

Space Weather Highlights **27 March – 02 April 2000**

SWO PRF 1283
04 April 2000

Solar activity ranged from low to high levels. The period began with activity at moderate levels as Region 8926 (S10, L = 013, class/area Dai/090 on 24 March) produced isolated M-class flares which included an M1/1N at 27/0518UT and an M3/SF at 28/0137UT. An optically uncorrelated Type II radio sweep occurred at 27/0646UT. Activity dropped to low levels on 29 March with occasional C-class x-ray flares, most of which were optically uncorrelated. Activity returned to moderate levels on 30 March as Region 8936 (S15, L = 202, class/area Dai/360 on 02 April) produced multiple low-level M-class flares, which included an M1/SF at 30/1245UT, an M3/1N at 30/1606UT, and an M2/2B at 30/2325UT. Activity rose to high levels on 31 March due to numerous M-class flares from several regions. The most flare productive of these was Region 8939 (N23, L = 194, class/area Dao/120 on 02 April), a small, compact region with a strong degree of magnetic mixing. It produced an M4/SF at 31/1019UT associated with a Type IV radio sweep, as well as M1/SF flares at 31/0755UT, 31/1318UT, and 31/1655UT. Region 8936, a compact, mixed-polarity group, showed moderate growth during 31 March and produced an M1/SN at 31/0652UT. Region 8925 (S18, L = 283, class/area Dki/270 on 27 March) added to the 31 March M-class total with an M2/1N at 31/1901UT. Activity decreased to low levels during the last two days of the period with most regions either stabilized or decaying.

Real-time solar wind data were available from the NASA Advanced Composition Explorer (ACE) spacecraft for most of the period. A transient signature was observed on 29 March with an associated velocity increase from 320 to 670 km/sec, a minor density increase, and periods of southward IMF Bz with maximum deflections to minus 8 nT (GSM). IMF Bz was generally southward during 30 - 31 March with maximum deflections to minus 9 nT along with increased densities. Another disturbance was detected during 01 - 02 April with increased velocities (peaks up to 510 km/sec on 02 April) along with periods of southward Bz to minus 11 nT.

There were no proton events or enhancements at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at normal to moderate levels. The geomagnetic field was mildly disturbed during the latter half of 29 March with unsettled to active levels detected globally and brief minor storm periods at high latitudes. Activity subsided to mostly quiet to unsettled levels during 30 March. Activity increased during the first half of 31 March with active to minor storm levels detected, then declined to quiet to unsettled levels for the remainder of the day. Activity increased to unsettled to active levels during 01/1800 - 02/0900UT followed by a return to quiet to unsettled levels.

Space Weather Outlook **05 April - 01 May 2000**

Solar activity is expected to vary between low and moderate levels with isolated low-level M-class flares likely. There will also be a slight chance for isolated major flare activity sometime during the period due to the return of previously active longitudes.

There will be a slight chance for a proton flux event at geosynchronous orbit sometime during the period.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at normal to moderate levels during most of the period.

Barring an Earth-directed coronal mass ejection (CME), geomagnetic field activity is expected to be at quiet to unsettled levels for most of the period.



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
27 March	205	227	1200	C1.0	9	1	0	12	2	0	0	0
28 March	201	232	1250	C1.1	12	1	0	8	1	0	0	0
29 March	209	238	910	C1.5	5	0	0	7	0	0	0	0
30 March	206	225	910	C1.2	11	4	0	29	1	1	0	0
31 March	225	248	950	C1.2	9	6	0	19	2	0	0	0
01 April	223	287	1430	C1.3	8	0	0	20	1	0	0	0
02 April	219	301	1700	C1.2	3	0	0	20	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
	27 March	2.7E+5	1.2E+4	2.4E+3		7.5E+6
28 March	1.4E+5	1.2E+4	2.5E+3		4.7E+6	
29 March	2.9E+5	1.3E+4	2.6E+3		5.9E+6	
30 March	8.0E+5	1.2E+4	2.5E+3		1.8E+6	
31 March	1.6E+5	1.2E+4	2.5E+3		1.8E+5	
01 April	1.1E+5	1.2E+4	2.6E+3		6.8E+5	
02 April	8.8E+4	1.1E+4	2.5E+3		2.9E+6	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	27 March	3	1-2-0-1-1-1-0-1	*	*-1-0-0-0-0-*0	5
28 March	3	2-1-1-1-1-1-1-0	1	1-1-0-1-0-0-0-0	5	2-1-2-2-1-2-2-1
29 March	9	0-0-1-1-2-1-4-4	*	0-0-3-5-0-0-3-*	9	1-0-1-2-2-2-4-4
30 March	8	2-1-1-0-3-2-3-3	16	5-1-3-4-2-1-3-2	10	2-2-2-2-3-3-3-3
31 March	18	3-4-4-3-3-3-3-3	*	*-*-*-*-*-*-*	19	3-4-4-4-4-3-3-3
01 April	12	2-3-2-2-3-2-4-3	*	*-*-*-*-*-*-*	14	3-3-1-2-3-4-4-3
02 April	14	4-3-3-3-3-3-2-2	*	*-*-*-*-*-*-*	16	4-3-4-3-3-3-3-3

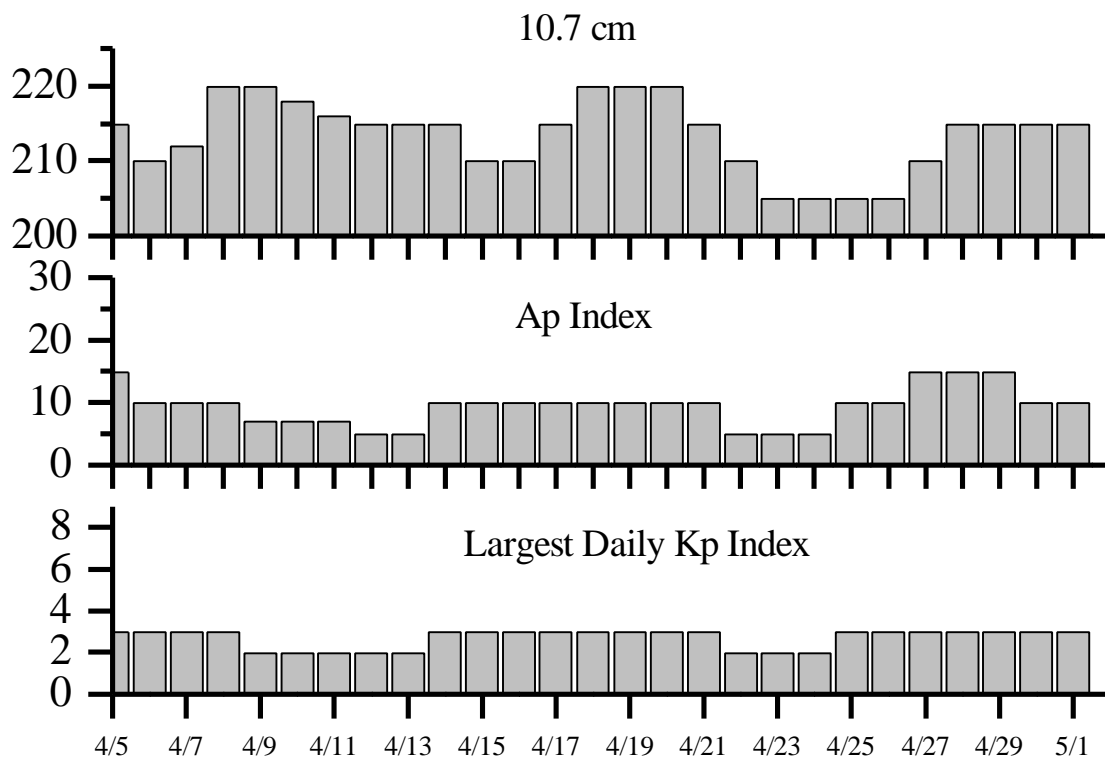


Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event
27 Mar 0022	3 – 245 MHz Radio Bursts	26 Mar
27 Mar 0022	1 – 245 MHz Radio Noise Storm	26 Mar
27 Mar 0735	Type II Radio Emission	27 Mar 0646
27 Mar 1115	Stratwarm Alert EXISTS	27 Mar
28 Mar 0015	1 – 245 MHz Radio Burst	27 Mar
28 Mar 1031	Stratwarm Alert EXISTS	28 Mar
28 Mar 1441	A-Index ≥ 20 Watch CANCELLED	29 Mar
29 Mar 0054	1 – 245 MHz Radio Burst	28 Mar
29 Mar 1022	Stratwarm Alert EXISTS	29 Mar
30 Mar 0001	K= 4 Observed	29 Mar 21 - 24
30 Mar 0010	2 – 245 MHz Radio Bursts	29 Mar
30 Mar 1210	Stratwarm Alert EXISTS	30 Mar
30 Mar 1756	K= 4 Observed	30 Mar 15 - 18
31 Mar 0034	4 – 245 MHz Radio Bursts	30 Mar
31 Mar 0600	K= 5 Observed	31 Mar 03 - 06
31 Mar 0801	K= 4 Warning valid	31 Mar 08 - 15
31 Mar 1041	K= 4 Observed	31 Mar 09 - 12
31 Mar 1134	Stratwarm Alert EXISTS	31 Mar
31 Mar 1136	Type IV Radio Emission	31 Mar 1035
31 Mar 1206	A-Index ≥ 20 Observed	31 Mar 1200
31 Mar 1450	K= 4 Warning EXTENDED, now valid through	01 Apr 0000
01 Mar 0021	1 – 245 MHz Radio Noise Storm	31 Mar
01 Apr 0604	A-Index ≥ 20 ENDED	31 Mar 1200
01 Apr 2100	K= 4 Observed	01 Apr 18 - 21
01 Apr 2100	K= 4 Warning valid	01 Apr 2100 - 02 Apr 1500
02 Mar 0209	2 – 245 MHz Radio Bursts	01 Apr



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
05 Apr	215	15	3	19 Apr	220	10	3
06	210	10	3	20	220	10	3
07	212	10	3	21	215	10	3
08	220	10	3	22	210	5	2
09	220	7	2	23	205	5	2
10	218	7	2	24	205	5	2
11	216	7	2	25	205	10	3
12	215	5	2	26	205	10	3
13	215	5	2	27	210	15	3
14	215	10	3	28	215	15	3
15	210	10	3	29	215	15	3
16	210	10	3	30	215	10	3
17	215	10	3	01 May	215	10	3
18	220	10	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
28 Mar	0134	0137	0139	M3.1	.005	SF	S11W73		8926				
30 Mar	0659	0714	0743	M1.2	.025	SF	N12E76			37	87		
30 Mar	1239	1245	1250	M1.3	.006	SF	S16E64		8936				
30 Mar	1558	1607	1612	M3.4	.014	1N	S17E63		8936				
30 Mar	2317	2324	2327	M2.0	.006	2B	S15E59		8936				
31 Mar	0622	0652	0723	M1.2	.034	SN	S15E55		8936		46		
31 Mar	0750	0755	0758	M1.0	.004	SF	N22E64		8939				
31 Mar	1013	1019	1024	M4.1	.017	SF	N23E65		8939	99	120		1
31 Mar	1312	1318	1323	M1.8	.008	SF	N24E60		8939		110		
31 Mar	1650	1655	1701	M1.2	.005	SF	N23E58		8939				
31 Mar	1842	1901	1905	M2.0	.016	1N	S20W26		8925				

Flare List

Date	Time			X-ray Class.	Optical Imp / Brtns	Location Lat CMD	Rgn #
	Begin	Max	End				
27 March	0111	0112	A0115	C9.6	SF	S10W58	8926
	0316	0327	0337	C4.3			
	0514	0519	0601	M1.0	1N	S10W62	8926
	0551	0553	0608		SF	N11E26	8924
	0637	0654	0714	C2.3			
	0757	0759	0808	C2.3	SF	S17E42	8931
	1039	1045	1055	C6.2	SF	S10W65	8926
	1359	1400	1439	C8.4	1F	S09W69	8926
	1415	1415	1420	C7.9	SF	S11W68	8926
	1433	1435	1506		SF	N10E20	8924
	1532	1538	1545	C8.9	SF	S10W69	8926
	1614	1615	1649		SF	N20E58	8934
	1646	1646	1651		SF	N17W57	8927
	1714	1715	1718		SF	N17W57	8927
	2038	2039	2045		SF	S18E20	8925
	2105	2116	2120	C4.7	SF	S11W71	8926
	28 March	0010	0016	0024	C2.5		
0129		0131	0156		SF	S19W17	8921
0136		0138	0200	M3.1	SF	S11W73	8926
0211		0214	0225	C4.5	1F	S09W74	8926
0215		0217	0225		SF	N10E13	8924
0230		0230	0237		SF	N10E11	8924
0345		0350	0352	C1.9			
0611		0613	0615		SF	S16W28	8921
0742		0746	0748	C2.4			
0831		0834	0836	C2.2			
1032		1059	1108	C1.8			
1318	1347	1415	C3.0				
1626	1643	1657	C4.7				



Flare List-continued

Date	Time			X-ray Class.	Optical		Rgn #
	Begin	Max	End		Imp / Brtns	Location Lat CMD	
28 March	1903	1914	1922	C8.7			
	2027	2040	2049	C4.0			
	2210	2219	2228	C4.4			
	2250	2251	2255	C3.8	SF	S17E82	
	2256	2306	2331		SF	S14E21	8931
	2359	0005	0008		SF	S20E06	8925
29 March	B0040	0041	0048		SF	S18E10	8925
	0136	0142	0149	C6.0			
	0513	0518	0532	C6.7			
	0919	0924	0932	C2.7			
	1114	1118	1121	C1.8			
	1429	1433	1445		SF	S17W02	8925
	1845	1847	1857	C4.4	SF	S17E75	8936
	1952	1954	1957		SF	S17E71	8936
	2140	2141	2145		SF	N14W80	8916
	2205	2205	2210		SF	S17E71	8936
	2219	2219	2223		SF	S17E69	8936
30 March	0005	0009	0016		SF	S17E70	8936
	B0053	U0059	A0110	C8.4	SF	S17E68	8936
	0128	0138	0151		SF	S18E72	8936
	0211	U0215	A0218		SF	S18E70	8936
	0225	U0225	A0250		SF	S18E70	8936
	0316	0316	0323		SF	S17E71	8936
	0341	0346	0356	C2.3			
	0446	0446	0456		SF	S11W19	8925
	B0710	U0710	0723	M1.2	SF	N12E76	
	0752	0755	0801		SF	S17E68	8936
	0912	0915	0917	C2.2			
	0934	0936	0948	C4.0	SF	S17E67	8936
	0943	0944	0952		SF	S17W48	8921
	1242	1245	1300	M1.3	SF	S16E64	8936
	1257	1258	1304		SF	S17W13	8925
	1351	1351	1416	C2.4	SF	S17W15	8925
	1437	1440	1458	C4.0	SF	S17W15	8925
	1457	1457	1504		SF	S19W52	8921
	1512	1519	1536	C3.3	SF	S18W16	8925
	1601	1606	1629	M3.4	1N	S17E63	8936
	1723	1727	1735	C1.9			
	1756	1801	1818	C4.3	SF	S17E63	8936
	1854	1854	1858	C3.0	SF	S17E62	8936
1923	1925	1927		SF	N22E74	8939	
2007	2008	2011		SF	S16E60	8936	



Flare List-continued

Date	Time			X-ray Class.	Optical		Rgn #	
	Begin	Max	End		Imp / Brtns	Location Lat CMD		
30 March	2008	2017	2023		SF	S05E58	8938	
	2035	2036	2041		SF	S18E60	8936	
	2050	2054	2127		SF	N23E69	8939	
	2051	2053	2057		SF	N26E60	8941	
	2235	2253	0005	C2.4	SF	S06E21	8935	
	2323	2325	0005	M2.0	2B	S15E59	8936	
	2324	2327	0004		SF	S17W20	8925	
	B2326	U2326	2358		SF	S17W20	8925	
	B2326	2334	2340		SF	S08E20	8935	
	31 March	0000	0003	0010		SF	N22E53	8939
0031		0032	0051		1F	S17E55	8936	
0216		0225	0237	C2.1				
0318		0321	0323	C3.1				
0458		0505	0511	C3.1				
0512		0517	0524	C9.5				
0632		0636	A0702	M1.2	SN	S15E55	8936	
0643		0652	A0702		SF	S16W25	8925	
0645		0657	A0702		SF	N22E65	8939	
0732		0806	0833	M1.0	SF	N22E64	8939	
0759		0801	0818		SF	S17E51	8936	
0801		0804	0809		SF	N15W09	8933	
B0932		U0932	0946	C8.5	SF	S17E53	8936	
B1005		U1005	A1008	C2.7	SF	N24E67	8939	
B1015		U1017	1044	M4.1	SF	N23E65	8939	
1144		1144	1158	C6.5	SF	S15E53	8936	
1314		1316	1333	M1.8	SF	N24E60	8939	
1654		1655	1704	M1.2	SF	N23E58	8939	
1655		1655	1708		SF	S16E50	8936	
1841		1850	1959	M2.0	1N	S20W26	8925	
1859		1900	1913		SF	S16E49	8936	
1923		1923	1928		SF	S16E49	8936	
2252		2252	2309	C1.8	SF	S17E46	8936	
2340		2342	2348	C1.9	SF	S16E45	8936	
2358		0002	0009		SF	N24E60	8939	
01 April		0003	0014	0024		SF	S16E45	8936
		0030	0101	0119		SF	S17W34	8925
		B0109	0154	0204		SF	S19E75	8945
	0158	0202	0209		SF	S17E41	8936	
	0204	0207	0214		SF	S19E75	8945	
	0212	0213	0215		SF	N24E58	8939	
	0246	0256	0309		SF	S19E84	8945	
	0312	0315	0348	C8.2	SF	S17W35	8925	
	0402	0406	0419		SF	N24E57	8939	



Flare List-continued

Date	Time			X-ray Class.	Optical		Rgn #
	Begin	Max	End		Imp / Brtns	Location Lat CMD	
01 April	0405	0406	0410		SF	S17E40	8936
	0432	0439	0510		SF	S19E74	8945
	0524	0524	0551		SF	N10W47	8924
	0525	0528	0552	C2.5	SF	S16E42	8936
	0659	0700	0721		SF	S16E41	8936
	0726	0742	0804	C8.1	1N	N10W48	8924
	1040	1052	1058	C2.2			
	1140	1141	1217	C6.1	SF	N23E47	8939
	1226	1232	1238	C3.0			
	B1716	U1717	1727		SF	N24E50	8939
	1746	1748	1825	C8.3	SF	N24E45	8939
	1901	1903	1909		SF	N14W30	8933
	1940	1942	1957	C2.6	SF	N26E30	
	02 April	1943	1952	1956		SF	N10W54
0109		0112	0116		SF	N24E46	8939
0127		0128	0132		SF	N16W33	8933
0203		0206	0212		SF	N24E45	8939
0346		0348	0357		SF	N24E45	8939
0348		0351	0356		SF	S08W09	8935
0531		0534	0538		SF	N22E34	8939
0547		0547	0605		SF	N22E40	8939
0839		0842	0853	C2.4	SF	N20E36	8939
1136		1136	A1148		SF	N24E39	8939
1551		1554	1600		SF	N16W42	8933
1612		1624	1654		SF	N15W42	8933
1655		1657	1703		SF	S16E29	8936
1655		1713	1722		SF	N16W43	8933
1704		1713	1845	C6.1	SF	S15E24	8936
1743		1745	1750		SF	N16W41	8933
1751		1754	1802		SF	N15W42	8933
1907		1918	1942	C5.2	SF	S18W57	8925
2009		2009	2022		SF	N21E34	8939
2040	2044	2051		SF	S18E22	8936	
2307	2313	2325		SF	S18E19	8936	



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 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															
20 Mar	N23E24	010	0200	03	HSX	002	A															
21 Mar	N22E13	008	0170	08	CAO	004	B															
22 Mar	N23W01	009	0210	03	HAX	002	A															
23 Mar	N23W14	009	0140	03	HSX	001	A	1				1										
24 Mar	N23W27	009	0170	03	HSX	001	A															
25 Mar	N23W41	009	0130	03	HSX	002	A															
26 Mar	N23W52	007	0150	02	HSX	001	A															
27 Mar	N23W65	007	0170	03	HSX	001	A															
28 Mar	N22W78	007	0150	02	HSX	001	A															
								1	0	0	1	0	0	0	0	0						

Crossed West Limb.

Absolute heliographic longitude: 9

<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		
20 Mar	N13E40	354	0250	11	ESO	016	B													2		
21 Mar	N13E27	354	0300	10	DAO	010	B													1		
22 Mar	N12E14	354	0240	11	EAO	013	B															
23 Mar	N13E01	354	0180	10	CAO	011	B													3		
24 Mar	N12W14	356	0140	08	DAO	010	B															
25 Mar	N12W27	355	0110	08	DSO	009	B															
26 Mar	N13W42	357	0140	04	DSO	005	B	1												1		
27 Mar	N13W56	358	0130	05	DSO	006	B															
28 Mar	N13W68	357	0130	05	DSO	004	B															
29 Mar	N12W84	360	0060	03	HSX	001	A													1		
								1	0	0	11	0	0	0	0	0						

Crossed West Limb.

Absolute heliographic longitude: 354



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 8920

20 Mar	N24E55	339	0010	00	AXX	001	A												
21 Mar	N24E40	341	0000	00	AXX	001	A												
22 Mar	N24E30	338	0020	06	BXO	005	B												
23 Mar	N23E16	339	0030	06	CSO	006	B												
24 Mar	N24E03	339																	
25 Mar	N24W10	339																	1
26 Mar	N24W23	339																	
27 Mar	N24W36	339																	
28 Mar	N24W49	339																	
29 Mar	N24W62	339																	
30 Mar	N24W75	339																	
																			0 0 0 1 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 339

Region 8921

20 Mar	S15E71	323	0030	04	CSO	002	B												
21 Mar	S16E60	321	0080	06	CAO	006	B												
22 Mar	S17E48	320	0370	09	DAO	014	B												4
23 Mar	S17E37	318	0340	10	DKI	017	B												2
24 Mar	S17E23	319	0420	10	EKC	026	B												1
25 Mar	S18E09	319	0240	10	DAI	027	B	1											1
26 Mar	S17W03	318	0260	10	DAI	029	B												3
27 Mar	S18W17	319	0130	10	DAI	020	B												
28 Mar	S17W30	319	0140	09	DAI	025	B												2
29 Mar	S17W44	320	0040	10	DSO	010	B												
30 Mar	S17W56	318	0010	09	CRO	005	B												2
31 Mar	S17W69	318																	
																			1 0 0 14 1 0 0 0

Still on Disk.

Absolute heliographic longitude: 318



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 8922

21 Mar	N14E57	324	0010	01	AXX	002	A											
22 Mar	N13E44	324	0030	02	CRO	003	B											
23 Mar	N14E32	323	0000	01	AXX	002	A											
24 Mar	N12E17	325	0000	00	AXX	001	A											
25 Mar	N12E04	325																
26 Mar	N12W09	325																
27 Mar	N12W22	325																
28 Mar	N12W35	325																
29 Mar	N16W44	320	0010	01	AXX	002	A											
30 Mar	N16W57	320																

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 325

Region 8923

22 Mar	S27E43	325	0010	03	BXO	003	B											
23 Mar	S26E32	323	0020	05	CSO	003	B											
24 Mar	S26E18	324	0020	06	CAO	002	B											
25 Mar	S27E05	323	0010	06	CAO	002	B											
26 Mar	S26W12	327	0000	00	AXX	001	A											
27 Mar	S26W24	326	0000	00	AXX	001	A											
28 Mar	S26W37	326																
29 Mar	S26W50	326																
30 Mar	S26W63	326																

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 323



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 8924

23 Mar	N13E70	285	0110	11	CAO	004	B											
24 Mar	N12E55	287	0140	10	CSO	004	B											
25 Mar	N10E41	287	0120	07	DAO	012	B						2					
26 Mar	N10E27	288	0200	07	DAI	024	BG											
27 Mar	N10E13	289	0230	09	DAI	022	B						2					
28 Mar	N10W01	290	0290	08	DAI	028	B						2					
29 Mar	N10W14	290	0340	11	EKO	018	B											
30 Mar	N10W28	290	0300	09	DKO	016	BG											
31 Mar	N10W42	291	0290	09	DKI	019	BGD											
01 Apr	N10W55	291	0350	09	DSI	014	BG	1					2	1				
02 Apr	N11W69	292	0330	09	DAO	011	BG											
										1	0	0	8	1	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 290

Region 8925

23 Mar	S17E76	279	0030	03	HAX	001	A											
24 Mar	S17E63	279	0090	07	CAO	002	B						1					
25 Mar	S18E50	278	0080	06	CSO	008	B						3					
26 Mar	S18E35	280	0170	07	DSI	017	BG						3					
27 Mar	S18E21	281	0270	10	DKI	020	B						1					
28 Mar	S17E08	281	0270	10	DKI	020	B						1					
29 Mar	S17W07	283	0180	11	EAI	027	B						2					
30 Mar	S18W20	282	0160	12	EAI	021	BG	3	1				7					
31 Mar	S18W33	282	0070	13	EAO	016	BG			1			1	1				
01 Apr	S18W44	280	0080	12	EAO	011	BG	1					2					
02 Apr	S18W56	279	0040	04	DAO	004	B	1					1					
										5	2	0	22	1	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 283

Region 8926

23 Mar	S10W18	013	0030	03	DAO	005	B											
24 Mar	S10W31	013	0090	08	DAI	011	B						3					
25 Mar	S10W45	013	0080	08	DSO	019	BGD	4					4					
26 Mar	S09W58	013	0090	08	DSO	012	BGD	1	1				2					
27 Mar	S09W71	013	0070	08	DSO	006	B	6	1				5	2				
28 Mar	S10W84	013	0080	07	DSO	005	B	1	1				1	1				
										12	3	0	15	3	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 13



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 8927

23 Mar	N18E00	355	0040	06	DAO	006	B					8						
24 Mar	N17W14	356	0060	07	DSO	009	B					1						
25 Mar	N16W28	356	0040	08	CAO	014	B											
26 Mar	N17W41	356	0130	09	DSO	017	BG											
27 Mar	N17W52	354	0070	08	DSO	011	B					2						
28 Mar	N17W66	355	0050	07	DSO	012	B											
29 Mar	N15W81	357	0000	04	BXO	002	B											
										0	0	0	11	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 355

Region 8928

24 Mar	N19E60	282	0060	09	CSO	002	B		1			2						
25 Mar	N19E45	283	0050	10	DAO	007	B	1				1						
26 Mar	N19E33	282	0060	11	CSO	008	B											
27 Mar	N18E16	286	0040	01	HSX	001	A											
28 Mar	N18E02	287	0040	01	HSX	001	A											
29 Mar	N19W12	288	0020	01	HSX	001	A											
30 Mar	N19W22	284	0020	01	HSX	001	A											
31 Mar	N19W39	288	0010	01	HSX	001	A											
01 Apr	N20W52	288	0010	01	HSX	001	A											
02 Apr	N21W64	287	0020	01	HSX	001	A											
									1	1	0	3	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 287

Region 8929

25 Mar	S25E53	275	0000	00	AXX	001	A											
26 Mar	S25E40	275																
27 Mar	S25E27	275																
28 Mar	S25E14	275																
29 Mar	S25E01	275																
30 Mar	S25W12	275																
31 Mar	S25W25	275																
01 Apr	S22W38	274	0000	00	AXX	001	A											
02 Apr	S22W51	274																
									0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 275



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 8930

25 Mar	S36E54	274	0000	03	BXO	002	B												
26 Mar	S36E41	274																	
27 Mar	S36E28	274																	
28 Mar	S36E15	274																	
29 Mar	S36E02	274																	
30 Mar	S36W11	274																	
02 Apr	S36W50	274																	

Still on Disk.

Absolute heliographic longitude: 274

Region 8931

26 Mar	S14E47	268	0010	08	BXO	008	B												
27 Mar	S14E34	268	0010	00	BXO	004	B	1				1							
28 Mar	S14E21	268	0020	04	DSO	004	B					1							
29 Mar	S13E07	269	0060	05	DAO	010	B												
30 Mar	S14W06	268	0060	09	DAO	009	B												
31 Mar	S14W20	269	0030	09	CAO	015	B												
01 Apr	S13W33	269	0090	11	EAO	017	B												
02 Apr	S14W46	269	0140	08	DAO	017	B												

Still on Disk.

Absolute heliographic longitude: 268

Region 8932

26 Mar	S14E71	244	0070	02	HSX	001	A												
27 Mar	S14E60	242	0060	02	HSX	001	A												
28 Mar	S14E46	243	0040	01	HSX	001	A												
29 Mar	S14E31	245	0050	02	HSX	001	A												
30 Mar	S15E18	244	0070	02	HSX	001	A												
31 Mar	S14E07	242	0050	09	CSO	008	B												
01 Apr	S13W06	242	0060	08	CSO	007	B												
02 Apr	S12W19	242	0100	08	CSO	011	B												

Still on Disk.

Absolute heliographic longitude: 242



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 8933

27 Mar N16E33	269	0010	01	HRX	001	A													
28 Mar N16E20	269	0020	11	ESO	007	B													
29 Mar N16E07	269	0030	08	DSO	004	B													
30 Mar N16W06	268	0020	08	CRO	005	B													
31 Mar N15W17	266	0030	04	DAO	006	B						1							
01 Apr N16W30	266	0060	05	DSO	009	B						1							
02 Apr N17W44	267	0110	07	DSO	017	B						6							
												0	0	0	8	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 268

Region 8934

27 Mar N22E53	249	0010	02	BXO	003	B						1							
28 Mar N21E39	250	0020	04	CRO	004	B													
29 Mar N22E25	251	0010	03	BXO	002	B													
30 Mar N21E11	251	0010	00	AXX	001	A													
31 Mar N21W02	251																		
01 Apr N21W15	251																		
02 Apr N21W28	251																		
												0	0	0	1	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 251

Region 8935

29 Mar S07E33	243	0030	05	CSO	011	B												
30 Mar S07E20	242	0050	07	DAO	009	B	1				2							
31 Mar S08E06	243	0130	08	DAO	016	B												
01 Apr S07W07	243	0170	06	DAO	013	B												
02 Apr S07W20	243	0120	06	DAO	013	B						1						
							1	0	0	3	0	0	0	0	0			

Still on Disk.

Absolute heliographic longitude: 243

Region 8936

29 Mar S16E71	205	0080	06	CSO	007	B	1				4							
30 Mar S16E58	204	0140	07	DSO	010	B	4	3			13	1	1					
31 Mar S15E47	202	0260	12	EAI	021	BD	4	1			9	1						
01 Apr S15E33	203	0300	10	DKC	030	BG	1				5							
02 Apr S15E21	202	0360	09	DAI	036	BG	1				4							
							11	4	0	35	2	1	0	0				

Still on Disk.

Absolute heliographic longitude: 202



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 8937

29 Mar	N26E64	212	0000	00	AXX	002	A										
30 Mar	N26E51	212															
31 Mar	N26E38	212															

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 212

Region 8938

30 Mar	S07E56	206	0030	03	CSO	004	B										
31 Mar	S07E42	207	0010	02	CRO	002	B										
01 Apr	S06E30	206	0010	01	AXX	001	A										
02 Apr	S04E17	206	0020	01	AXX	003	A										

0 0 0 1 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 206

Region 8939

30 Mar	N22E72	190	0030	03	HSX	001	A										
31 Mar	N22E55	194	0030	03	CRO	003	B	1	4								
01 Apr	N23E43	193	0130	05	DAO	008	B	2									
02 Apr	N23E29	194	0120	06	DAO	009	B	1									

4 4 0 23 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 194

Region 8940

30 Mar	N13E65	197	0010	01	HRX	001	A										
31 Mar	N14E50	199	0020	00	HSX	001	A										
01 Apr	N14E38	198	0020	01	HRX	001	A										
02 Apr	N14E25	198	0020	01	HSX	001	A										

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 198

Region 8941

30 Mar	N25E54	208	0000	01	AXX	001	A										
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0 0 0 1 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 208



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 8942</i>																	
31 Mar	S12E20	229	0010	04	BXO	004	B										
01 Apr	S12E06	230	0020	01	HRX	002	A										
02 Apr	S12W08	231	0050	06	CRO	010	B										
								0	0	0	0	0	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 230																	
<i>Region 8943</i>																	
31 Mar	N23E20	229	0010	04	BXO	006	B										
01 Apr	N23E07	229	0030	06	BXO	008	B										
02 Apr	N23W06	229	0080	08	DSO	011	B										
								0	0	0	0	0	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 229																	
<i>Region 8944</i>																	
01 Apr	N08E70	166	0050	02	HSX	001	A										
02 Apr	N09E58	165	0090	02	HSX	001	A										
								0	0	0	0	0	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 165																	
<i>Region 8945</i>																	
01 Apr	S17E72	164	0050	05	BXO	003	B										4
02 Apr	S17E59	164	0100	07	DSO	006	B										
								0	0	0	4	0	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 164																	

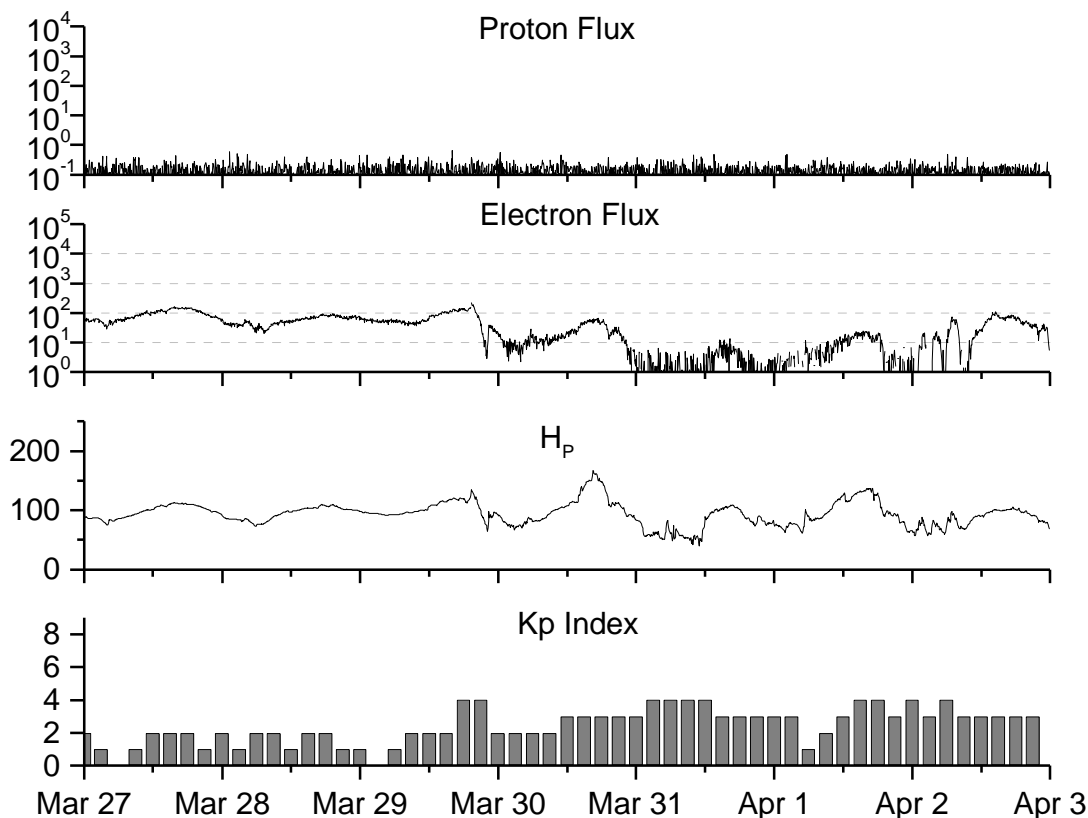


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

Month	Sunspot Numbers				Radio Flux		Geomagnetic		
	Observed values SWO	RI	Ratio RI/SWO	Smooth values SWO	RI	*Penticton 10.7 cm	Smooth Value	Planetary Ap	Smooth Value
1998									
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	150.0	102.3	135.7	161.1	19	12.0
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	
March	203.6	138.2	0.68			208.2		09	

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 27 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.

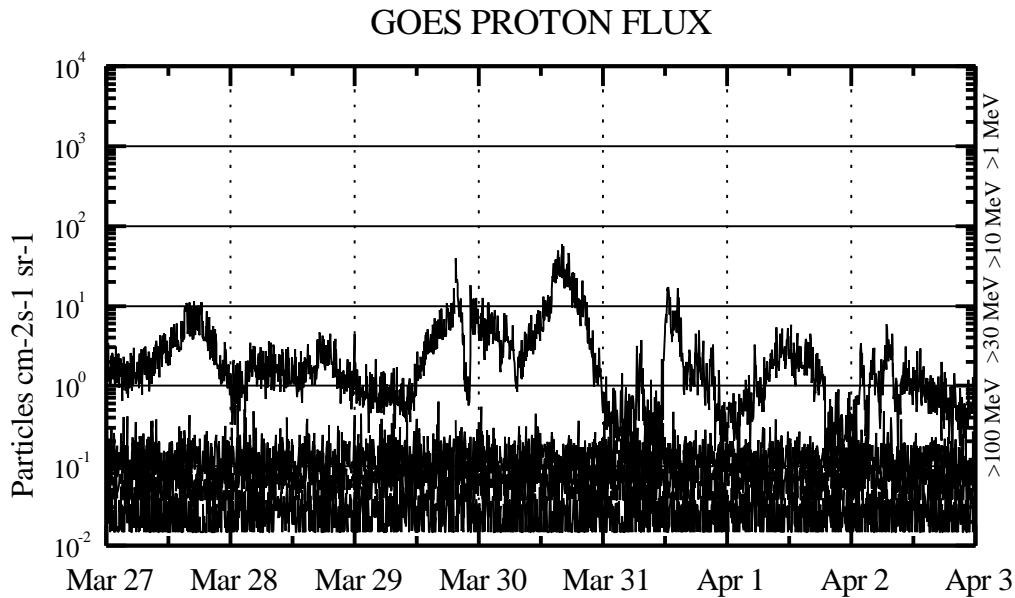
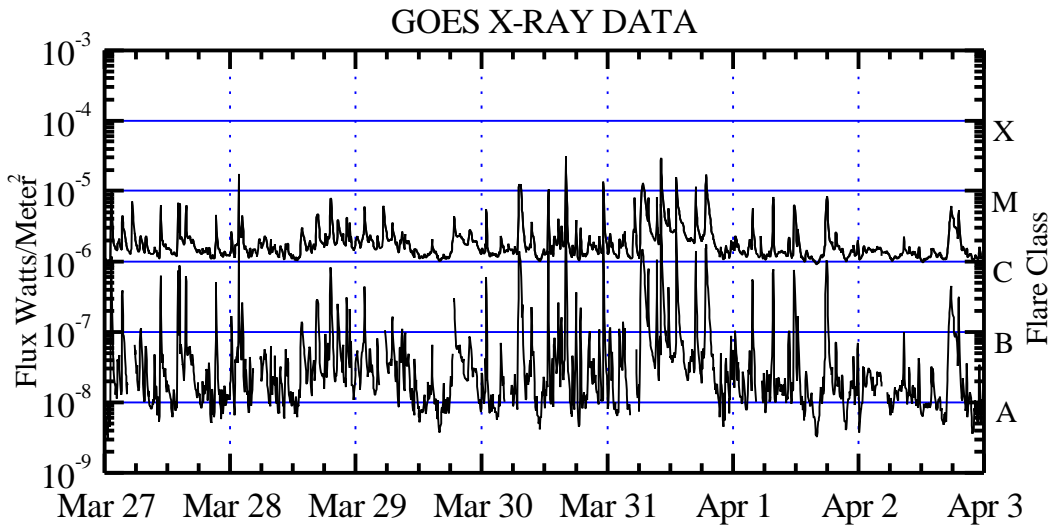
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV at GOES-8.

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.





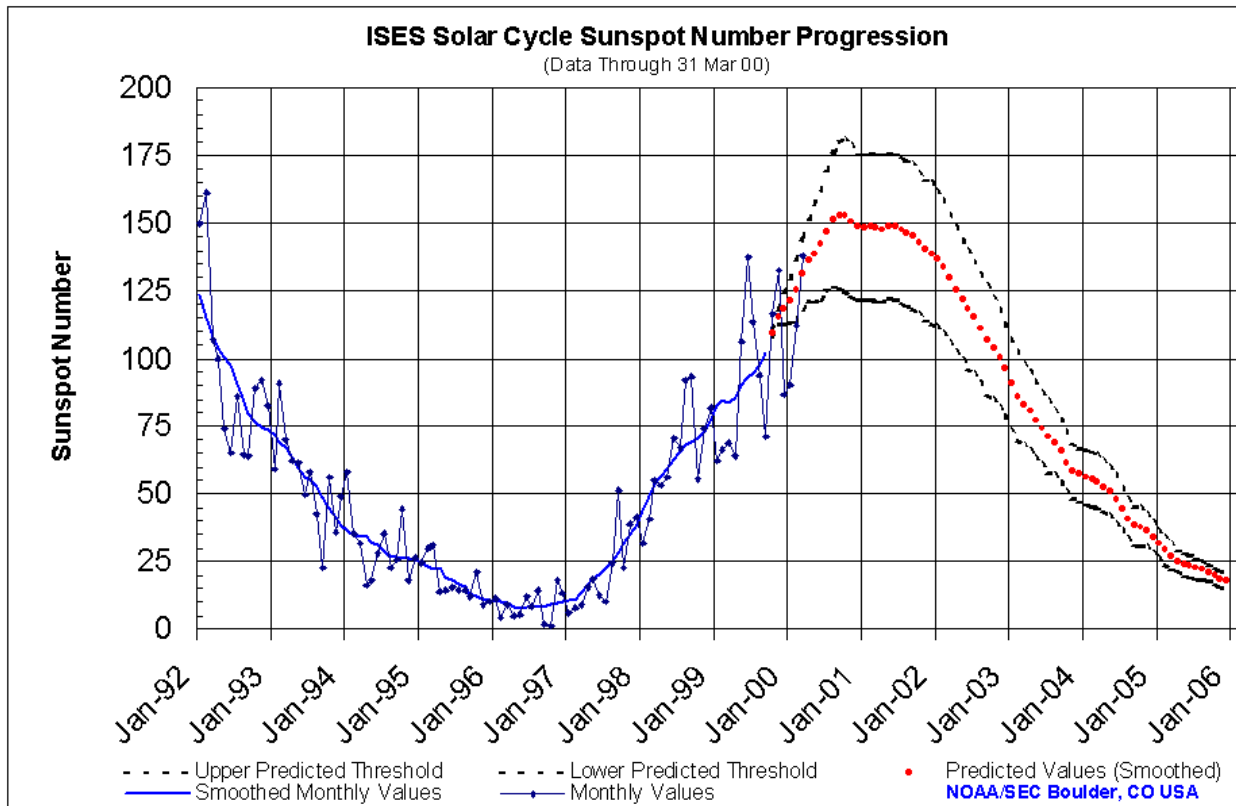
Wee

kly 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.

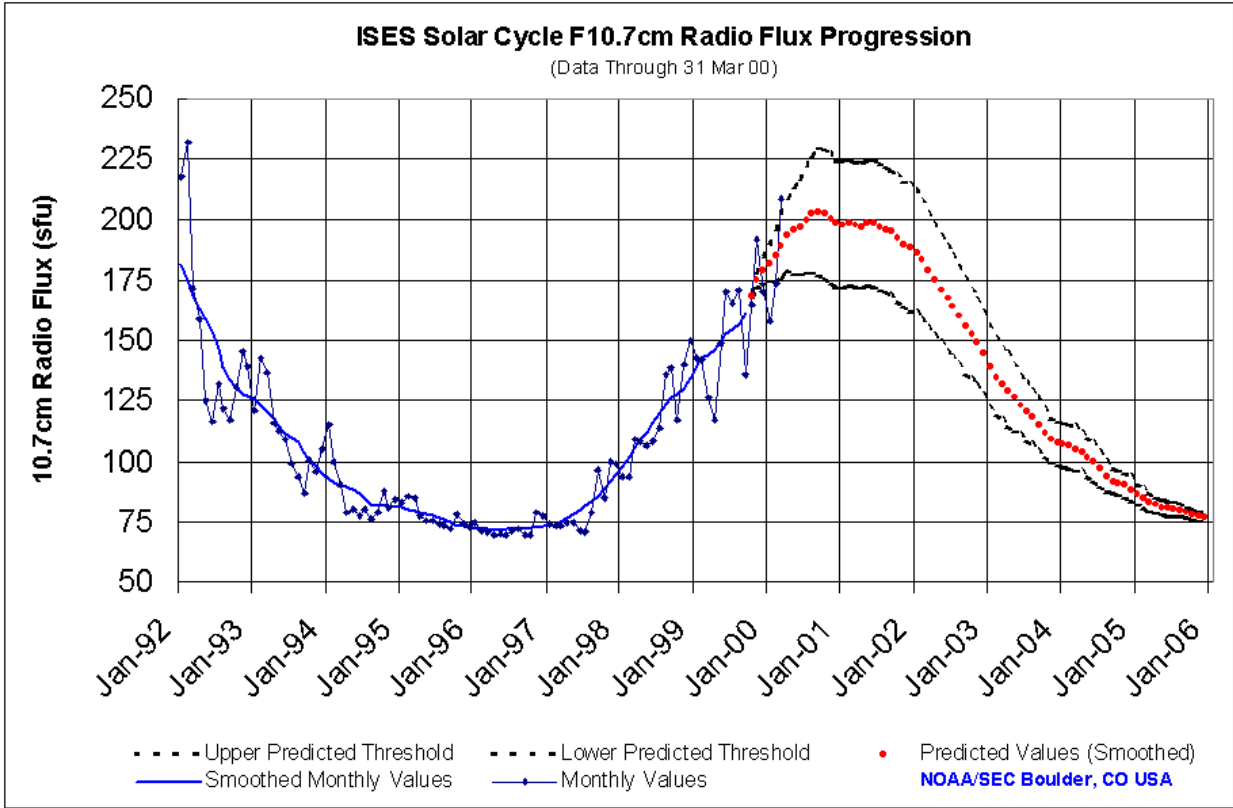




SEC Prediction of Smoothed Sunspot Number

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1996	10	10	10	9	8	9	8	8	8	9	10	10
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)
1997	11	11	14	17	18	20	23	25	28	32	35	39
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)
1998	44	49	53	57	59	63	66	68	70	71	73	78
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)
1999	83	85	84	85	90	93	94	98	102	109	115	118
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(1)	(3)	(6)
2000	121	125	131	136	139	142	147	151	153	153	151	148
	(8)	(11)	(13)	(15)	(18)	(20)	(22)	(25)	(27)	(28)	(28)	(27)
2001	148	149	148	148	149	149	147	146	145	143	140	139
	(27)	(27)	(27)	(27)	(27)	(27)	(27)	(27)	(27)	(26)	(26)	(26)
2002	137	134	130	125	122	118	115	111	107	104	100	96
	(25)	(25)	(24)	(23)	(22)	(22)	(21)	(20)	(20)	(19)	(18)	(17)
2003	91	86	83	81	77	74	71	69	66	62	59	57
	(17)	(16)	(15)	(15)	(14)	(13)	(13)	(12)	(12)	(11)	(10)	(10)
2004	56	56	55	53	51	48	44	41	38	38	36	34
	(10)	(10)	(10)	(9)	(9)	(9)	(8)	(7)	(7)	(7)	(6)	(6)
2005	31	29	27	25	24	23	23	22	21	20	19	18
	(5)	(5)	(5)	(4)	(4)	(4)	(4)	(4)	(3)	(3)	(3)	(3)





SEC Prediction of Smoothed F10.7cm Radio Flux

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1996	72 (***)	72 (***)	72 (***)	72 (***)	71 (***)	72 (***)	72 (***)	72 (***)	72 (***)	73 (***)	73 (***)	73 (***)
1997	73 (***)	74 (***)	75 (***)	77 (***)	78 (***)	80 (***)	82 (***)	83 (***)	86 (***)	89 (***)	91 (***)	94 (***)
1998	98 (***)	102 (***)	106 (***)	109 (***)	112 (***)	116 (***)	120 (***)	124 (***)	127 (***)	128 (***)	130 (***)	134 (***)
1999	139 (***)	143 (***)	144 (***)	146 (***)	150 (***)	153 (***)	154 (***)	156 (***)	161 (***)	168 (1)	175 (3)	179 (6)
2000	182 (8)	185 (11)	189 (13)	194 (15)	196 (18)	197 (20)	200 (22)	203 (24)	203 (26)	202 (27)	200 (27)	198 (26)
2001	198 (26)	198 (26)	198 (26)	197 (26)	198 (26)	198 (26)	197 (26)	196 (26)	195 (26)	192 (26)	190 (26)	188 (26)
2002	187 (25)	184 (25)	179 (24)	175 (23)	171 (22)	167 (22)	164 (21)	160 (20)	156 (20)	153 (19)	149 (18)	145 (17)
2003	140 (17)	135 (16)	132 (15)	130 (15)	126 (14)	123 (12)	120 (12)	118 (11)	115 (11)	112 (10)	110 (9)	108 (9)
2004	107 (9)	106 (9)	105 (9)	104 (8)	102 (8)	100 (8)	97 (7)	94 (6)	92 (5)	91 (5)	90 (5)	88 (5)
2005	87 (4)	85 (4)	83 (4)	82 (3)	81 (3)	81 (3)	80 (3)	80 (3)	79 (2)	78 (2)	78 (2)	77 (2)



ISES Solar Cycle Ap Progression

(Data Through 31 Mar 00)

