

Solar activity was at low to high levels. The period began with activity at low levels on 24 July. Activity increased to high levels on 25 July as Region 9097 (N08, L = 170, class/area Ekc/510 on 25 July) produced an M8/2B at 25/0249UT with accompanying Type II and IV radio sweeps. An associated faint halo CME was observed by LASCO, beginning at 25/0300UT. This region also produced an M1/1B at 25/1846UT. Region 9087 (S12, L = 235, class/area Fac/380 on 25 July), produced an M3/2N flare at 25/0456UT as it approached the west limb. Activity dropped to moderate levels during 26 July, due to a single optically uncorrelated M1 event, with the most likely source being Region 9087 behind the west limb (S11W94). Activity continued to be moderate on 27 and 28 July due to minor M-class flares from Region 9090 (N14, L = 203, class/area Fai/380 on 27 July). Activity decreased to low levels for the last two days of the period.

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 315 - 410 km/sec during the period of 24 - 27 July. Two weak shocks were observed at ACE at 26/0254UT and 26/1756UT. On 28 July velocity ranged from 330-390 km/sec until 28/0543UT when a shock from the 25 July CME was observed. Velocity then increased to 450-490 km/sec. Density increased from 1-5 p/cc to 10-36 p/cc. Density decreased to a range of 2-10 p/cc after 28/2037UT. IMF Bz averaged -8 nT and proceeded to decrease in the southward direction after shock passage, ranging from -12 to -20 nT. At 28/1741 the IMF Bz went northward and averaged around +5 nT for the rest of the day. By the end of the period velocity was ranging from 400-470 km/sec, density from 1-6 p/cc, and IMF Bz from -4 nT to +5 nT. IMF Bz was predominately northward during 29-30 July.

A greater than 10 MeV proton event at geosynchronous orbit was observed on 28 July. Particle fluxes began to rise slowly after 28/0200UT and attained threshold at 28/1050UT. The peak of the event was 18 PFU at 28/1130UT and the event fell below threshold at 28/1310UT.

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 24 and 25 July. Activity increased to quiet to minor storm levels on 26 July. Two weak shock passages at approximately 26/0300UT and 26/1800UT contributed to periods of active and minor storming levels in the geomagnetic field. Activity decreased to quiet to unsettled, with isolated active periods at higher latitudes on 27 July. Activity increased to quiet to minor storm levels on 28 July due to the arrival of transient material from the CME of 25 Jul. The first indication of the transient was a shock at ACE at 28/0543UT, shortly followed by a sudden impulse at 28/0635UT (measuring 41 nT on the Boulder magnetometer. Minor storm levels (estimated Kp's of 5) were sustained for 12 hours from 28/0600 – 28/1800UT. Effects from the CME passage continued on into 29 July with predominately active to minor storm levels, with an isolated period of major storming at high latitudes. By the end of the day, the geomagnetic field was quiet to unsettled. Activity continued to be quiet to unsettled on 30 July, with isolated active periods of local sub-storming observed on the nighttime sector.



Space Weather Outlook
02 - 28 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.

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.

Geomagnetic field activity is expected to be at quiet to unsettled levels 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
24 July	225	215	1820	C1.5	7	0	0	31	1	0	0	0
25 July	202	232	1710	C1.4	7	3	0	9	1	2	0	0
26 July	175	214	1390	C1.5	12	1	0	17	0	0	0	0
27 July	162	174	970	C1.3	10	3	0	18	0	0	0	0
28 July	158	163	840	B9.2	8	0	0	4	0	0	0	0
29 July	153	183	890	B6.6	6	0	0	5	0	0	0	0
30 July	150	138	680	B5.5	3	0	0	5	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
24 July	7.8E+5	2.7E+4	1.9E+3		1.8E+6	
25 July	2.6E+5	1.8E+4	2.1E+3		4.4E+6	
26 July	4.3E+5	2.1E+4	2.0E+3		2.9E+6	
27 July	2.9E+5	1.8E+4	2.3E+3		8.6E+5	
28 July	2.4E+6	3.9E+5	2.6E+3		1.9E+6	
29 July	1.5E+6	1.4E+5	2.0E+3		1.1E+6	
30 July	6.6E+5	4.2E+4	2.1E+3		2.6E+6	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	24 July	4	2-3-1-0-1-0-1-1	6	3-3-2-1-1-1-0-1	8
25 July	4	1-1-1-1-1-1-2-2	6	2-2-1-1-1-2-2-2	7	2-2-1-2-2-3-2-3
26 July	16	2-2-4-2-3-2-4-4	20	2-3-4-3-4-5-3-2	20	3-3-4-4-4-3-4-4
27 July	6	3-1-0-0-1-2-2-3	*	3-2-0-3-*. *- *-2	9	4-2-1-2-1-2-2-3
28 July	16	2-3-4-3-4-3-3-2	43	2-3-6-4-6-6-5-2	30	3-3-5-5-5-5-4-3
29 July	17	4-3-3-4-4-2-2-2	30	4-3-5-6-5-3-2-2	27	3-3-4-6-5-3-3-3
30 July	10	3-4-2-2-2-2-1-2	*	2-3-*. *- *. *- *. *	10	3-3-1-2-3-2-2-2



Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UT
24 Jul 0034	5 – 245 MHz Bursts	23 Jul
24 Jul 0034	1 – 245 MHz Noise Storm	23 Jul
24 Jul 2132	A ≥ 20 Watch	26 Jul
25 Jul 0307	X-Ray event M8/2B/N06W03	25 Jul 0250
25 Jul 0316	10cm Radio Burst 690 F.U.	25 Jul 0246
25 Jul 0316	Type II Radio Emission	25 Jul 0249
25 Jul 0741	Type IV Radio Emission	25 Jul 0255
26 Jul 0025	6 – 245 MHz Bursts	25 Jul
26 Jul 0720	K = 5 Warning	26 Jul 0730 - 1500
26 Jul 0900	K = 5 Observed	26 Jul 06 - 0900
26 Jul 1904	K = 4 Warning	26/1905 - 27/0000 Jul
26 Jul 2141	A ≥ 20 Watch	28 Jul
26 Jul 2142	A ≥ 20 Watch	29 Jul
26 Jul 2259	K = 5 Warning	26/2315 – 27/1500 Jul
27 Jul 0049	1 – 245 MHz Bursts	26 Jul
27 Jul 0422	10cm Radio Burst 190 F.U.	27 Jul 0407
28 Jul 0036	2 – 245 MHz Bursts	27 Jul
28 Jul 0328	K = 4 Warning	28 Jul 0340 - 1500
28 Jul 0400	Proton Event >10MeV @ ≥ 10pfu Warning	28 Jul 0405 - 1200
28 Jul 0556	K = 4 Observed	28 Jul 03 - 0600
28 Jul 0602	K ≥ 6 Warning	28 Jul 0645 - 2100
28 Jul 0650	Sudden Impulse observed at Boulder	28 Jul 0635
28 Jul 0855	K = 5 Observed	28 Jul 06 - 0900
28 Jul 1134	Proton Event >10MeV @ ≥ 10pfu	28 Jul 1050
28 Jul 1215	CANCELLED K ≥ 6 Warning	26/2315 – 27/1500 Jul
28 Jul 1403	K = 5 Warning	28 Jul 1415 - 2100
28 Jul 1505	K = 5 Observed	28 Jul 12 - 1500
28 Jul 1532	A ≥ 20 Observed	28 Jul 1500
28 Jul 1636	A ≥ 30 Warning	28/1640 – 29/0600 Jul
28 Jul 1638	K ≥ 6 Warning	28/1640 – 29/0600 Jul
28 Jul 1821	ENDED Proton Event >10MeV @ ≥ 10pfu	28 Jul 1050
29 Jul 0054	1 – 245 MHz Burst	28 Jul
29 Jul 0103	Type II Radio Emission	28 Jul 2222
29 Jul 0115	CANCELLED K ≥ 6 Warning	28/1640 – 29/0600 Jul
29 Jul 0254	K = 4 Warning	29 Jul 0254 - 1500
29 Jul 0302	A ≥ 30 Observed	29 Jul 0300
29 Jul 0306	K = 4 Observed	29 Jul 00 - 0300
29 Jul 0533	K = 5 Warning	29 Jul 0532 - 1500
29 Jul 0855	ENDED A ≥ 30 Observed	29 Jul 0300
29 Jul 1154	A ≥ 30 Observed	29 Jul 1200
29 Jul 1154	K = 5 Observed	29 Jul 09 - 1200
29 Jul 1436	EXTENDED K = 4 Warning	29 Jul 0254 - 2359
29 Jul 1525	ENDED A ≥ 30 Observed	29 Jul 1200

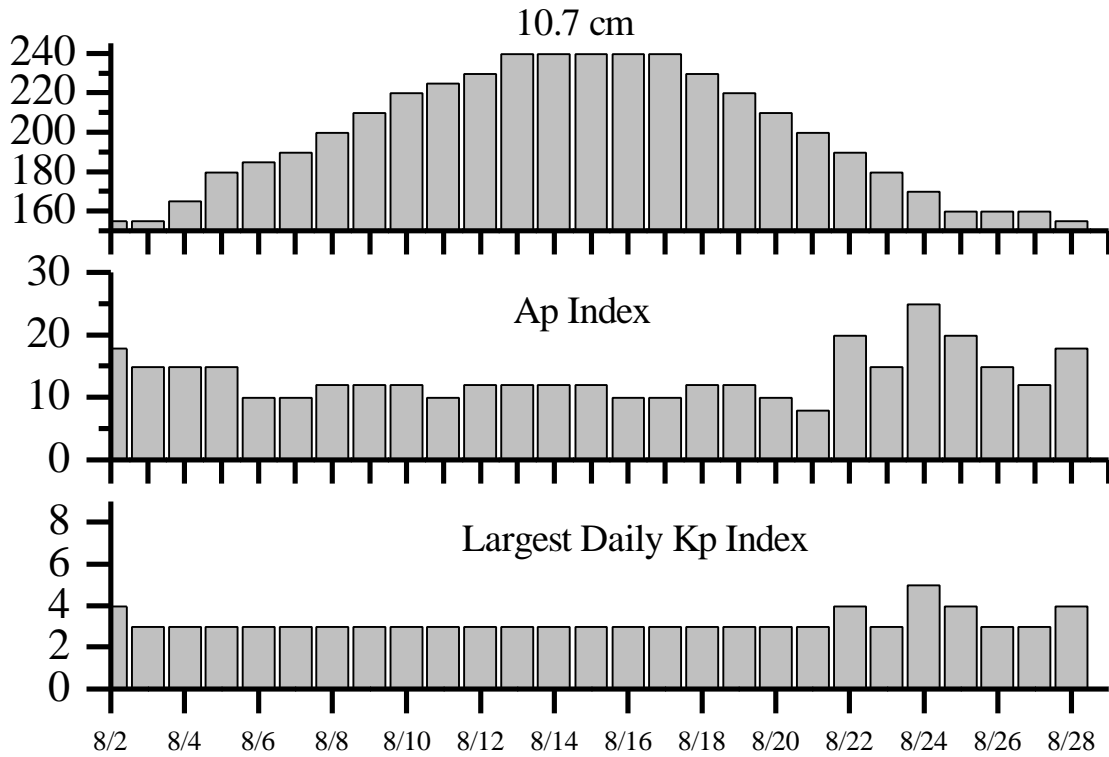


Alerts and Warnings Issued – continued.

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UT
30 Jul 0021	1 – 245 MHz Burst	29 Jul
30 Jul 0512	K = 4 Warning	30 Jul 0512 - 1500
30 Jul 0601	K = 4 Observed	30 Jul 03 - 0600
30 Jul 1203	ENDED A \geq 20 Observed	28 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
02 Aug	155	18	1	16 Aug	240	10	3
03	155	15	3	17	240	10	3
04	165	15	3	18	230	12	3
05	180	15	3	19	220	12	3
06	185	10	3	20	210	10	3
07	190	10	3	21	200	8	3
08	200	12	3	22	190	20	4
09	210	12	3	23	180	15	3
10	220	12	3	24	170	25	5
11	225	10	3	25	160	20	4
12	230	12	3	26	160	15	3
13	240	12	3	27	160	12	3
14	240	12	3	28	150	18	4
15	240	12	3				



Energetic Events

Date	Time		X-ray		Optical Information			Peak		Sweep Freq		
	Begin	Max	½ Max	Class	Integ Flux	Imp/ Brtns	Location Lat CMD	Rgn #	Radio Flux		Intensity	
									245	2695	II	IV
25 Jul 00	0243	0249	0254	M8.0	.028	2B	N06W08	9097	61000	690	1	1
25 Jul 00	0440	0456	0504	M3.7	.025	2N	S13W71	9087		100		
25 Jul 00	1841	1846	1857	M1.2	.009	1B	N05W16	9097	630	130		
26 Jul 00	0737	0743	0750	M1.3	.006							
27 Jul 00	0406	0410	0413	M2.4	.006	SB	N10W72	9090		190		
27 Jul 00	1643	1711	1745	M1.5	.044							
27 Jul 00	2337	2342	2347	M1.2	.004	SF	N11W78	9090				

Flare List

Date	Time			X-ray Class.	Imp / Brtns	Location Lat CMD	Rgn
	Begin	Max	End				
24 July	0045	0048	0054		SF	S12W57	9087
	0148	0159	0210	C3.6	1F	N06E04	9097
	0202	0208	0218		SF	N23W72	9095
	0402	0402	0441		SF	N15W26	9090
	0531	0534	0541		SF	N11W27	9090
	0545	0548	0550	C2.2			
	0614	0619	0639		SF	N13W28	9090
	0816	0823	0842	C2.2	SF	N12W30	9090
	0849	0850	0854		SF	N22W76	9095
	1141	1225	1317	C4.4			
	1311	1311	1327		SF	N13W34	9090
	1312	1313	1325		SF	S22W18	9094
	1402	1403	1407		SF	S14W61	9087
	1444	1445	1448		SF	N14W31	9090
	1537	1544	1548		SF	N12W35	9090
	1558	1601	1618	C2.8	SF	S31E45	9100
	1631	1632	1648		SF	N12W36	9090
	1712	1712	1721		SF	S14E41	9101
	1736	1740	1744		SF	N23W81	9088
	1805	1805	1811		SF	N24W81	9088
	1810	1815	1831		SF	N07W04	9097
	1812	1816	1822		SF	N24W82	9088
	1838	1846	1850		SF	N24W81	9088
	1839	1844	1854		SF	N08W05	9097
1846	1846	1902		SF	N13W32	9090	
1924	1937	1957		SF	N07W05	9097	
1959	2001	2006	C3.8	SF	N13W39	9090	
2000	2000	2008		SF	S13W62	9087	
2019	2021	2027		SF	S14W63	9087	
2022	2023	2026		SF	N13W37	9090	
2109	2109	2114		SF	N05W05	9097	
2110	2110	2115		SF	N13W37	9090	



Flare List – continued.

Date	Time			X-ray	Optical		Rgn Lat CMD
	Begin	Max	End		Imp / Class.	Location Brtns	
24 July	2231	2246	2256	C5.2	SF	S17W63	9087
	2244	2249	2306		SF	N08W08	9097
25 July	B0058	U0058	A0112		SF	N13W41	9090
	B0247	U0252	A0322	M8.0	2B	N06W08	9097
	B0442	U0501	A0605	M3.7	2N	S13W71	9087
	B0454	U0454	A0511		SF	S13E34	9101
	1019	1020	1031	C2.5	SF	N06W12	9097
	1235	1239	1304	C6.2	SN	N15W46	9090
	1323	1324	1330		SF	N06W13	9097
	1441	1446	1505	C2.4	SF	N04W13	9097
	1600	1601	1605	C4.5	SF	N05W14	9097
	1842	1851	1913	M1.2	1B	N05W16	9097
	2034	2034	2040		SF	N05W13	9097
	2146	2150	2205	C4.4	SF	N13W52	9090
	26 July	2228	2232	2240	C3.0		
2256		2307	2334	C4.4			
0137		0147	0207	C3.9			
0218		0218	0222		SF	S13W89	9087
0315		0315	0326	C5.0	SF	S13W89	9087
0406		0417	0431	C8.9	SF	N11W52	9090
0509		0510	0526	C4.6	SN	N13W48	9090
0531		0532	0535		SF	S14W84	9087
0554		0558	0602		SF	S16W88	9087
0704		0709	0715	C2.0			
0737		0743	0750	M1.3			
B0825		U0826	0829	C2.6	SF	S11W89	9087
0933		0948	1000	C2.7			
1103		1108	1116	C2.0			
1225		1227	1233		SF	N11W64	9090
1256		1256	1302		SF	N18W48	9090
1509		1513	1518		SF	N16W62	9090
1528		1538	1544		SF	N16W62	9090
1551		1554	1602		SF	N17W59	9090
1615		1617	1653	C4.4	SF	N15W59	9090
1655		1658	1714		SF	N14W60	9090
1724		1726	1733		SF	N15W64	9090
1805		1807	1831	C5.4	SF	N08W25	9097
1841		1856	1904	C2.6			
1917		1927	1934		SF	N10W59	9090
1935		1940	1946	C3.6			
27 July	0016	0020	0024	C2.3			
	0103	0107	0116	C2.6			



Flare List – continued.

Date	Time			X-ray	Optical		Rgn Lat CMD
	Begin	Max	End		Imp / Class.	Location Brtns	
27 July	0241	0248	0300	C3.5			
	0340	0344	0348	C2.9			
	B0410	U0411	A0428	M2.4	SB	N10W72	9090
	0441	0445	0455		SF	N05W34	9097
	0518	0518	0524		SF	N13W68	9090
	0545	0556	0619	C3.9	SF	N12W66	9090
	0716	0720	0748	C2.3	SF	N07W34	9097
	0916	U0918	A0921	C4.1	SF	N13W64	9090
	1017	1026	1033	C2.4			
	1222	1224	1230		SF	N15W71	9090
	1240	1242	1249	C2.7	SF	N16W73	9090
	1307	1307	1312		SF	N17W72	9090
	1354	1354	1358		SF	N17W73	9090
	1447	1447	1452	C3.7	SF	N14W80	9090
	1514	1516	1521		SF	N15W73	9090
	1604	1618	1633		SF	N16W75	9090
	1643	1711	1745	M1.5			
	1740	1740	1751		SF	S21E36	9102
	1743	1744	1750		SF	N15W75	9090
	1839	1843	1855		SF	N08W39	9097
	1840	1843	1858		SF	N16W74	9090
	B2340	U2341	A0046	M1.2	SF	N11W78	9090
	28 July	0000	0008	0019	C4.2		
0400		0404	0410	C1.4			
0412		0417	0422	C2.3			
0711		0720	0730	C2.8			
1008		1013	1018	C1.9			
1243		1246	1251	C1.3			
1332		1344	1420		SF	N10E08	9103
1451		1453	1456		SF	N16W87	9090
1631		1635	1639	C1.7			
29 July	2024	2026	2036		SF	N08W54	9097
	2058	2109	2155	C3.5	SF	N19E65	9105
	0008	0013	0017	C1.3			
	0151	0156	0201	C1.9			
	0243	0245	0251	C1.2	SF	S22E84	9107
30 July	0329	0337	0341	C3.4			
	0435	0436	0444		SF	S26W78	9094
	0713	0714	0723	C2.3	SF	S29W23	9100
	1104	1113	1123		SF	N10W05	9103
	1635	1638	1653	C1.4	SF	N10W05	9103
	0023	0023	0029		SF	N11W10	9103



Flare List – continued.

Date	Time			X-ray	Optical		Rgn Lat CMD
	Begin	Max	End		Imp / Class.	Location Brtns	
30 July	0930	0934	0942	B8.3			
	1111	1115	1119	C1.5			
	1159	1210	1222	C7.8			
	1313	1314	1316	C4.2	SF	N15E53	9105
	1610	1611	1613		SF	N10W19	9103
	1640	1641	1643		SF	N11W19	9103
	1645	1650	1658		SF	N11W19	9103
	1722	1725	1729	B9.5			

Region Summary

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 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		
24 Jul	N16W88	256														
								5	2	0	43	4	1	0	0	

Crossed West Limb.

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 9087</i>																							
14 Jul	S12E71	229	0170	05	HAX	002	A																
15 Jul	S13E58	229	0240	06	CAO	005	B	2				9											
16 Jul	S13E44	230	0210	07	DAO	015	BG	5				10	2										
17 Jul	S12E28	232	0250	10	DAI	026	BG	3	2			12	4										
18 Jul	S12E13	234	0450	15	EAI	036	BGD	2	1			10	1	2									
19 Jul	S12W01	235	0510	19	FAC	051	BGD	2	1			9								1			
20 Jul	S12W13	234	0780	19	FKC	088	GD	3	2			11	2										
21 Jul	S12W26	234	0790	18	FKC	066	GD	4	1			14	1										
22 Jul	S12W39	233	0670	18	FKC	050	GD	1				16											
23 Jul	S12W53	234	0650	17	FKC	042	BG	4	2			13	2	1									
24 Jul	S11W67	235	0560	17	FAC	026	BG	1				5											
25 Jul	S12W80	235	0380	17	FAC	012	BG		1											1			
26 Jul	S11W94	236	0240	19	FAC	010	BG	2				5											
								29	10	0	11	1	4	1	0								

Crossed West Limb.

Absolute heliographic longitude: 235

Region 9089

15 Jul	N11E41	246	0000	00	AXX	001	A														
16 Jul	N12E30	244	0000	00	AXX	001	A														
17 Jul	N13E16	244	0000	00	AXX	001	A														
18 Jul	N13E03	244																			
19 Jul	N13W10	244																			
20 Jul	N13W23	244																			
21 Jul	N13W36	244																			
22 Jul	N13W49	244																			
23 Jul	N13W62	244																			
24 Jul	N13W75	244																			
25 Jul	N13W88	244																			
								0	0	0	0	0	0	0	0	0	0	0	0	0	

Crossed West Limb.

Absolute heliographic longitude: 244



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											
24 Jul	N13W36	204	0360	23	FAI	030	BG	2				12											
25 Jul	N15W48	203	0450	22	FAI	044	BG	2				3											
26 Jul	N14W61	203	0380	21	FAI	027	BG	3				11											
27 Jul	N14W76	205	0320	22	FAI	009	BG	4	2			14											
28 Jul	N15W82	197	0140	02	HSX	001	A					1											
29 Jul	N15W95	197	0060	02	HSX	001	A																
								20	8	0	75	6	1	0	0								

Crossed West Limb.

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																
24 Jul	S06W37	205	0020	02	HSX	002	A																
25 Jul	S06W51	206	0000	01	AXX	001	A																
26 Jul	S04W64	206	0000	00	AXX	001	A																
27 Jul	S04W77	206																					
28 Jul	S04W90	206																					
								2	0	0	2	1	0	0	0								

Crossed West Limb.

Absolute heliographic longitude: 204



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 9094</i>																
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									
24 Jul	S23W28	196	0010	01	HSX	001	A						1			
25 Jul	S22W41	196	0040	04	CSO	005	B									
26 Jul	S23W54	196	0020	01	HSX	001	A									
27 Jul	S22W67	196	0020	01	HRX	001	A									
28 Jul	S24W79	194	0020	01	AXX	001	A									
29 Jul	S24W92	194											1			
								0	0	0	3	0	0	0	0	

Crossed West Limb.

Absolute heliographic longitude: 196

<i>Region 9095</i>																
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			
24 Jul	N24W77	245	0100	14	ESO	006	B						2			
25 Jul	N25W89	244	0050	10	CSO	002	B									
								3	0	0	18	0	0	0	0	

Crossed West Limb.

Absolute heliographic longitude: 247



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 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											
24 Jul	S12W06	174	0040	03	DSO	008	B											
25 Jul	S12W20	175	0040	04	CSO	007	B											
26 Jul	S11W33	175	0020	03	CSO	004	B											
27 Jul	S10W46	175	0010	01	HSX	001	A											
28 Jul	S11W59	174	0010	01	AXX	001	A											
29 Jul	S12W72	174	0010	01	AXX	001	A											
30 Jul	S12W85	174																
									0	0	0	1	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 174

Region 9097

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							
24 Jul	N06W01	169	0540	13	EKC	028	BG	1			5	1						
25 Jul	N08W15	170	0510	11	EKC	026	BG	3	2		5	1	1					
26 Jul	N07W27	169	0390	10	DAC	028	BG	1			1							
27 Jul	N09W41	170	0250	09	DAI	023	BG	1			3							
28 Jul	N09W55	170	0210	09	DAI	018	B				1							
29 Jul	N09W68	170	0120	08	DAO	013	B											
30 Jul	N08W83	172	0070	07	CSO	005	B											
									13	3	0	45	3	1	0	0		

Still on Disk.

Absolute heliographic longitude: 169



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 9099

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											
24 Jul	N13E12	156	0070	02	HSX	001	A											
25 Jul	N14W02	157	0060	02	HSX	001	A											
26 Jul	N14W14	156	0070	02	HSX	001	A											
27 Jul	N15W28	157	0060	02	HSX	001	A											
28 Jul	N16W41	156	0080	02	HSX	001	A											
29 Jul	N17W54	156	0070	01	HSX	001	A											
30 Jul	N16W69	158	0050	01	HSX	001	A											

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 157

Region 9100

21 Jul	S31E73	135	0020	01	AXX	001	A											
22 Jul	S32E60	134	0040	02	HSX	001	A											1
23 Jul	S31E47	134	0070	02	HSX	001	A											2
24 Jul	S32E40	128	0100	12	EAO	011	B	1										1
25 Jul	S33E26	129	0130	13	ESO	011	B											
26 Jul	S32E13	129	0130	12	ESO	009	B											
27 Jul	S31W02	131	0130	13	CSO	008	B											
28 Jul	S30W15	130	0120	10	CSO	002	B											
29 Jul	S29W28	130	0090	09	CSO	003	B	1										1
30 Jul	S29W43	132	0120	03	HSX	001	A											

2 0 0 5 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 131



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 9101

22 Jul	S15E66	128	0020	00	HRX	001	A																
23 Jul	S16E53	128	0020	03	CRO	002	B																
24 Jul	S17E42	126	0020	02	HSX	002	A							1									
25 Jul	S15E24	131	0040	08	CSO	012	B							1									
26 Jul	S14E10	132	0030	07	CSO	008	B																
27 Jul	S13W05	134	0020	02	HSX	001	A																
28 Jul	S13W19	134	0010	03	BXO	002	B																
29 Jul	S13W31	133	0010	03	BXO	003	B																
30 Jul	S13W44	133																					
													0	0	0	2	0	0	0	0	0		

Still on Disk.

Absolute heliographic longitude: 134

Region 9102

25 Jul	S21E60	095	0010	00	HRX	001	A																
26 Jul	S21E46	096	0010	06	BXO	003	B																
27 Jul	S19E30	099	0000	00	AXX	001	A							1									
28 Jul	S17E15	100	0000	00	AXX	001	A																
29 Jul	S17E02	100																					
30 Jul	S17W11	100																					
													0	0	0	1	0	0	0	0	0		

Still on Disk.

Absolute heliographic longitude: 100

Region 9103

26 Jul	N08E28	114	0010	01	HRX	001	A																
27 Jul	N09E16	113	0020	03	CRO	003	B																
28 Jul	N10E03	112	0040	05	DAO	010	B							1									
29 Jul	N08W11	113	0120	08	DAO	016	B	1						2									
30 Jul	N11W26	115	0120	08	DSO	015	B							4									
													1	0	0	7	0	0	0	0	0		

Still on Disk.

Absolute heliographic longitude: 112



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 9104

26 Jul	S19E75	067	0090	02	HSX	001	A
27 Jul	S23E65	064	0080	02	HSX	001	A
28 Jul	S21E51	064	0100	02	HSX	001	A
29 Jul	S21E38	064	0120	02	HSX	001	A
30 Jul	S20E24	065	0100	03	HSX	001	A

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 65

Region 9105

27 Jul	N13E81	048	0050	02	HSX	001	A
28 Jul	N15E66	049	0090	01	HSX	001	A
29 Jul	N14E54	048	0080	02	HSX	001	A
30 Jul	N16E40	049	0080	02	HSX	001	A

1 1
1 1
2 0 0 2 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 49

Region 9106

27 Jul	S10W15	144	0010	03	CSO	004	B
28 Jul	S10W30	145	0020	04	BXO	004	B
29 Jul	S09W43	145	0030	04	CSO	005	B
30 Jul	S10W58	147	0010	04	BXO	004	B

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 144

Region 9107

29 Jul	S19E69	033	0150	12	ESO	002	B
30 Jul	S18E56	033	0110	16	FSO	005	B

1 1
1 0 0 1 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 33

Region 9108

29 Jul	S09W18	120	0010	02	BXO	002	B
30 Jul	S12W31	120	0000	00	AXX	001	A

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 120



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 9109

29 Jul	S07E40	062	0020	04	CRO	004	B										
30 Jul	S06E27	062	0020	04	BXO	004	B										
								0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 62

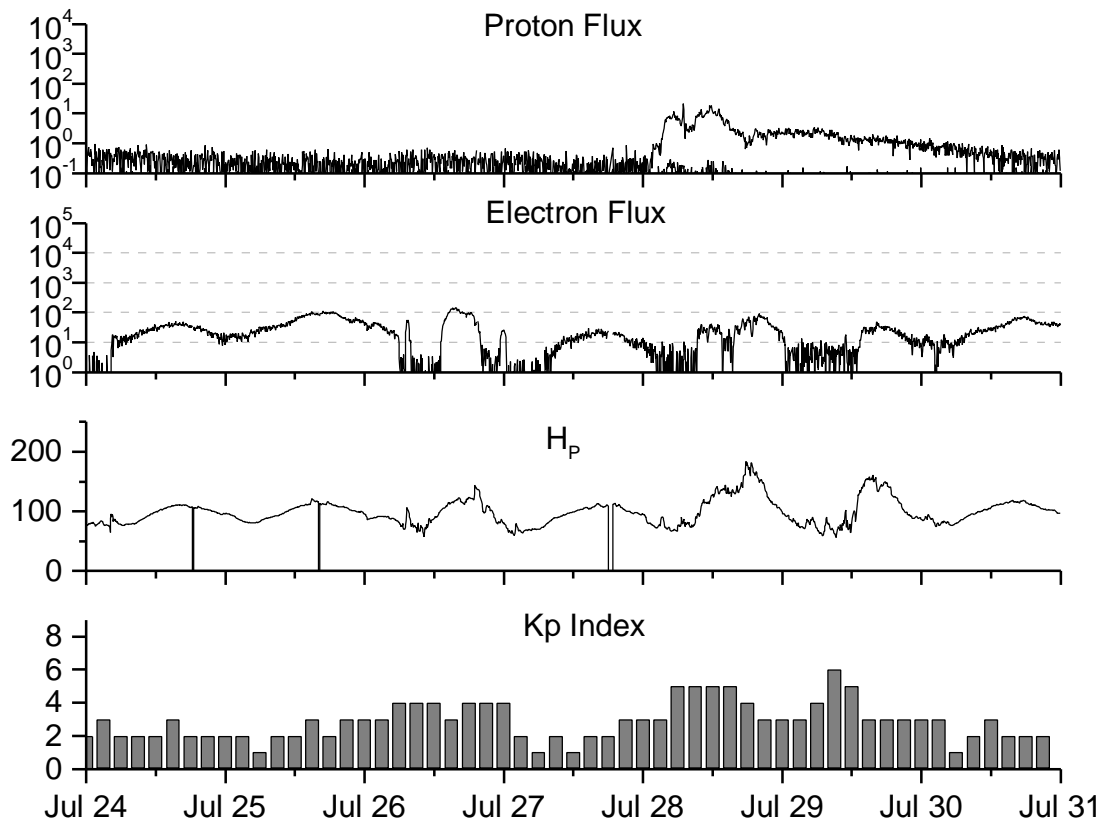


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

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.

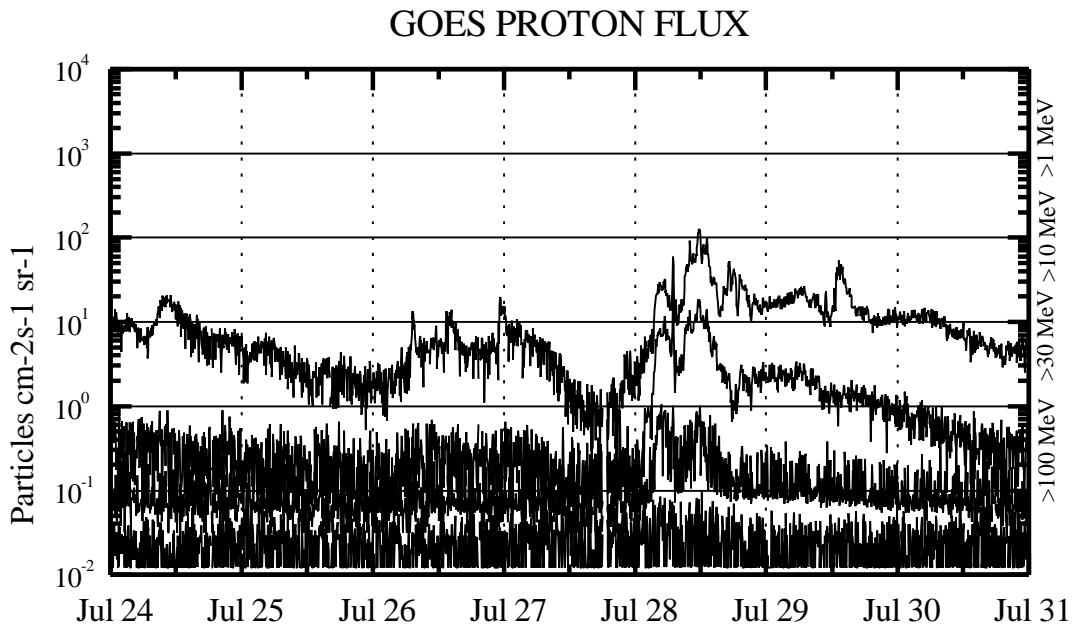
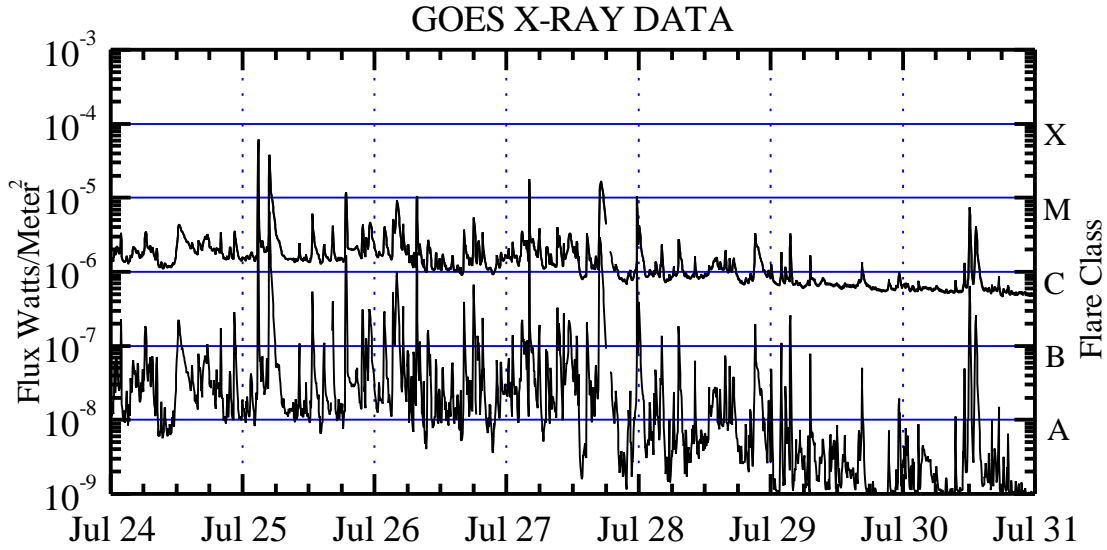
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV at GOES-8.

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 minute 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 minute 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.

