

Space Weather Highlights **30 June - 06 July 2003**

SWO PRF 1453
08 July 2003

Solar activity was at low to moderate levels. The period began on 30 June with low level activity including a C8/Sf flare at 0225 UTC from Region 396 (S06, L=128, class/area Eao/160 on 30 June). Region 397 (N11, L=033, class/area Fkc/930 on 06 July) was in a steady growth phase early in the period forming a delta magnetic configuration in the trailing spots on 30 June. On 01 - 02 July this region showed some decay simplifying to a beta-gamma configuration. Steady growth began again on 03 July, and by 05 July a beta-gamma-delta magnetic configuration developed. Activity from Region 397 consisted of C-class flares on 01 July and 03 - 06 July. The largest event of the period came from Region 397, an M3/Sf flare at 0728 UTC on 02 July. Region 400 (N04, L=349, class/area/mag. Dso/90/B on 02 July) rotated onto the visible disk on 01 July and exhibited steady growth until 05 July. Activity from Region 400 consisted of C-class flares on 02 - 05 July including a C7/1f flare on 04 July at 1442 UTC. Moderate level activity was observed from Region 400 on 06 July with an M2/Sf at 0011 UTC.

Solar wind data were available from the NASA Advanced Composition Explorer (ACE) spacecraft for most of the summary period. The period began on 30 June with solar wind speeds near 800 km/s and in gradual decline. By 02 July, wind speed reached 450 km/s. Late on 02 July and through 04 July solar wind speed was somewhat variable but increasing due to another coronal hole high speed stream. On 04 - 05 July, solar wind speed was steady near 750 km/s. Late on 05 July, solar wind speed began to decline as the coronal hole rotated out of a geoeffective position and ended the period near 600 km/s. The Bz component of the interplanetary magnetic field was, on average slightly southward expected to produce minor storm levels.

There were no greater than 10 MeV proton events at geosynchronous orbit during the period.

The greater than 2 MeV electron flux at geo-synchronous orbit reached high levels everyday during the period, 30 June - 06 July.

The geomagnetic field ranged from quiet to minor storm levels. Activity on 30 June was associated with an exiting coronal hole high speed stream and reached unsettled to active levels with one period of isolated minor storm levels. Activity on 01- 03 July was at quiet to active levels. A second coronal hole high speed stream produced minor storm levels on 04 July and unsettled to active levels on 05 July. The period ended on 06 July with quiet to unsettled conditions.

Space Weather Outlook **09 July - 04 August 2003**

Solar activity is expected to range from very low to moderate levels but predominantly at low levels. Region 397 and Region 400 have the potential for moderate level activity before they rotate beyond the west limb on 09 July and 13 July, respectively. Activity for the remainder of the period is expected to be at very low to low levels.

No greater than 10 MeV proton events at geosynchronous orbit are expected during the period.

The greater than 2 MeV electron flux is expected to reach high levels on 06 - 08 July, 12 - 14 July, 16 -18 July, 20 - 28 July, and again on 30 July - 02 August due to recurrent coronal hole high speed streams.

The geomagnetic field is expected to range from quiet to major storm levels during the period. Minor storm levels are possible on 11 - 12 July due to a small recurrent coronal hole high speed streams. Unsettled to major storm levels are possible on 14-16 July due to small but intense coronal hole high speed stream. A large southern coronal hole is due to return on 23 - 27 July with major storm levels possible. The trailing portion of this large coronal hole will be in a geoeffective position on 29 July - 01 August and is for much of the period.



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
30 June	128	159	1260	B4.5	6	0	0	6	1	0	0	0
01 July	131	138	1130	B3.8	4	0	0	1	0	0	0	0
02 July	135	153	880	B4.5	3	1	0	3	1	0	0	0
03 July	132	147	840	B4.4	5	0	0	11	0	0	0	0
04 July	140	130	1080	B5.1	11	0	0	7	1	0	0	0
05 July	142	88	1180	B4.6	8	0	0	5	0	0	0	0
06 July	130	114	1250	B3.7	5	1	0	8	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
30 June	1.2E+6	1.0E+4	2.4E+3		1.7E+8	
01 July	3.4E+5	1.1E+4	2.6E+3		2.8E+8	
02 July	2.8E+5	1.1E+4	2.5E+3		1.8E+8	
03 July	6.1E+5	1.1E+4	2.7E+3		1.2E+8	
04 July	1.1E+6	1.1E+4	2.6E+3		8.5E+7	
05 July	1.0E+6	1.1E+4	2.6E+3		1.8E+8	
06 July	6.1E+5	1.1E+4	2.8E+3		2.2E+8	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	30 June	14	3-3-4-3-2-2-3-2	41	4-5-7-4-5-4-2-2	20
01 July	14	5-3-3-2-2-2-1-2	15	3-3-4-3-4-2-2-2	13	3-4-3-2-3-3-3-3
02 July	11	1-2-3-3-2-2-4-2	21	1-2-3-5-5-3-3-3	15	1-3-3-4-3-3-4-3
03 July	14	2-3-1-2-3-3-4-4	18	3-3-3-3-4-4-3-3	17	3-3-2-3-3-4-4-4
04 July	15	3-3-2-4-3-3-3-3	40	4-4-4-7-4-5-3-3	25	4-5-3-5-4-4-3-4
05 July	14	3-3-3-2-3-3-3-3	33	4-4-5-5-5-5-3-2	17	4-3-4-3-3-3-3-3
06 July	10	3-2-1-2-3-3-2-2	17	2-2-2-5-4-4-2-1	12	3-3-2-3-3-3-3-3

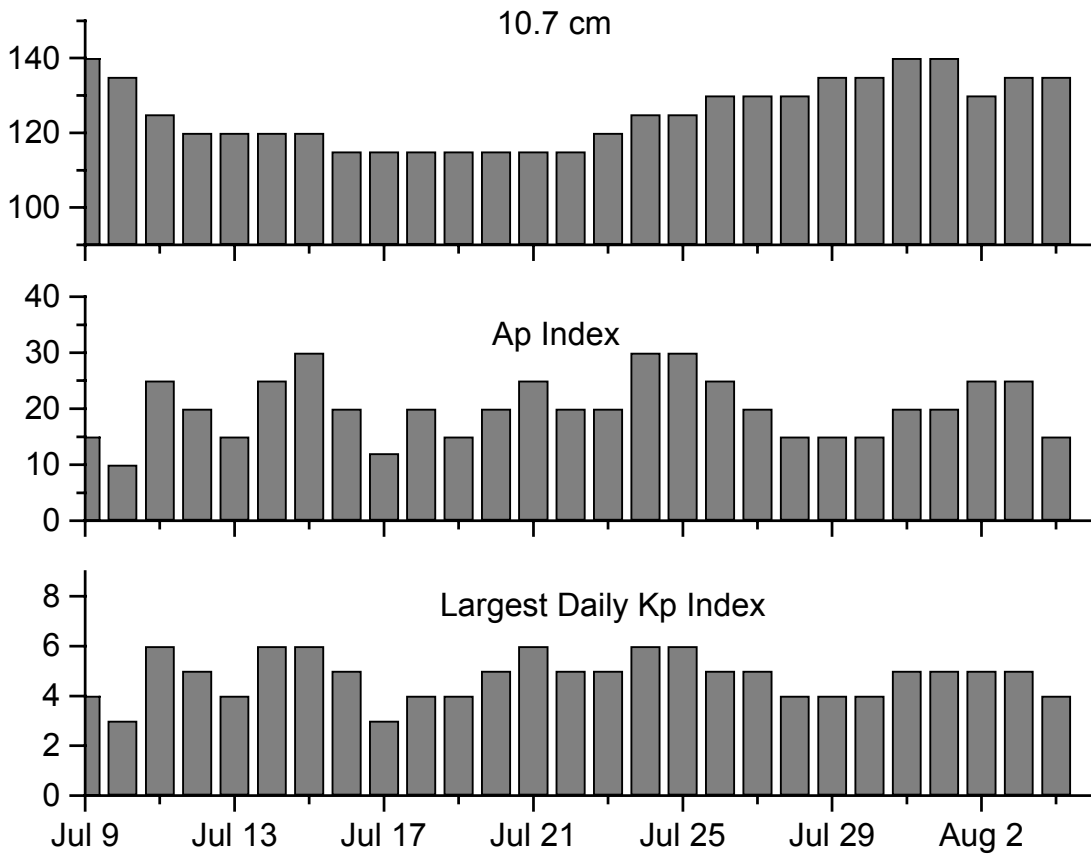


Alerts and Warnings Issued

<u>Date & Time of Issue</u>	<u>Type of Alert or Warning</u>	<u>Date & Time of Event UT</u>
30 Jun 0010	4 - 245 MHz Radio Bursts	29 Jun
30 Jun 1126	ALERT: Electron 2MeV Integral Flux > 1000pfu	30 Jun 1105
30 Jun 1456	EXTENDED WARNING: Geomagnetic K= 5	27 Jun 0546 - 30 Jun 2359
01 Jul 0517	WARNING: Geomagnetic K= 4	01 Jul 0517 - 1500
01 Jul 0520	ALERT: Geomagnetic K= 4	01 Jul 0520
01 Jul 0833	ALERT: Electron 2MeV Integral Flux > 1000pfu	01 Jul 0810
01 Jul 1857	WATCH: Geomagnetic A \geq 20	04 Jul
02 Jul 0006	2 - 245 MHz Bursts	01 Jul
02 Jul 0006	1 - 245 MHz Radio Noise Storm	01 Jul
02 Jul 0502	ALERT: Electron 2MeV Integral Flux exceeded 1000pfu	02 Jul 0500
02 Jul 0817	SUMMARY: 10cm Radio Burst	02 Jul 0711
02 Jul 2005	WATCH: Geomagnetic A \geq 20	05 Jul
03 Jul 0013	2 - 245 MHz Bursts	01 Jul
03 Jul 1216	ALERT: Electron 2MeV Integral Flux exceeded 1000pfu	03 Jul 1155
03 Jul 1710	WARNING: Geomagnetic K= 4	03 Jul 1710 - 04 Jul 1500
03 Jul 1713	ALERT: Geomagnetic K= 4	03 Jul 1712
04 Jul 0002	8 - 245 MHz Radio Bursts	03 Jul
04 Jul 0002	1 - 245 MHz Radio Noise Storm	03 Jul
04 Jul 0547	WARNING: Geomagnetic K= 5	04 Jul 0547 - 1500
04 Jul 0550	ALERT: Geomagnetic K= 5	04 Jul 0550
04 Jul 1256	ALERT: Electron 2MeV Integral Flux > 1000pfu	04 Jul 1235
04 Jul 1442	EXTENDED WARNING: Geomagnetic K= 5 expected	04 Jul 0547 - 05 Jul 1500
04 Jul 1525	ALERT: Type II Radio Emission	04 Jul 1455
05 Jul 0140	5 - 245 MHz Bursts	04 Jul
05 Jul 0140	1 - 245 MHz Radio Noise Storm	04 Jul
05 Jul 1131	ALERT: Electron 2MeV Integral Flux > 1000pfu	05 Jul 1115
05 Jul 1454	EXTENDED WARNING: Geomagnetic K= 5	04 Jul 0547 - 05 Jul 2359
05 Jul 2020	WATCH: Geomagnetic A \geq 20	08 Jul
05 Jul 2355	WARNING: Geomagnetic K= 4	06 Jul 0001 - 1500
06 Jul 0547	ALERT: Electron 2MeV Integral Flux > 1000pfu	06 Jul 0500
06 Jul 1450	EXTENDED WARNING: Geomagnetic K= 4	06 Jul 0001 - 07 Jul 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
09 Jul	140	15	4	23 Jul	120	20	5
10	135	10	3	24	125	30	6
11	125	25	6	25	125	30	6
12	120	20	5	26	130	25	5
13	120	15	4	27	130	20	5
14	120	25	6	28	130	15	4
15	120	30	6	29	135	15	4
16	115	20	5	30	135	15	4
17	115	12	3	31	140	20	5
18	115	20	4	01 Aug	140	20	5
19	115	15	4	02	130	25	5
20	115	20	5	03	135	25	5
21	115	25	6	04	135	15	4
22	115	20	5				



Energetic Events

Date	Time		X-ray		Optical Information			Peak		Sweep Freq		
	Begin	Max	½ Max	Class	Integ Flux	Imp/ Brtns	Location		Radio Flux		Intensity	
							Lat	CMD	245	2695	II	IV
02 Jul	0706	0728	0746	M3.0	.047	1f	N13E25		230			
06 Jul	0006	0032	0040	M2.3	.017	Sf	N04E18					

Flare List

Date	Time			X-ray Class.	Imp / Brtns	Optical Location Lat CMD	Rgn			
	Begin	Max	End							
30 June	0008	0013	0025	C6.5	Sf	S03W48	396			
	0019	0021	0030				N10E52	397		
	0220	0225	0250				C8.0	Sf	S03W49	396
	0513	0519	0522				C1.6	Sf	S04W51	396
	0735	0738	0759				C5.2	1f	N04E48	397
	0902	0904	0907				C2.2	Sf	S04W47	396
	1157	1200	1203				B6.8			
	1501	1506	1525					Sf	N18E60	399
	1608	1621	1630				C1.0			
01 July	2247	2250	2303	B5.0						
	1314	1318	1320	B8.4						
	1336	1339	1407	C2.3	Sf	N09E23	397			
	1754	1802	1806	C1.4			397			
	1840	1902	1929	C1.1			397			
02 July	2010	2029	2045	C1.0			397			
	0136	0138	0142	B8.0	Sf	N03E72	400			
	0249	0250	0302	B7.2	Sf	N10E35	397			
	0309	0312	0316	B9.7						
	0711	0714	0806	M3.0	1f	N13E25	397			
	1202	1208	1218	C1.3						
	1540	1540	1549	C1.6	Sf	N02E62	400			
03 July	2206	2222	2240	C5.4			400			
	0108	0109	0120	C1.2	Sf	N03E58	400			
	0420	0422	0435	B9.9	Sf	N14E18	397			
	0449	0449	0455		Sf	N09E01	397			
	0457	0458	0502		Sf	N02E59	400			
	0555	0600	0614	C3.8	Sf	N13E23	397			
	1207	1211	1225	C2.7	Sf	N15E05	397			
	1229	1231	1238	C2.8	Sf	N15E11	397			
	1340	1341	1351		Sf	N13E10	397			
	1446	1456	1520	C3.3	Sf	N04E51	400			
	1723	1727	1733	B6.4			397			
	2103	2107	2112		Sf	N09W08	397			
	2213	2219	2237		Sf	N13E06	397			



Flare List

Date	Time			X-ray Class.	Optical		Rgn	
	Begin	Max	End		Imp / Brtns	Location Lat CMD		
04 July	0007	0028	0056		Sf	N13E09	397	
	0116	0121	0128	C2.0				
	0400	0401	0413		Sf	N09W12	397	
	0507	0513	0519	C1.9				
	0539	0548	0552		Sf	N09W13	397	
	0604	0609	0621	C1.4	Sf	N13E05	397	
	0745	0746	A0753	C1.0	Sf	N09W14	397	
	0945	0949	0953	C1.0				
	1127	1130	1136	B9.8				
	1139	1143	1156	C1.0				
	1223	1232	1239	C1.6				
	B1255	U1255	1309	C1.1	Sf	N14W10	397	
	B1331	U1232	A1236	B8.1	Sf	N09W16	397	
	1435	1442	1553	C7.1	1f	N05E32	400	
	1733	1800	1831	C3.8			397	
	2118	2121	2124	B6.7				
	2208	2213	2218	C1.2				
	2340	2343	2345	B6.6				
	05 July	0327	0331	0337	C1.0			397
		0539	0544	0548	C1.0			397
0550		0553	0555	C1.1			397	
0911		0913	0924	C2.3	Sf	N13W17	397	
1239		1246	1249	C2.5	Sf	N13W20	397	
1657		1700	1721	C3.9	Sf	N14W22	397	
1940		1944	2018	C4.4	Sf	N11W26	397	
06 July	2333	2333	2339	C1.7	Sf	N05E20	400	
	0009	0011	0019	M2.3	Sf	N04E18	400	
	B0059	U0100	A0122		Sf	N05E25	400	
	0332	0338	0345		Sf	N05E24	400	
	0405	0408	0410	C1.0			400	
	0434	0437	0450	C4.4	Sf	N12W30	397	
	1033	1039	1044	B8.9			397	
	1806	1812	1819	C1.2	Sf	N15W31	397	
	1830	1832	1850	C2.3	Sf	N15W32	397	
	1904	1908	1912	B6.6				
	2003	2003	2011	C1.3	Sf	N12W35	397	
	2036	2036	2043	B9.0	Sf	N17W31	397	



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 387

18 Jun	N18E62	170	0100	08	Cso	007	B												5
19 Jun	N18E49	170	0200	10	Dko	007	Bg												
20 Jun	N18E36	169	0250	09	Dai	019	Bg												
21 Jun	N18E23	169	0260	11	Eso	021	Bg												
22 Jun	N18E10	169	0270	11	Eao	021	Bg												
23 Jun	N17W03	169	0230	14	Eko	022	Bg												
24 Jun	N19W16	169	0160	11	Eao	016	B												
25 Jun	N18W29	169	0230	11	Eao	012	B												
26 Jun	N19W42	168	0170	11	Eso	009	B												
27 Jun	N18W55	168	0120	10	Dao	004	B												
28 Jun	N19W70	170	0130	11	Cso	004	B												
29 Jun	N16W83	170	0110	02	Hsx	001	A												
30 Jun	N15W92	166	0060	07	Cao	002	B												
																			0 0 0 5 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 169

Region 390

22 Jun	N15E76	103	0080	08	Dai	002	B												
23 Jun	N13E64	102	0070	01	Hax	002	A												
24 Jun	N13E51	102	0090	04	Cao	007	B												
25 Jun	N13E37	103	0090	02	Hsx	002	A												
26 Jun	N14E23	103	0070	05	Cso	005	B												
27 Jun	N14E10	103	0060	03	Hsx	003	A												
28 Jun	N16W03	103	0070	03	Cso	005	B												
29 Jun	N16W16	103	0090	03	Hsx	001	A												
30 Jun	N18W30	104	0080	02	Hsx	002	A												
01 Jul	N16W43	103	0070	02	Hsx	001	A												
02 Jul	N15W56	103	0030	02	Hsx	001	A												
03 Jul	N15W70	104	0030	01	Hsx	001	A												
04 Jul	N17W85	106	0030	02	Hsx	001	A												
05 Jul	N17W98	106																	
																			0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 103



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 392

24 Jun	N07E69	084	0030	02	Hax	002	A												
25 Jun	N05E57	083	0020	01	Hsx	001	A												
26 Jun	N06E43	083	0010	01	Hrx	001	A												
27 Jun	N06E30	083	0020	01	Hsx	001	A												
28 Jun	N10E17	083	0010	01	Hsx	001	A												
29 Jun	N06E04	083	0000	00	Axx	001	A												
30 Jun	N06W09	083	0010	01	Axx	002	A												
01 Jul	N06W26	086	0010	05	Bxo	002	B												
02 Jul	N04W35	082	0010	01	Axx	001	A												
03 Jul	N04W50	084	0010	01	Axx	001	A												
04 Jul	N04W63	084																	

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 083

Region 393

24 Jun	S15E72	081	0060	06	Dao	002	B												
25 Jun	S18E57	083	0090	07	Dao	004	B	1				1							
26 Jun	S18E43	083	0050	08	Cao	005	B												
27 Jun	S17E28	085	0030	04	Cso	003	B												
28 Jun	S16E13	087	0020	02	Hsx	005	A												
29 Jun	S13E00	087																	
30 Jun	S13W13	087																	
01 Jul	S13W26	087																	
02 Jul	S13W39	087																	
03 Jul	S13W52	087																	

1 0 0 1 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 087

Region 394

26 Jun	N08E22	104	0010	02	Axx	002	B												
27 Jun	N10E09	104	0020	04	Cro	005	B												
28 Jun	N10W06	106	0070	05	Dao	010	B												
29 Jun	N10W19	106	0060	06	Dao	005	B												
30 Jun	N08W34	108	0040	04	Cso	005	B												
01 Jul	N08W49	109	0020	01	Hsx	002	A												
02 Jul	N07W62	109	0010	01	Axx	001	A												
03 Jul	N07W75	109																	

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 106



Region Summary - continued.

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	2	3

Region 395

26 Jun	N10E62	064	0060	02	Hsx	001	A											
27 Jun	N10E49	064	0050	02	Hax	002	A											
28 Jun	N11E36	064	0020	02	Hsx	003	A											
29 Jun	N11E23	064	0000	00	Axx	001	A											
30 Jun	N12E11	063	0020	09	Cro	004	B											
01 Jul	N11W04	064	0010	03	Bxo	002	B											
02 Jul	N09W17	064	0010	01	Axx	001	A											
03 Jul	N10W31	065	0010	01	Axx	001	A											
04 Jul	N10W44	065																
									0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 064

Region 396

27 Jun	S04W12	125	0050	05	Dao	006	B											
28 Jun	S04W26	126	0120	07	Dso	017	B											
29 Jun	S04W38	125	0150	10	Dao	019	B	2			3							
30 Jun	S06W54	128	0160	12	Eao	017	B	4			4							
01 Jul	S05W69	129	0130	10	Dso	008	B											
02 Jul	S05W83	130	0070	09	Cso	003	B											
									6	0	0	7	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 125

Region 397

27 Jun	N09E72	041	0170	05	Hax	001	A											
28 Jun	N10E65	035	0510	16	Fkc	007	B											
29 Jun	N12E53	034	0790	18	Fho	014	B											
30 Jun	N11E40	034	0850	18	Fhi	030	Gd	1			1	1						
01 Jul	N12E26	034	0770	15	Eki	028	Gd	4			1							
02 Jul	N10E13	034	0630	17	Fki	035	Bg		1		1	1						
03 Jul	N12E00	034	0660	15	Eki	045	Bg	3			8							
04 Jul	N12W14	035	0790	17	Fkc	049	Bg	4			7							
05 Jul	N11W26	033	0890	18	Fkc	041	Bgd	7			4							
06 Jul	N11W39	033	0930	17	Fkc	040	Bgd	4			5							
								23	1	0	27	2	0	0	0	0		

Still on Disk.

Absolute heliographic longitude: 034



Region Summary - continued.

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	2	3

Region 398

30 Jun	N04E66	008	0010	01	Axx	002	A										
01 Jul	N04E52	008	0010	01	Axx	001	A										
02 Jul	N02E40	007	0010	03	Bxo	003	B										
03 Jul	N03E29	005	0010	03	Bxo	003	B										
04 Jul	N02E16	005	0010	01	Axx	002	A										
05 Jul	N03E03	004	0010	03	Bxo	002	B										
06 Jul	N03W14	008	0010	02	Bxo	005	B										
								0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 004

Region 399

30 Jun	N15E52	022	0030	02	Hsx	005	A											1
01 Jul	N16E40	020	0030	03	Cso	003	B											
02 Jul	N16E27	020	0020	03	Cro	005	B											
03 Jul	N14E16	018	0020	04	Cro	004	B											
04 Jul	N14W01	022	0020	05	Bxo	005	B											
05 Jul	N14W14	022																
								0	0	0	1	0	0	0	0	0	0	

Still on Disk.

Absolute heliographic longitude: 022

Region 400

01 Jul	N05E69	351	0080	02	Hsx	001	A											
02 Jul	N04E58	349	0090	08	Dso	013	B			2			2					
03 Jul	N05E44	350	0100	10	Dsi	022	B			2			3					
04 Jul	N05E31	350	0230	09	Dao	023	B			1			1					
05 Jul	N05E18	349	0280	09	Dki	015	Bd			1			1					
06 Jul	N05E03	351	0290	11	Eki	026	Bg			1	1		3					
								7	1	0	9	1	0	0	0	0	0	

Still on Disk.

Absolute heliographic longitude: 351

Region 401

06 Jul	S10E66	288	0020	02	Axx	003	A											
								0	0	0	0	0	0	0	0	0	0	

Still on Disk.

Absolute heliographic longitude: 288

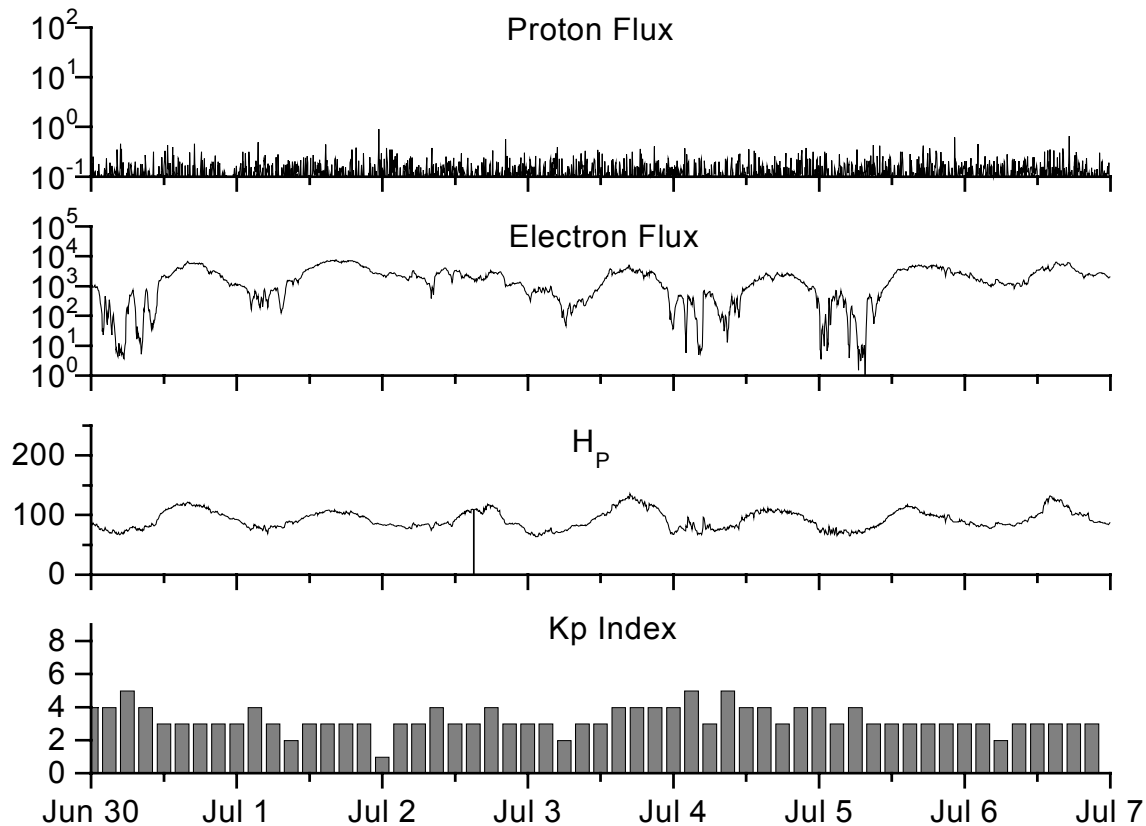


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

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
2001									
July	124.6	81.1	0.66	172.1	111.7	131.3	183.9	9	12.9
August	159.4	106.4	0.67	176.7	113.6	163.1	188.8	11	13.0
September	229.1	150.7	0.66	178.8	114.1	233.8	191.3	13	12.8
October	197.3	125.5	0.64	179.5	114.0	208.1	191.9	20	12.0
November	178.6	106.5	0.60	183.7	115.5	212.7	193.7	16	12.0
December	217.5	132.2	0.61	184.5	114.6	235.6	193.9	09	12.2
2002									
January	189.0	114.1	0.60	184.8	113.5	227.3	194.6	08	12.4
February	194.5	107.4	0.55	188.6	114.7	205.0	197.2	10	12.8
March	153.1	98.4	0.64	188.9	113.4	180.3	195.7	10	13.0
April	194.9	120.7	0.62	186.2	110.5	189.8	191.5	15	13.2
May	204.1	120.8	0.59	183.6	108.9	178.4	188.0	15	13.3
June	146.0	88.3	0.60	179.9	106.3	148.7	183.0	11	13.5
July	183.5	99.9	0.54	175.4	102.7	173.5	173.5	13	13.9
August	191.0	116.4	0.61	169.3	98.7	183.9	169.5	16	14.3
September	206.4	109.6	0.53	163.4	94.6	175.8	164.2	14	14.9
October	153.9	97.5	0.63	158.7	90.5	167.0	159.5	23	15.5
November	159.8	95.5	0.60	150.5	85.3	168.7	154.3	16	16.1
December	147.9	80.8	0.55	144.6	82.1	158.6	150.9	13	17.0
2003									
January	149.3	79.5	0.53			144.6		13	
February	87.9	46.2	0.53			124.6		15	
March	119.7	61.5	0.51			132.3		19	
April	114.3	60.0	0.52			126.5		20	
May	89.6	55.2	0.62			116.2		25	
June	118.4	77.4	0.65			129.4		24	

NOTE: All smoothed values after June 1999 and monthly values after December 2000 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 22, RI= 158.5, occurred July 1989. *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 30 Jun 2003

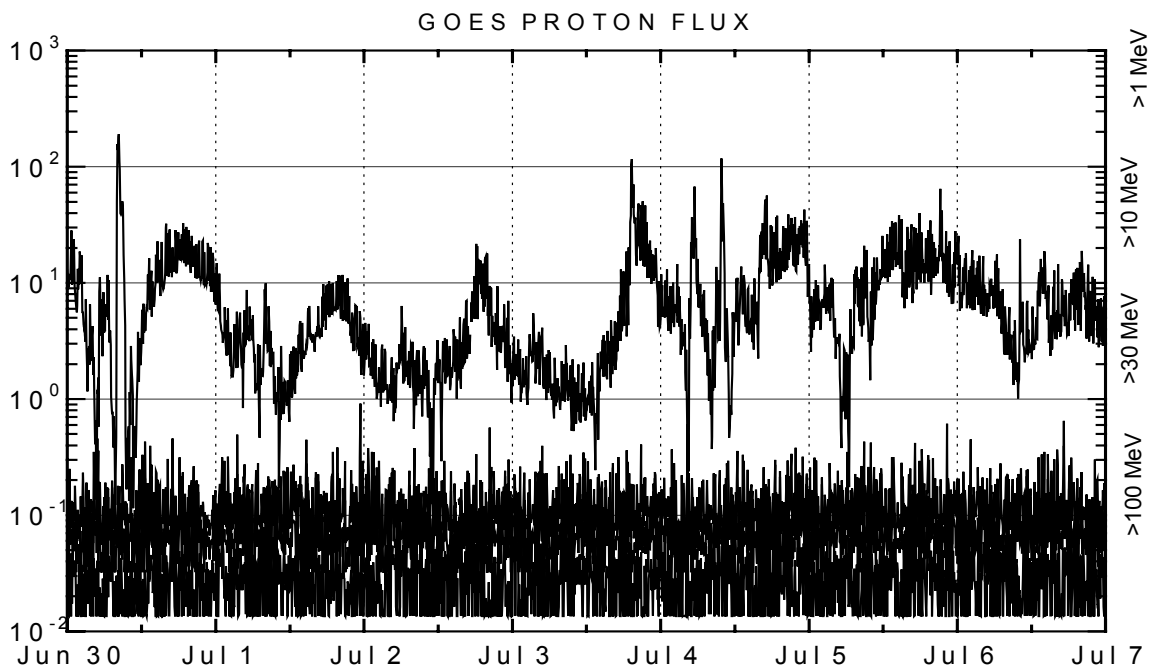
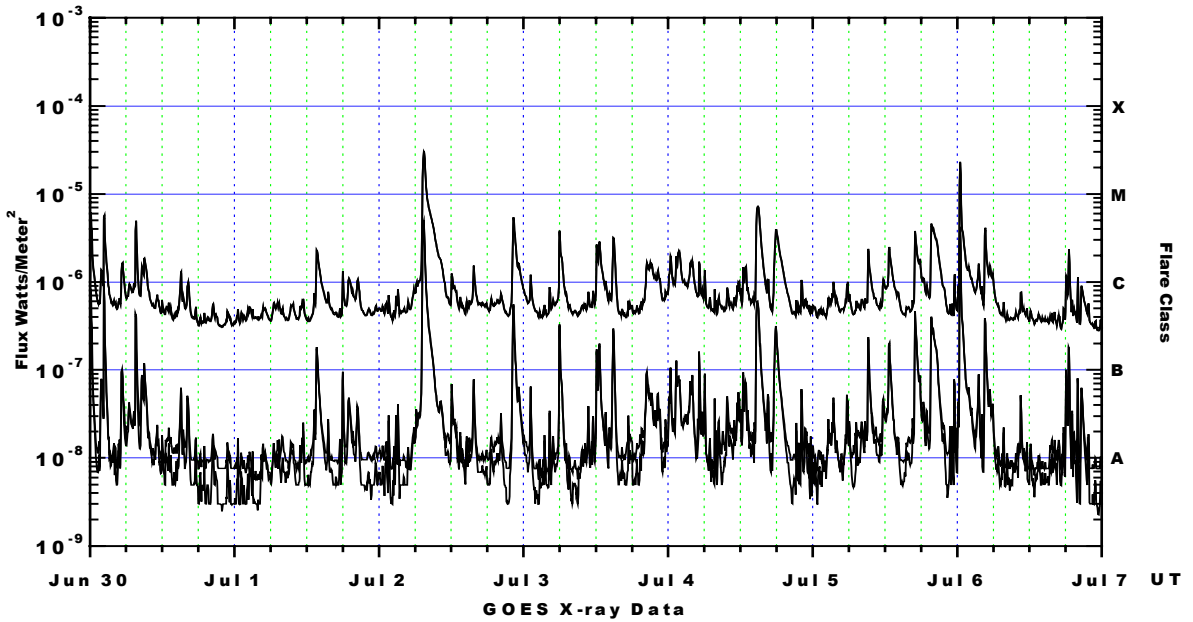
Protons plot contains the five-minute averaged integral proton flux (protons/cm²-sec -sr) as measured by GOES-11 (W113) for each of three energy thresholds: greater than 10, 50, and 100 MeV. The primary proton instrument was switched from GOES-8 to GOES-11 on 19 June 2003 (See details at <http://www.sec.noaa.gov/GOES.html>).

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

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 Heartland, UK. These data are made available through cooperation from the Geological Survey of Canada (GSC) 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 and 10 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. The primary proton instrument was switched from GOES-8 to GOES-11 on 19 June 2003 (See details at <http://www.sec.noaa.gov/GOES.html>).



M5 or Greater X-Ray Flares



Space Environment Center

June 2003
(Month 81)

Preliminary data

Comparison of Cycles at current month in cycle

