

Space Weather Highlights
08 - 14 April 2002

SWO PRF 1389
16 April 2002

Solar activity ranged from low to high levels. Activity was low on 08 April with frequent C-class flares, most of which were produced by Region 9899 (N18, L = 179, class/area Dao/220 on 10 April). Activity increased to moderate levels on 09 April due to two M-class flares from Region 9899 including an M2/2b flare at 09/0042 UTC associated with Type II and IV radio sweeps (for other flare magnitudes and times, please refer to the Energetic Events or Optical Flares lists). It also produced an M1 X-ray flare at 10/1907 UTC and a C3/Sf flare at 12/0512 UTC, both associated with Type II and IV radio sweeps. Region 9899 grew at a gradual pace during most of the period, with minor mixed polarities near its large leader spot. Activity increased to high levels on 10 April due to an impulsive M8/1n flare at 10/1231 UTC from Region 9893 (N19, L = 215, class/area Eai/490 on 09 April) associated with a Type II radio sweep and a 510 sfu Tenflare. Region 9893 was part of a two region complex that included Region 9901 (N20, L = 204, class/area Dai/250 on 13 April), which rapidly emerged just to the east of Region 9893. The M8/1n flare occurred near the junction of these two groups where a magnetic delta configuration had formed. This delta configuration dissipated, but another delta developed in the leader spots of Region 9901 and persisted through the rest of the period. Activity alternated between low and moderate levels during 11 – 14 April with isolated M-class flares from the Region 9893/9901 complex including an M4/1f at 12/1802 UTC associated with a Type IV radio sweep.

Solar wind data were available from NASA Advanced Composition Explorer (ACE) spacecraft for most of the summary period. No significant disturbances were detected. However, minor changes were observed during 11 – 14 April including intermittent periods of sustained southward IMF Bz (maximum southward deflections to minus 9 nT (GSM)) and brief periods of elevated solar wind velocities (peaks to 530 km/sec on 11 April).

There were no proton events detected at geo-synchronous orbit.

Greater than 2 MeV electron fluxes at geo-synchronous orbit were at normal to moderate levels during 08 – 10 April, then decreased to normal levels for the rest of the period.

Geomagnetic field activity was at quiet to unsettled levels during 08 – 10 April. Activity increased to quiet to active levels during 11 – 14 April, though the active periods were brief.

Space Weather Outlook
17 April - 13 May 2002

Solar activity is expected to be at low to moderate levels during the period. Isolated lesser M-class flares are likely during 17 - 21 April and 29 April – 13 May. There will be a slight chance for isolated major flare activity during these periods as well. Activity is expected to be low during 22 – 28 April.

There will be a slight chance for a proton event through 20 April and again during 07 – 13 May.

Greater than 2 MeV fluxes may reach high levels around 30 April – 02 May. Normal to moderate flux levels are expected during the rest of the period.

Active geomagnetic field conditions are likely during 17 – 18 April due to an expected CME passage. Active conditions will also be possible during 27 – 30 April due to recurrent coronal hole effects.



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
08 April	206	245	1930	C1.1	13	0	0	12	0	0	0	0
09 April	205	212	1710	C1.3	4	2	0	2	2	1	0	0
10 April	194	220	1290	C1.2	7	2	0	13	3	0	0	0
11 April	197	235	1430	C1.0	8	0	0	9	2	0	0	0
12 April	212	263	1800	B9.3	7	2	0	11	1	0	0	0
13 April	226	257	2160	C1.1	9	0	0	8	0	0	0	0
14 April	210	236	2170	C2.4	9	2	0	26	2	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
	08 April	1.5E+5	1.2E+4	3.1E+3		8.7E+6
09 April	2.2E+5	1.2E+4	3.2E+3		8.9E+6	
10 April	2.1E+5	1.2E+4	3.1E+3		3.8E+6	
11 April	3.4E+5	2.5E+4	2.7E+3		7.4E+5	
12 April	7.0E+5	2.8E+4	2.4E+3		5.1E+5	
13 April	1.7E+5	1.3E+4	2.7E+3		3.2E+5	
14 April	1.8E+5	1.5E+4	2.6E+3		4.1E+5	

Daily Geomagnetic Data

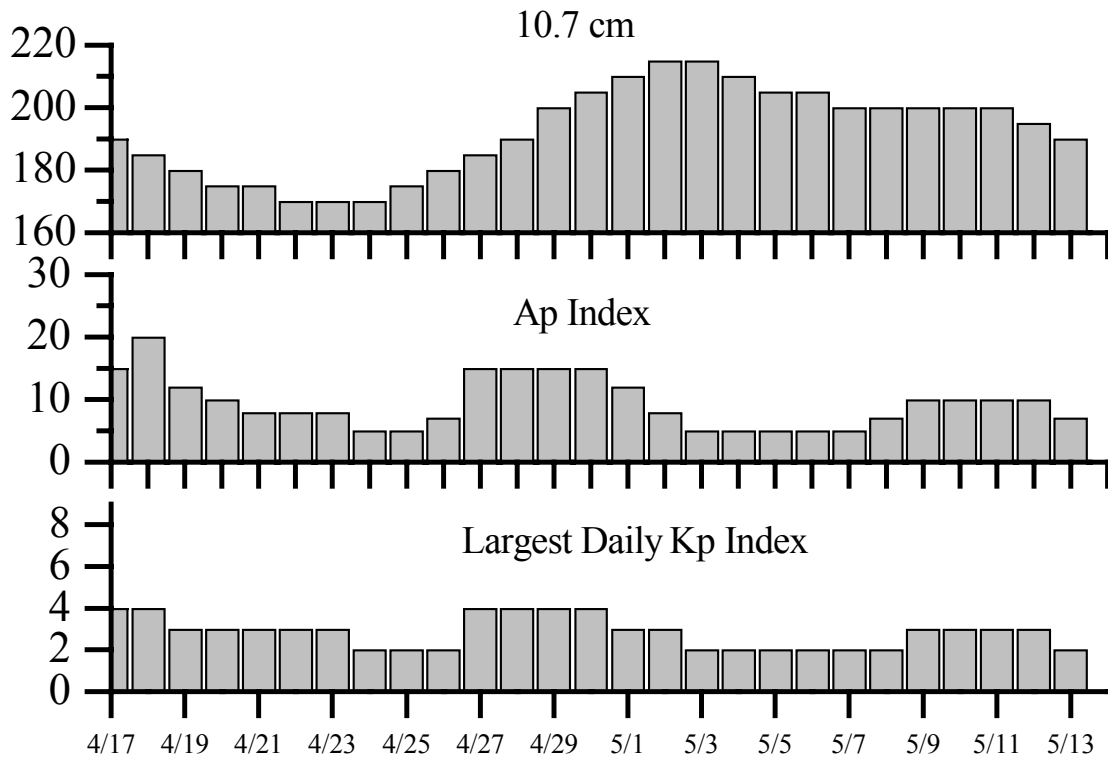
Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	08 April	2	0-0-1-1-1-1-1-1	*	*_*_*_*_*_*_*_*	5
09 April	2	0-0-1-0-1-2-1-1	1	0-0-1-0-0-0-0-1	6	2-0-1-1-2-3-3-2
10 April	4	0-1-1-2-1-2-1-2	5	0-0-0-4-1-2-1-2	7	1-0-1-3-3-3-3-2
11 April	10	2-1-2-3-3-2-2-3	11	2-1-2-4-3-2-2-3	13	2-1-2-3-3-4-3-4
12 April	14	4-2-2-2-4-2-3-3	24	4-1-5-5-5-2-2-2	13	4-2-2-2-3-3-3-3
13 April	9	2-2-2-3-3-2-2-3	24	1-3-4-4-5-5-3-2	14	3-2-3-4-3-3-3-3
14 April	8	3-2-1-1-3-3-0-1	31	3-3-3-2-7-5-1-1	13	3-3-2-2-4-3-3-2



Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UT
08 Apr 0030	1 - 245 MHz Radio Burst	07 Apr
09 Apr 00	5 - 245 MHz Radio Bursts	08 Apr
09 Apr 055	SUMMARY: 10cm Radio Burst	09 Apr 0040
09 Apr 104	ALERT: Type II Radio Emission	09 Apr 0043
09 Apr 131	ALERT: Type IV Radio Emission	09 Apr 0102
10 Apr 0030	5 - 245 MHz Radio Bursts	09 Apr
10 Apr 1230	ALERT: X-Ray Flux exceeded M5	10 Apr 1228
10 Apr 1249	SUMMARY: X-ray Event M8.2	10 Apr 1231
10 Apr 1304	SUMMARY: 10cm Radio Burst	10 Apr 1228
10 Apr 1308	ALERT: Type II Radio Emission	10 Apr 1230
10 Apr 1924	SUMMARY: 10cm Radio Burst	10 Apr 1903
10 Apr 1938	ALERT: Type II Radio Emission	10 Apr 1907
11 Apr 0028	4 - 245 MHz Radio Bursts	10 Apr
11 Apr 0028	1 - 245 MHz Radio Noise Storm	10 Apr
11 Apr 1644	ALERT: Type II Radio Emission	11 Apr 1626
12 Apr 0040	2 - 245 MHz Radio Bursts	11 Apr
12 Apr 0040	1 - 245 MHz Radio Noise Storm	11 Apr
12 Apr 0105	ALERT: Geomagnetic K= 4	12 Apr 12 0103
12 Apr 0123	ALERT: Geomagnetic K= 5	12 Apr 0115
12 Apr 0132	WARNING: Geomagnetic K= 4 Apr 12 0135	12 Apr 1500
12 Apr 0517	ALERT: Type II Radio Emission	12 Apr 0505
12 Apr 0610	ALERT: Type IV Radio Emission	12 Apr 0507
12 Apr 1816	ALERT: Type IV Radio Emission	12 Apr 1748
12 Apr 2257	SUMMARY: Geomagnetic Sudden Impulse	12 Apr 2243
13 Apr 0058	1 - 245 MHz Radio Burst	12 Apr
13 Apr 0058	2 - 245 MHz Radio Noise Storms	12 Apr
13 Apr 0106	WATCH: Geomagnetic A \geq 20 or greater predicted	13 Apr
14 Apr 0021	2 - 245 MHz Radio Bursts	13 Apr
14 Apr 0021	1 - 245 MHz Radio Noise Storm	13 Apr
14 Apr 0919	ALERT: Type II Radio Emission	14 Apr 0744
14 Apr 1430	ALERT: Geomagnetic K= 4	14 Apr 1418
14 Apr 1455	WARNING: Geomagnetic K= 4 expected	14/1455 -15/0000 Apr
14 Apr 1955	CANCEL WARNING: Geomagnetic K= 4 expected	14 Apr 1455
14 Apr 2259	ALERT: Type II Radio Emission	14 Apr 2228





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
17 Apr	190	15	4	01 May	210	12	3
18	185	20	4	02	215	8	3
19	180	12	3	03	215	5	2
20	175	10	3	04	210	5	2
21	175	8	3	05	205	5	2
22	170	8	3	06	205	5	2
23	170	8	3	07	200	5	2
24	170	5	2	08	200	7	2
25	175	5	2	09	200	10	3
26	180	7	2	10	200	10	3
27	185	15	4	11	200	10	3
28	190	15	4	12	195	10	3
29	200	15	4	13	190	7	2
30	205	15	4				



Energetic Events

Date	Time		X-ray		Optical Information			Peak		Sweep Freq		
	Begin	Max	½ Max	Class	Integ Flux	Imp/Location		Rgn #	Radio Flux		Intensity	
						Brtns	Lat CMD		245	2695	II	IV
09 Apr	0038	0042	0050	M2.1	.011	2b	N19E46	9899	3100	260	2	
09 Apr	1254	1302	1310	M1.1	.007	160						
10 Apr	1223	1231	1240	M8.2	.049	1n	N15W14	9893	510		2	
10 Apr	1848	1907	1915	M1.6	.013	1n	N17E23	9899	7700	490	1	
12 Apr	1305	1310	1314	M1.4	.004	68						
12 Apr	1731	1802	1817	M4.0	.063	1f	N21W26	9901	58		1	
14 Apr	0321	0351	0409	M1.4	.032	1f	N22W45	9893				
14 Apr	2334	0014	0025	M3.7	.043	Sf	N19W60	9893	260	59		

Flare List

Date	Time			X-ray Class.	Imp / Brtns	Optical		Rgn
	Begin	Max	End			Location Lat CMD		
08 April	0016	0019	0021	C2.1	Sf	N19E61	9899	
	0134	0138	0216	C5.1	Sf	N20E35	9901	
	0300	0304	0320	C4.7	Sf	N20E56	9899	
	0329	0331	0334		Sf	N19E34	9901	
	0346	0350	0405	C2.1	Sf	N20E33	9901	
	0523	0523	0534	C2.0	Sf	S20E49	9898	
	0942	0951	1004	C1.8				
	1120	1122	1130	C2.1	Sf	N18E54	9899	
	1140	1144	1148	C1.7				
	1202	1203	1207	C1.5	Sf	N02W63	9887	
	1344	1347	1401	C2.1	Sf	S14W53	9888	
	1724	1727	1735	C2.3	Sf	S18E41	9898	
	09 April	2041	2044	2103	C6.1	Sf	N21E49	9899
2253		2259	2303	C2.4				
2320		2323	2331		Sf	N20E46	9899	
0039		0040	0104	M2.1	2b	N19E46	9899	
0536		0548	0624	C7.9	1f	N20E50	9899	
0602		0607	0620		1f	N17E70	9903	
1254		1302	1310	M1.1				
1731		1734	1742	C2.2	Sf	S16W04		
1906		1921	1939	C4.1	Sf	S15W05		
2041		2147	2215	C2.1				
10 April	0044	0059	0117	C5.6	Sf	N19E33	9899	
	0300	0302	0308		Sf	S30W21	9900	
	0353	0355	0414	C2.4	Sf	N21E39	9899	
	0418	0426	0440		Sf	N20E31	9899	
	0420	0426	0430	C3.0				
	0642	0649	0708	C4.3	1f	N20E31	9899	
	0743	0744	0749		Sf	N18E63	9903	
	1114	1117	1135		Sf	N18E26	9899	
	1124	1124	1131		Sf	N18W10	9893	



Flare List - continued.

Date	Time			X-ray Class.	Optical		Rgn
	Begin	Max	End		Imp / Brtns	Location Lat CMD	
10 Apr	1226	1227	B1405	M8.2	1n	N15W14	9893
	1229	1230	1233		Sf	N19E04	9901
	1331	1335	1414		Sf	N20E03	9901
	1417	1423	1436	C5.0			
	1540	1541	1544	C4.2	Sf	N19W11	9893
	1639	1640	1643		Sf	N21W05	9893
10 April	1851	1858	1915		Sf	S16W20	9904
	1902	1904	1933	M1.6	1n	N17E23	9899
11 April	B2228	U2242	A2259	C3.2	Sf	S29W29	9900
	0047	0047	0053		Sf	N20E27	9899
	0147	0153	0211	C9.9	1n	N20W10	9893
	0153	0154	0203		Sf	N16E45	9902
	0157	0158	0201		Sf	N18E47	9903
	0307	U0310	0314		Sf	S19E09	9898
	0346	0346	0354		Sf	N21W17	9893
	0347	0347	0352		Sf	N21W03	9901
	0406	0406	0411		Sf	S28W32	9900
	0601	0606	0641	C4.4	Sf	S29W31	9900
	0901	0905	0911	C2.3			
	0924	0930	0936	C3.4			
	1553	1558	1605	C2.0			
	1619	1625	1705	C9.2	1f	S15W33	9904
	1833	1838	1843	C7.2			
	12 April	2259	2300	2307	C1.6	Sf	N18W28
0117		0120	0123	C1.5			
0146		0147	0153	C1.8	Sf	S12E36	9906
0250		0253	0256	C1.9			
0306		0307	0317	C5.0	Sf	S03E76	9907
0450		0455	0514	C3.4	Sf	N16E05	9899
0510		0513	0515		Sf	S04E80	9907
0842		0842	0846	C3.0	Sf	S15E33	9906
1305		1310	1314	M1.4			
1409		1436	1453		Sf	N18W31	9893
1454		1457	1514		Sf	N18W31	9893
1510		1514	1518		Sf	N12E23	9893
1515		1516	1527		Sf	N19W30	9893
1528		1531	1535		Sf	N18W31	9893
1600	1601	1609	C7.7	Sf	S04E66	9907	
1737	1756	1850	M4.0	1f	N21W26	9901	
13 April	0506	0530	0556	C3.3			
	1008	1013	1020	C3.2			



Flare List - continued.

Date	Time			X-ray Class.	Imp / Brtns	Optical	Rgn
	Begin	Max	End			Location Lat CMD	
13 April	B1031	U1031	1043	C3.6	Sf	S28W64	9900
	1148	1149	1158		Sf	N20W43	9893
	1212	1213	1222	C3.1	Sf	S03E57	9907
	1331	1337	1342	C2.6			
	1437	1438	1443		Sf	N18W55	9893
	1522	1523	1538	C1.9	Sf	S15E16	9906
	1633	1633	1646	C2.3	Sf	S03E55	9907
	1728	1729	1739	C2.9	Sf	N19W38	9901
	2034	2035	2044		Sf	S16E14	9906
	2159	2206	2218	C3.4			
14 April	0105	0105	0112	C5.5	Sf	S04E45	9907
	0144	0146	0154		Sf	N19W54	9893
	0227	0230	0302		Sf	N19W54	9893
	0303	0342	0514	M1.4	1f	N22W45	9893
	0324	0325	0345		Sf	S04E47	9907
	0450	0451	0506	C8.6	Sn	S04E42	9907
	0451	0451	0457		Sf	S14E08	9906
	0519	0520	0525		Sf	S15E09	9906
	0537	0537	0546		Sf	S03E45	9907
	0641	0641	0644		Sf	N19W43	9901
	0658	0701	0712	C5.3	Sf	S04E41	9907
	0736	0738	0746	C9.6	Sf	N19W57	9893
	1215	U1217	A1226		Sf	N23W56	9893
	1253	1253	1259		Sf	S17E08	9906
	1340	1340	1404	C3.8	Sf	S16E04	9906
	1349	1351	1355		Sf	N21W57	9893
	1403	1404	1407		Sf	S07E46	9907
	1545	1546	1555		Sf	N22W59	9893
	1628	1629	1632		Sf	S15W73	
	1728	1738	1743		Sf	N20W59	9893
	1936	1945	1950	C2.0			
	2054	2056	2103	C4.4	Sf	S03E35	9907
	2104	2110	2146	C7.3	Sf	N19W62	9893
	2120	2140	2144		Sf	N20W58	9901
2124	2132	2141		Sf	N21W56	9893	
2225	2228	2232	C7.2	Sf	N18W74	9893	
2235	2237	2252		1f	N20W64	9893	
2337	0016	0049	M3.7	Sf	N19W60	9893	
2340	0013	0049		Sf	N21W55	9901	



Region Summary

Date	Location		Sunspot Characteristics				Flares											
	° Lat	° CMD	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 9885</i>																		
27 Mar	N11E69	317	0120	07	Dao	004	B											
28 Mar	N11E56	317	0190	10	Dso	006	B	1				1						
29 Mar	N12E44	316	0460	15	Eai	025	Bg					3						
30 Mar	N11E27	320	0580	13	Eki	032	Bgd	3	1			13	1					
31 Mar	N10E14	320	0600	16	Fki	019	Bg	1	1			4	1					
01 Apr	N11E01	320	0710	15	Eki	033	Bg	1				2						
02 Apr	N13W14	321	0600	16	Fki	041	Bg											
03 Apr	N13W26	320	0500	15	Eko	017	Bg											
04 Apr	N13W39	320	0510	15	Ehi	027	Bg	1				1						
05 Apr	N13W51	319	0550	15	Eki	022	Bg	3				5						
06 Apr	N13W64	319	0320	12	Eai	015	Bg					1						
07 Apr	N13W80	321	0170	10	Dao	004	B											
08 Apr	N13W90	318	0120	03	Hsx	004	A											
								10	2	0	30	2	0	0	0	0		

Crossed West Limb.

Absolute heliographic longitude: 320

Region 9886

29 Mar	N11E59	301	0090	06	Dso	007	B											
30 Mar	N12E42	305	0080	08	Dao	008	B											
31 Mar	N11E30	304	0100	09	Dso	008	B	1				1						
01 Apr	N11E16	305	0180	09	Dao	021	B	1				1						
02 Apr	N12E02	305	0110	11	Dai	032	B											
03 Apr	N12W10	304	0110	09	Dso	009	B											
04 Apr	N13W24	305	0100	08	Dso	016	B											
05 Apr	N14W38	306	0110	08	Dai	017	B	1				1						
06 Apr	N14W51	306	0120	10	Dao	016	B											
07 Apr	N14W67	308	0090	07	Dso	006	B											
08 Apr	N14W80	308	0050	04	Bxo	005	B											
09 Apr	N14W90	305																
								3	0	0	3	0	0	0	0	0		

Crossed West Limb.

Absolute heliographic longitude: 305



Region Summary - continued.

Date	Location		Sunspot Characteristics				Flares										
	Helio		Area (10 ⁻⁶ hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical						
	(° Lat ° CMD)	Lon						C	M	X	S	1	2	3	4		
<i>Region 9887</i>																	
29 Mar	N01E66	294	0010	04	Bxo	003	B	1			1						
30 Mar	N01E51	296	0170	08	Dao	010	B				2						
31 Mar	N01E37	297	0240	11	Eai	011	Bg										
01 Apr	N01E24	297	0490	10	Dki	025	Bg				6						
02 Apr	N02E11	296	0700	12	Eki	048	Bg	7			9						
03 Apr	N02W02	296	0710	12	Eki	022	Bg	1			1						
04 Apr	N02W16	297	0720	12	Eki	026	Bg										
05 Apr	N03W29	297	0690	14	Eki	023	Bg	1			1						
06 Apr	N03W42	297	0630	14	Eki	028	Bg	1			1						
07 Apr	N02W56	297	0560	14	Eko	015	Bg										
08 Apr	N02W69	297	0420	13	Eao	006	B	1			1						
09 Apr	N04W82	297	0250	13	Eao	005	Bg										
10 Apr	N03W93	285	0060	02	Cao	002	Bg										
								12	0	0	22	0	0	0	0	0	

Crossed West Limb.

Absolute heliographic longitude: 296

<i>Region 9888</i>																	
29 Mar	S11E70	290	0150	04	Cao	004	B										
30 Mar	S12E58	289	0110	05	Cao	005	B				1						
31 Mar	S13E46	288	0190	07	Dso	005	B										
01 Apr	S13E32	289	0330	07	Dao	014	B										
02 Apr	S12E19	288	0250	09	Dai	024	B										
03 Apr	S13E07	287	0250	09	Dho	013	B	1			1						
04 Apr	S12W06	287	0180	07	Dao	011	B	1			1						
05 Apr	S12W19	287	0180	06	Dao	009	B				1						
06 Apr	S12W32	287	0140	04	Cko	005	B										
07 Apr	S11W45	287	0160	03	Hkx	005	A										
08 Apr	S12W59	287	0110	07	Cso	004	B	1			1						
09 Apr	S11W72	287	0040	09	Cso	002	B										
10 Apr	S13W86	288	0010	00	Axx	001	A										
								3	0	0	5	0	0	0	0	0	

Crossed West Limb.

Absolute heliographic longitude: 287



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 9889

31 Mar	S20E48	286	0020	05	Cso	002	B												
01 Apr	S20E30	291	0020	02	Hsx	002	A												
02 Apr	S19E18	289	0020	04	Cao	007	B												
03 Apr	S19E05	289	0000	00	Bxo	002	B												
04 Apr	S20W06	287	0000	02	Bxo	002	B												
05 Apr	S12W18	286																	
06 Apr	S12W31	286																	
07 Apr	S12W44	286																	
08 Apr	S12W57	286																	

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 289

Region 9891

02 Apr	S08W08	315	0000	00	Axx	001	A												
03 Apr	S08W22	316	0010	03	Bxo	003	B												
04 Apr	S08W36	317																	
05 Apr	S08W49	317																	
06 Apr	S08W62	317																	
07 Apr	S08W75	317																	
08 Apr	S08W88	317																	

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 315

Region 9892

02 Apr	N05E63	244	0090	06	Cro	005	B												
03 Apr	N04E49	245	0040	08	Cso	004	B												
04 Apr	N09E34	247	0030	03	Cso	005	B												
05 Apr	N05E20	248	0010	01	Hrx	002	A												
06 Apr	N05E07	248	0010	01	Axx	002	A												
07 Apr	N05W06	247	0010	04	Bxo	003	B												
08 Apr	N05W19	247	0010	03	Cro	002	B												
09 Apr	N05W32	247																	
10 Apr	N05W45	247																	
11 Apr	N05W58	247																	
12 Apr	N05W71	247																	
13 Apr	N05W84	247																	

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 247



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 9893</i>															
03 Apr	N18E78	216	0030	05	Hsx	001	A								
04 Apr	N18E64	217	0250	11	Eho	008	B	2			4				
05 Apr	N19E53	215	0320	14	Eai	015	Bg	1			2				
06 Apr	N19E40	215	0370	15	Eki	021	Bg	3			4	1			
07 Apr	N18E27	215	0360	16	Fki	026	Bg	4			3	1			
08 Apr	N18E13	215	0450	16	Fhi	027	Bgd								
09 Apr	N19W00	215	0490	13	Eai	025	Bgd								
10 Apr	N19W14	216	0300	13	Eki	020	Bg	1	1		3	1			
11 Apr	N19W27	216	0340	15	Eai	027	Bg	2			2	1			
12 Apr	N20W39	214	0390	15	Eai	031	Bgd				5				
13 Apr	N18W53	215	0400	16	Fki	017	Bgd				2				
14 Apr	N20W67	216	0400	13	Eai	013	Bgd	3	2		11	2			
								16	3	0	36	6	0	0	0

Still on Disk.

Absolute heliographic longitude: 215

Region 9894

05 Apr	N14W09	277	0020	06	Cro	006	B								
06 Apr	N14W22	277	0010	01	Hrx	002	A								
07 Apr	N16W35	277													
08 Apr	N16W48	277													
09 Apr	N16W61	277													
10 Apr	N16W74	277													
11 Apr	N16W87	277													
								0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 277

Region 9895

05 Apr	N06E58	210	0020	07	Bxo	003	B								
06 Apr	N06E45	210	0020	04	Bxo	003	B								
07 Apr	N07E37	205													
08 Apr	N07E24	205													
09 Apr	N07E11	205													
10 Apr	N07W02	205													
11 Apr	N07W15	205													
12 Apr	N07W28	205													
13 Apr	N07W41	205													
14 Apr	N07W54	205													
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 205



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 9896

05 Apr	S11E74	194	0100	02	Hsx	001	A										
06 Apr	S11E61	194	0110	02	Hsx	001	A										
07 Apr	S11E47	194	0080	02	Hsx	001	A										
08 Apr	S11E34	194	0080	02	Hsx	001	A										
09 Apr	S11E21	194	0100	02	Hsx	002	A										
10 Apr	S11E08	194	0110	02	Hsx	001	A										
11 Apr	S11W07	196	0110	02	Hsx	001	A										
12 Apr	S11W19	194	0080	05	Dso	005	B										
13 Apr	S10W33	195	0100	02	Hax	001	A										
14 Apr	S09W46	195	0090	02	Hsx	001	A										

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 196

Region 9897

06 Apr	S01W02	257	0050	04	Dao	005	B										
07 Apr	S02W17	258	0070	05	Dso	009	B										
08 Apr	S02W30	258	0030	05	Dso	006	B										
09 Apr	S02W43	258	0020	05	Cso	002	B										
10 Apr	S02W59	261	0030	03	Cso	002	B										
11 Apr	S02W74	263	0010	01	Axx	001	A										
12 Apr	S02W87	263															

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 257

Region 9898

06 Apr	S19E66	189	0040	03	Dao	002	B										
07 Apr	S18E53	188	0030	03	Bxo	004	B	1			1						
08 Apr	S19E40	188	0010	03	Cro	004	B	2			2						
09 Apr	S19E25	190	0010	08	Bxo	004	B										
10 Apr	S19E12	190	0010	01	Axx	001	A										
11 Apr	S18W02	191	0010	01	Axx	001	A					1					
12 Apr	S18W15	191															
13 Apr	S18W28	191															
14 Apr	S18W41	191															

3 0 0 4 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 191



Region Summary - continued.

Date	Location		Sunspot Characteristics				Flares											
	Helio		Area (10 ⁻⁶ hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical							
	(° Lat ° CMD)	Lon						C	M	X	S	1	2	3	4			
<i>Region 9899</i>																		
06 Apr	N18E72	183	0160	02	Hax	001	A											
07 Apr	N18E59	183	0180	02	Hsx	001	A											
08 Apr	N18E46	183	0220	04	Cko	003	B	4			5							
09 Apr	N18E33	183	0190	06	Dso	006	B	1	1			1	1					
10 Apr	N18E22	180	0220	05	Dao	009	B	3	1		4	2						
11 Apr	N18E09	180	0210	05	Dao	006	B				1							
12 Apr	N17W04	179	0180	05	Dso	009	B	1			1							
13 Apr	N18W19	181	0160	03	Hax	003	A											
14 Apr	N19W32	181	0190	04	Cso	004	B											
								9	2	0	11	3	1	0	0			

Still on Disk.

Absolute heliographic longitude: 179

<i>Region 9900</i>																		
07 Apr	S29E07	234	0080	08	Dso	014	B											
08 Apr	S29W06	234	0150	11	Eai	020	B											
09 Apr	S29W19	234	0180	12	Eai	020	B											
10 Apr	S28W32	234	0110	11	Esi	018	Bg	1			2							
11 Apr	S28W45	234	0100	10	Dao	013	B	1			2							
12 Apr	S28W57	232	0140	08	Dao	014	Bg											
13 Apr	S29W68	230	0100	09	Cso	010	B	1			1							
14 Apr	S28W81	230	0040	04	Bxo	003	B											
								3	0	0	5	0	0	0	0			

Still on Disk.

Absolute heliographic longitude: 234

<i>Region 9901</i>																		
07 Apr	N20E37	204	0060	06	Bxo	008	B				2							
08 Apr	N19E24	204	0130	07	Dai	017	B	2			3							
09 Apr	N19E11	204	0200	07	Dai	011	B											
10 Apr	N20W02	204	0190	09	Dai	019	Bg				2							
11 Apr	N21W14	203	0190	07	Dai	016	Bgd				1							
12 Apr	N21W26	201	0190	06	Dai	017	Bgd		1			1						
13 Apr	N20W39	201	0250	08	Dai	020	Bgd	1			1							
14 Apr	N22W56	205	0180	08	Dao	014	B		1		3							
								3	2	0	12	1	0	0	0			

Still on Disk.

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

Region 9902

07 Apr	N11E75	166	0120	02	Hax	001	A											
08 Apr	N13E64	164	0090	10	Cso	003	B											
09 Apr	N13E54	161	0120	15	Eso	004	B											
10 Apr	N13E43	159	0100	15	Eso	003	B											
11 Apr	N13E31	158	0080	14	Eso	005	B						1					
12 Apr	N14E19	156	0120	14	Cso	008	B											
13 Apr	N13E03	159	0090	13	Eao	007	B											
14 Apr	N13W11	160	0090	14	Eso	011	B											
								0	0	0	0	1	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 159

Region 9903

08 Apr	N19E74	154	0060	07	Dso	003	B											
09 Apr	N19E61	154	0050	04	Cao	004	B							1				
10 Apr	N19E47	155	0060	04	Cso	004	B					1						
11 Apr	N19E34	155	0040	03	Cso	005	B					1						
12 Apr	N18E19	156	0030	04	Cro	004	B											
13 Apr	N18E06	156	0000	00		000												
14 Apr	N15W02	151	0000	00	Axx	001	A											
								0	0	0	0	2	1	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 151

Region 9904

09 Apr	S16W07	222	0060	03	Cao	007	B											
10 Apr	S16W21	223	0050	04	Cso	006	Bgd						1					
11 Apr	S16W36	225	0020	03	Bxo	004	B	1						1				
12 Apr	S15W49	224	0030	04	Cro	005	B											
13 Apr	S14W56	218	0030	08	Bxo	008	B											
14 Apr	S14W69	218																
								1	0	0	0	1	1	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 222



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 9905

10 Apr	S17E04	198	0040	04	Cso	004	B											
11 Apr	S15W13	202	0040	05	Cao	007	B											
12 Apr	S15W25	200	0050	07	Dao	012	B											
13 Apr	S15W41	203	0060	08	Dao	006	B											
14 Apr	S14W55	204	0060	08	Dso	004	B											
										0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 198

Region 9906

11 Apr	S16E40	149	0080	05	Dso	009	B											
12 Apr	S16E26	149	0190	07	Dai	020	Bg	2			2							
13 Apr	S15E13	149	0470	10	Dkc	038	Bgd	1			2							
14 Apr	S15W02	151	0640	12	Eki	032	Bgd	1			4							
								4	0	0	8	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 151

Region 9907

11 Apr	S04E74	115	0200	10	Dso	010	B											
12 Apr	S05E61	114	0380	13	Eai	014	Bg	2			3							
13 Apr	S04E46	116	0440	10	Dac	030	Bg	2			2							
14 Apr	S04E33	116	0330	10	Dai	025	B	4			7							
								8	0	0	12	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 116

Region 9908

12 Apr	N05W25	200	0020	03	Cao	004	B											
13 Apr	N04W40	202	0060	05	Dso	007	B											
14 Apr	N05W54	203	0020	05	Cso	007	B											
										0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 200

Region 9909

14 Apr	N06E70	079	0130	02	Hsx	001	A											
										0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 079

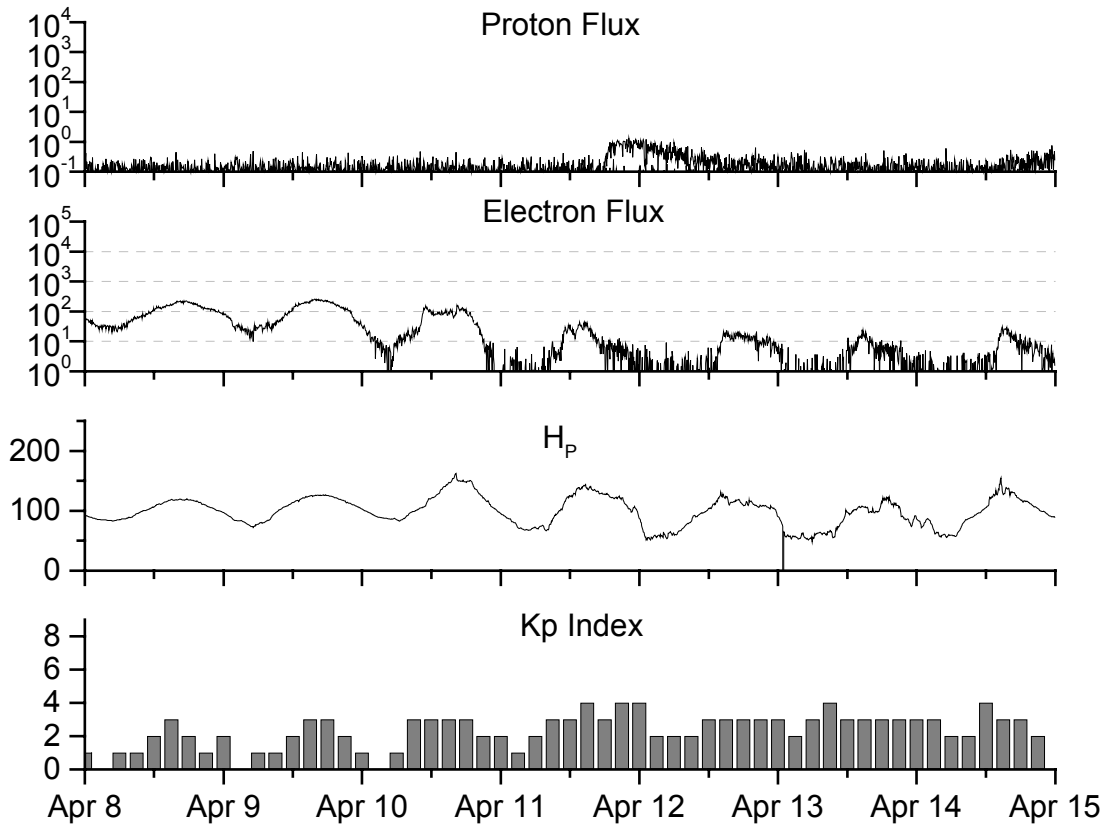


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

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
2000									
April	193.4	125.5	0.65	176.3	120.8	184.2	180.5	15	15.0
May	188.8	121.6	0.64	173.1	119.0	184.5	180.0	15	15.0
June	190.3	124.9	0.66	172.0	118.7	179.8	179.7	15	15.1
July	236.7	169.1	0.71	173.0	119.7	204.7	180.2	21	14.8
August	166.6	130.5	0.78	171.8	118.6	163.1	179.5	16	14.2
September	157.9	109.9	0.70	169.0	116.2	182.1	177.1	18	14.2
October	138.9	100.1	0.72	166.2	114.4	167.7	175.6	18	14.6
November	149.9	106.5	0.71	162.7	112.7	178.8	173.6	17	14.6
December	146.4	104.5	0.71	160.8	112.1	173.6	172.0	08	14.4
2001									
January	142.7	95.1	0.67	156.3	108.8	166.7	168.8	08	13.8
February	131.0	80.1	0.61	151.4	104.2	147.3	165.8	06	13.3
March	166.7	114.2	0.69	154.0	104.9	177.7	167.9	17	12.9
April	163.6	108.2	0.66	159.4	107.7	178.3	171.7	18	12.7
May	135.1	97.3	0.72	163.1	108.8	148.7	174.8	12	12.5
June	196.7	134.0	0.68	167.2	109.9	173.7	178.8	12	12.4
July	124.6	82.2	0.66	172.1	111.8	131.3	183.9	11	12.4
August	159.4	106.8	0.67	176.7	113.8	163.2	188.8	13	12.5
September	229.1	150.7	0.66	178.8	114.3	233.3	191.3	12	12.3
October	197.4	125.6	0.64			208.2		18	
November	178.6	106.5	0.60			212.5		14	
December	217.5	131.8	0.61			236.6		08	
2002									
January	189.0	113.9	0.60			226.4		07	
February	194.5	108.0	0.56			205.1		09	
March	153.1	98.1	0.64			179.5		10	

NOTE: All smoothed values after June 1999 and monthly values after December 2000 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 08 April 2002

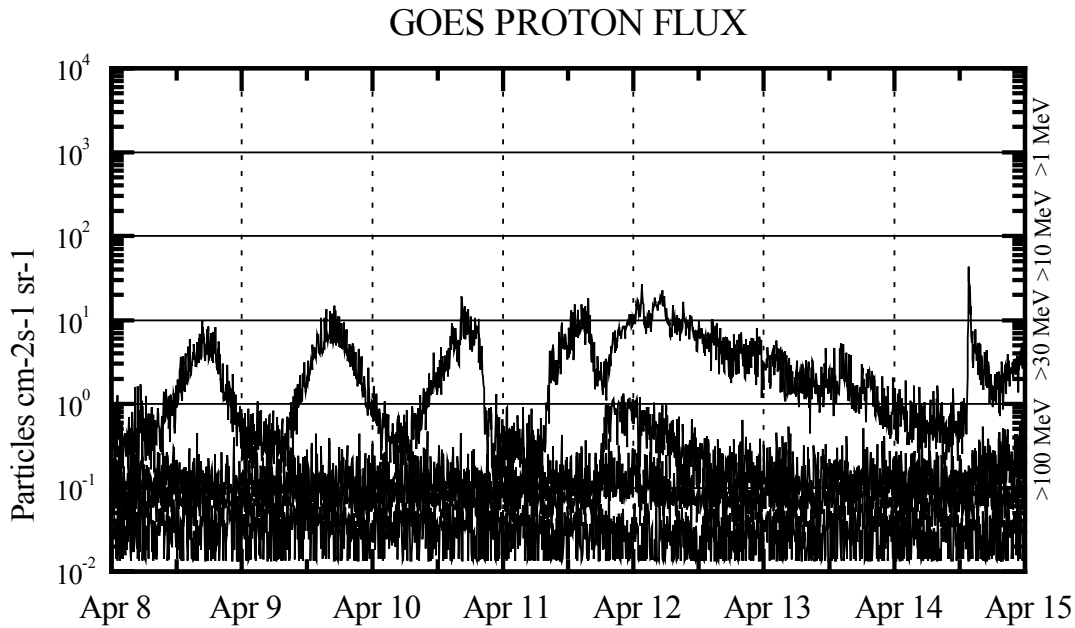
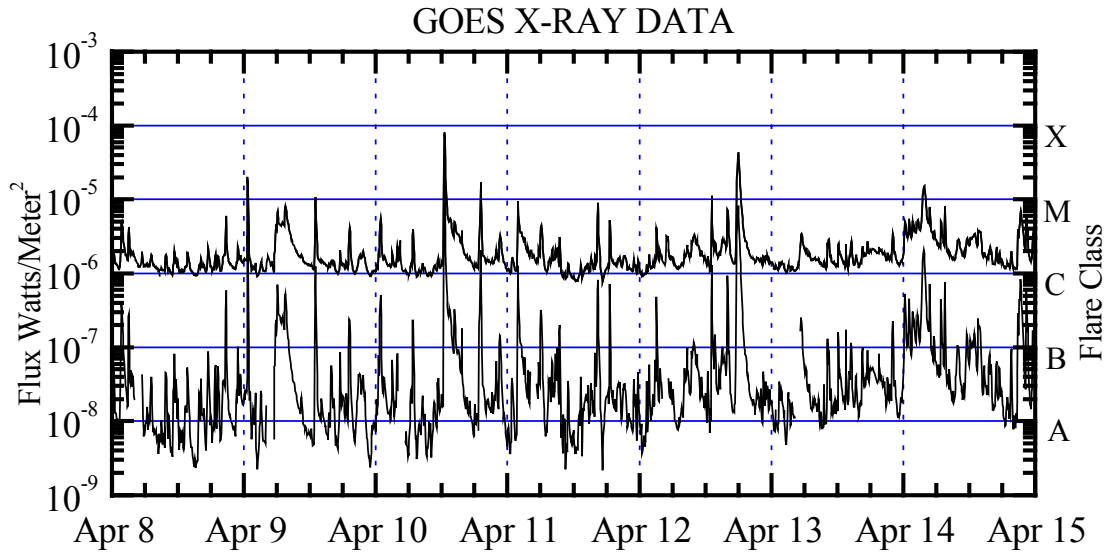
Protons plot contains the five-minute averaged integral proton flux (protons/cm²-sec -sr) as measured by GOES-8 (W75) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

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 Air Force Weather Agency) 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.

