

Space Weather Highlights
13 - 19 March 2000

SWO PRF 1281
21 March 2000

Solar activity was predominantly moderate for the week. A total of seven low-level M-class events was observed. Region 8906 (S16, L=122, class area EKC/900 on 14 March) was responsible for six of those M-class flares. This region exhibited significant magnetic complexity, including several delta configurations, during the period. Region 8910 (N12, L=071, class/area EKC/590 on 19 March) was responsible for the other M-class event. This region grew at a moderate pace during the period and developed a delta configuration at the end of the period. Many coronal mass ejections occurred during the week. None appeared to be Earth directed.

Real-time solar wind data were available from the NASA Advanced Composition Explorer (ACE) spacecraft for almost all of the period. Solar wind velocity was below normal for most of the time and other parameters were nominal.

There were no proton events detected at geosynchronous orbit.

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

The geomagnetic field was generally quiet for the week. Brief unsettled conditions were observed toward the end of the period.

Space Weather Outlook
22 March - 17 April 2000

Solar activity should be generally moderate for the next 27 days. Region 8910 is capable of generating occasional M-class flares prior to its west limb transit on 25-26 March. There is a slight possibility of a major flare from this region prior to that time. Previously active longitudes are expected to return during the next two weeks that should help maintain moderate levels of activity for the foreseeable future. Should region 8910 produce a major flare, there is a possibility of a solar proton event during the early part of the forecast period.

The greater than 2 MeV electron flux at geosynchronous orbit should become elevated during the 25-28 March period. Normal levels are forecast for the remainder of the upcoming solar rotation.

The geomagnetic field should remain quiet to unsettled until 24 March when a coronal hole related disturbance is expected to begin. Predominantly unsettled to active conditions should be experienced through 26 March. Isolated minor storm conditions are possible during that period. Barring the occurrence of future Earth directed coronal mass ejections, the remainder of the period should consist of quiet to unsettled conditions.



Daily Solar Data

Date	Radio Flux 10.7 cm	Sun spot No. (10 ⁶ hemi.)	Sunspot Area	X-ray Background	Flares							
					X-ray Flux			Optical				
					C	M	X	S	1	2	3	4
13 March	188	172	1510	B8.9	15	1	0	11	1	0	0	0
14 March	183	193	1590	B8.7	9	0	0	18	0	0	0	0
15 March	179	167	1090	B7.7	16	1	0	6	1	0	0	0
16 March	184	138	1090	B7.2	10	0	0	10	2	0	0	0
17 March	192	152	1190	C1.4	12	1	0	12	0	0	0	0
18 March	195	142	1430	C3.4	4	3	0	5	3	1	0	0
19 March	208	208	1720	C6.1	5	1	0	23	1	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
	13 March	4.1E+4	1.1E+4	2.4E+3		4.0E+6
14 March	4.8E+4	1.1E+4	2.2E+3		5.7E+6	
15 March	5.8E+4	1.2E+4	2.3E+3		9.4E+6	
16 March	4.6E+5	1.1E+4	2.3E+3		1.5E+7	
17 March	5.3E+5	1.3E+4	2.3E+3		5.4E+6	
18 March	4.8E+5	1.3E+4	2.4E+3		5.8E+6	
19 March	1.3E+5	1.2E+4	2.4E+3		5.1E+5	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	13 March	2	2-1-0-0-0-1-1-1	2	2-1-0-1-0-0-1-1	4
14 March	5	2-2-1-2-1-1-1-1	10	1-1-2-5-3-2-0-0	6	2-2-1-3-1-2-2-2
15 March	0	0-0-1-0-0-0-0-0	5	4-2-1-1-0-0-0-0	3	1-0-0-0-1-2-1-2
16 March	2	0-0-0-0-0-1-1-2	0	0-0-0-0-0-0-0-0	4	0-0-0-0-1-1-2-1
17 March	3	2-0-2-2-1-0-0-0	4	1-0-0-4-0-0-0-0	6	2-1-2-2-2-2-2-2
18 March	6	1-0-1-1-2-2-3-2	4	0-0-0-3-2-1-2-1	7	1-0-1-2-2-3-3-2
19 March	6	2-2-2-2-2-1-2-1	8	1-2-3-3-2-2-1-0	8	2-2-2-2-2-3-3-2

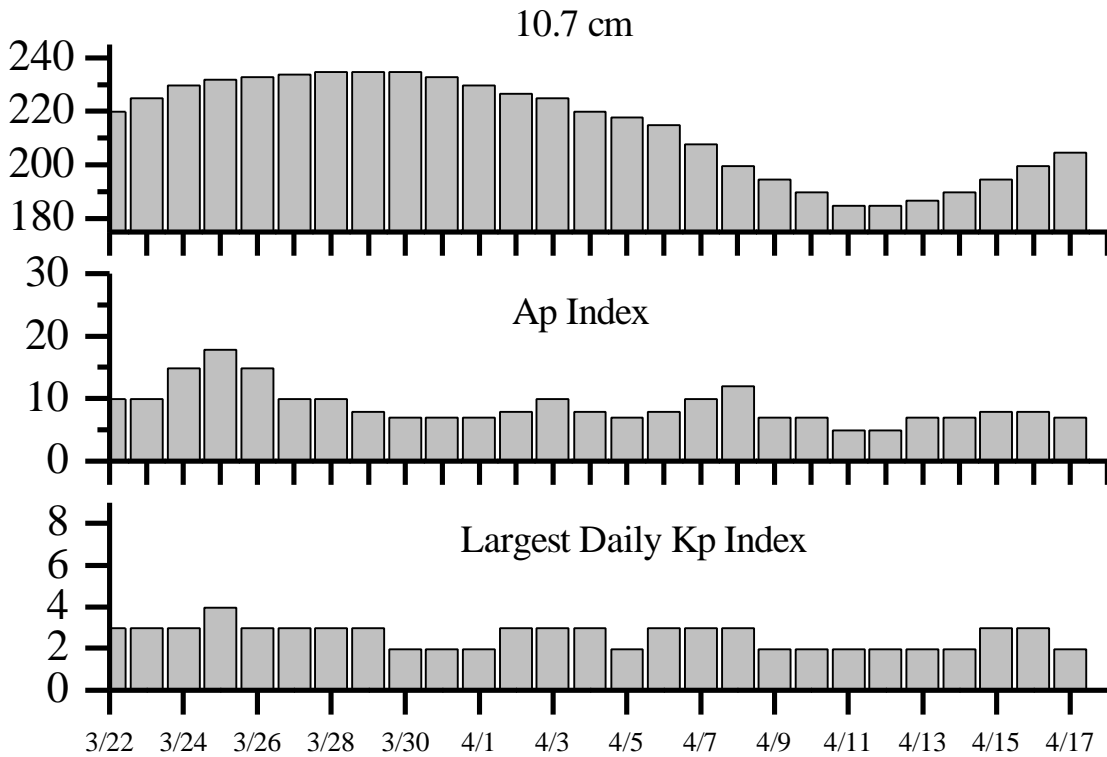


Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event
13 Mar 1241	Stratwarm Alert Exists Monday	
14 Mar 0118	5 - 245 MHz Bursts	13 Mar
14 Mar 1243	Stratwarm Alert Exists Tuesday	
15 Mar 0031	5 - 245 MHz Bursts	14 Mar
15 Mar 1230	Stratwarm Alert Exists Wednesday	
16 Mar 0016	2 - 245 MHz Bursts	15 Mar
16 Mar 1152	Stratwarm Alert Exist Thursday	
17 Mar 0029	5 - 245 MHz Bursts	16 Mar
17 Mar 0029	245 MHz Noise Storms	16 Mar
17 Mar 1235	Stratwarm Alert Exists Friday	
18 Mar 0228	5 - 245 MHz Bursts	17 Mar
18 Mar 1510	Stratwarm Alert Exists Saturday	
18 Mar 2229	Type II Radio Emission	18 Mar 2103
18 Mar 2231	Type II Radio Emission	18 Mar 2156
19 Mar 0013	5 - 245 MHz Bursts	18 Mar
19 Mar 0048	10cm Radio Burst 380 F.U.	18 Mar 2326
19 Mar 0401	Type II Radio Emission	19 Mar 0204
19 Mar 1338	Stratwarm Alert Exists Sunday	
19 Mar 1924	10cm Radio Burst 350 F.U.	19 Mar 1752



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
22 Mar	220	10	3	05	218	7	2
23	225	10	3	06	215	8	3
24	230	15	3	07	208	10	3
25	232	18	4	08	200	12	3
26	233	15	3	09	195	7	2
27	234	10	3	10	190	7	2
28	235	10	3	11	185	5	2
29	235	8	3	12	185	5	2
30	235	7	2	13	187	7	2
31	233	7	2	14	190	7	2
01 Apr	230	7	2	15	195	8	3
02	227	8	3	16	200	8	3
03	225	10	3	17	205	7	2
04	220	8	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
13 Mar	1038	1048	1101	M1.4	.015	1N	S14E11	8906				
15 Mar	1836	1840	1843	M1.4	.004	1N	S18W21	8906				
17 Mar	1108	1125	1134	M1.1	.010	SF	S14W47	8906	96			
18 Mar	2047	2102	2116	M2.1	.024	1N	S16W54	8906				
18 Mar	2313	2333	2353	M2.6	.038	2N	N11W09	8910		83		
18 Mar	2353	2357	0019	M3.9	.045	1N	S16W61	8906		380		
19 Mar	1701	1756	1807	M1.6	.036	1F	S17W71	8906	110	350		

Flare List

Date	Time			X-ray Class.	Optical Imp / Brtns	Location Lat CMD	Rgn #
	Begin	Max	End				
13 March	0046	0055	0107				
	0131	0133	0136		SF	S14W46	8898
	0159	0202	0218		SF	S10E14	8906
	0231	0234	0243	C1.4	SF	N09E69	8910
	0502	0504	0530	C6.8	SN	S17E15	8906
	0656	0656	0659		SF	N28W80	8904
	0716	0729	0756	C3.9	SF	S15E14	8906
	B0827	U0828	0851	C3.7	SF	S15E13	8906
	0927	0933	1000	C2.7	SF	S18E10	8906
	B1042	U1046	1136	M1.4	1N	S14E11	8906
	1438	1439	1443	C2.4	SF	N06E57	8910
	1507	1510	1514	C1.4			
	1614	1621	1636	C3.5	SF	S18E09	8906
	1642	1649	1653	C2.2			
	1723	1729	1741	C1.8	SF	S14W33	8901
	1826	1832	1837	C3.2			
	1909	1915	1918	C2.8			
	2105	2109	2113	C1.7			
	2303	2314	2324	C3.1			
14 March	0507	0511	0516	C1.9	SF	S19E01	8906
	0514	0515	0522		SF	N08E49	8910
	0540	0545	0607		SF	N10E55	8910
	0745	0749	0753	C1.3			
	0747	0749	0755		SF	N08E47	8910
	0800	0801	0804		SF	S18W02	8906
	0856	0902	0911	C1.7	SF	N08E46	8910
	1050	1059	1105	C2.6			
	1354	1357	1403	C1.3			
	1438	1438	1440		SF	S19W02	8906
	1439	1440	1445		SF	S15W82	8898
1442	1443	1446		SF	S20W02	8906	
1709	1709	1716		SF	N09E49	8910	



Flare List-continued

Date	Time			X-ray Class.	Optical		Rgn
	Begin	Max	End		Imp / Brtns	Location Lat CMD #23	
14 March	1726	1728	1731		SF	S16W10	8906
	1734	1737	1753	C1.9	SF	N11E48	8910
	2021	2023	2032		SF	S18W06	8906
	2046	2052	2057	C2.2	SF	S18W09	8906
	2101	2104	2124	C3.9	SF	N09E46	8910
	2130	2131	2135		SF	S15W12	8906
	2226	2226	2256		SF	S12W50	8901
	2236	2247	2311		SF	S17W08	8906
	2340	2344	2349	C2.0			
15 March	0100	0103	0107	C1.9			
	0117	0120	0122	C1.1			
	0226	0233	0237	C2.3			
	0316	0320	0324	C4.2			
	0338	0342	0345	C6.8			
	0517	0520	0522	C1.7			
	0538	0543	0547	C4.0			
	0624	0628	0632	C2.1			
	0749	0754	0801	C4.1			
	1057	1100	1106	C1.3			
	1220	1237	1249	C3.0	SF	S16W23	8906
	1402	1402	1407		SF	S18W19	8906
	1414	1415	1425	C1.7	SF	S15W55	8901
	1442	1500	1510		SF	S14W56	8901
	1457	1458	1501		SF	S18W18	8906
	1556	1559	1601	C1.2			
	1643	1643	1646		SF	S18W20	8906
	1825	1832	1834	C3.2			
	1826	1839	1916	M1.4	1N	S18W21	8906
	2111	2115	2117	C2.1			
2316	2320	2325	C1.2				
16 March	0347	0348	0357	C1.7	SF	S12E53	8913
	0423	0423	0428	C2.1	SF	S19W31	8906
	0517	0518	0523		SF	S13E53	8913
	0617	0620	0625	C1.6			
	0754	0755	0757		SF	N09E29	8910
	B1109	U1120	A1139	C6.2	SF	S14W30	8906
	1409	1410	1444	C6.3	SF	N10E23	8910
	1456	1457	1502	C2.8	SF	S15W38	8906
	1517	1520	1534	C3.3	SF	S14W35	8906
	1838	1838	2007	C9.0	1F	S17W34	8906
	2045	2046	2053	C1.6	SF	N09E21	8910
	2115	2116	2134		SF	N09E20	8910



Flare List-continued

Date	Time			X-ray Class.	Optical		Rgn #
	Begin	Max	End		Imp / Brtns	Location Lat CMD	
16 March	2205	2209	2318	C6.6	1F	N08E19	8910
17 March	0345	0409	0420	C1.7			
	0429	0435	0441	C3.2			
	0453	0458	0506	C5.8			
	0719	0719	0723	C1.7	SF	S16W40	8906
	0729	0729	0736	C3.3	SF	S15W39	8906
	0809	U0814	0833	C4.3	SF	N13E11	8910
	0934	0935	0948	C1.8	SF	N09E12	8910
	1111	1118	1146	M1.1	SF	S14W47	8906
	1412	1414	1421		SF	S16E34	8913
	1533	1533	1544		SF	N09E11	8910
	1702	1702	1723		SF	S19W48	8906
	1709	1711	1722	C1.7	SF	S17E32	8913
	1744	1748	1750	C2.8			
	1949	1955	2005	C1.8	SF	S18W48	8906
	2156	2203	2313	C3.6	SF	S17W47	8906
	B2352	U2355	A0146	C6.1	SF	S18W51	8906
18 March	0352	0406	0412	C3.1			
	0843	0853	0908	C2.7			
	0918	0933	0943	C3.0			
	1627	1633	1700		SF	N09W04	8910
	1758	1840	1905		SF	N10W03	8910
	1848	1853	1856		SF	S18W88	8902
	2047	2102	2116	M2.1	1N	S16W64	8906
	2128	2136	2140		SF	N09W09	8910
	2152	2156	2226	C4.5	1F	S31W14	8909
	2321	2332	A0028	M2.6	2N	N11W09	8910
	2327	2331	2334		SF	N19E18	8906
	2354	2355	0022	M3.9	1N	S16W61	8906
19 March	B0024	U0028	A0054		SF	S18W64	8906
	0156	0202	0210	C5.5			
	B0219	U0220	A0236		SF	N09W08	8910
	0220	0502	0506		SF	N19E16	8917
	B0251	U0252	A0256		SF	N14E59	8916
	0710	0713	0721		SF	N14W14	8910
	0748	0748	A0800		SF	N13W15	8910
	0903	0904	0912	C2.7	SF	N11W15	8910
	B1105	U1106	1110	C2.2	SF	S20W69	8906
	1138	1144	1209	C5.3	SF	S31W21	8909
	1148	U1151	A1208		SF	N14W15	8910



Flare List-continued

Date	Time			X-ray Class.	Optical		Rgn #	
	Begin	Max	End		Imp / Brtns	Location Lat CMD		
19 March	1415	1415	1420	C2.9	SF	S19W72	8906	
	1441	1441	1938		SF	N12E61	8916	
	1444	1446	1453		SF	N11W20	8910	
	1500	1503	1510		SF	N09W19	8910	
	1557	1602	1615		SF	N09W16	8910	
	1629	1633	1639		SF	S18W73	8906	
	1701	1708	1807		SF	N11W20	8910	
	1753	1755	1830		M1.6	1F	S17W71	8906
	1829	1832	1847			SF	N20E09	8917
	2144	2147	2200			SF	N14W21	8910
	2202	2208	2219	SF		N14W21	8910	
	2215	2215	2223	SF		N18E48	8916	
	2314	2337	2357	SF	N31W12	8918		
	2357	2358	0005	SF	N31W16	8918		



Region Summary

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

Region 8898

02 Mar	S15E71	200	0010	01	AXX	001	A													
03 Mar	S16E60	197	0030	07	BXO	003	B													
04 Mar	S15E48	196	0050	07	DSO	006	B													
05 Mar	S13E34	197	0140	07	DAO	014	B	8			15									
06 Mar	S13E20	198	0330	09	DKO	020	B	1			1									
07 Mar	S13E07	198	0470	13	EKO	018	B				1									
08 Mar	S13W06	198	0470	12	EKI	021	BG													
09 Mar	S13W20	199	0550	12	EKO	023	B													
10 Mar	S13W32	198	0420	12	EHl	021	B	1			1									
11 Mar	S13W45	198	0370	11	EAI	017	B													
12 Mar	S13W59	199	0310	11	EAO	011	B	2			2	1								
13 Mar	S14W70	197	0250	11	EAO	006	B				1									
14 Mar	S13W83	196	0160	10	DAO	004	B				1									
15 Mar	S12W89	189	0020	01	AXX	001	A													
								12	0	0	22	1	0	0	0	0				

Crossed West Limb.

Absolute heliographic longitude: 198

Region 8901

05 Mar	S13E71	160	0010	02	AXX	002	A												
06 Mar	S14E57	161	0020	08	BXO	005	B				1								
07 Mar	S15E41	164	0020	16	BXO	008	B												
08 Mar	S13E29	163	0030	05	BXO	006	B												
09 Mar	S12E15	164	0010	03	BXO	003	B												
10 Mar	S12E01	165	0020	01	CRO	003	B												
11 Mar	S12W13	166	0010	01	HSX	001	A												
12 Mar	S12W22	162	0010	07	CSO	004	B												
13 Mar	S12W37	164	0010	06	CAO	002	B	1			1								
14 Mar	S13W49	162	0020	07	BXO	003	B				1								
15 Mar	S14W60	160	0020	04	BXO	004	B	1			2								
16 Mar	S14W75	162	0010	01	HRX	001	A												
17 Mar	S15W86	160	0000	00	AXX	001	A												
								2	0	0	5	0	0	0	0	0			

Crossed West Limb.

Absolute heliographic longitude: 165



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 8902

06 Mar	S18E72	146	0030	01	HSX	001	A											
07 Mar	S17E60	145	0050	01	HSX	001	A											
08 Mar	S18E49	143	0040	03	HSX	003	A											
09 Mar	S18E35	144	0010	02	BXO	004	B											
10 Mar	S18E22	144	0010	01	AXX	003	A											
11 Mar	S17E10	143	0020	01	HSX	001	A											
12 Mar	S17W03	143	0010	01	HRX	001	A											
13 Mar	S18W17	144	0010	03	BXO	004	B											
14 Mar	S17W30	143	0000	00	AXX	001	A											
15 Mar	S17W43	143																
16 Mar	S17W56	143																
17 Mar	S17W69	143																

0 0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 143

Region 8903

07 Mar	S12E23	182	0030	04	DAO	002	B											
08 Mar	S12E09	183	0040	09	DAO	007	B											
09 Mar	S12W03	182	0050	07	DRO	009	B											
10 Mar	S12W17	183	0040	09	CRO	011	B											
11 Mar	S12W31	184	0040	09	DSO	006	B											
12 Mar	S12W46	186	0040	07	CAO	008	B					1						
13 Mar	S12W58	185	0090	07	CAO	008	B											
14 Mar	S12W71	184	0030	06	CSO	003	B											
15 Mar	S12W85	185	0020	01	HSX	001	A											

0 0 0 1 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 182

Region 8904

08 Mar	N26W06	198	0030	05	CRO	007	B											
09 Mar	N24W19	198	0050	07	CRO	014	B	1			1							
10 Mar	N25W32	198	0100	09	CAO	024	B				3							
11 Mar	N24W45	198	0130	11	ESO	018	B	2			2							
12 Mar	N23W59	199	0170	11	EAO	012	B	3			6							
13 Mar	N24W70	197	0150	12	EAO	010	B				1							
14 Mar	N24W83	196	0160	05	CAO	004	B											

6 0 0 13 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 198



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 8905

08 Mar	S06E22	170	0020	02	BXO	005	B												
09 Mar	S06E08	171	0010	03	CRO	005	B												
10 Mar	S06W05	171	0010	01	BXO	004	B												
11 Mar	S06W18	171																	
12 Mar	S06W31	171										1							
13 Mar	S06W44	171																	
14 Mar	S06W57	171																	
15 Mar	S06W70	171																	
16 Mar	S13W83	171																	
												0	0	0	1	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 171

Region 8906

08 Mar	S17E68	124	0740	08	HKX	012	A												
09 Mar	S16E55	124	0480	12	EKO	019	B	2				1	1						
10 Mar	S16E44	122	0730	10	DKC	029	B	10				12	1						
11 Mar	S16E31	122	0800	09	DKC	022	BD	3	1			6	1						
12 Mar	S15E18	122	0850	16	FKC	041	BD	4	1			5	1						
13 Mar	S16E06	121	0840	13	EKC	032	BD	5	1			6	1						
14 Mar	S16W09	122	0900	14	EKC	038	BD	2				9							
15 Mar	S16W20	120	0720	15	EKC	047	BGD	1	1			4	1						
16 Mar	S16W37	124	0680	10	DKI	022	BGD	5				4	1						
17 Mar	S16W49	123	0610	09	DKI	020	B	5	1			7							
18 Mar	S17W62	123	0410	08	DKO	010	BG		2			1	2						
19 Mar	S17W75	122	0370	10	DKO	007	B	2	1			4	1						
												39	8	0	59	1	0	0	0

Still on Disk.

Absolute heliographic longitude: 121

Region 8907

08 Mar	S17E22	170	0040	06	DSO	007	B												
09 Mar	S18E06	173	0040	06	CSO	004	B												
10 Mar	S16W06	172	0020	02	HRX	002	A												
11 Mar	S18W20	173	0020	07	CSO	005	B												
12 Mar	S17W35	175	0010	00	AXX	001	A												
13 Mar	S17W48	175	0000	00	AXX	001	A												
14 Mar	S17W61	175																	
15 Mar	S17W74	175																	
16 Mar	S17W87	175																	
												0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 173



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 8908

09 Mar	S19E71	108	0100	09	CSO	003	B										
10 Mar	S19E59	107	0070	08	CSO	006	B										
11 Mar	S19E45	108	0040	04	CSO	003	B										
12 Mar	S20E33	107	0020	04	CSO	004	B										
13 Mar	S20E21	106	0010	04	BXO	003	B										
14 Mar	S23E08	106	0000	03	BXO	002	B										
15 Mar	S23E05	106															
16 Mar	S23W18	106															
17 Mar	S23W31	106															
18 Mar	S23W44	106															
19 Mar	S23W57	106															
										0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 106

Region 8909

11 Mar	S29E76	077	0030	02	HRX	001	A										
12 Mar	S29E64	076	0040	02	HSX	002	A										
13 Mar	S29E55	072	0050	08	CSO	003	B										
14 Mar	S28E40	073	0050	07	CSO	004	B										
15 Mar	S28E27	073	0020	08	BXO	003	B										
16 Mar	S28E12	075	0010	07	CSO	002	B										
17 Mar	S29E01	073	0020	07	CSO	003	B										
18 Mar	S28W16	077	0030	03	DRO	004	B	1				1					
19 Mar	S29W25	073	0010	07	BXO	006	B	1									
								2	0	0	1	1	0	0	0	0	

Still on Disk.

Absolute heliographic longitude: 073

Region 8910

12 Mar	N11E68	072	0140	06	CAO	004	B										
13 Mar	N09E56	071	0100	05	DAO	003	B	2				2					
14 Mar	N10E43	070	0250	06	DAO	010	B	3				7					
15 Mar	N11E31	069	0250	08	DAO	023	B										
16 Mar	N11E18	069	0230	08	DAI	021	BG	3				4	1				
17 Mar	N11E05	069	0250	10	DAI	034	B	2				3					
18 Mar	N11W10	071	0390	09	DAI	035	BG		1			3		1			
19 Mar	N12W23	071	0590	12	EKC	048	BGD	2				11					
								12	1	0	30	1	1	0	0		

Still on Disk.

Absolute heliographic longitude: 069



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 8911

14 Mar	N11W43	156	0020	02	CRO	002	B										
15 Mar	N12W55	155	0010	06	BXO	003	B										
16 Mar	N10W68	155	0010	01	HRX	001	A										
17 Mar	N08W79	153	0010	00	HRX	001	A										
								0	0	0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 156

Region 8912

14 Mar	N15W02	115	0000	00	AXX	001	A										
15 Mar	N15W15	115															
16 Mar	N15W28	115															
17 Mar	N15W41	115															
18 Mar	N15W54	115															
19 Mar	N15W67	115															
								0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 115

Region 8913

14 Mar	S14E66	047	0000	00	AXX	001	A										
15 Mar	S16E57	043	0030	07	BXO	005	B										
16 Mar	S16E42	045	0060	07	DAO	007	B	1			2						
17 Mar	S16E30	044	0100	09	DAO	011	B	1			2						
18 Mar	S16E17	044	0140	10	DAO	012	B										
19 Mar	S16E04	044	0220	11	EAI	021	B										
								2	0	0	4	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 044

Region 8914

16 Mar	N16E05	082	0010	02	BXO	003	B										
17 Mar	N16W08	082															
18 Mar	N16W21	082															
19 Mar	N16W34	082															
								0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 082



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 8915</i>																	
16 Mar	N22E76	011	0080	02	HSX	001	A										
17 Mar	N23E62	012	0130	02	HSX	001	A										
18 Mar	N23E49	012	0170	04	CSO	003	B										
19 Mar	N23E36	012	0170	03	HSX	002	A										
								0	0	0	0	0	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 012																	
<i>Region 8916</i>																	
17 Mar	N12E74	000	0070	02	HSX	001	A										
18 Mar	N13E64	357	0280	11	CSO	006	B										
19 Mar	N14E53	355	0260	09	DAO	011	B					3					
								0	0	0	0	3	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 355																	
<i>Region 8917</i>																	
18 Mar	N20E18	043	0010	03	BXO	002	B										
19 Mar	N19E04	044	0070	06	DAO	014	B					2					
								0	0	0	0	2	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 044																	
<i>Region 8918</i>																	
19 Mar	N32W14	062	0030	06	CRO	006	B					2					
								0	0	0	0	2	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 062																	
<i>Region 8919</i>																	
19 Mar	S22E58	350	0000	04	BXO	003	B										
								0	0	0	0	0	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 350																	

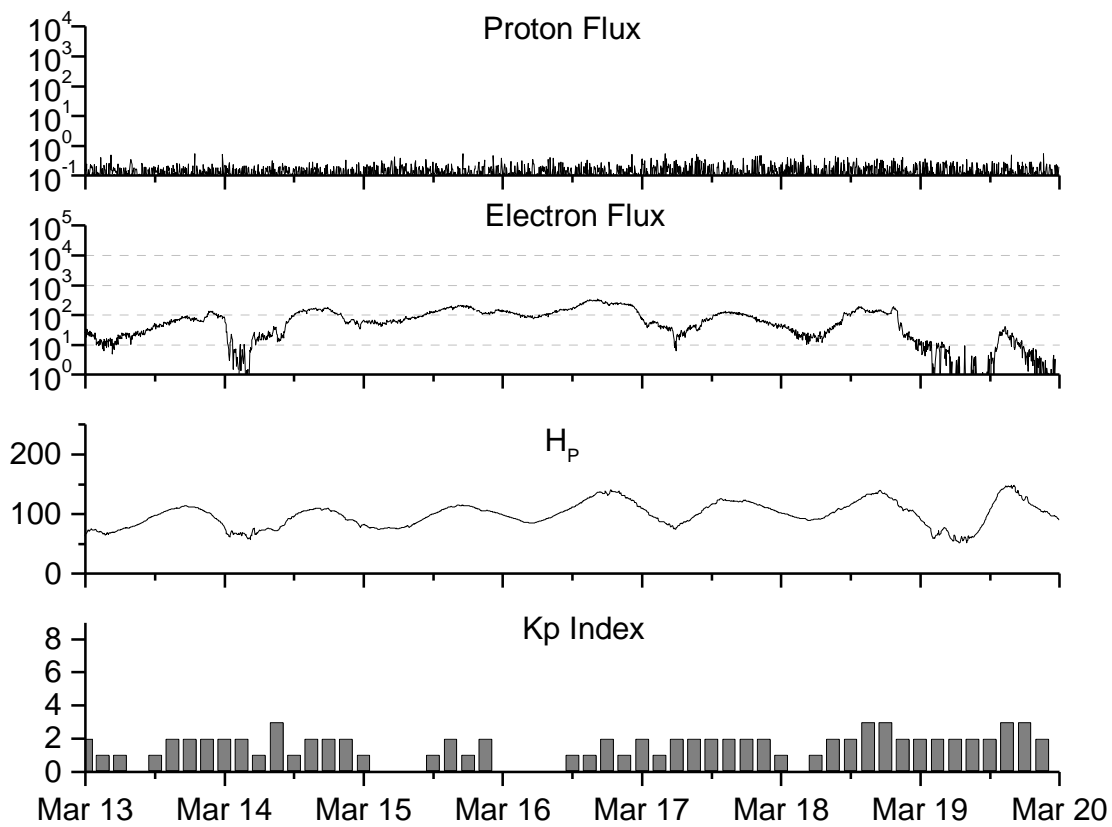


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

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									
February	54.4	40.3	0.74	67.4	48.9	93.4	101.7	08	10.5
March	81.8	54.8	0.67	73.3	53.4	109.1	105.8	13	11.1
April	73.6	53.4	0.73	77.7	56.5	108.3	108.9	10	11.3
May	74.3	56.3	0.76	81.4	59.4	106.7	112.0	18	11.6
June	93.6	70.7	0.76	85.9	62.5	108.4	115.8	10	11.9
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	85.4	117.2	145.8	12	12.2
May	140.5	106.3	0.76	131.7	90.4	148.6	150.0	08	12.4
June	208.3	137.4	0.66	136.0	93.0	169.8	152.9	07	12.4
July	169.2	113.5	0.67	138.0	94.4	165.6	154.4	10	12.3
August	136.1	93.7	0.69	142.8	97.5	170.8	156.4	15	12.2
September	107.4	70.9	0.66			135.7		19	
October	167.7	116.4	0.69			164.9		19	
November	199.3	132.7	0.67			191.7		14	
December	123.5	86.4	0.70			169.8		10	
2000									
January	140.8	90.2	0.64			158.3		06	
February	161.9	112.3	0.69			173.7		13	

NOTE: All smoothed values after November 1998 and monthly values after June 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 13 March 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.

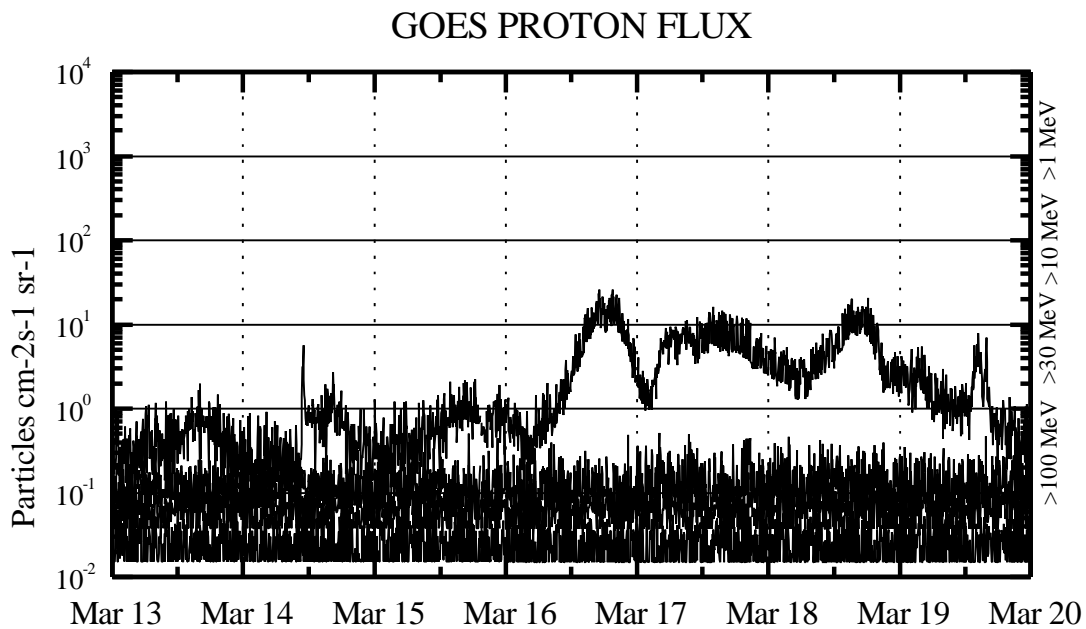
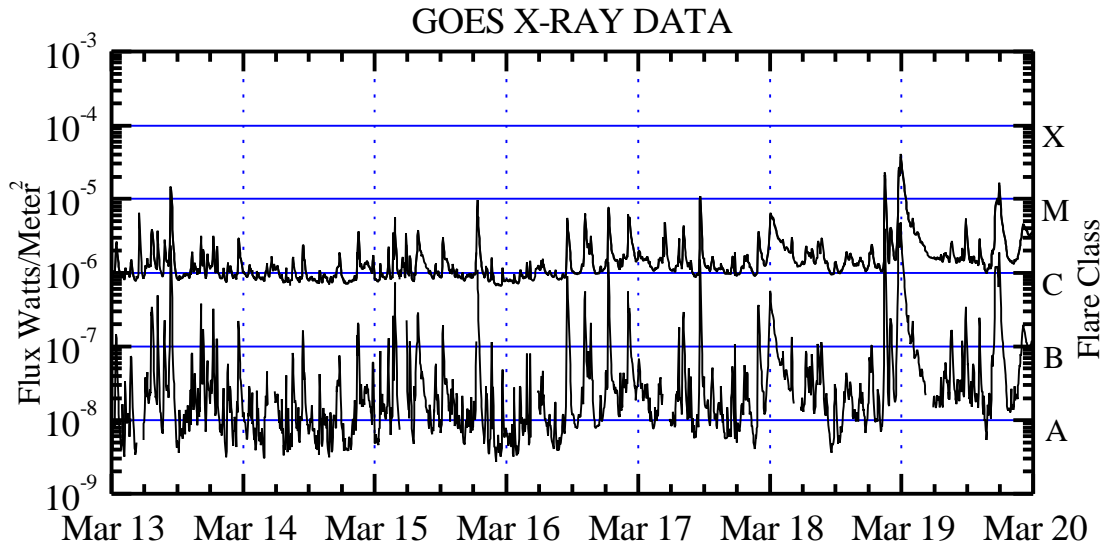
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV at GOES-8.

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.

