

## **Space Weather Highlights**

### **03 - 09 July 2000**

**SWO PRF 1297**  
**11 July 2000**

Solar activity ranged from very low to high levels. Activity was low during 03 - 06 July due to isolated to occasional C-class subflares from a variety of regions. Events of interest during this period included a 13-degree filament disappearance from Region 9068 (S18, L = 048, class/area Ekc/390 on 08 July) with an associated Type II radio sweep at 04/2243UT and a C4/SF at 06/1236UT with an associated Type II radio sweep from Region 9070 (N18, L = 029, class/area Eac/340 on 08 July). Activity increased to moderate levels on 07 July due to a pair of M-class flares from Region 9071 (N22, L = 083, class/area Cro/050 on 07 July). The first was an M1/SN at 07/1105UT with an associated Type II radio sweep. The second flare was an M1/1B at 07/1819UT. Optically uncorrelated Type II radio sweeps occurred at 07/0318UT and 07/2055UT. Images from the SOHO/LASCO instrument showed a halo-type coronal mass ejection (CME) beginning at 07/1026UT, which may have been associated with a filament disappearance near center disk. Activity decreased to low levels on 08 July. Activity increased to high levels on 09 July due to an M5/1N flare at 09/0723UT from Region 9077 (N18, L = 311, class/area Fki/750 on 09 July). Region 9077 rotated into view on 07 July as a large, magnetically complex sunspot group. Note: at issue time Region 9077 had produced additional major flares. Details will be provided in next week's issue.

Real-time solar wind data were available from the NASA Advanced Composition Explorer (ACE) spacecraft for most of the period. A weak coronal hole signature was observed during 04 - 05 July. During this time, velocities increased to a high of 510 km/sec, IMF Bz became mostly southward with maximum deflections to minus 9 nT (GSM), and the solar sector shifted from toward (negative polarity) to away (positive polarity).

There were no proton events at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at normal to moderate levels.

Geomagnetic field activity was at quiet to unsettled levels during 03 - 04 July. Activity increased to quiet to active levels during 05 - 06 July with brief minor to major storm periods detected at high latitudes. Activity declined to mostly quiet to unsettled levels during the remainder of the period.

## **Space Weather Outlook**

### **12 July - 07 August 2000**

Solar activity is expected to be at moderate to high levels until Region 9077 crosses the west limb on 21 July. Activity is expected to decrease to low to moderate levels thereafter with isolated M-class flares likely.

A greater than 10 MeV solar proton event is expected at geosynchronous orbit during the first day of the forecast period following a major flare that occurred on 11 July from Region 9077. Additional proton events are possible until Region 9077 departs the visible on 21 July.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at normal to moderate levels through most of the period. However, there will be a chance for high flux levels during 13 - 18 and 25 - 26 July.

Active to major storm conditions are expected during 12 - 14 July due to recent coronal mass ejections with the most intense activity expected on the 14th. Active to minor storm conditions are expected during 15 - 16 July as the disturbance subsides. Active conditions are expected during 24 - 25 July due to coronal hole effects. Quiet to unsettled conditions are expected during the remainder of the period, barring another Earth-directed CME.



### 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
03 July	156	166	1180	B5.7	0	0	0	5	0	0	0	0
04 July	158	165	1040	B5.7	5	0	0	7	1	0	0	0
05 July	169	200	1010	B5.9	5	0	0	4	0	0	0	0
06 July	174	210	1170	B6.2	5	0	0	14	1	0	0	0
07 July	187	226	1150	C1.0	5	2	0	19	1	0	0	0
08 July	210	260	1740	C1.0	13	0	0	33	2	0	0	0
09 July	211	262	2240	C3.3	8	1	0	13	2	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)		
	>1MeV	>10MeV	>100MeV	>.6MeV	>2MeV	>4MeV
03 July	6.3E+4	1.1E+4	2.7E+3		1.1E+7	
04 July	4.3E+4	1.0E+4	2.3E+3		7.7E+6	
05 July	1.8E+5	1.1E+4	2.4E+3		7.3E+6	
06 July	6.0E+4	1.1E+4	2.3E+3		8.3E+6	
07 July	5.4E+4	1.0E+4	2.3E+3		9.6E+6	
08 July	4.8E+4	1.1E+4	2.3E+3		9.2E+6	
09 July	1.6E+5	1.1E+4	2.3E+3		9.1E+6	

### Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
03 July	8	2-2-1-3-3-1-2-2	8	2-2-2-3-3-1-2-1	10	2-2-2-3-3-3-3-3
04 July	10	3-2-1-2-4-2-2-2	6	2-2-0-3-2-1-1-2	9	3-2-1-2-3-3-3-2
05 July	6	1-1-2-2-3-2-1-1	21	2-1-4-6-4-3-1-1	13	2-1-3-4-3-4-2-1
06 July	6	1-2-2-1-2-2-2-2	13	4-2-1-1-4-2-4-1	7	2-2-2-2-2-2-3-2
07 July	6	2-1-1-1-2-2-1-3	6	3-2-1-2-0-1-1-2	8	2-2-1-3-3-3-2-3
08 July	6	2-2-1-1-3-2-2-0	8	2-2-0-1-3-4-1-0	7	2-2-1-2-2-3-2-1
09 July	6	0-1-2-1-2-2-1-3	8	0-2-3-1-4-1-1-1	7	1-1-2-2-2-2-2-3

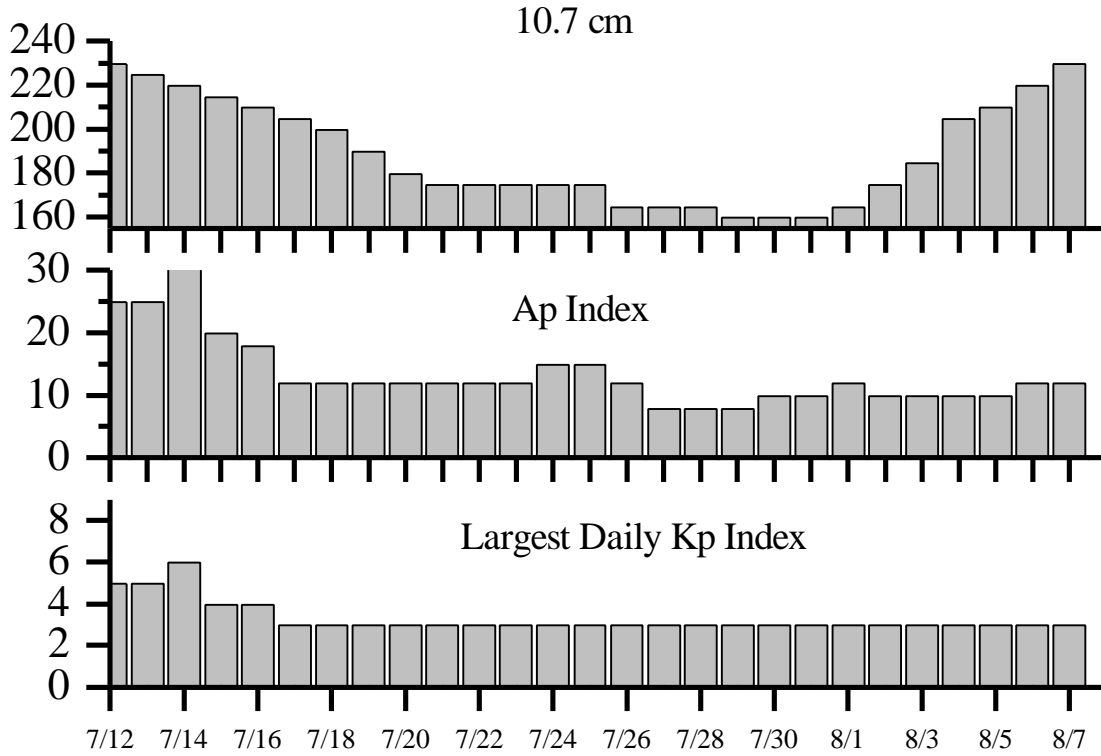


*Alerts and Warnings Issued*

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UT
05 Jul 0036	245 MHz Noise Storms	04 Jul
05 Jul 0743	Type II Radio Emission	04 Jul 2243
05 Jul 1203	K-Index of 4 Observed	05 Jul 09 - 12
06 Jul 0136	4 - 245 MHz Bursts	05 Jul
06 Jul 0136	245 MHz Noise Storm	05 Jul
06 Jul 1319	Type II Radio Emission	06 Jul 1236
07 Jul 0051	6 - 245 MHz Bursts	06 Jul
07 Jul 0051	245 MHz Noise Storm	06 Jul
07 Jul 1236	Type II Radio Emission	07 Jul 1114
07 Jul 2209	Type II Radio Emission	07 Jul 2055
08 Jul 0149	3 - 245 MHz Bursts	07 Jul
08 Jul 0149	245 MHz Noise Storms	07 Jul
08 Jul 1429	A $\geq$ 20 Watch	11 Jul 2000
09 Jul 0009	4 - 245 MHz Bursts	08 Jul
09 Jul 0009	245 MHz Noise Storms	08 Jul
09 Jul 0747	X-Ray event M5.7	09 Jul 0723
09 Jul 1150	Type II Radio Emission	09 Jul 1117
09 Jul 2009	A $\geq$ 20 Watch	12 Jul



*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
12 July	230	25	5	26 July	165	12	3
13	225	25	5	27	165	8	3
14	220	50	6	28	165	8	3
15	215	18	4	29	160	8	3
16	210	12	4	30	160	10	3
17	205	12	3	31	160	10	3
18	200	12	3	01 Aug	165	12	3
19	190	12	3	02	175	10	3
20	180	12	3	03	185	10	3
21	175	12	3	04	205	10	3
22	175	12	3	05	210	10	3
23	175	12	3	06	220	12	3
24	175	15	3	07	230	12	3
25	175	15	3				



***Energetic Events***

Date	Time		X-ray		Optical Information			Peak		Sweep Freq	
	Begin	Max	½	Integ	Imp/ Brtns	Location Lat CMD	Rgn #	Radio Flux		Intensity	
			Max					Class	Flux	245	2695
07 Jul	1056	1105	1127	M1.3	.019	SN	N23W41	9071	52	2	
07 Jul	1810	1819	1833	M1.3	.012	1B	N21W47	9071	15		
09 Jul	0715	0723	0726	M5.7	.017	1N	N16E72	9077	11		

***Flare List***

Date	Time			X-ray Class.	Imp / Brtns	Optical		Rgn
	Begin	Max	End			Location Lat CMD		
03 July	0044	0045	0050	B8.6	SF	N26W37	9063	
	0136	0142	0148	B8.8				
	0407	0415	0421	B8.1				
		0419	0421	0426		SF	N17E69	9070
		1629	1630	1635	B7.2	SF	S14W31	9062
		1655	1701	1706	B9.8	SF	S13W44	9061
		2053	2054	2100	B7.3	SF	S17E39	9068
04 July	0005	0038	0111	C2.0	1F	S16W32	9062	
	0015	0044	0101		SF	S19E39	9068	
	0218	0225	0227	B9.3				
	0825	0825	0829	C1.3	SF	S20E35	9068	
	1028	1032	1043	B8.2				
	1345	1350	1354		SF	N17E45	9070	
	1435	1440	1449		SF	S18W37	9062	
	1458	1500	1516	C2.3	SF	S22E31	9068	
	1511	1525	1622	C3.4	SF	N17E49	9070	
	2114	2120	2133	C1.9				
05 July	2141	2141	2154		SF	N19E46	9070	
	0354	0401	0408	C2.3				
	1346	1348	1358		SF	N25W70	9063	
	1620	1622	1630		SF	N22W18	9071	
	1909	1913	1917	C1.1				
	2001	2004	2010	C1.0	SF	N24W19	9071	
	2039	2039	2044	C1.3	SF	N20E32	9070	
	2310	2314	2322	C1.0				
06 July	0256	0257	0300		SF	S17W64	9062	
	0525	0529	0537	C1.1				
	0531	0533	0539		SF	N22W25	9071	
	0904	0908	0920	C2.4	SF	S20E07	9068	
	1222	1223	1226	C4.3	SF	N18E25	9070	
	1319	1330	1403		SF	N17E28	9070	
	1456	1457	1459		SF	S15W76	9061	
	1507	1509	1514		SF	N19E23	9070	
	1542	1543	1546		SF	N19E21	9070	



*Flare List – continued.*

Date	Time			X-ray	Optical		Rgn Lat CMD
	Begin	Max	End		Imp / Class.	Location Brtns	
06 July	1715	1715	1721		SF	N19E22	9070
	1728	1728	1731		SF	N18E19	9070
	1813	1821	1828		SF	N18E19	9070
	1913	1918	1934		SF	N18E19	9070
	1935	1946	1952		1F	N19E20	9070
	2038	2045	2108	C4.7			
	2038	2045	2108	C4.8			
	2311	2350	0019		SF	N20E16	9070
	2355	0002	0015		SF	N19E16	9070
07 July	0031	0031	0104	C2.0	SF	N20E17	9070
	0132	0132	0137		SF	N18E19	9070
	0201	0205	0210	C5.0	SF	N18E15	9070
	0303	0304	0307		SF	N21W37	9071
	0330	0331	0341		SF	N21W38	9071
	0545	0556	0655	C3.3	SF	N22W39	9071
	0553	0554	0600		SF	N20E12	9070
	0908	0918	0959	C5.6	SF	N17E10	9070
	1100	1102	1139	M1.3	SN	N23W41	9071
	1537	1537	1547		SF	N17E08	9070
	1558	1600	1610		SF	S20W10	9068
	1630	1636	1641		SF	S20W10	9068
	1635	1635	1644		SF	N17E08	9070
	1639	1639	1648		SF	N22W46	9071
	1704	1705	1714		SF	N19E07	9070
	1812	1821	1909	M1.3	1B	N21W47	9071
	1931	1931	1938		SF	N14E40	9074
	2017	2017	2025		SF	N18E02	9070
	2029	2030	2036		SF	N19E00	9070
	08 July	2213	2213	2223	C4.1	SF	N21W51
0025		0025	0033		SF	N18E02	9070
0129		0130	0133	C1.4	SF	N18E00	9070
0154		0156	0203	C2.1	SF	N18E00	9070
0229		0229	0235	C2.2	SF	N18E00	9070
0238		0244	0307		SF	N21W53	9071
0310		0310	0314		SF	S22E18	9073
0426		0428	0431		SF	N18W02	9070
0630		0632	0636	C2.1	SF	S23E16	9073
0732		0733	0802	C6.1	1N	N17W07	9070
0757		0800	0804		SF	S22E15	9073
0824		0832	0842	C2.3	SF	S22E14	9073



*Flare List – continued.*

Date	Time			X-ray	Optical		Rgn Lat CMD	
	Begin	Max	End		Imp / Class.	Location Brtns		
08 July	1032	1036	1039	C3.0				
	1123	1129	1133		SF	S22E12	9073	
	1125	1125	1130		SF	N18W03	9070	
	1135	1138	1143		SF	S22E13	9073	
	1203	1205	1207		SF	S22E13	9073	
	1305	1307	1315	C4.5	SN	S22E12	9073	
	1321	1326	1341	C3.1	1F	N17W08	9070	
	B1328	U1344	1358		SF	S20E09	9073	
	1408	1410	1420		SF	N17W07	9070	
	1420	1448	1458		SF	S21E11	9073	
	1456	1457	1501		SF	N16E61	9077	
	1501	1506	1512		SF	N19E78	9077	
	1502	1502	1512		SF	S21E11	9073	
	1517	1601	1611		SF	S17E05	9073	
	1520	1522	1541	C2.9	SF	S17W06	9069	
	1555	1555	1559		SF	N19E78	9077	
	1625	1630	1717	C2.4	SF	N17W09	9070	
	1626	1627	1632		SF	N19E77	9077	
	1728	1732	1736		SF	N20W59	9071	
	1747	1747	1752		SF	S22E09	9073	
	1813	1814	1820		SF	S17W08	9069	
	1846	1848	1854		SF	S22E10	9073	
	1908	1909	1926		SF	N22W06	9070	
	2045	2052	2057	C4.6				
	B2137	U2206	A2223		SF	N18E35	9074	
	2144	2150	2155	C4.0				
	B2328	0032	0124		SF	N18W12	9070	
	09 July	0229	0233	0243	C5.0	SF	N15E74	9077
		0255	0304	0318	C4.2			
		0448	0453	0507		SF	N19W12	9070
0650		0655	0709	C4.2	SF	N16E69	9077	
0718		0724	0812	M5.7	1N	N16E72	9077	
0822		0848	0910		1F	N19W17	9070	
1151		1215	1233	C4.4	SF	N16E67	9077	
1520		1520	1529		SF	N17E66	9077	
1617		1619	1632		SF	N16E66	9077	
1657		1711	1724	C6.0				
1731		1735	1741		SF	N20W20	9070	
1733		1733	1737		SF	N15E64	9077	
1757	1757	1802		SF	N19W22	9070		



**Flare List – continued.**

Date	Time			X-ray	Optical		Rgn Lat CMD
	Begin	Max	End		Imp / Class.	Location Brtns	
09 July	2005	2008	2010	C2.6			
	2131	2143	2239	C4.6	SN	N19E63	9077
	2224	2226	2235		SF	S18W26	9069
	2226	2226	2234		SF	N14W52	9066
	2244	2257	2310		SF	N18E60	9077
	2339	2342	2346	C2.4			

**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	3	4

*Region 9055*

21 Jun	N19E70	174	0080	01	HSX	001	A												
22 Jun	N20E56	175	0090	02	HSX	001	A												
23 Jun	N19E44	174	0080	02	HSX	001	A							1					
24 Jun	N19E30	175	0110	02	HSX	001	A												
25 Jun	N19E17	174	0070	02	HSX	002	A												
26 Jun	N19E05	173	0050	02	HSX	002	A												
27 Jun	N20W08	173	0060	02	HSX	002	A												
28 Jun	N21W21	173	0080	02	HSX	001	A												
29 Jun	N21W34	173	0050	01	HSX	001	A												
30 Jun	N22W47	173	0050	01	HSX	001	A												
01 Jul	N23W58	170	0040	02	HSX	001	A												
02 Jul	N22W73	172	0020	01	HRX	001	A												
03 Jul	N21W88	174	0010	01	HRX	001	A												

0 0 0 1 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 173





**Region Summary-continued**

Date	Location		Sunspot Characteristics				Flares										
	° Lat ° CMD)	Helio Lon	Area (10 <sup>6</sup> hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical						
								C	M	X	S	1	2	3	4		
<i>Region 9056</i>																	
21 Jun	S15E68	176	0130	02	HSX	001	A										
22 Jun	S14E54	177	0180	03	HSX	001	A										
23 Jun	S15E42	176	0250	03	HAX	001	A										
24 Jun	S14E28	177	0250	04	HAX	002	A										
25 Jun	S14E15	176	0230	03	HSX	001	A										
26 Jun	S14E02	176	0260	03	HHX	001	A										
27 Jun	S13W11	176	0220	04	HSX	001	A										
28 Jun	S12W25	177	0210	03	HSX	001	A										
29 Jun	S12W37	176	0210	03	HSX	001	A										
30 Jun	S12W50	176	0200	03	HSX	001	A										
01 Jul	S12W64	176	0170	02	HSX	001	A										
02 Jul	S11W77	176	0160	02	HSX	001	A										
03 Jul	S11W92	178	0110	02	HSX	001	A										
								0	0	0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 176

<i>Region 9057</i>																	
22 Jun	N14E72	159	0140	04	HSX	001	A										
23 Jun	N14E60	158	0180	04	HAX	001	A										
24 Jun	N13E46	159	0240	03	HHX	001	A										
25 Jun	N13E33	158	0200	03	HSX	001	A										
26 Jun	N13E20	158	0250	03	HHX	001	A						1				
27 Jun	N14E07	158	0260	05	CHO	003	B										
28 Jun	N14W06	158	0290	05	CHO	004	B										
29 Jun	N15W19	158	0230	04	CHO	004	B										
30 Jun	N15W34	160	0230	04	CHO	003	B						1				
01 Jul	N16W46	158	0180	02	HSX	001	A										
02 Jul	N16W59	158	0150	02	HAX	001	A										
03 Jul	N15W74	160	0170	03	HSX	001	A										
04 Jul	N16W86	159	0120	02	HSX	001	A										
								0	0	0	2	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 158



**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

*Region 9060*

24 Jun	S34E59	146	0000	00	AXX	001	A												
25 Jun	S32E46	145	0010	03	BXO	002	B												
26 Jun	S34E36	142	0010	00	BXO	001	B												
27 Jun	S33E22	143	0020	04	BXO	004	B												
28 Jun	S33E09	143																	
29 Jun	S33W04	143																	
30 Jun	S33W17	143																	
01 Jul	S33W30	143																	
02 Jul	S33W43	143																	
03 Jul	S33W56	143																	
04 Jul	S33W69	143																	
05 Jul	S33W82	143																	

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 143

*Region 9061*

24 Jun	S15E72	133	0050	02	HSX	001	A												
25 Jun	S15E59	132	0050	01	HSX	001	A												
26 Jun	S15E45	133	0060	02	HSX	001	A												
27 Jun	S15E31	134	0050	02	HSX	001	A												
28 Jun	S14E18	134	0070	02	HSX	001	A												
29 Jun	S14E05	134	0080	02	HSX	001	B												
30 Jun	S13W08	134	0070	02	HSX	001	A												
01 Jul	S13W22	134	0050	01	HSX	001	A												
02 Jul	S13W35	134	0060	03	CSO	003	B												
03 Jul	S13W48	134	0060	02	HSX	001	A												1
04 Jul	S13W61	134	0060	02	CSO	002	B												
05 Jul	S13W75	135	0040	01	HSX	001	A												
06 Jul	S13W88	133	0010	01	HRX	001	A												1

0 0 0 2 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 134



**Region Summary-continued**

Date	Location		Sunspot Characteristics				Flares																
	( ° Lat ° CMD)	Helio Lon	Area (10 <sup>6</sup> hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical												
								C	M	X	S	1	2	3	4								
<i>Region 9062</i>																							
25 Jun	S19E72	119	0080	03	DSO	002	B						3										
26 Jun	S18E61	117	0140	08	DSO	008	B																
27 Jun	S18E48	117	0260	10	DKO	013	B	1													1		
28 Jun	S17E34	118	0360	10	DKO	014	B																
29 Jun	S16E23	116	0360	09	DKO	019	B																
30 Jun	S16E09	117	0400	10	DKO	022	B																
01 Jul	S16W04	116	0310	10	DKI	021	B																
02 Jul	S16W18	117	0280	08	CKO	016	B																
03 Jul	S16W32	118	0230	09	CKO	014	B						1										
04 Jul	S16W46	119	0220	06	CAO	007	B	1					1	1									
05 Jul	S16W61	121	0150	03	DSO	003	B																
06 Jul	S14W74	119	0120	06	CAO	004	B						1										
07 Jul	S16W86	118	0080	04	CSO	004	B																
								2	0	0	0	6	1	1	0	0							

Crossed West Limb.

Absolute heliographic longitude: 116

*Region 9063*

26 Jun	N24E41	137	0030	03	CRO	003	B														
27 Jun	N25E29	136	0080	08	DAO	008	BG														
28 Jun	N25E16	136	0090	10	DSO	016	B														
29 Jun	N26E02	137	0060	11	EAO	015	B														
30 Jun	N26W10	136	0070	12	EAO	013	B														
01 Jul	N26W22	134	0040	11	CSO	009	B														
02 Jul	N26W38	137	0020	10	BXO	004	B														
03 Jul	N26W50	136	0010	03	BXO	002	B						1								
04 Jul	N27W59	132	0010	00	AXX	002	B														
05 Jul	N27W73	133	0000	01	AXX	002	A						1								
06 Jul	N27W86	133																			
								0	0	0	0	2	0	0	0	0	0				

Crossed West Limb.

Absolute heliographic longitude: 137



*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

*Region 9065*

29 Jun	N20E75	064	0060	01	HSX	001	A									
30 Jun	N20E63	063	0080	03	HSX	001	A									
01 Jul	N20E50	062	0050	02	HSX	001	A									
02 Jul	N21E39	060	0040	04	CSO	003	B									
03 Jul	N22E25	061	0040	01	CSO	004	B									
04 Jul	N22E13	060	0010	01	HSX	001	A									
05 Jul	N23W02	062	0000	00	AXX	001	A									
06 Jul	N23W15	062														
07 Jul	N24W26	058	0010	01	BXO	002	B									
08 Jul	N24W39	058														
09 Jul	N24W52	058														
											0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 062

*Region 9066*

29 Jun	N10E75	064	0100	07	HSX	001	A									
30 Jun	N13E63	063	0110	05	CAO	005	B									
01 Jul	N13E55	057	0090	14	CSO	011	B					2				
02 Jul	N12E39	060	0070	07	DSO	009	B									
03 Jul	N12E23	063	0070	05	DSO	006	B									
04 Jul	N12E12	061	0060	06	DSO	010	B									
05 Jul	N11W03	063	0030	03	CAO	004	B									
06 Jul	N12W16	061	0030	04	CSO	005	B									
07 Jul	N12W30	062	0020	02	CRO	002	B									
08 Jul	N13W43	062	0010	04	CRO	005	B									
09 Jul	N12W55	061	0010	03	BXO	002	B					1				
											0	0	0	3	0	0

Still on Disk.

Absolute heliographic longitude: 063



**Region Summary-continued**

Date	Location		Sunspot Characteristics				Flares							
	( ° Lat ° CMD)	Helio Lon	Area (10 <sup>6</sup> hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical			
								C	M	X	S	1	2	3

*Region 9067*

29 Jun	S22E73	066	0130	02	HSX	001	A										
30 Jun	S20E60	066	0180	02	HSX	001	A										
01 Jul	S20E47	065	0210	03	HSX	001	A	2			3						
02 Jul	S20E35	064	0200	02	HSX	001	A										
03 Jul	S20E22	064	0200	03	HSX	001	A										
04 Jul	S20E09	064	0210	02	HAX	001	A										
05 Jul	S21W04	064	0230	03	HAX	001	A										
06 Jul	S20W18	063	0200	03	HSX	001	A										
07 Jul	S20W30	062	0150	02	CAO	002	B										
08 Jul	S19W44	063	0190	03	HAX	001	A										
09 Jul	S18W56	063	0160	02	HSX	001	A										
										2	0	0	3	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 064

*Region 9068*

01 Jul	S19E63	049	0070	05	DSO	005	B	1			3						
02 Jul	S19E51	048	0160	10	DAO	013	B	2			9						
03 Jul	S19E38	048	0200	10	DAO	013	B				1						
04 Jul	S20E26	047	0210	10	DAO	024	B	2			3						
05 Jul	S19E11	049	0200	10	DAO	023	B										
06 Jul	S18W03	048	0310	10	DAI	025	B	1			1						
07 Jul	S18W15	047	0270	11	EAO	025	B				2						
08 Jul	S18W28	047	0390	11	EKC	034	B										
09 Jul	S17W42	048	0320	09	DAI	022	B										
										6	0	0	19	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 048

*Region 9069*

01 Jul	S13E70	042	0040	02	HSX	001	A				1						
02 Jul	S14E59	040	0050	01	HSX	001	A										
03 Jul	S14E47	039	0050	01	HSX	001	A										
04 Jul	S14E33	040	0050	01	HAX	002	A										
05 Jul	S14E19	041	0020	02	HAX	002	A										
06 Jul	S13E05	040	0020	03	CSO	002	B										
07 Jul	S12W07	039	0010	03	BXO	003	B										
08 Jul	S18W11	030	0140	08	DAO	015	B	1			2						
09 Jul	S17W25	031	0300	11	EAO	017	B				1						
										1	0	0	4	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 040



***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 9070</i>																	
02 Jul	N19E72	027	0030	01	HAX	001	A					3					
03 Jul	N18E57	029	0030	01	HSX	001	A					1					
04 Jul	N18E44	029	0090	07	DAO	015	B	1				3					
05 Jul	N17E29	031	0310	09	DAI	022	BG	1				1					
06 Jul	N18E15	030	0340	10	DAI	022	B	1				10	1				
07 Jul	N18E03	029	0320	11	EAO	031	BG	3				10					
08 Jul	N19W11	030	0340	12	EAC	038	BG	6				10	2				
09 Jul	N19W24	030	0320	13	EAC	026	BG					3	1				
								12	0	0	0	41	4	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 029

*Region 9071*

05 Jul	N22W23	083	0010	03	BXO	005	B	1				2					
06 Jul	N22W35	080	0010	06	BXO	007	B					1					
07 Jul	N23W48	080	0050	07	CRO	007	B	2	2			6	1				
08 Jul	N22W62	081	0040	08	CRO	006	B					2					
09 Jul	N24W76	082	0010	05	BXO	002	B										
								3	2	0	0	11	1	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 083

*Region 9072*

05 Jul	N15E16	044	0000	01	AXX	002	A										
06 Jul	N16E02	043	0010	01	HRX	002	A										
07 Jul	N16W11	043															
08 Jul	N16W24	043															
09 Jul	N16W37	043															
								0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 043

*Region 9073*

05 Jul	S21E44	016	0020	04	BXO	003	B										
06 Jul	S22E30	015	0060	07	DAO	007	B										
07 Jul	S20E18	014	0060	08	DAO	011	B										
08 Jul	S19E04	015	0150	12	EAO	023	B	3				14					
09 Jul	S19W09	015	0160	12	ESO	016	B										
								3	0	0	0	14	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 015



**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

*Region 9074*

05 Jul	N10E64	356	0000	00	AXX	001	A										
06 Jul	N11E49	356	0000	00	AXX	001	A										
07 Jul	N11E36	356										1					
08 Jul	N13E30	349	0010	09	BXO	004	B					1					
09 Jul	N12E16	350	0020	07	BXO	005	B										
								0	0	0	2	0	0	0	0	0	

Still on Disk.

Absolute heliographic longitude: 350

*Region 9075*

06 Jul	N06E64	341	0010	06	BXO	002	B										
07 Jul	N06E54	338	0010	04	BXO	002	B										
08 Jul	N06E43	336	0000	00	AXX	001	A										
09 Jul	N06E31	336	0020	04	DSO	002	B										
								0	0	0	0	0	0	0	0	0	

Still on Disk.

Absolute heliographic longitude: 336

*Region 9076*

06 Jul	S24E69	336	0050	02	HSX	001	A										
07 Jul	S22E59	333	0030	01	HSX	001	A										
08 Jul	S22E46	333	0030	01	HSX	001	A										
09 Jul	S23E32	334	0020	01	HSX	001	A										
								0	0	0	0	0	0	0	0	0	

Still on Disk.

Absolute heliographic longitude: 334

*Region 9077*

07 Jul	N18E72	320	0100	10	DSO	004	B										
08 Jul	N18E64	315	0410	18	FKI	010	B	1			4						
09 Jul	N18E55	311	0750	26	FKI	021	BG	4	1		8	1					
								5	1	0	12	1	0	0	0	0	

Still on Disk.

Absolute heliographic longitude: 311

*Region 9078*

07 Jul	S13E74	318	0040	01	CAO	002	B										
08 Jul	S13E57	322	0030	01	HRX	002	A										
09 Jul	S14E44	322	0020	06	BXO	005	B										
								0	0	0	0	0	0	0	0	0	

Still on Disk.

Absolute heliographic longitude: 322



***Region Summary-continued***

Location		Sunspot Characteristics					Flares							
Date	( ° Lat ° CMD)	Helio Lon	Area (10 <sup>6</sup> hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical			
							C	M	X	S	1	2	3	4
<i>Region 9079</i>														
09 Jul	S29E65	301	0070	02	HSX	001	A							
								0	0	0	0	0	0	0
Still on Disk.														
Absolute heliographic longitude: 301														
<i>Region 9080</i>														
09 Jul	N26E80	286	0060	01	HSX	001	A							
								0	0	0	0	0	0	0
Still on Disk.														
Absolute heliographic longitude: 286														



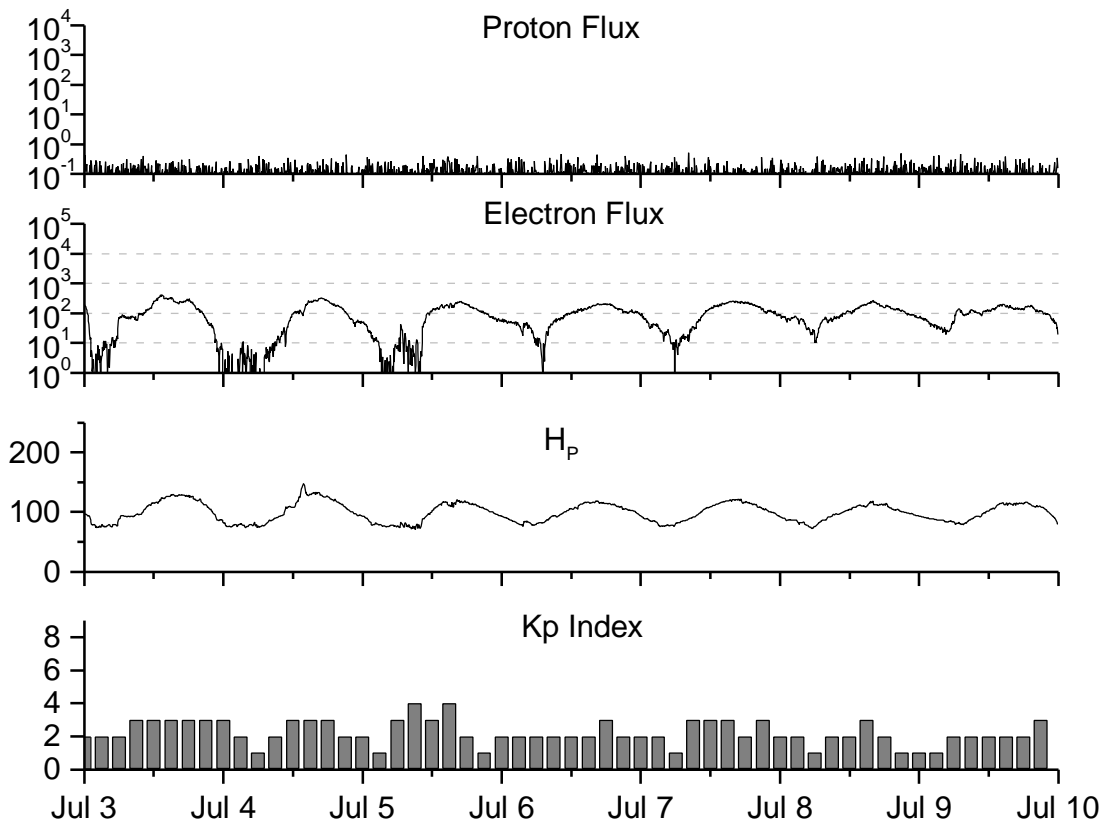


**Recent Solar Indices (preliminary)  
of the observed monthly mean values**

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>1998</b>									
July	98.3	66.6	0.68	90.3	65.5	114.0	120.3	11	12.2
August	118.6	92.2	0.78	93.7	67.8	136.0	124.1	18	12.4
September	119.0	92.9	0.78	96.1	69.5	138.3	126.8	13	12.6
October	77.0	55.5	0.72	97.7	70.5	117.3	127.9	13	12.8
November	99.5	74.0	0.74	101.3	73.0	140.2	130.0	16	12.4
December	120.8	81.9	0.68	108.8	77.9	150.1	134.3	08	11.9
<b>1999</b>									
January	94.3	62.0	0.66	116.5	82.6	142.6	139.0	10	11.7
February	93.4	66.3	0.71	120.2	84.6	142.0	142.6	12	11.6
March	100.5	68.8	0.68	120.5	83.8	126.3	144.0	14	11.7
April	92.9	63.7	0.69	123.8	85.5	117.2	145.8	12	12.2
May	140.5	106.4	0.76	131.7	90.5	148.6	149.9	08	12.4
June	208.3	137.7	0.66	136.0	93.1	169.8	152.9	07	12.4
July	169.2	113.5	0.67	138.0	94.4	165.6	154.4	10	12.6
August	136.1	93.7	0.69	142.8	97.5	170.8	156.3	15	12.9
September	107.4	71.5	0.66	150.0	102.3	135.7	161.0	19	12.8
October	167.7	116.7	0.69	158.5	107.7	164.8	167.2	19	12.7
November	199.3	133.2	0.67	164.7	110.9	191.5	171.5	14	13.2
December	123.5	86.4	0.70	165.9	110.9	169.8	173.4	10	13.9
<b>2000</b>									
January	140.8	90.2	0.64			158.1		13	
February	161.9	112.3	0.69			173.2		15	
March	203.6	138.2	0.68			208.2		09	
April	193.4	125.3	0.65			184.2		15	
May	188.8	120.8	0.64			184.5		16	
June	190.3	124.9	0.66			178.8		16	

**NOTE:** All smoothed values after June 1999 and monthly values after December 1999 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 03 July 2000*

*Protons* plot contains the five-minute averaged integral proton flux (protons/cm<sup>2</sup>-sec -sr ) as measured by GOES-8 (W75) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

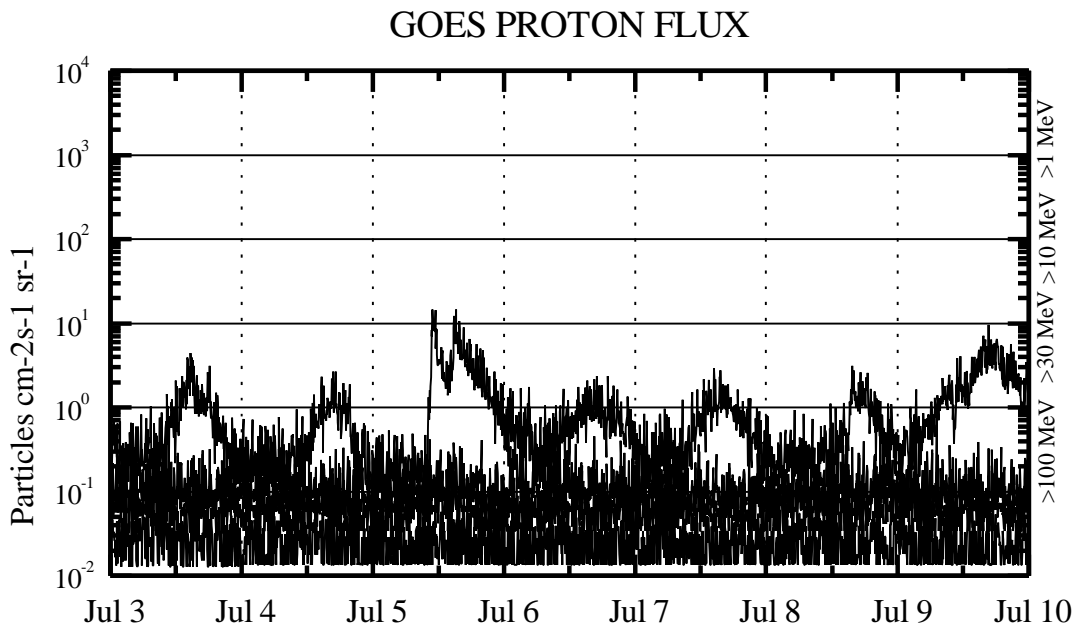
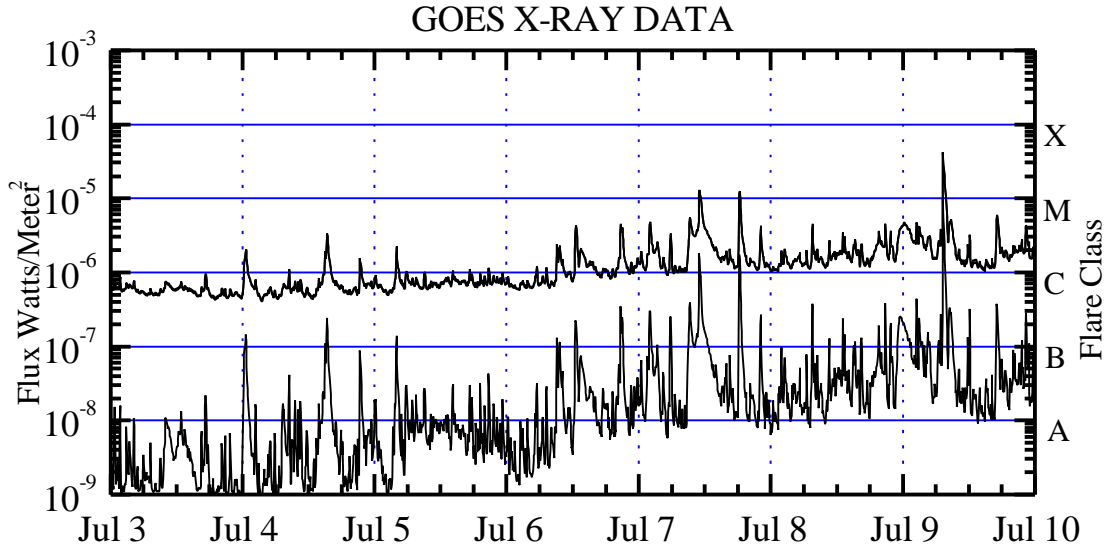
*Electrons* plot contains the five-minute averaged integral electron flux (electrons/cm<sup>2</sup>-sec -sr) with energies greater than 2 MeV at GOES-8.

*H<sub>p</sub>* plot contains the five minute averaged magnetic field H - component in nanoteslas (nT) as measured by GOES-8. 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 USAF 55<sup>th</sup> Space Weather Squadron) 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<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<sub>p</sub> 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 8 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/cm<sup>2</sup>-sec-sr) as measured by GOES-8 (W75) 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.

