-ray enhancement that peaked at 0657 UTC. The summary period ended on 01 August with activity levels at very low.

Solar wind data were available from the NASA Advanced Composition Explorer (ACE) spacecraft during most of the summary period. The period began with solar wind speed near 600 km/s as transient effects from a series of CMEs from 22 and 23 July were still present. At 26/2228 UTC, a strong sudden impulse (SI) of 95 nT was observed at the Boulder magnetometer. This SI followed the very fast (~31 hours) transit of the full halo CME associated with the long duration M1 flare of 25 July. Solar wind speed increased from the already elevated levels near 600 km/s to over 1050 km/s. After nearly four hours of fluctuating between -15 and +15 nT, the IMF Bz rotated strong southward and ranged from -15 to -25 nT for about 15 hours. Thereafter, and for the remainder of the summary period, the Bz ranged from between +5 to –5 nT. Wind speed gradually decreased to near 500 km/s through most of 30 July. At 30/2115 UTC, a weak SI (25 nT) occurred at Boulder with a brief increase in wind velocity to 600 km/s. This SI was believed to be in response to the long duration C4 x-ray event on the 28th. Wind speed gradually decreased to 500 km/s and ended the summary period near 450 km/s. Another weak shock passage was observed at the ACE spacecraft at approximately 01/0130 UTC and was believed to be the result of the long duration C2 x-ray flare observed on 29 July.

The greater than 10 MeV proton event that began on 25/1855 UTC reached a peak flux of 2,090 pfu on 26/2250 UTC and ended on 28/0040 UTC. The event was associated with the long duration M1 flare on 25 July and had an initial peak of 271 pfu on 26/1905 UTC. The larger peak on 26/2250 UTC was associated with the shock passage following the very fast transit of the full halo CME from the M1 flare.

The greater than 2 MeV electron flux at geosynchronous orbit was at high levels on 26 – 27 July and 01 August and at very high levels on 28 – 31 July.

The geomagnetic field ranged from quiet to severe storm levels. The period began on 26 July with activity at major storm levels as transient effects from a series of CMEs from 22 and 23 July were felt. By 27 July, activity increased to severe storm levels as the geomagnetic field responded to effects from the long duration M1 flare of 25 July. By 28 July, the field had relaxed to quiet to unsettled conditions and remained so for the remainder of the summary period.

Space Weather Outlook
04 August - 30 August 2004

Solar activity is expected to range from very low to low through 12 August. Activity levels are expected to increase to low to moderate after 12 August when old Region 652 (L=348) is due to due to return.

A greater than 10 MeV proton event is possible after the return of old Region 652.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to reach high levels on 08 – 10 August.

Early in the forecast period, from 07 to 09 August, the geomagnetic field is expected to range from mostly unsettled to active levels due to a weak, recurrent coronal hole stream that is expected to be in a geoeffective position. Thereafter through the end of the forecast period, mostly quiet to unsettled conditions are expected.

Daily Solar Data

Date	Radio Flux 10.7 cm	Sun spot No.	Sunspot Area (10^{-6} hemi.)	X-ray Background	Flares: X-ray Flux C	M	X	Optical S	1	2	3	4
26 July	128	113	1230	B6.6	5	3	0	5	1	1	0	0
27 July	118	66	1130	B4.4	7	2	0	2	4	0	0	0
28 July	101	66	960	B4.3	7	1	0	7	1	0	0	0
29 July	100	32	400	B3.7	5	0	0	1	0	0	0	0
30 July	89	33	230	B2.6	1	0	0	0	0	0	0	0
31 July	86	39	270	B2.0	3	0	0	0	0	0	0	0
01 August	83	40	260	A9.1	0	0	0	0	0	0	0	0

Daily Particle Data

Date	Proton Fluence (protons/cm^2-day-sr) >1MeV	>10MeV	>100MeV	Electron Fluence (electrons/cm^2-day-sr) >.6MeV	>2MeV	>4MeV
26 July	1.6E+8	9.5E+6	3.1E+3		4.3E+8	
27 July	2.7E+8	1.9E+6	2.1E+3		9.4E+7	
28 July	2.9E+7	3.5E+5	2.3E+3		4.5E+9	
29 July	7.0E+6	4.1E+4	2.6E+3		9.3E+9	
30 July	1.3E+7	4.7E+4	3.0E+3		6.4E+9	
31 July	1.4E+7	7.9E+4	3.0E+3		3.0E+9	
01 August	1.1E+7	1.8E+5	2.8E+3		3.1E+8	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg A	K-indices	High Latitude College A	K-indices	Estimated Planetary A	K-indices
26 July	26	6-3-1-2-1-2-3-6	23	5-4-2-4-1-2-3-5	31	6-4-3-3-3-2-3-6
27 July	119	7-7-6-7-8-7-4-5	212	6-6-9-9-9-8-5-5	162	8-7-8-8-9-7-5-5
28 July	11	3-3-2-2-3-2-2-3	27	3-4-4-5-5-4-2-3	14	3-3-3-3-3-3-2-3
29 July	6	2-2-2-1-1-2-2-1	9	3-3-2-3-1-2-1-1	9	2-3-3-2-2-3-2-2
30 July	7	1-1-1-1-1-2-2-4	8	2-2-2-2-3-1-1-3	7	2-1-1-2-3-2-2-3
31 July	7	2-2-2-2-2-2-2-2	20	4-2-2-3-5-5-2-1	9	2-2-2-2-3-3-3-3
01 August	9	3-2-2-1-2-3-2-2	8	4-3-2-1-0-1-1-2	8	3-2-1-1-2-3-2-3

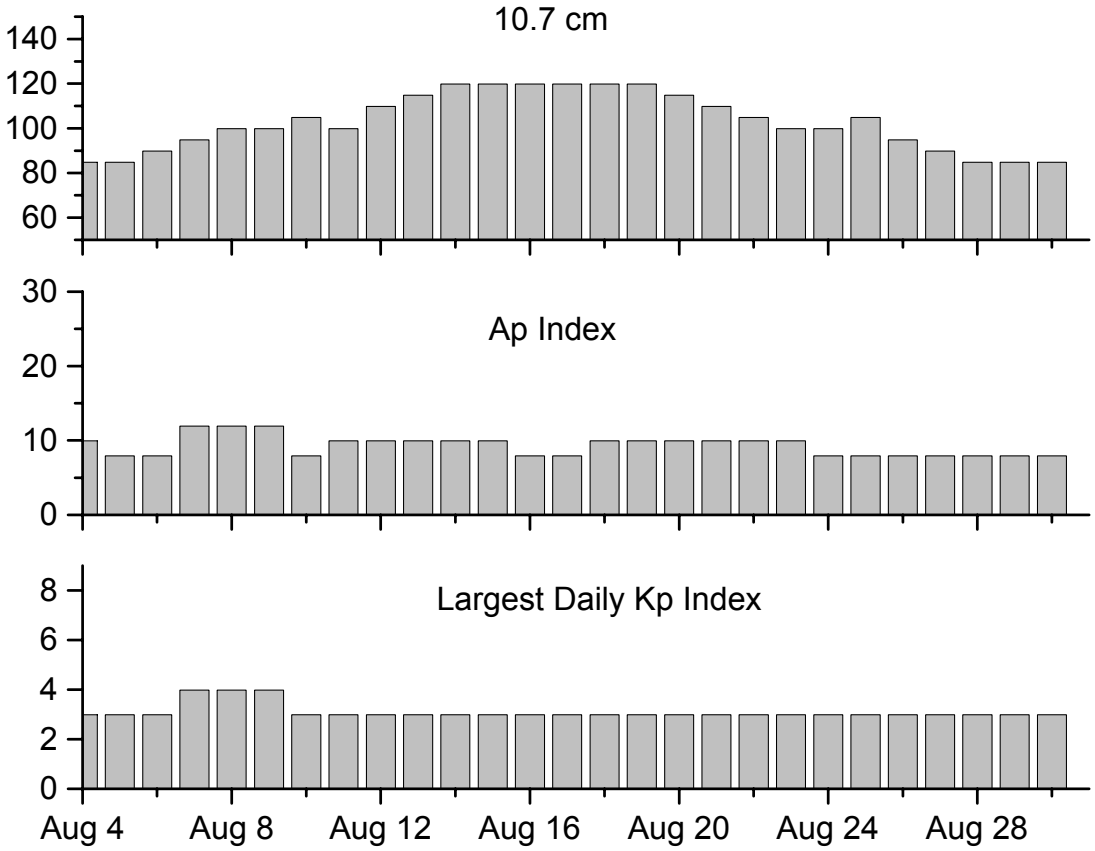
Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UT
26 Jul 0011	5 – 245 MHz Radio Bursts	25 Jul
26 Jul 0011	3 – 245 MHz Radio Noise Storms	25 Jul
26 Jul 0059	CONT ALERT: Proton Event 10MeV Integral Flux > 10pfu	25 Jul 1855
26 Jul 0109	ALERT: Geomagnetic K= 6	25 Jul 0106
26 Jul 0515	ALERT: Electron 2MeV Integral Flux > 1000pfu	26 Jul 0500
26 Jul 1455	EXT WARNING: Proton 10MeV Integral Flux above 10pfu >	25 Jul 1830 - 26 Jul 2359
26 Jul 1936	ALERT: Proton Event 10MeV Integral Flux > 100pfu	26 Jul 1850
26 Jul 2218	EXT WARNING: Proton 10MeV Integral Flux above 10pfu >	25 Jul 1830 - 27 Jul 1500

Alerts and Warnings Issued – continued.

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UT
26 Jul 2233	WARNING: Geomagnetic Sudden Impulse expected	26 Jul 2300 - 2330
26 Jul 2235	WARNING: Geomagnetic K= 6 expected	26 Jul 2300 - 27 Jul 1500
26 Jul 2259	SUMMARY: Geomagnetic Sudden Impulse	26 Jul 2251
26 Jul 2309	ALERT: Geomagnetic K= 5	26 Jul 2300
26 Jul 2325	ALERT: Geomagnetic K= 6	26 Jul 2320
27 Jul 0014	2 – 245 MHz Radio Bursts	26 Jul
27 Jul 0014	1 – 245 MHz Radio Noise Storm	26 Jul
27 Jul 0030	ALERT: Geomagnetic K= 6	27 Jul 0030
27 Jul 0036	WARNING: Geomagnetic K≥ 7	27 Jul 0037 - 1500
27 Jul 0043	ALERT: Geomagnetic K= 7	27 Jul 0043
27 Jul 0104	CONT ALERT: Proton Event 10MeV Integral Flux > 100pfu	26 Jul 1855
27 Jul 0351	ALERT: Geomagnetic K= 6	27 Jul 0348
27 Jul 0358	ALERT: Geomagnetic K= 7	27 Jul 0355
27 Jul 0634	ALERT: Geomagnetic K= 6	27 Jul 0634
27 Jul 0645	ALERT: Electron 2MeV Integral Flux > 1000pfu	27 Jul 0615
27 Jul 0654	ALERT: Geomagnetic K= 7	27 Jul 0653
27 Jul 1010	ALERT: Geomagnetic K= 6	27 Jul 1010
27 Jul 1103	ALERT: Geomagnetic K= 7	27 Jul 1100
27 Jul 1118	ALERT: Geomagnetic K= 8	27 Jul 1108
27 Jul 1224	ALERT: Geomagnetic K= 6	27 Jul 1224
27 Jul 1332	ALERT: Geomagnetic K= 7	27 Jul 1331
27 Jul 1443	EXT WARNING: Proton 10MeV Integral Flux > 10pfu	25 Jul 1830 - 27 Jul 2100
27 Jul 1445	EXTENDED WARNING: Geomagnetic K= 6	26 Jul 2300 - 27 Jul 2359
27 Jul 1456	EXTENDED WARNING: Geomagnetic K≥ 7	27 Jul 0037 - 2359
27 Jul 1459	ALERT: Geomagnetic K= 8	27 Jul 1457
27 Jul 1551	ALERT: Geomagnetic K-index of 6	27 Jul 1550
27 Jul 2058	EXT WARNING: Proton 10MeV Integral Flux > 10pfu	25 Jul 1830 - 28 Jul 0600
27 Jul 2340	EXT WARNING: Geomagnetic K= 6	26 Jul 2300 - 28 Jul 1500
28 Jul 0010	4 – 245 MHz Radio Bursts	27 Jul
28 Jul 0010	1 – 245 MHz Radio Noise Storm	27 Jul
28 Jul 0106	CONT ALERT: Proton Event 10MeV Integral Flux > 100pfu	Jul 26 1850
28 Jul 0514	ALERT: Electron 2MeV Integral Flux > 1000pfu	28 Jul 0500
28 Jul 0643	SUMMARY: Proton Event 10MeV Integral Flux > 10pfu	25 Jul 1855
28 Jul 2123	WATCH: Geomagnetic A≥ 20	30 Jul
29 Jul 0011	2 – 245 MHz Radio Bursts	28 Jul
29 Jul 0011	1 – 245 MHz Radio Noise Storm	28 Jul
29 Jul 0515	ALERT: Electron 2MeV Integral Flux > 1000pfu	29 Jul 0500
30 Jul 0123	1 – 245 MHz Radio Bursts	29 Jul
30 Jul 0519	ALERT: Electron 2MeV Integral Flux > 1000pfu	30 Jul 0500
30 Jul 2122	SUMMARY: Geomagnetic Sudden Impulse	30 Jul 2115
30 Jul 2255	WARNING: Geomagnetic K= 4	30 Jul 2256 - 31 Jul 1600
31 Jul 0050	1 – 245 MHz Radio Burst	30 Jul
31 Jul 0514	ALERT: Electron 2MeV Integral Flux > 1000pfu	31 Jul 0500
31 Jul 1220	SUMMARY: 10cm Radio Burst	31 Jul 1038
01 Aug 0156	ALERT: Geomagnetic K-index of 4	01 Aug 0156
01 Aug 0726	ALERT: Electron 2MeV Integral Flux > 1000pfu	01 Aug 0705

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
04 Aug	85	10	3	18 Aug	120	10	3
05	85	8	3	19	120	10	3
06	90	8	3	20	115	10	3
07	95	12	4	21	110	10	3
08	100	12	4	22	105	10	3
09	100	12	4	23	100	10	3
10	105	8	3	24	100	8	3
11	100	10	3	25	105	8	3
12	110	10	3	26	95	8	3
13	115	10	3	27	90	8	3
14	120	10	3	28	85	8	3
15	120	10	3	29	85	8	3
16	120	8	3	30	85	8	3
17	120	8	3				

Energetic Events

Date	Time			X-ray		Optical Information			Peak Radio Flux		Sweep Freq Intensity	
	Begin	Max	½ Max	Class	Integ Flux	Imp/ Brtns	Location Lat CMD	Rgn #	245	2695	II	IV
26 Jul 04	0536	0552	0601	M1.3	.011	Sf	N02W41	652	61			
26 Jul 04	1723	1730	1737	M1.1	.006	2n	N03W45	652	38			
26 Jul 04	2346	0000	0011	M1.2	.011	1f	N10W54	652				
27 Jul 04	0541	0545	0552	M1.1	.005	1n	N02W53	652	320	100		
27 Jul 04	1959	2020	2037	M1.5	.017	1f	N09W65	652				
28 Jul 04	2345	0006	0016	M2.0	.019			652				

Flare List

Date	Time Begin	Time Max	Time End	X-ray Class.	Optical Imp / Brtns	Optical Location Lat CMD	Rgn
26 July	0234	0243	0250	C1.9			
	0539	0558	0614	M1.3	Sf	N02W41	652
	0805	0809	0822		Sf	N09W44	652
	0900	0901	0912	C2.9	Sf	N09W44	652
	1650	1659	1711	C4.7			652
	1726	1736	1752	M1.1	2n	N03W45	652
	1818	1818	1822		Sf	N08W48	652
	2200	2207	2216	C1.0			652
	2238	U2239	A2322	C1.8	Sf	N11W47	652
	2349	0000	A0111	M1.2	1f	N10W54	652
27 July	0256	0302	0307	C1.5			652
	0544	0545	0609	M1.1	1n	N02W53	652
	0623	0629	0638	C1.2			652
	0914	1018	1105	C3.7			652
	1017	1017	1021		Sf	N08W58	652
	1327	1332	1340	B9.0			
	1446	1450	1454	B8.7			652
	1504	1506	1513	C3.0	1f	N01W58	652
	1524	1526	1529	C2.8	Sf	N06W57	652
	2003	2017	2112	M1.5	1f	N09W65	652
	2227	2233	2236	C2.9			652
	2252	2257	2302	C1.1			652
	B2355	0000	0008		1n	N11W51	
28 July	0232	0609	0803	C4.4			
	0647	0648	0650		Sf	N01W68	652
	B0806	U0807	A0821	C6.3	Sf	N06W70	652
	1141	1147	1153	C3.0			652
	1337	1338	1341	C1.2	Sf	N04W68	652
	1532	1534	1538	C3.6	Sf	N01W72	652
	1624	1625	1635	C3.3	Sf	N03W65	652
	1842	1846	1850		Sf	N04W71	652
	1843	1847	1849	B9.6			652
	2130	2131	2138	C1.6	1f	N04W72	652
	2233	2233	2237		Sf	N07E13	654

Flare List-continued

	Time			X-ray	Optical		Rgn
Date	Begin	Max	End	Class.	Imp / Brtns	Location Lat CMD	
28 July	2345	0006	0016	M2.0			652
29 July	0622	0626	0628	C1.1			652
	0658	0705	0709	C1.7			652
29 July	0813	0817	0820	B6.2			652
	0956	1004	1015	B6.8			652
	1142	1304	1402	C2.1			652
	1631	1631	1636	C2.8	Sf	N03W86	652
	2036	2039	2041	B9.0			
	2354	0012	0014	C1.0			652
30 July	0727	0731	0734	C1.2			652
	1121	1127	1132	B7.5			654
	1232	1238	1251	B5.2			652
	1454	1512	1516	B4.4			654
	1908	1914	1925	B3.8			652
	2220	2228	2236	B5.4			652
	2248	2253	2259	B8.2			654
31 July	0046	0104	0129	C2.8			652
	0516	0657	0914	C8.4			652
	1035	1101	1149	C5.3			652
	1834	1839	1844	B5.9			
01 August	0156	0159	0202	B2.6			655
	0222	0226	0233	B2.4			
	0432	0436	0443	B2.2			654
	0508	0524	0547	B2.3			
	0711	0719	0724	B1.8			
	1020	1023	1026	B1.5			
	1701	1707	1711	B1.3			
	2105	2110	2115	B1.5			

Region Summary

Date	Location (° Lat ° CMD)	Helio Lon	Sunspot Characteristics Area (10^{-6} hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	Flares X-ray C	M	X	Optical S	1	2	3	4
			Region 652												
16 Jul	N05E84	346	0300	07	Hhx	002	A				1				
17 Jul	N05E71	346	0750	11	Ekc	028	B	2			2				
18 Jul	N05E58	346	1370	17	Fkc	030	Bgd	2			3				
19 Jul	N05E45	346	1525	18	Fkc	052	Bgd	4			3	1			
20 Jul	N10E32	345	1670	17	Fkc	043	Bgd	5	1		3			1	
21 Jul	N08E19	345	2010	17	Fkc	067	Bgd	2			1	1			
22 Jul	N08E06	345	1730	18	Fkc	056	Bgd	8	2		3		1		
23 Jul	N08W10	348	1840	19	Fkc	049	Bgd	5	2		3				
24 Jul	N08W21	346	1610	19	Fkc	073	Bgd	7	2		4	1			
25 Jul	N08W35	347	1340	18	Fkc	089	Bgd	3	4		2	2	1		
26 Jul	N08W47	345	1060	17	Fkc	069	Bgd	4	3		5	1	1		
27 Jul	N07W62	347	0930	17	Fkc	025	Bg	7	2		2	3			
28 Jul	N08W76	348	0830	14	Ekc	020	Bg	6	1		6	1			
29 Jul	N08W89	348	0280	12	Eao	004	Bg	4			1				
								59	17	0	39	1	3	1	0

Crossed West Limb.
Absolute heliographic longitude:345

Date	Location (° Lat ° CMD)	Helio Lon	Sunspot Characteristics Area (10^{-6} hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	Flares X-ray C	M	X	Optical S	1	2	3	4
			Region 653												
17 Jul	S14E71	346	0100	08	Dao	010	B								
18 Jul	S14E58	346	0200	11	Cao	011	B								
19 Jul	S14E45	346	0270	12	Dai	013	B	1			1				
20 Jul	S14E32	346	0190	07	Cao	017	B								
21 Jul	S12E20	344	0110	06	Cai	015	B								
22 Jul	S12E05	346	0130	08	Dai	010	B								
23 Jul	S13W09	347	0090	04	Dso	005	B								
24 Jul	S12W24	349	0060	04	Cso	004	B								
25 Jul	S12W37	349	0070	05	Cso	004	B								
26 Jul	S12W50	348	0080	02	Dso	002	B								
27 Jul	S14W65	350	0070	04	Dso	003	B								
28 Jul	S12W76	348	0020	11	Bxo	009	B								
29 Jul	S12W89	348													
								1	0	0	1	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude:346

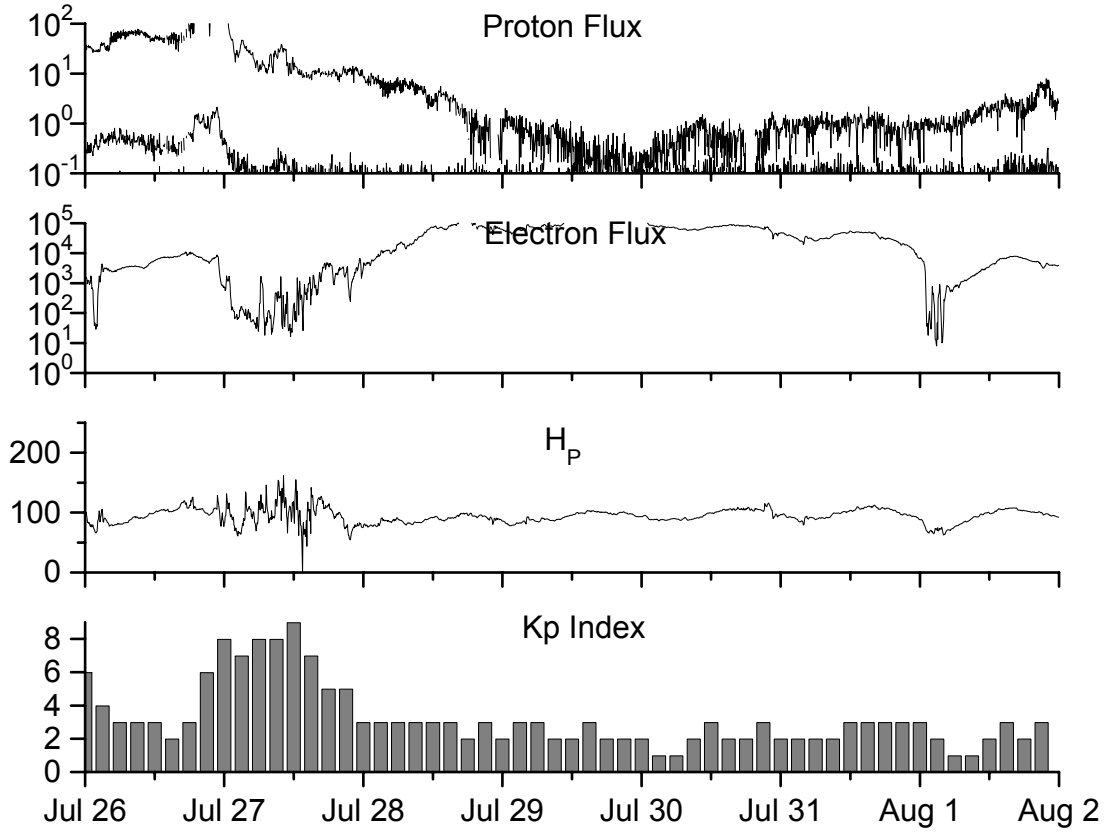
Region Summary - continued.

Date	Location (° Lat ° CMD)	Helio Lon	Sunspot Characteristics Area (10^{-6} hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	Flares X-ray C	M	X	Optical S	1	2	3	4
			Region 654												
25 Jul	N08E52	260	0030	05	Cao	007	B								
26 Jul	N07E38	260	0090	07	Dao	012	B								
27 Jul	N07E25	260	0130	08	Dso	008	B								
28 Jul	N08E11	261	0110	09	Dao	007	B				1				
29 Jul	N08W02	261	0120	09	Dso	008	B								
30 Jul	N08W15	261	0120	10	Dso	012	Bg								
31 Jul	N08W28	260	0100	10	Dao	014	Bg								
01 Aug	N08W41	260	0080	11	Eso	007	B								
								0	0	0	1	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:261															
			Region 655												
30 Jul	S09E71	175	0110	02	Hax	001	A								
31 Jul	S09E57	175	0170	09	Dao	005	B								
01 Aug	S09E44	175	0180	12	Eao	013	B								
								0	0	0	0	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:175															

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

	Sunspot Numbers					Radio Flux		Geomagnetic	
	Observed values		Ratio	Smooth values		*Penticton	Smooth	Planetary	Smooth
Month	SWO	RI	RI/SWO	SWO	RI	10.7 cm	Value	Ap	Value
					2002				
July	183.5	99.6	0.54	175.4	102.7	173.5	176.3	11	13.7
August	191.0	116.4	0.61	169.2	98.7	183.9	169.5	16	14.2
September	206.4	109.6	0.53	163.4	94.6	175.8	164.1	14	15.0
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	136.3	20	20.0
May	89.6	55.2	0.62	118.3	67.8	129.3	135.0	26	21.0
June	118.4	77.4	0.65	113.6	65.2	129.4	132.6	24	21.8
July	132.8	85.0	0.64	106.9	62.0	127.8	129.5	20	22.3
August	114.3	72.7	0.64	102.8	60.3	122.1	127.5	23	22.4
September	82.6	48.8	0.59	100.7	59.8	112.3	126.0	19	21.9
October	118.9	65.6	0.55	96.6	58.4	153.1	124.1	32	21.1
November	118.9	67.2	0.57	93.6	57.0	153.1	121.8	31	20.0
December	75.4	47.0	0.62			115.1		18	
					2004				
January	62.3	37.2	0.60			114.1		20	
February	75.6	46.0	0.61			107.0		13	
March	81.0	48.9	0.60			112.2		12	
April	59.3	39.3	0.66			101.3		10	
May	77.3	41.5	0.54			99.7		9	
June	78.9	43.2	0.55			99.7		9	

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 26 July 2004

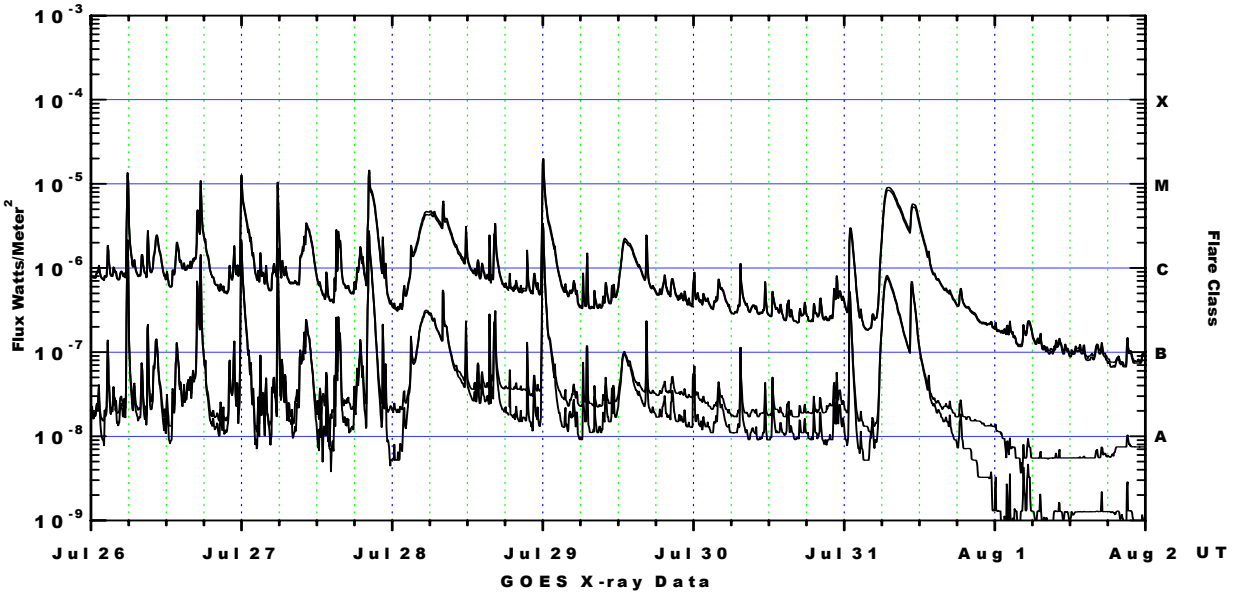
Protons plot contains the five-minute averaged integral proton flux (protons/cm^2 –sec –sr) as measured by GOES-11 (W98) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

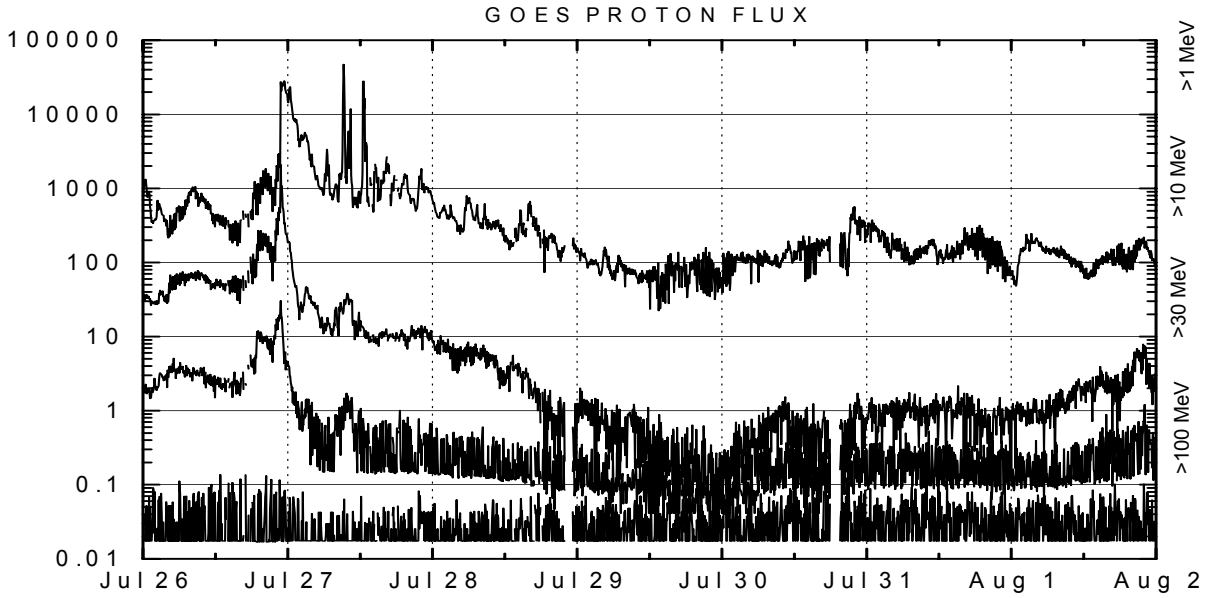
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm^2 –sec –sr) with energies greater than 2 MeV at GOES-12 (W75).

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 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 Kp are " global " parameters that are applicable to a first order approximation over large areas. Hparallel 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

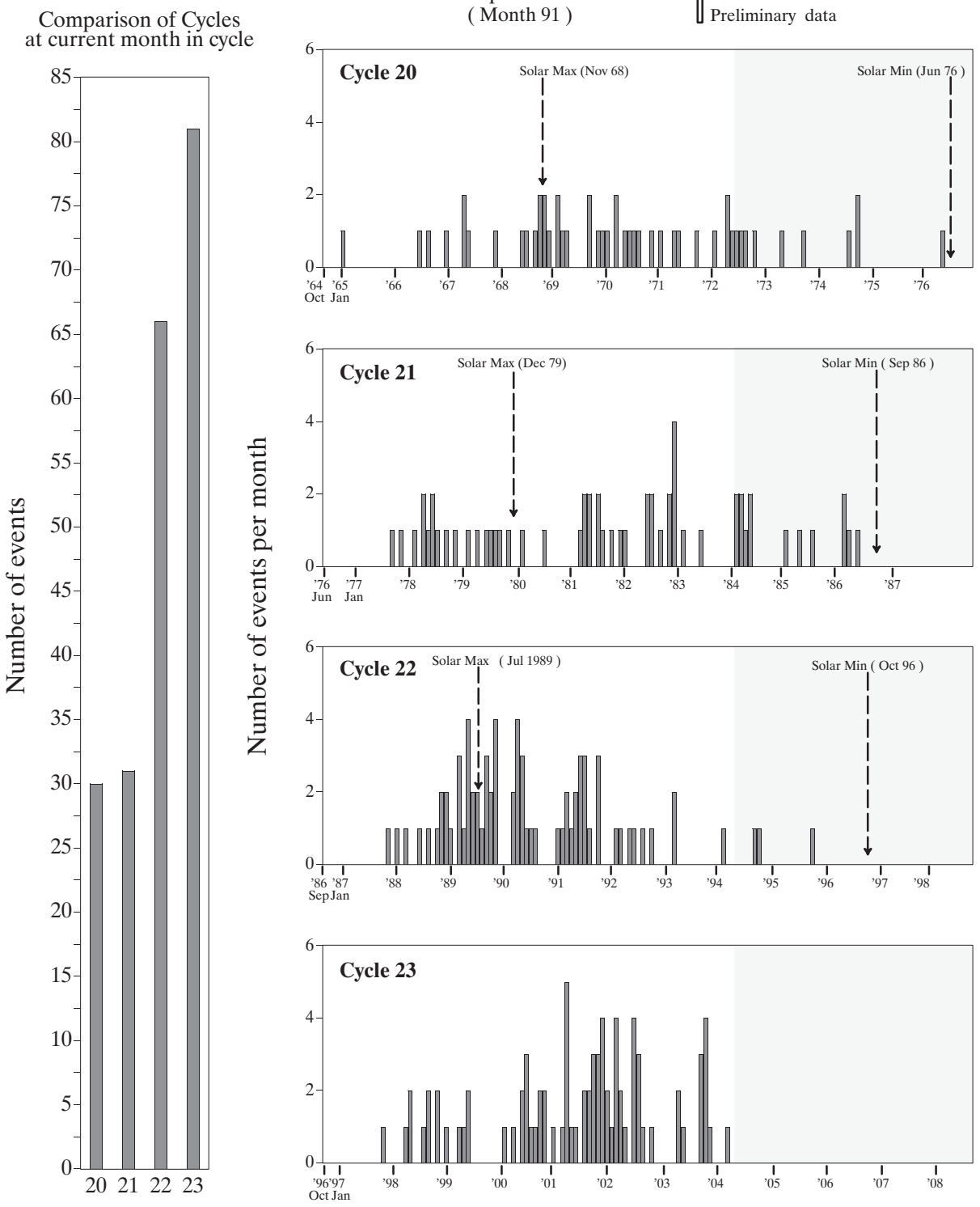
X-ray plot contains five-minute averaged x-ray flux (watts/m$^{2)}$ as measured by GOES 12 (W75) and GOES 10 (W135) in two wavelength bands, .05 -. 4 and .1 - .8 nm. The letters A, B, C, M and X refer to x-ray event levels for the .1 - .8 nm band.

Proton plot contains the five-minute averaged integral proton flux (protons/cm^2 –sec-sr) as measured by GOES-11 (W98) for each of the energy thresholds: >1, >10, >30 and >100 MeV. P10 event threshold is 10 pfu (protons/cm^2-sec-sr) at greater than 10 MeV.

Proton Events

April 2004
(Month 91)

Preliminary data



SESC defines Proton Events as periods (in excess of 15 minutes) when the geosynchronous >10MeV proton flux remains above 10 pfu (particle flux unit =1p/cm*cm*s*sr). Events continue and are counted as a single event until fluxes remain below 10 pfu regardless of whether enhancements from new sources occur. Using different event criteria may result in different event totals.

Space Environment Center

K Tegnell