

Space Weather Highlights 17 - 23 July 2000

SWO PRF 1299
25 July 2000

Solar activity was at moderate to high levels. The period began with activity at moderate levels as Region 9087 (S12, L = 235, class/area Fkc/790 on 21 July) produced two M-class flares including an M1/1F at 17/1345UT and an M2/1N at 17/2027UT. Region 9077 (N18, L = 310, class/area Fkc/1010 on 11 July), which was responsible for last week's X5/3B proton flare, produced an M1/2F flare at 17/0004UT as it slowly decayed. Activity continued at moderate levels during 18 July with two M-class flares from Region 9077: an M1/2B at 18/0515UT and an M3/SF at 18/1945UT. Region 9087 produced an M3/2N flare at 18/1419UT. Activity increased to high levels on 19 July due to an M6/3N flare at 19/0726UT from Region 9087. This large, magnetically complex (beta-gamma-delta structure) region was gradually developing at the time of the flare. Region 9087 also produced an M5/1B at 20/2025UT as well as an M3/1F at 20/1006UT. A Type II radio sweep was observed at 20/1652UT and was likely associated with a C5/SF flare from Region 9090 (N12, L = 203, class/area Fki/340 on 22 July). Activity remained at high levels on 21 July due to an M5/2B from Region 9090 at 21/1437UT. This flare occurred as the region showed an increase in size and complexity. Region 9087, a large magnetically complex (beta-gamma-delta) group, continued to evolve and produced an M1/SF at 21/1050UT. Region 9088 (N22, L = 269, class/area Dao/180 on 20 July) produced an M3/SF at 22/0001UT. Activity decreased to moderate levels on 22 July due to an M3/2N flare at 22/1134UT from Region 9085. This flare was associated with a proton event at geosynchronous orbit (see the discussion below). Region 9090 produced an M1/1F flare at 22/0711UT as it showed signs of simplification. Activity remained at moderate levels on the last day of the period due to M-class flares from Region 9087 including an M1/1N at 23/1000UT and an M1/1N at 23/1413UT.

Real-time solar wind velocity and density data were available from the NASA Advanced Composition Explorer (ACE) spacecraft for most of the period. Solar wind velocities were 740 km/sec as the period began, then gradually decreased through early 18 July. Velocities increased from 520 to 620 Km/sec around midday on 18 July followed by a gradual decrease until midday on 19 July. A CME passage occurred around midday on 19 July accompanied by a jump in velocities (460 to 640 Km/sec), increased densities, and increased IMF Bz variability with readings in the plus 13 to minus 11 nT (GSM) range along with sustained periods of southward Bz. A possible CME passage occurred early on 22 July with an increase in densities and IMF Bz variability (Bz ranged from plus 1- to minus 8 nT (GSM)).

The greater than 10 MeV proton flux at geosynchronous orbit was at event levels as the period began in the aftermath of the X5/3B flare of 14 July. The greater than 10 MeV proton event finally ended at 19/2330UT, although fluxes remained enhanced for most of the rest of the period. The greater than 100 MeV proton flux was enhanced at the beginning of the period as well, but declined to background levels by 18 July. A greater than 10 MeV proton event began at geosynchronous orbit at 22/1320UT following the M3/2N flare of 22 July. The event reached a maximum of 17 PFU at 22/1405UT and ended at 23/2310UT. A greater than 100 MeV proton flux enhancement also followed this flare.

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

Geomagnetic field activity was at quiet to unsettled levels through 18 July with an increase to mostly active levels during 18/2100 - 2400UT. Activity returned to quiet to unsettled levels during 19/0000 - 1500UT, but increased to unsettled to active levels after 19/1500UT due to the effects of a CME passage at Earth. CME effects continued during 20 July with unsettled to major storm levels until 20/1500Z. Activity decreased to quiet to unsettled levels after 20/1500UT and remained so through 21 July. Field activity remained at mostly quiet to unsettled levels during the last two days of the period with brief active to major storm levels detected at some middle and high latitude stations.



Space Weather Outlook

26 July - 21 August 2000

Solar activity is expected to be at moderate to high levels. Isolated M-class flares are expected. There is also a chance for isolated major flares during the period.

There is a chance for a greater than 10 MeV solar proton event at geosynchronous orbit during the period.

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, high fluxes are possible during 28 - 31 July.

Geomagnetic field activity is expected to be at unsettled to active levels through 29 July due to recent CME activity. There is a chance for minor storm levels at high latitudes during this period as well. Quiet to unsettled levels are expected during the rest of the period, barring an Earth-directed CME.



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
17 July	228	335	1900	C2.3	14	2	0	36	5	0	0	0
18 July	249	343	2150	C1.5	6	3	0	34	1	3	0	0
19 July	250	342	2390	C2.1	5	1	0	29	1	0	1	0
20 July	253	401	2850	C2.6	12	2	0	31	2	0	0	0
21 July	251	325	2690	C2.1	9	5	0	31	5	1	0	0
22 July	251	290	2140	C2.3	4	2	0	33	1	1	0	0
23 July	217	276	2030	C1.8	5	2	0	30	3	1	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
	17 July	4.5E+7	8.0E+6	1.2E+4		1.7E+6
18 July	1.7E+7	2.5E+6	3.3E+3		2.1E+6	
19 July	1.5E+7	1.3E+6	3.8E+3		2.6E+6	
20 July	4.9E+6	3.5E+5	2.6E+3		4.3E+6	
21 July	1.7E+6	2.3E+5	2.2E+3		4.0E+6	
22 July	5.4E+6	5.4E+5	4.1E+3		5.0E+6	
23 July	5.9E+6	1.5E+5	2.0E+3		2.8E+6	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	17 July	8	2-3-2-3-2-1-2-2	*	*-*-*-*-*1-1-2	9
18 July	8	2-2-2-1-2-2-1-4	*	2-3-2-2-2-*-*2	13	3-2-2-2-3-3-4-4
19 July	10	2-1-0-2-2-3-4-3	*	2-0-*-*1-4-3-4	15	3-1-1-2-3-4-4-5
20 July	28	5-5-5-4-3-2-3-3	57	5-7-6-5-6-4-3-3	43	5-6-6-6-5-3-4-3
21 July	6	2-2-1-2-2-1-2-2	11	2-3-1-3-3-2-2-3	9	3-2-1-2-3-3-2-3
22 July	11	1-2-2-4-2-2-3-3	43	1-3-4-6-4-7-5-2	18	2-3-4-5-3-4-3-3
23 July	20	2-2-1-1-3-3-6-4	26	5-3-1-1-4-5-5-3	20	3-3-2-2-3-4-5-4



Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UT
17 Jul 0001	ENDED A \geq 50 Observed	15 Jul 1800
17 Jul 0019	CONTINUED $>10\text{MeV} \geq 10\text{pfu}$ protons	14 Jul 1050
17 Jul 0048	9 – 245 MHz Bursts	16 Jul
17 Jul 0048	1 – 245 MHz Noise Storm	16 Jul
17 Jul 0300	ENDED A \geq 30 Observed	15 Jul 0600
17 Jul 0601	ENDED A \geq 20 Observed	13 Jul 1500
17 Jul 2045	10cm Radio Burst 280 F.U.	17 Jul 2024
17 Jul 2047	Type II Radio Emission	17 Jul 2021
18 Jul 0010	CONTINUED $>10\text{MeV} \geq 10\text{pfu}$ protons	14 Jul 1050
18 Jul 0116	8 - 245 MHz Bursts	17 Jul
18 Jul 0116	245 MHz Noise Storm	17 Jul
18 Jul 0528	Type II Radio Emission	18 Jul 0507
18 Jul 0607	Type IV Radio Emission	18 Jul 0513
18 Jul 1834	Type IV Radio Emission	18 Jul 1355
19 Jul 0000	K = 4 Observed	18 Jul 21 - 00
19 Jul 0017	CONTINUED $>10\text{MeV} \geq 10\text{pfu}$ protons	14 Jul 1050
19 Jul 0108	6 – 245 MHz Bursts	18 Jul
19 Jul 0108	1 – 245 MHz Noise Storm	18 Jul
19 Jul 0756	X-Ray event M6.4	19 Jul 0726
19 Jul 0811	Type IV Radio Emission	19 Jul 0728
19 Jul 1513	K = 5 Warning	19/1530 – 20/1500 Jul
19 Jul 1541	Sudden Impulse observed at Boulder	19 Jul 1526
19 Jul 1806	K = 4 Observed	19 Jul 15 - 1800
19 Jul 2021	A \geq 20 Watch	20 Jul
19 Jul 2022	A \geq 20 Watch	22 Jul
19 Jul 2023	A \geq 50 Watch	21 Jul
20 Jul 0011	CONTINUED $>10\text{MeV} \geq 10\text{pfu}$ protons	14 Jul 1050
20 Jul 0022	9 – 245 MHz Bursts	19 Jul
20 Jul 0022	1 – 245 MHz Noise Storm	19 Jul
20 Jul 0300	K = 5 Observed	20 Jul 00 - 03
20 Jul 0542	K \geq 6 Warning	20 Jul 0550 - 1550
20 Jul 0602	K = 6 Observed	20 Jul 03 - 0600
20 Jul 0603	A \geq 20 Observed	20 Jul 0600
20 Jul 0756	A \geq 30 Warning	20 Jul 09 - 2359
20 Jul 0855	A \geq 30 Observed	20 Jul 0900
20 Jul 1214	ENDED $>10\text{MeV} \geq 10\text{pfu}$ protons	14 Jul 1050
20 Jul 1728	Type II Radio Emission	20 Jul 1652
20 Jul 2033	X-Ray event M5/1B	20 Jul 2025
20 Jul 2042	10cm Radio Burst 420 F.U.	20 Jul 2023
21 Jul 0027	26 – 245 MHz Bursts	20 Jul
21 Jul 0027	1 – 245 MHz Noise Storm	20 Jul
21 Jul 0552	ENDED A \geq 30 Observed	20 Jul 0900
21 Jul 0901	ENDED A \geq 20 Observed	20 Jul 0600

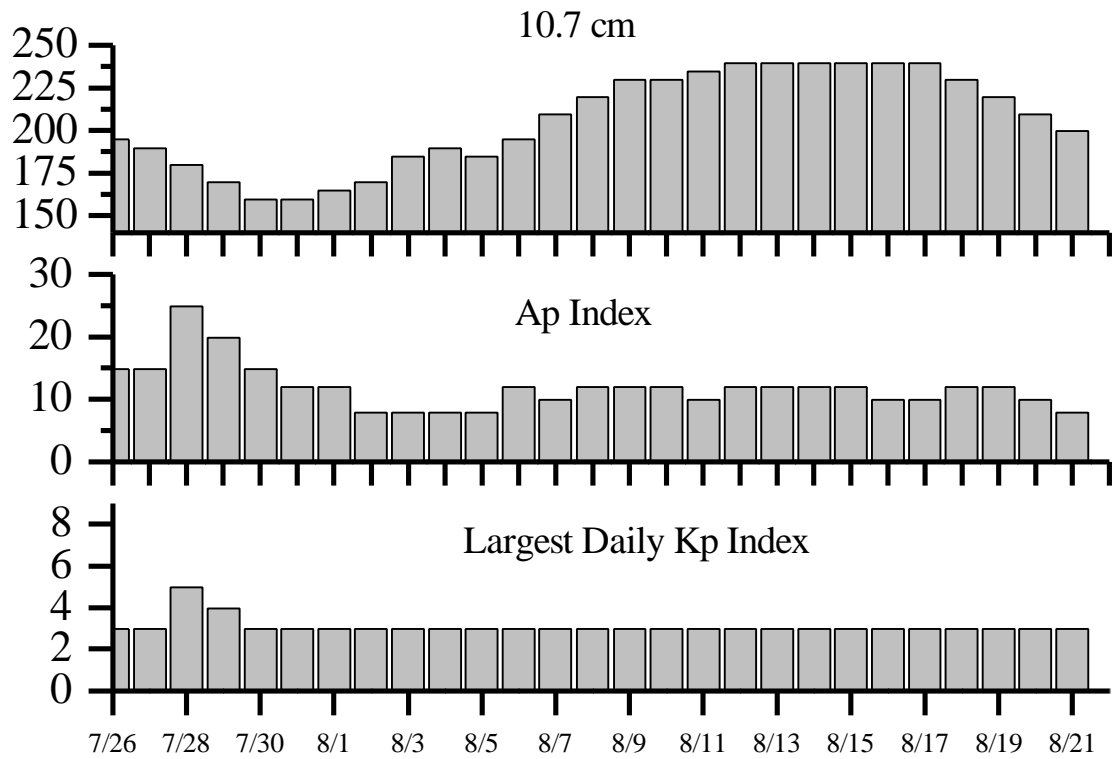


Alerts and Warnings Issued – continued.

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UT
21 Jul 1457	X-Ray event M5.5	21 Jul 1437
21 Jul 1545	Type II Radio Emission	21 Jul 1440
21 Jul 1546	Type II Radio Emission	21 Jul 1448
22 Jul 1151	Type II Radio Emission	22 Jul 1125
22 Jul 1215	Type IV Radio Emission	22 Jul 1137
22 Jul 1338	>10MeV \geq 10pfu protons	22 Jul 1320
22 Jul 1806	K = 4 Observed	22 Jul 15 - 18
22 Jul 2111	A \geq 20 Watch	23 Jul
22 Jul 2117	A \geq 20 Watch	24 Jul
23 Jul 0046	9 – 245 MHz Bursts	22 Jul
23 Jul 0046	245 MHz Noise Storm	22 Jul
23 Jul 1218	ENDED >10MeV \geq 10pfu protons	22 Jul 1320
23 Jul 1459	K = 4 Observed	23 Jul 12 - 15
23 Jul 1759	K = 4 Observed	23 Jul 15 - 18
23 Jul 2029	K = 4 Warning	23/2030 - 24/1200 Jul
23 Jul 2100	K = 5 Observed	23 Jul 18 - 21
23 Jul 2135	A \geq 20 Watch	25 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
26 July	195	15	3	09 Aug	230	12	3
27	190	15	3	10	230	12	3
28	180	25	5	11	235	10	3
29	170	20	4	12	240	12	3
30	160	15	3	13	240	12	3
31	160	12	3	14	240	12	3
01 Aug	165	12	3	15	240	12	3
02	170	8	3	16	240	10	3
03	185	8	3	17	240	10	3
04	190	8	3	18	230	12	3
05	185	8	3	19	220	12	3
06	195	12	3	20	210	10	3
07	210	10	3	21	200	8	3
08	220	12	3				



Energetic Events

Date	Time			X-ray		Optical Information			Peak		Sweep Freq		
	Begin	Max	½	Class	Integ Flux	Imp/ Brtns	Location		Rgn #	Radio Flux		Intensity	
			Max				Lat	CMD		245	2695	II	IV
17 Jul	1335	1345	1348	M1.2	.007	1F	S08E31	9087	2800	14			
17 Jul	2014	2027	2032	M2.4	.012	1N	S11E36	9087	7100	280	3		
18 Jul	0459	0515	0538	M1.9	.032	2B	N17W58	9077	73	57	2	1	
18 Jul	1400	1419	1431	M3.0	.035	2N	S14E15	9087		48		1	
18 Jul	1934	1945	2014	M3.3	.067			9077					
19 Jul	0645	0726	0750	M6.4	.160	3N	S21E12	9087	2800	84		1	
20 Jul	0921	1006	1039	M3.6	.110	1F	S12W08	9087	250	180		1	
20 Jul	2022	2025	2028	M5.0	.010	1B	S15W11	9087		420			
21 Jul	0517	0524	0529	M1.7	.008	1N	N12E10	9090	7500	93			
21 Jul	1005	1015	1022	M1.9	.012	1N	N12E13	9090					
21 Jul	1033	1050	1056	M1.9	.020	SF	S13W18	9087					
21 Jul	1430	1437	1443	M5.5	.025	2B	N10E12	9090	54	49	1		
21 Jul	2331	0001	0006	M3.3	.027	SF	N21W61	9088	140				
22 Jul	0652	0711	0724	M1.0	.014	1F	N12W05	9090					
22 Jul	1117	1134	1202	M3.7	.070	2N	N14W56	9085	140	70	2	1	
23 Jul	0951	1000	1013	M1.5	.013	1N	S13W47	9087		44			
23 Jul	1359	1413	1433	M1.1	.017	1N	S14W46	9087		57			

Flare List

Date	Time			X-ray Class.	Optical Imp / Brtns	Location Lat CMD	Rgn
	Begin	Max	End				
17 July	0002	0005	0012		SN	N11E76	9090
	0026	0042	0102	C8.1	SF	N19E03	9088
	0032	0033	0048		SN	S12E46	9087
	0040	0055	0115		SF	N22W17	9084
	0041	0041	0105		SF	N19W12	9080
	0050	0051	0055		SF	N15E65	9090
	0103	0104	0109		SF	N15E64	9090
	0238	0238	0256		SF	S12E37	9087
	0239	0240	0248		SF	N17W31	9077
	0251	0320	0340		SF	N18W44	9077
	0333	0337	0339	C4.3			
	0344	0348	0350	C6.7			
	B0435	U0437	0501	C6.2	SF	N18W32	9077
	0513	0513	0521		SF	N03W02	9081
	0527	0531	0544	C4.3	SN	N13E73	9090
	0621	0630	0648	C6.1	SF	N18W40	9077
	0708	0710	0715	C3.9	SF	S08E36	9087
	0716	0720	0722		SF	S13E41	9087
	0804	0807	0812	C2.5			
	B0830	U0842	0850	C5.3	1F	S10E36	9087
	0923	U0924	0931	C6.2	SF	N15E71	9090
	1118	U1124	1152		SF	N04W06	9081
	1337	1344	1354	M1.2	1F	S08E31	9087



Flare List – continued.

Date	Time			X-ray	Optical			
	Begin	Max	End		Imp / Class.	Location Brtns	Rgn Lat CMD	
17 July	1343	1345	1403		SF	N05W07	9081	
	1410	1410	1416		SF	N19W43	9077	
	1425	1425	1429		SF	S13E30	9087	
	1438	1439	1444		SF	S08E33	9087	
	1515	1517	1520	C5.9	SF	N18W43	9077	
	1544	1559	1613		SF	S08E34	9087	
	1652	1656	1703		SF	S08E34	9087	
	1806	1806	1830		1F	N19W47	9077	
	1833	1842	1903		SF	S15E36	9087	
	1839	1840	1852		SF	N19W40	9077	
	1842	1844	1852	C3.7	SN	S09E56	9091	
	1854	1856	1907		SF	N18W47	9077	
	1931	1933	1938		SF	S11E31	9087	
	2007	2008	2013		SF	N20W06	9088	
	2016	2029	2058	M2.4	1N	S11E36	9087	
	2104	2104	2110		SF	N20W07	9088	
	2117	2119	2129		SF	S15E26	9087	
	2118	2118	2123		SF	N20W10	9088	
	2139	2142	2144	C2.6				
	2231	2303	2319		1F	S12E30	9087	
	2242	2251	2307		SF	N17W50	9077	
	2330	2336	2347	C2.9	SF	S12E30	9087	
	18 July	0001	0005	0010		SF	S12E30	9087
		0106	0110	0113	C2.8			
0337		0341	0347	C2.2				
0412		0413	0418		SF	S13E29	9087	
0458		0505	0638	M1.9	2B	N17W58	9077	
0625		U0626	A0633		SF	S13E28	9087	
0708		0721	0803	C9.3	1F	S13E16	9087	
0709		0715	0723		SF	N17W54	9077	
0757		0801	0812		SF	N12W04	9085	
1000		1001	1005		SF	N25E07	9095	
1045		1049	1056		SF	S10E19	9087	
1055		1104	1106	C2.8	SF	N05E79	9097	
1109		1109	1122		SF	N22E05	9095	
1121		1122	1126		SF	S15E23	9087	
1141		1141	1147		SF	S08E25	9087	
1150		1150	1154		SF	N19W59	9077	
1318		1320	1339		SF	N13W04	9085	
1324		1324	1337		SF	N19W59	9077	
1333		1336	1338		SF	N05E79	9085	
1333		1334	1338		SF	S14E14	9087	



Flare List – continued.

Date	Time			X-ray	Optical		Rgn Lat CMD	
	Begin	Max	End		Imp / Class.	Location Brtns		
18 July	1333	1335	1344		SF	N23E03	9095	
	B1340	1346	1350		SF	N07E76	9097	
	1401	1418	1541	M3.0	2N	S14E15	9087	
	1402	1403	1407		SF	N20W61	9077	
	1540	1540	1544		SF	N04E81	9097	
	1542	1547	1710		SF	S11E17	9087	
	1550	1554	1605		SF	N06E68	9097	
	1607	1607	1618		SF	N05E79	9097	
	1656	1658	1705		SF	N03E81	9097	
	1703	1703	1714		SF	N16W03	9085	
	1721	1735	1810	C6.4	SF	S13E12	9087	
	1730	1730	1738		SF	N23E03	9095	
	1853	U1944	A2210		2N	S14E18	9087	
	1854	1859	1930		SF	N06E74	9097	
	1927	1935	2001		SF	N17W61	9077	
	1934	1945	2014	M3.3			9077	
	2019	2022	2032		SF	N07E83	9097	
	2105	2114	2131		SF	N19W56	9077	
	2110	2112	2127		SF	S12E14	9087	
	2120	2123	2126		SF	N18W59	9077	
	2304	2306	2320	C4.1	SF	N17W63	9077	
	19 July	0431	0434	0522	C6.7	SF	S19E13	9087
		B0640	U0721	A0818	M6.4	3N	S21E12	9087
0941		0943	0944		SF	S13E13	9087	
B0945		U0945	0943		SF	S13E13	9087	
B1028		U1028	A1047		SF	N13W19	9085	
1106		1107	1146		SF	N15W11	9085	
1115		1116	1122		SF	N04E74	9097	
1238		1242	1248		SF	N04E73	9097	
1256		1256	1304		SF	S17E10	9087	
1344		1345	1404		SF	S13E02	9087	
1444		1446	1451		SF	N10E32	9090	
1529		1530	1538		SF	N13W16	9085	
1548		1551	1553		SF	S09E06	9087	
1609		1610	1628	C3.4	SF	N19W69	9077	
1623		1627	1636		SF	N03E71	9097	
1632		1634	1639	C3.5	SF	S12E03	9087	
1708		1722	1729		SF	N07E69	9097	
1726		1726	1734		SF	N22W31	9088	
1737		1750	1759		SF	N07E68	9097	
1805		1809	1814		SF	N07E68	9097	
1827	1841	1904		SF	N14W19	9085		



Flare List – continued.

Date	Time			X-ray	Optical		Rgn Lat CMD	
	Begin	Max	End		Imp / Class.	Location Brtns		
19 July	1832	1839	1906	C5.8	1F	N07E68	9097	
	1906	1912	1919		SF	N13W22	9085	
	1907	1917	1919		SF	N07E69	9097	
	B2011	2011	2016		SF	S12E00	9087	
	2052	2052	2058		SF	N08W26	9085	
	2126	2139	2152		SF	S11E01	9087	
	2138	2140	2147		SF	N16W74	9077	
	2157	2157	2211		C3.6	SF	N07E65	9097
	2214	2216	2245			SF	N21W36	9088
	2248	2254	2307			SF	N18W35	9088
20 July	0033	0038	0045	SF		N16W75	9077	
	0056	0057	0114	SF	N14E36	9090		
	B0307	U0312	A0312	SF	S12W04	9087		
	B0312	U0317	A0332	C5.5	SF	N05E61	9097	
	B0349	0358	A0438		SF	S12W05	9087	
	0400	0413	0432	C6.5	SF	N07E62	9097	
	0439	U0444	0513		SF	S11W04	9087	
	0500	0503	0514	SF	N19W37	9088		
	0519	0525	0531	SF	S11W02	9087		
	B0718	U0718	0721	SF	N05E59	9097		
	0816	0822	0831	SF	S11W05	9087		
	0838	0845	0902	SF	S11W06	9087		
	0936	U1007	1105	M3.6	1F	S12W08	9087	
	1147	1149	1155		SF	N04E59	9097	
	1225	1226	1234		SF	N13W29	9085	
	1235	1236	1240	SF	S26E31	9094		
	1316	1321	1349	C7.0	SN	S13W08	9087	
	1326	1328	1338		SF	N11E20	9090	
	1358	1359	1407	SF	N15W35	9085		
	1403	1412	1442	SF	N11E20	9090		
1427	1427	1430	SF	S09W05	9087			
1454	1457	1528	C5.1	SF	N11E19	9090		
1536	1538	1543		SF	S05E18	9091		
1546	1548	1602	C7.0	SN	S11W10	9087		
1600	1640	1716	C5.7	SF	N11E18	9090		
B1703	U1704	1711		SF	N13E25	9090		
1715	1720	1724	SF	N17W26	9085			
1744	1748	1751	C5.7					
1843	1847	1858	C5.7			9090		
1930	1935	1939	C4.5					
2003	2013	2029	C6.1	SF	N12E16	9090		



Flare List – continued.

Date	Time			X-ray	Optical		Rgn Lat CMD
	Begin	Max	End		Imp / Class.	Location Brtns	
20 July	2023	2027	2051	M5.0	1B	S15W11	9087
	2103	2106	2114		SN	S07W08	9087
	2213	2215	2220	C3.5	SF	S16W11	9087
	2303	2309	2329		SF	N12E14	9090
	2307	2312	2319	C4.9			
	2326	2330	2332		SF	N11W40	9085
21 July	0047	U0049	A0050		SF	N21W59	9084
	B0310	0312	0330	C4.0	SF	S12W17	9087
	0354	0402	0408	C9.7			
	B0439	U0441	0447	C6.0	SF	S11W15	9087
	0513	0523	0603	M1.7	1N	N12E10	9090
	0514	0515	0526		SF	S13W14	9087
	0630	0639	0742		SF	N19W45	9088
	0749	0752	0756		SF	N03E49	9097
	0850	0852	0858	C6.3	SF	S11W20	9087
	0944	0944	0952		SF	N13E16	9090
	0954	U1048	1121	M1.9	1N	N12E13	9090
	1056	1058	1106	M1.9	SF	S13W18	9087
	1146	U1149	1159		SF	N11E06	9090
	1217	1219	1225		SF	S09W17	9087
	1256	1258	1314		SF	N11E07	9090
	1315	1436	1933	M5.5	2B	N10E12	9090
	1331	1338	1356		SF	S12W24	9087
	1344	1344	1348		SF	S13W21	9087
	1405	1408	1448	C9.5	SF	S11W22	9087
	1449	1449	1503		SF	N12E06	9090
	1532	1536	1543		SF	N12E04	9090
	1549	1554	1625		SF	N21W41	9095
	1628	1634	1639		SF	N13E12	9090
	1631	1632	1646		SF	S08W27	9087
	1653	1654	1657		SF	N20W76	9077
	1717	1720	1725		SF	S13W22	9087
	1718	1721	1725		SF	S12W23	9087
	1829	1846	1906	C6.9	SF	N01E44	9097
	1830	1841	1907		SF	N13E03	9090
	1931	1932	1937		SF	S13W23	9087
1940	1943	1949		SF	N08E03	9090	
2006	2010	2017	C4.3	SF	N13E10	9090	
2039	2047	2111	C9.0	1F	N13E09	9090	
2110	2110	2120		SF	S09W27	9087	
2201	2204	2210		SF	N12W01	9090	
2239	2248	2320	C8.5	1F	N12W50	9085	



Flare List – continued.

Date	Time			X-ray	Optical		Rgn Lat CMD
	Begin	Max	End		Imp / Class.	Location Brtns	
21 July	2244	2248	2317		1N	S14W23	9087
	2355	2355	0003	M3.3	SF	N21W61	9088
22 July	0007	0010	0040		SF	S12W29	9087
	0043	0043	0052		SF	N13W54	9085
	0155	0205	0214		SF	S11W27	9087
	0224	0234	0250		SF	S33E75	9100
	0255	0316	0330		SF	N12W02	9090
	0409	0410	0417	C7.2	SF	N22W47	9095
	0417	0420	0448		SF	S11W29	9087
	0501	0501	0512		SF	S08W24	9087
	0618	0620	0639	C8.4	SN	N13W04	9090
	0655	0708	0735	M1.0	1F	N12W05	9090
	0825	0825	0828		SF	N04E34	9097
	0901	0907	0913	C6.0			9097
	1101	1101	1106		SF	N07E29	9097
	1109	1111	1114		SF	N14E02	9090
	1119	1125	1145	M3.7	2N	N14W56	9085
	1221	1224	1233		SF	N13W07	9090
	1229	1231	1239		SF	N22W74	9088
	1315	1315	1320		SF	S16W33	9087
	1344	1350	1359		SF	N25W43	9095
	1410	1413	1433		SF	S14W32	9087
	1447	1452	1527		SF	N22W46	9095
	1532	1535	1548		SF	S15W34	9087
1600	1612	1625		SF	N11W07	9090	
1609	1611	1615		SF	S16W33	9087	
1609	1614	1619		SF	N19W72	9088	
1650	1654	1720	C6.3	SF	N23W55	9095	
1708	1709	1729		SF	N13W10	9090	
1709	1709	1723		SF	S10W37	9087	
1805	1805	1812		SF	S15W36	9087	
1815	1815	1824		SF	S14W36	9087	
1845	1845	1851		SF	S10W38	9087	
B2014	U2015	2018		SF	N22W52	9095	
2032	2033	2044		SF	S14W35	9087	
2142	2151	2206		SF	S12W41	9087	
2210	2220	2226		SF	S16W36	9087	
2347	0031	0050		SF	S10W45	9087	
23 July	0047	0052	0100		SF	N06E19	9097
	0123	0123	0131	C2.8	SF	S10W42	9087
	0213	0217	0226		SF	S33E64	9100



Flare List – continued.

Date	Time			X-ray	Optical		Rgn Lat CMD
	Begin	Max	End		Imp / Class.	Location Brtns	
23 July	0230	0233	0239		SF	S32E64	9100
	0249	0249	0256		SF	N11W14	9090
	0305	0311	0313		SF	S12W41	9087
	0351	0353	0433		SF	S10W45	9087
	0432	0432	0438		SF	N05E16	9097
	0536	0537	0543	C2.8	SF	S12W44	9087
	0545	0554	0618		SF	S11W43	9087
	0915	0919	0944	C4.5	SF	S14W45	9087
	0953	0958	1029	M1.5	1N	S13W47	9087
	1210	1212	1217		SF	N23W66	9095
	1317	1338	1410		1F	N14W73	9085
	1400	1410	1514	M1.1	1N	S14W46	9087
	1456	1459	1507		SF	N07E16	9097
	1508	1511	1515		SF	N07E16	9097
	1514	1520	1522		SF	S12W51	9087
	1535	1538	1539		SF	S13W49	9087
	1551	1552	1557		SF	N09E11	9097
	1632	1635	1647		SF	S10W51	9087
	1752	1802	1830	C6.0	2N	S14W52	9087
	1908	1911	1916		SF	N23W66	9095
	1916	1921	1924		SF	S11W50	9087
	2001	2008	2011		SF	N22W70	9085
	2004	2008	2011		SF	N24W65	9095
	2122	2132	2154		SF	S16W50	9087
	2158	2203	2206		SF	S15W50	9087
	2204	2206	2223		SF	N22W70	9095
	2229	2231	2232		SF	N06E13	9097
	2249	2258	2313		SF	S12W55	9087
	2314	2316	2342	C1.9	SF	N14W76	9085
	2356	2356	2359		SF	N22W71	9095
	2359	0003	0020		SF	N22W73	9095



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	4								
<i>Region 9077</i>																							
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										
10 Jul	N17E44	309	0950	25	FKC	028	BGD	1	3			15	1	1									
11 Jul	N18E33	307	1010	25	FKC	041	BGD	1	1	1		6	1	1									
12 Jul	N17E16	310	0940	20	FKC	038	BGD	1	1	1		8	1	1									
13 Jul	N17E03	310	0730	21	FKC	042	BGD			1		6	1										
14 Jul	N18W09	309	0460	21	FKC	057	BGD		1	1		3	1								1		
15 Jul	N18W21	308	0420	21	FKI	062	BGD	2	1			9											
16 Jul	N18W36	310	0450	20	FKI	045	BG	1	1			5									1		
17 Jul	N18W47	307	0320	14	EAI	032	BG	3				9	1										
18 Jul	N18W58	305	0200	12	EAI	025	BG	1	2			8									1		
19 Jul	N19W73	307	0080	16	FAO	011	B	1				2											
20 Jul	N19W84	305	0040	10	BXO	005	B					1											
								16	12	3	84	7	5	1	0								

Crossed West Limb.

Absolute heliographic longitude: 310

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														
10 Jul	S14E28	325	0030	01	HRX	001	A														
11 Jul	S14E14	326	0010	01	HRX	003	A														
12 Jul	S14E01	326																			
13 Jul	S12W09	322	0020	07	CAO	005	B														
14 Jul	S12W22	322																			
15 Jul	S12W35	322																			3
16 Jul	S12W48	322																			
17 Jul	S12W61	322																			
18 Jul	S12W74	322																			
19 Jul	S12W87	322																			
								0	0	0	3	0	0	0	0	0					

Crossed West Limb.

Absolute heliographic longitude: 326



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 9079</i>																							
09 Jul	S29E65	301	0070	02	HSX	001	A																
10 Jul	S29E51	302	0070	02	HSX	001	A																
11 Jul	S28E39	301	0070	02	HAX	001	A																
12 Jul	S28E25	301	0060	01	HAX	001	A																
13 Jul	S28E13	300	0070	02	HSX	001	A																
14 Jul	S28E01	299	0060	02	HSX	001	A																
15 Jul	S28W12	299	0060	02	HSX	001	A																
16 Jul	S26W25	299	0060	02	HSX	001	A																
17 Jul	S25W37	297	0050	01	HSX	001	A																
18 Jul	S25W51	298	0050	02	HSX	001	A																
19 Jul	S26W64	298	0060	03	HAX	001	A																
20 Jul	S26W75	296	0050	02	HSX	001	A																
21 Jul	S28W87	295	0030	02	HSX	001	A																

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 299

<i>Region 9080</i>												
09 Jul	N26E80	286	0060	01	HSX	001	A					
10 Jul	N25E68	285	0030	01	HSX	001	A					1
11 Jul	N26E53	287	0050	01	HAX	001	A					1
12 Jul	N25E40	286	0030	01	HSX	001	A					1
13 Jul	N24E25	288	0040	07	CSO	003	B					
14 Jul	N26E13	287	0020	01	HSX	001	A					
15 Jul	N26E02	285	0020	04	CSO	003	B					
16 Jul	N26W10	284	0020	05	CRO	007	B					
17 Jul	N26W23	283	0070	05	BXO	009	B					1
18 Jul	N25W36	283	0020	03	BXO	004	B					
19 Jul	N24W54	288	0120	08	DAO	012	B					
20 Jul	N24W68	289	0090	11	CSO	006	B					
21 Jul	N24W84	292	0100	03	DSO	002	B					

0 0 0 4 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 285



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 9081</i>																			
11 Jul	N02E69	271	0100	10	DSO	005	B					3							
12 Jul	N02E55	271	0170	09	DAO	006	B												
13 Jul	N01E41	272	0180	09	DAO	011	B					7							
14 Jul	N02E29	271	0160	10	DAO	014	B												
15 Jul	N02E16	271	0120	09	DAO	012	B					1							
16 Jul	N03E02	272	0090	08	DAO	011	B												
17 Jul	N04W11	271	0090	07	CSO	008	B					3							
18 Jul	N04W22	269	0070	05	CSO	004	B												
19 Jul	N04W35	269	0070	02	HSX	001	A												
20 Jul	N04W49	270	0070	02	HSX	001	A												
21 Jul	N05W62	270	0050	02	HSX	001	A												
22 Jul	N05W75	269	0040	01	HSX	001	A												
23 Jul	N06W86	267	0030	01	HSX	001	A												
												0	0	0	14	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 272

<i>Region 9082</i>																			
11 Jul	S12E39	301	0010	01	AXX	001	A												
12 Jul	S12E21	305	0030	06	CSO	008	B												
13 Jul	S11E06	307	0070	08	DAO	009	B												
14 Jul	S11W06	306	0070	08	CAO	011	B					3							
15 Jul	S10W19	306	0040	06	CAO	009	B					2	1						
16 Jul	S10W33	307	0020	06	CSO	008	B	1				1							
17 Jul	S09W47	307	0040	08	DSO	011	B												
18 Jul	S10W60	307	0050	10	DAO	008	B												
19 Jul	S10W73	307																	
												1	0	0	6	1	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 307



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 9084</i>																		
12 Jul	N20E35	291	0020	04	CRO	003	B											
13 Jul	N19E22	291	0020	03	DSO	002	B		1			3						
14 Jul	N21E09	291	0020	05	CAO	002	B					2						
15 Jul	N21W04	291																
16 Jul	N20W12	286	0010	04	BXO	004	B					1						
17 Jul	N21W26	286	0160	07	DAO	010	B					1						
18 Jul	N20W41	288	0170	07	DAO	011	B											
19 Jul	N19W55	289	0280	08	DAO	007	B											
20 Jul	N20W66	287	0180	09	CSO	006	B											
21 Jul	N20W81	289	0090	02	HSX	001	A					1						
22 Jul	N21W94	288	0030	01	HSX	001	A											
								0	1	0	8	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 291

<i>Region 9085</i>																		
12 Jul	N13E69	257	0050	02	DRO	002	B					1						
13 Jul	N13E59	254	0120	10	DAO	009	B	1	1			15	1					
14 Jul	N14E47	253	0170	10	DAI	017	BG					5	1					
15 Jul	N14E33	254	0180	09	DAO	019	BG	2				3						
16 Jul	N14E20	254	0270	11	EKI	023	BG					2						
17 Jul	N15E08	252	0300	14	EAO	023	BG											
18 Jul	N12W06	253	0300	11	EAO	021	B					4						
19 Jul	N14W18	252	0260	15	EAO	021	B					6						
20 Jul	N15W34	255	0300	15	EAO	027	B					4						
21 Jul	N14W48	256	0190	15	EAO	018	B	1					1					
22 Jul	N14W61	255	0090	14	EAO	012	B		1			1		1				
23 Jul	N16W75	256	0070	06	CAO	005	B	1				2	1					
								5	2	0	43	4	1	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 253



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 9090</i>																							
16 Jul	N10E70	204	0090	10	DSO	006	B		2			3	2										
17 Jul	N12E58	202	0250	17	FSI	017	BG	2				5											
18 Jul	N11E46	201	0190	19	FAO	020	BG																
19 Jul	N11E32	202	0190	19	FAO	028	B					1											
20 Jul	N12E18	203	0190	21	FSO	042	B	4				8											
21 Jul	N12E05	203	0320	22	FKI	037	BG	2	3			10	3	1									
22 Jul	N11W08	202	0340	22	FKI	042	BG	1	1			6	1										
23 Jul	N13W21	202	0310	22	FAI	043	BG					1											
									9	6	0	34	6	1	0	0							

Still on Disk.

Absolute heliographic longitude: 203

<i>Region 9091</i>																							
16 Jul	S07E69	205	0030	02	HSX	001	A	1				1											
17 Jul	S06E54	206	0110	05	CAO	005	B	1				1											
18 Jul	S07E41	206	0070	05	CSO	004	B																
19 Jul	S06E27	207	0040	06	CAO	003	B																
20 Jul	S06E15	206	0060	06	CSO	005	B					1											
21 Jul	S06E04	204	0050	02	HSX	001	A																
22 Jul	S06W11	205	0030	01	HSX	001	A																
23 Jul	S06W24	205	0030	01	HSX	002	A																
									2	0	0	2	1	0	0	0							

Still on Disk.

Absolute heliographic longitude: 204

<i>Region 9092</i>																							
17 Jul	S26W14	274	0030	04	BXO	005	B																
18 Jul	S25W27	274	0030	05	DSO	006	B																
19 Jul	S25W38	272	0030	05	CRO	003	B																
20 Jul	S25W49	270	0000	00	AXX	001	A																
21 Jul	S25W62	270																					
									0	0	0	0	0	0	0	0	0						

Still on Disk.

Absolute heliographic longitude: 274



Region Summary - continued

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

Region 9093

17 Jul	S11E07	253	0010	03	CSO	003	B											
18 Jul	S12W07	254	0010	03	CSO	002	B											
19 Jul	S12W20	254																
20 Jul	S12W33	254																
21 Jul	S12W46	254																
												0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 253

Region 9094

17 Jul	S25E62	198	0080	01	HSX	001	A											
18 Jul	S25E50	197	0060	01	HSX	001	A											
19 Jul	S24E36	198	0050	02	HAX	001	A											
20 Jul	S24E24	197	0050	02	HSX	001	A										1	
21 Jul	S23E11	197	0040	03	CSO	003	B											
22 Jul	S23W02	196	0030	01	HSX	001	A											
23 Jul	S23W14	195	0020	05	CSO	003	B											
												0	0	0	1	0	0	0

Still on Disk.

Absolute heliographic longitude: 196

Region 9095

17 Jul	N22E11	249	0020	03	BXO	005	B											
18 Jul	N23E00	247	0050	05	DAO	008	B	1				4						
19 Jul	N24W14	248	0030	08	CRO	010	B											
20 Jul	N23W27	248	0060	09	DSO	014	B											
21 Jul	N22W42	250	0070	11	ESO	010	B										1	
22 Jul	N22W54	248	0060	10	DAO	011	B	2				5						
23 Jul	N25W65	246	0070	13	ESO	009	B					6						
								3	0	0	0	16	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 247

Region 9096

18 Jul	S13E71	176	0060	02	HSX	001	A										1	
19 Jul	S14E59	175	0070	02	DAO	002	B											
20 Jul	S14E47	174	0070	03	CSO	003	B											
21 Jul	S13E36	172	0060	02	CAO	004	B											
22 Jul	S12E20	174	0030	03	DSO	005	B											
23 Jul	S13E08	173	0040	04	DSO	009	B											
												0	0	0	1	0	0	0

Still on Disk.

Absolute heliographic longitude: 173



Region Summary - continued

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 9097</i>														
18 Jul	N06E75	172	0200	06	DSO	002	B	1		8				
19 Jul	N05E66	168	0370	09	DAO	004	B	2		8	1			
20 Jul	N05E53	168	0650	11	EKC	012	BD	2		4				
21 Jul	N06E42	166	0660	11	EKC	019	B	1		2				
22 Jul	N06E25	169	0630	12	EKC	021	BG	1		2				
23 Jul	N09E13	168	0630	12	EKC	026	BG		1	6				
								7	1	0	30	1	0	0
Still on Disk.														
Absolute heliographic longitude: 168														
<i>Region 9098</i>														
19 Jul	S02W21	255	0010	03	BXO	004	B							
20 Jul	S02W35	256	0010	03	BXO	004	B							
21 Jul	S02W48	256												
22 Jul	S02W61	256												
									0	0	0	0	0	0
Still on Disk.														
Absolute heliographic longitude: 255														
<i>Region 9099</i>														
19 Jul	N11E74	160	0050	02	HSX	001	A							
20 Jul	N12E63	158	0070	02	HSX	001	A							
21 Jul	N13E50	158	0080	02	HSX	001	A							
22 Jul	N13E37	157	0060	02	HSX	001	A							
23 Jul	N13E25	156	0070	02	HSX	001	A							
									0	0	0	0	0	0
Still on Disk.														
Absolute heliographic longitude: 156														
<i>Region 9100</i>														
22 Jul	S32E60	134	0040	02	HSX	001	A			1				
23 Jul	S31E47	134	0070	02	HSX	001	A			2				
									0	0	0	3	0	0
Still on Disk.														
Absolute heliographic longitude: 134														
<i>Region 9101</i>														
22 Jul	S15E66	128	0020	00	HRX	001	A							
23 Jul	S16E53	128	0020	03	CRO	002	B							
									0	0	0	0	0	0
Still on Disk.														
Absolute heliographic longitude: 128														

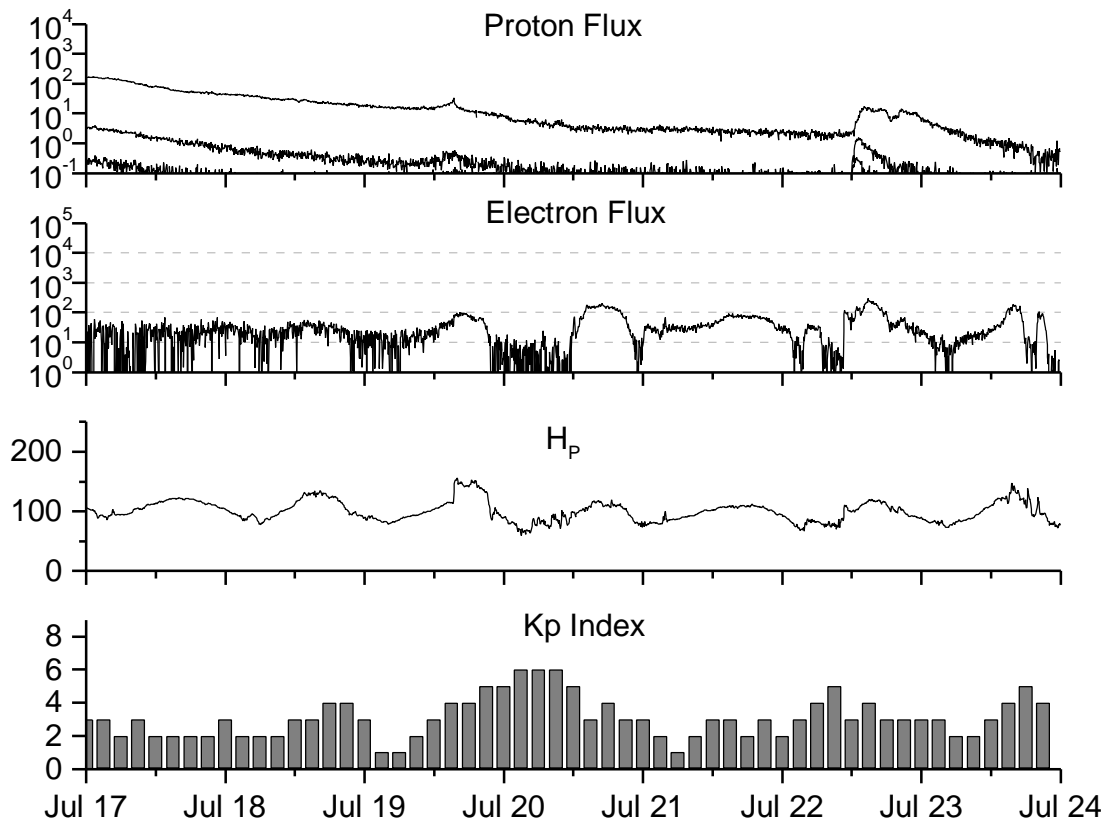


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

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
1998									
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
1999									
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
2000									
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 17 July 2000*

Protons plot contains the five-minute averaged integral proton flux (protons/cm²-sec -sr) as measured by GOES-8 (W75) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

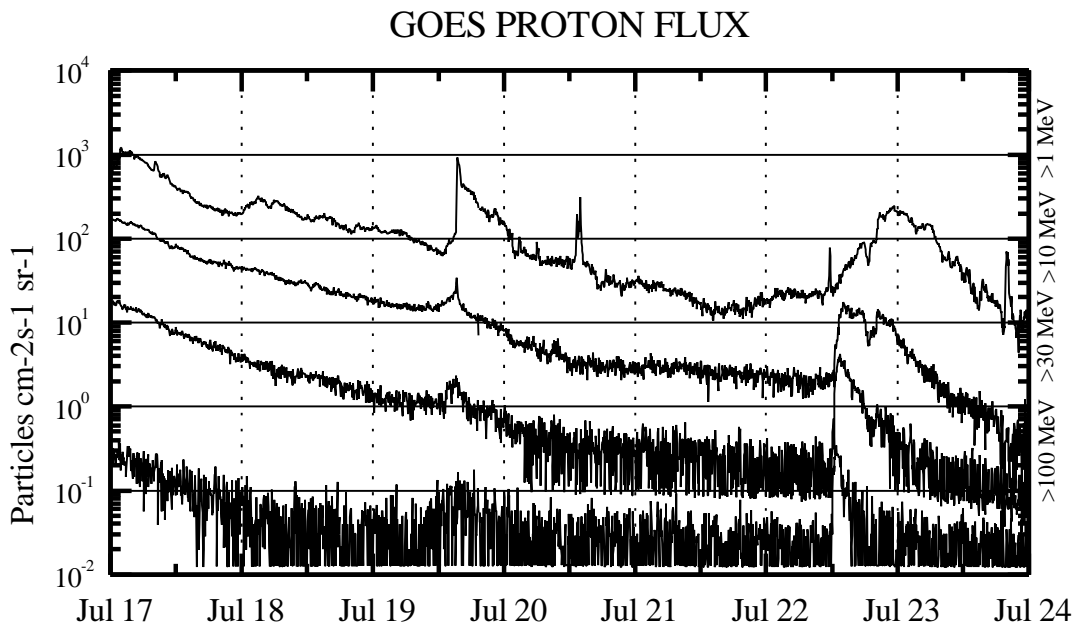
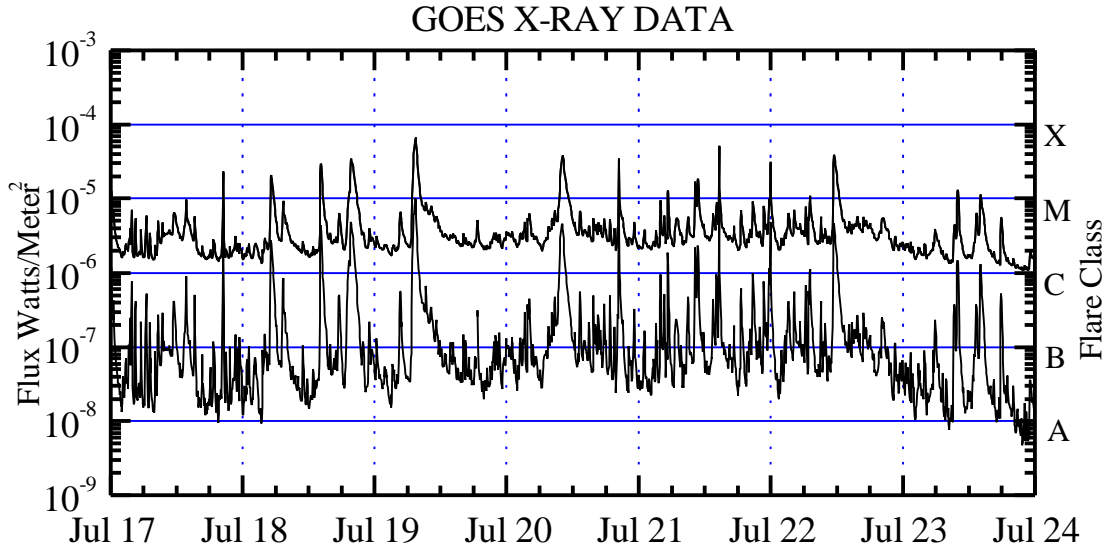
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV at GOES-8.

H_p 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_p plot contains the estimated planetary 3-hour K-index (derived by the USAF 55th 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_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 mine averaged x-ray flux (watts/m²) 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 mine averaged integral proton flux (protons/cm²-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/cm²-sec-sr) at greater than 10 MeV.

