Space Weather Highlights **SWO PRF 1285**
10 - 16 April 2000 **18 April 2000**

Solar activity ranged from low to moderate levels. The period began with activity at low levels then increased to moderate levels from 11-12 April. Region 8948 (S15, L = 129, class/area Eai/110 on 11 April) produced three M1-class flares during this period. Region 8948 showed steady decline in activity after 12 April. Activity was low 13-14 April. Region 8948 did produce a C7, long duration, parallel-ribbon flare, with a small filament disappearance on 13/2130UT. Activity level returned to moderate on 15 April as Region 8955 (S22, L = 031, class/area Eao/350 on 15 April) began to show a gradual increase in magnetic complexity. Region 8955 produced an M4/SF on 15/1018UT, with an associated 570 SFU Tenflare and a partial-halo Coronal Mass Ejection (CME). Region 8955 also produced an M2/1N on 15/1448UT and a C7/1N with a small filament disappearance on 15/1905UT. Solar activity was low for the remainder of the period. Region 8955 had appeared to stabilize by the end of the period.

Real-time solar wind data were available from the NASA Advanced Composition Explorer (ACE) spacecraft for most of the period. Solar wind velocity decreased from 580 km/s during the first day of the period to normal to low levels for most of the period. Velocity steadily increased on 16 April until a weak shock was observed on 16/0951UT. After that time, velocity continued to increase slowly, reaching 500 km/s by days end.

The proton flux at geosynchronous orbit was at normal to moderate levels.

The greater than 2 MeV electron flux was at high levels 10-11 April and moderate to high levels from 12-15 April. The greater than 2 MeV electron flux returned to background levels on 16 April.

The geomagnetic field began the period at unsettled to active levels on 10 April. Conditions decreased to quiet to unsettled levels from 11-13 April and quiet levels on 14-15 April. Unsettled to minor storm conditions were observed on 16 April. Minor storming began after a weak shock was observed passing the ACE spacecraft at 16/0951UT.

Space Weather Outlook
19 April - 15 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.

The proton flux at geosynchronous orbit is expected to be at normal to moderate levels during most of 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.

The geomagnetic field is expected to be mostly quiet to unsettled with isolated active periods 19-20 April. Isolated active conditions are also possible on 10-11 May due to the possibility of a returning coronal hole. Barring an Earth-directed coronal mass ejection (CME), geomagnetic field activity is expected to be at quiet to unsettled levels for the rest of the period.

Daily Solar Data

Date	Radio Flux 10.7 cm	Sun spot No.	Sunspot Area (10^{-6} hemi.)	X-ray Background	Flares: X-ray Flux C	M	X	Flares: Optical S	1	2	3	4
10 April	178	175	590	C1.8	7	0	0	3	2	0	0	0
11 April	182	148	630	B7.6	8	2	0	11	2	0	0	0
12 April	173	172	820	C1.1	5	1	0	10	0	0	0	0
13 April	164	190	1030	B5.6	3	0	0	3	0	0	0	0
14 April	165	173	860	B5.4	4	0	0	4	1	0	0	0
15 April	164	177	770	B5.3	8	2	0	9	2	0	0	0
16 April	159	170	750	B4.8	8	0	0	7	2	0	0	0

Daily Particle Data

Date	Proton Fluence (protons/cm^2-day-sr) >1MeV	>10MeV	>100MeV	Electron Fluence (electrons/cm^2-day-sr) >.6MeV	>2MeV	>4MeV
10 April	1.6E+5	1.1E+4	2.1E+3		4.1E+7	
11 April	1.7E+5	1.1E+4	2.2E+3		7.4E+7	
12 April	1.2E+5	1.1E+4	2.3E+3		5.7E+7	
13 April	2.4E+5	1.1E+4	2.5E+3		5.7E+7	
14 April	2.9E+5	1.1E+4	2.5E+3		8.8E+7	
15 April	4.0E+5	1.2E+4	2.9E+3		7.4E+7	
16 April	4.8E+4	1.2E+4	2.7E+3		9.3E+4	

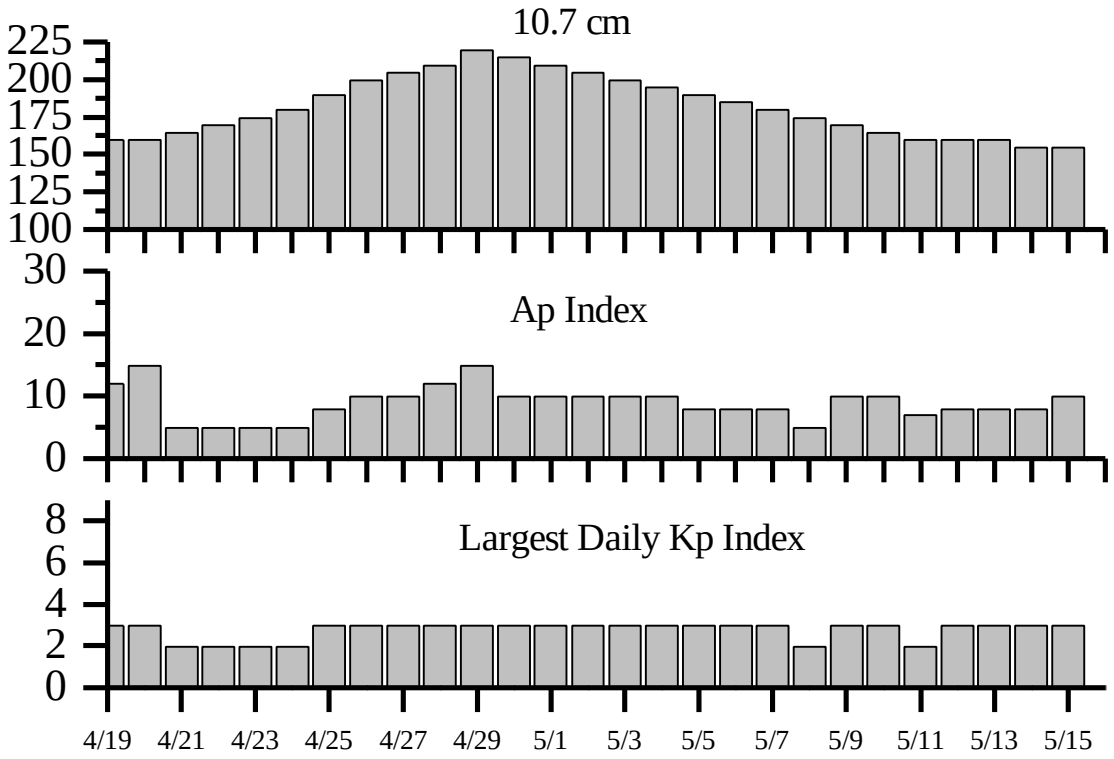
Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg A	K-indices	High Latitude College A	K-indices	Estimated Planetary A	K-indices
10 April	14	3-4-3-3-3-2-2-2	27	4-4-5-5-3-4-3-2	20	4-4-4-4-3-2-3-4
11 April	8	1-3-3-1-3-1-2-0	*	2-3-6-3-4-*-1-1	10	2-3-4-3-3-1-2-2
12 April	7	3-3-2-1-0-2-1-2	*	2-*-*-*-*-*-*-*	5	3-2-2-2-2-1-2-2
13 April	3	1-3-2-1-0-1-0-0	*	*-*-*-*-*-*-*-*	8	3-3-3-1-1-2-2-1
14 April	2	0-0-1-2-1-1-1-0	*	*-*-*-*-*-0-2-0	5	1-1-1-2-1-2-2-2
15 April	7	0-1-1-1-3-2-2-3	7	4-0-0-1-3-0-2-2	7	1-1-2-2-2-2-3-3
16 April	16	2-3-4-4-4-2-2-2	29	2-4-3-5-6-4-3-3	23	4-4-4-5-5-3-3-2

Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event
10 Apr 0003	10cm Radio Burst	09 Apr 2331
10 Apr 0003	K= 4 Observed	09 Apr 21 - 24
10 Apr 0108	4 - 245 MHz Bursts	09 Apr
10 Apr 0139	Type IV Radio Emission	10 Apr 0023
10 Apr 0230	K= 4 Warning	10 Apr 0230 - 1800
10 Apr 0302	K= 4 Observed	10 Apr 00 - 03
10 Apr 1208	A ≥ 20 Observed	10 Apr 1200
10 Apr 1405	Electron Event >2MeV ≥1000pfu	10 Apr 1358
11 Apr 0000	ENDED A ≥ 20 Observed	10 Apr 1200
11 Apr 0056	3 - 245 MHz Bursts	10 Apr
11 Apr 0100	CONTINUED Electron Event >2MeV ≥ 1000pfu	10 Apr 1358
11 Apr 1609	A ≥ 20 Watch	12 Apr
11 Apr 2043	A ≥ 20 Watch	13 Apr
12 Apr 0100	CONTINUED Electron Event >2MeV ≥1000pfu	10 Apr 1358
12 Apr 0726	Type II Radio Emission	12 Apr 0632
12 Apr 2020	CANCELLED A ≥ 20 Watch	13 Apr
13 Apr 0008	2 - 245 MHz Bursts	12 Apr
13 Apr 0100	CONTINUED Electron Event >2MeV ≥1000pfu	10 Apr 1358
14 Apr 0100	CONTINUED Electron Event >2MeV ≥1000pfu	10 Apr 1358
15 Apr 0100	CONTINUED Electron Event >2MeV ≥1000pfu	10 Apr 1358
15 Apr 1053	10cm Radio Burst	15 Apr 1012
16 Apr 0005	CONTINUED Electron Event >2MeV ≥1000pfu	10 Apr 1358
16 Apr 0116	14 - 245 MHz Bursts	15 Apr
16 Apr 0116	245 MHz Noise Storms	15 Apr
16 Apr 0859	K= 4 Warning	16 Apr 09 - 15
16 Apr 0907	K= 4 Observed	16 Apr 06 - 09
16 Apr 1137	K= 5 Warning	16 Apr 12 - 15
16 Apr 1201	K= 5 Observed	16 Apr 09 - 12
16 Apr 1801	A ≥ 20 Observed	16 Apr 1800

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
19 Apr	160	12	3	03 May	200	10	3
20	160	15	3	04	195	10	3
21	165	5	2	05	190	8	3
22	170	5	2	06	185	8	3
23	175	5	2	07	180	8	3
24	180	5	2	08	175	5	2
25	190	8	3	09	170	10	3
26 Apr	200	10	3	10	165	10	3
27	205	10	3	11	160	7	2
28	210	12	3	12	160	8	3
29	220	15	3	13	160	8	3
30	215	10	3	14	155	8	3
01 May	210	10	3	15	155	10	3
02	205	10	3				

Energetic Events

Date	Time			X-ray		Optical Information			Peak Rgn		Sweep Freq Radio Flux	
Intensity	Begin	Max	½ Max	Class	Integ Flux	Imp/ Brtns	Location Lat CMD	#	245	2695	II	IV
11 Apr	1757	1810	1817	M1.0	.008	1N	S16W18	8948				
11 Apr	2329	2337	2345	M1.1	.007	1N	S15W22	8948				
12 Apr	0327	0335	0350	M1.3	.012	SF	S15W24	8948				
15 Apr	1009	1018	1022	M4.3	.015	SF	S22E29	8955	15000	570		
15 Apr	1437	1448	1453	M2.2	.012	1N	S23E28	8955	590	49		

Flare List

Date	Time Begin	Max	End	X-ray Class.	Optical Imp / Brtns	Location Lat CMD	Rgn
10 April	B0020	U0030	A0046	C8.1	1N	S13E01	8948
	0234	0234	0241		SF	N10W34	8944
	0513	0520	0524	C2.6			
	B0753	U0754	A0805	C1.6	SF	S20E02	8948
	0953	1002	1008	C6.5			
	1851	1911	1916	C8.6			
	2014	2017	2025	C2.1	SF	S18W09	8948
	2053	2109	2144	C8.2	1N	S14W09	8948
11 April	0016	0017	0022		SF	S20E86	8955
	0058	0103	0112	C1.1			
	0140	0141	0149	C1.3	SF	N25W78	8939
	0244	0304	0326	C1.7	SF	S14W11	8948
	0501	0515	0539		SF	S15W13	8948
	0709	0712	0720	C1.3	SF	S17W14	8948
	0731	0734	0736		SF	S14W13	8948
	0740	0750	0812	C2.2	SF	S15W14	8948
	0844	0844	0850		SF	N16E73	8958
	1004	1010	1024	C2.3			
	1118	1122	1127	C1.5			
	1624	1627	1630	C1.0			
	1645	1649	1653		SF	N32E62	8954
	1800	1810	1845	M1.0	1N	S16W18	8948
	1918	1919	1928		SF	S16W20	8948
	1957	1958	2001		SF	S20E70	8955
	2333	2334	0029	M1.1	1N	S15W22	8948
12 April	0046	0049	0113		SF	S15W24	8948
	0132	0135	0151		SF	N14E31	8951
	0229	0232	0235		SF	N14E30	8951
	0331	0332	0413	M1.3	SF	S15W24	8948
	0417	0417	0429		SF	S15W25	8948
	0508	0512	0532	C2.1			

Flare List-continued

	Time			X-ray	Optical Imp /	Optical Location	Rgn
Date	Begin	Max	End	Class.	Brtns	Lat CMD	#
12 April	0624	0631	0643	C2.1	SN	S19W28	8948
	0906	0907	0940	C1.6	SF	S16W30	8948
	1205	1214	1218	C7.8			
	1557	1557	1600		SF	S20E33	
	1733	1754	1800		SF	S16W33	8948
	1854	1859	1928	C2.4	SF	S16W34	8948
13 April	0014	0020	0055	C2.9	SF	S16W36	8948
	1240	1251	1254	C1.5			
	1728	1730	1733		SF	S22E49	8955
	2050	2130	2246	C1.0			
	2204	2207	2211		SF	S25E44	8955
14 April	0141	0151	0218	C4.7			
	0302	0428	0600	C1.1			
	0811	0814	0847	C7.2	1F	S14W54	8948
	1448	1448	1452		SF	N20W26	8960
	1523	1525	1528		SF	N19W26	8960
	2335	2338	2345	B8.7	SF	S21E36	8955
	2341	2344	2359	C4.3	SF	S16W63	8948
15 April	B0010	U0010	A0029	C3.4	SF	S21E30	8955
	0331	0337	0347		SF	S21E29	8955
	0756	0802	0805	C2.3			
	0825	0829	0832	B7.3			
	0855	0900	0912	B8.5			
	0934	0940	0946	C1.1			
	B1025	U1030	A1030	M4.3	SF	S22E29	8955
	1213	1217	1223	C1.0			
	1322	1325	1327	B7.8			
	1340	1342	1350	C3.0	SF	S22E29	8955
	1440	1445	1504	M2.2	1N	S23E28	8955
	1537	1538	1544	C1.7	SF	S17W71	8948
	1857	1905	1947	C7.7	1N	S22E26	8955
	2115	2116	2119		SF	S22E26	8955
	2138	2140	2203	C6.5	SF	S22E25	8955
	2237	2239	2251		SF	S25W19	8961
	2248	2248	2252		SF	N19W43	8960
16 April	0007	0012	0039	C6.3	1N	S21E23	8955
	0032	0032	0035		SF	N30W01	8954
	B0220	0234	0318	C1.9	SF	S21E22	8955
	B0356	U0356	A0402	C4.2	SF	S14W74	8957

Flare List-continued

Date	Time Begin	Time Max	Time End	X-ray Class.	Optical Imp / Brtns	Optical Location Lat CMD	Rgn #
16 April	0553	0600	0617	C5.9	1N	S22E20	8955
	1258	1305	1312	C1.0			
	1629	1632	1638	C1.4	SF	S17W14	8959
	1644	1651	1655	C1.0			
	1759	1802	1804	B7.9			
	1902	1909	1946	B9.5	SF	S21E13	8955
	1914	1915	1920		SF	N34E23	8964
	2114	2116	2141	C1.0	SF	S21E12	8955

Region Summary

	Location		Sunspot Characteristics					Flares							
								X-ray			Optical				
Date	(° Lat ° CMD)	Helio Lon	Area (10^{-6} hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	C	M	X	S	1	2	3	4
		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				
03 Apr	S14E06	204	0390	07	DAC	024	BD	1			2				
04 Apr	S16W07	204	0320	06	DAI	020	BG				1				
05 Apr	S15W21	204	0210	06	DAI	022	BG				1				
06 Apr	S15W34	204	0160	06	DAI	014	B				1				
07 Apr	S15W47	204	0130	05	CAO	012	BG								
08 Apr	S16W61	205	0070	04	CAO	005	B								
09 Apr	S15W74	205	0070	01	HAX	001	A								
10 Apr	S16W88	205	0030	01	HRX	001	A								
								12	4	0	40	2	1	0	0

Crossed West Limb.
Absolute heliographic longitude: 204

Region Summary-continued

Date	Location (° Lat ° CMD)	Helio Lon	Sunspot Characteristics Area (10^{-6} hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	Flares X-ray C	X-ray M	X-ray X	Optical S	Optical 1	Optical 2	Optical 3	Optical 4
			Region 8939												
30 Mar	N22E72	190	0030	03	HSX	001	A				2				
31 Mar	N22E55	194	0030	03	CRO	003	B	1	4		8				
01 Apr	N23E43	193	0130	05	DAO	008	B	2			5				
02 Apr	N23E29	194	0120	06	DAO	009	B	1			8				
03 Apr	N24E14	196	0080	05	DAO	011	B								
04 Apr	N23E01	196	0050	05	CSO	007	B								
05 Apr	N23W12	195	0060	05	CSO	008	B				3				
06 Apr	N22W26	196	0080	04	CAO	006	B				1				
07 Apr	N23W39	196	0060	04	CSO	005	B								
08 Apr	N22W53	197	0070	02	HSX	001	A								
09 Apr	N23W66	197	0060	02	HSX	001	A	1			1				
10 Apr	N23W82	199	0040	01	HSX	001	A								
								5	4	0	28	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 196

			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								
03 Apr	N14E12	198	0010	04	BXO	005	B								
04 Apr	N13E00	197	0010	02	HSX	002	A								
05 Apr	N12W12	195	0010	00	BXO	004	B								
06 Apr	N15W30	200	0000	00	AXX	001	A	1			1				
07 Apr	N15W43	200													
08 Apr	N15W56	200													
09 Apr	N15W69	200													
10 Apr	N15W82	200													
								1	0	0	1	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 197

Region Summary-continued

	Location		Sunspot Characteristics					Flares							
		Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical				
Date	(° Lat ° CMD)	Lon	(10^{-6} hemi)	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4
	Region 8944														
01 Apr	N08E70	166	0050	02	HSX	001	A								
02 Apr	N09E58	165	0090	02	HSX	001	A								
03 Apr	N09E44	166	0060	01	HSX	001	A								
04 Apr	N11E31	166	0050	02	HSX	001	A								
05 Apr	N08E18	165	0040	01	HAX	002	A								
06 Apr	N08E04	166	0040	02	HSX	001	A								
07 Apr	N07W08	165	0030	01	HSX	002	A				1				
08 Apr	N07W21	165	0030	03	CSO	005	B								
09 Apr	N08W35	166	0010	01	AXX	002	A								
10 Apr	N08W48	166									1				
11 Apr	N08W61	166													
12 Apr	N08W74	166													
13 Apr	N08W87	166													
								0	0	0	2	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 166

	Region 8945														
01 Apr	S17E72	164	0050	05	BXO	003	B				4				
02 Apr	S17E59	164	0100	07	DSO	006	B								
03 Apr	S18E46	164	0040	08	DSO	005	B								
04 Apr	S18E33	164	0040	09	DSO	002	B								
05 Apr	S19E20	163	0040	10	DSO	006	B								
06 Apr	S20E07	163	0020	11	CRO	006	B								
07 Apr	S20W04	161	0010	09	BXO	007	B								
08 Apr	S20W15	159	0010	02	AXX	002	A								
09 Apr	S23W29	160	0020	02	CSO	002	B								
10 Apr	S23W42	160													
11 Apr	S23W55	160													
12 Apr	S23W68	160													
13 Apr	S23W81	160													
								0	0	0	4	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 161

Region Summary-continued

Date	Location (° Lat ° CMD)	Helio Lon	Sunspot Characteristics Area (10^{-6} hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	Flares X-ray C	X-ray M	X-ray X	Optical S	Optical 1	Optical 2	Optical 3	Optical 4
	Region 8947														
03 Apr	N23E02	208	0000	00	AXX	002	B								
04 Apr	N23W11	208													
05 Apr	N23W24	208													
06 Apr	N23W37	208													
07 Apr	N23W50	208													
08 Apr	N23W63	208													
09 Apr	N23W76	208													
10 Apr	N23W89	208													
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 208

	Region 8948														
04 Apr	S15E70	127	0110	05	CSO	004	B		1						
05 Apr	S15E56	127	0110	05	DAO	007	B				3				
06 Apr	S15E42	128	0070	07	DSO	008	B	1	1			1	1		
07 Apr	S14E28	129	0110	11	ESI	021	BGD	2			4				
08 Apr	S15E14	130	0210	11	EAI	042	BGD	7	2		12	2			
09 Apr	S15E01	130	0160	12	EAI	052	GD	2	2		5	1	1		
10 Apr	S15W12	129	0170	12	EAI	048	BGD	4			2	2			
11 Apr	S15W25	129	0110	11	EAI	021	BG	3	2		6	2			
12 Apr	S16W37	127	0140	07	DAI	021	BG	3	1		7				
13 Apr	S15W49	126	0110	07	DAO	011	BG	1			1				
14 Apr	S15W63	127	0050	06	CAO	004	B	2			1	1			
15 Apr	S16W76	127	0060	09	DSO	003	B	1			1				
16 Apr	S16W89	127													
								26	9	0	42	9	2	0	0

Still on Disk.
Absolute heliographic longitude: 130

Region Summary-continued

Date	Location (° Lat ° CMD)	Helio Lon	Sunspot Characteristics Area (10^{-6} hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	Flares X-ray C	X-ray M	X-ray X	Optical S	Optical 1	Optical 2	Optical 3	Optical 4
	Region 8949														
05 Apr	S18E76	107	0050	02	HSX	002	A								
06 Apr	S19E68	102	0110	02	HSX	001	A								
07 Apr	S18E56	101	0190	11	CSO	004	B								
08 Apr	S19E43	101	0200	11	EAO	006	B								
09 Apr	S20E27	104	0150	08	CAO	006	B								
10 Apr	S19E13	104	0130	07	CSO	006	B								
11 Apr	S19W05	109	0100	08	CSO	009	B								
12 Apr	S19W14	104	0110	05	CSO	006	B								
13 Apr	S19W27	104	0100	04	CAO	004	B								
14 Apr	S19W40	104	0100	02	HSX	002	A								
15 Apr	S19W52	103	0050	02	HAX	002	A								
16 Apr	S19W65	102	0070	02	HAX	002	A								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 109

	Region 8951														
07 Apr	N11E74	083	0060	02	HSX	001	A								
08 Apr	N13E64	080	0120	05	DSO	002	B				2				
09 Apr	N12E53	078	0130	05	CSO	003	B								
10 Apr	N11E39	078	0100	02	HSX	001	A								
11 Apr	N11E24	080	0100	04	CSO	003	B								
12 Apr	N11E11	079	0090	05	CSO	003	B				2				
13 Apr	N12W03	080	0100	05	CSO	006	B								
14 Apr	N12W18	082	0100	04	CSO	005	B								
15 Apr	N12W31	082	0100	04	DSO	006	B								
16 Apr	N11W44	081	0110	05	DSO	008	B								
								0	0	0	4	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 080

Region Summary-continued

Date	Location (° Lat ° CMD)	Helio Lon	Sunspot Characteristics Area (10^{-6} hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	Flares X-ray C	X-ray M	X-ray X	Optical S	Optical 1	Optical 2	Optical 3	Optical 4
			Region 8952												
07 Apr	S24E49	108	0010	03	BXO	002	B								
08 Apr	S23E36	108	0000	00	AXX	001	A								
09 Apr	S23E22	109	0000	00	AXX	001	A								
10 Apr	S26E08	110													
11 Apr	S26W05	110													
12 Apr	S26W18	110													
13 Apr	S26W31	110													
14 Apr	S26W44	110													
15 Apr	S26W57	110													
16 Apr	S26W70	110													
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 110

			Region 8953												
09 Apr	S14E72	059	0030	04	CSO	002	B								
10 Apr	S17E56	061	0060	09	DSO	009	B								
11 Apr	S17E41	063	0070	08	DSO	007	B								
12 Apr	S16E31	059	0080	08	DSO	016	B								
13 Apr	S15E20	057	0060	03	CSO	004	B								
14 Apr	S14E07	057	0040	05	CSO	007	B								
15 Apr	S16W06	057	0020	05	CRO	004	B								
16 Apr	S14W20	057	0020	05	CAO	006	B								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 057

			Region 8954												
10 Apr	N31E66	051	0000	01	AXX	002	A								
11 Apr	N30E53	051	0020	07	CAO	005	B				1				
12 Apr	N31E40	050	0030	10	CRO	007	B								
13 Apr	N30E29	048	0010	08	BXO	004	B								
14 Apr	N31E14	050	0000	07	BXO	002	B								
15 Apr	N32W01	052	0000	00	AXX	001	A								
16 Apr	N32W14	052									1				
								0	0	0	2	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 052

Region Summary-continued

Date	Location (° Lat ° CMD)	Helio Lon	Sunspot Characteristics Area (10^{-6} hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	Flares X-ray C	X-ray M	X-ray X	Optical S	Optical 1	Optical 2	Optical 3	Optical 4
			Region 8955												
10 Apr	S22E77	040	0040	01	HSX	001	A								
11 Apr	S22E71	033	0220	13	ESO	006	B				2				
12 Apr	S22E57	033	0260	12	ESO	009	B								
13 Apr	S22E46	031	0380	13	EKO	011	B				2				
14 Apr	S22E33	031	0340	13	EAO	009	B				1				
15 Apr	S22E20	031	0350	13	EAO	019	B	4	2		6	2			
16 Apr	S21E07	030	0350	13	EAO	014	BG	4			3	2			
								8	2	0	14	4	0	0	0

Still on Disk.
Absolute heliographic longitude: 030

			Region 8956												
10 Apr	N11E52	065	0000	00	AXX	001	A								
11 Apr	N11E40	064	0000	00	AXX	001	A								
12 Apr	N14E24	066	0020	09	CRO	005	B								
13 Apr	N13E11	066	0020	07	BXO	004	B								
14 Apr	N14W03	067	0010	07	BXO	002	B								
15 Apr	N12W16	067	0020	06	CRO	008	B								
16 Apr	N13W31	068	0010	07	BXO	009	B								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 067

			Region 8957												
10 Apr	S12W14	131	0020	06	DAO	005	B								
11 Apr	S12W27	131	0000	03	AXX	003	A								
12 Apr	S12W40	131													
13 Apr	S12W53	131													
14 Apr	S12W66	131													
15 Apr	S12W79	131													
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 131

			Region 8958												
11 Apr	N17E66	038	0010	04	BXO	003	B				1				
12 Apr	N17E53	037	0020	06	CAO	005	B								
13 Apr	N16E42	035	0010	01	AXX	002	A								
14 Apr	N17E30	034	0000	00	AXX	001	A								
15 Apr	N17E17	034													
16 Apr	N17E04	034													
								0	0	0	1	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 034

Region Summary-continued

Date	Location (° Lat ° CMD)	Helio Lon	Sunspot Characteristics Area (10^{-6} hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	Flares X-ray C	X-ray M	X-ray X	Optical S	Optical 1	Optical 2	Optical 3	Optical 4
			Region 8959												
12 Apr	S19E29	061	0070	06	DAO	010	B								
13 Apr	S17E14	063	0090	07	DAO	007	B								
14 Apr	S18E03	061	0080	09	DAO	006	B								
15 Apr	S17W13	064	0060	10	CAO	009	B								
16 Apr	S17W25	061	0040	09	CSO	014	B	1			1				
								1	0	0	1	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		061													
			Region 8960												
13 Apr	N19W15	092	0010	03	BXO	003	B								
14 Apr	N19W31	095	0040	07	CSO	011	B				2				
15 Apr	N19W43	094	0040	08	CSO	012	B				1				
16 Apr	N20W57	094	0050	09	CSO	008	B								
								0	0	0	3	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		092													
			Region 8961												
13 Apr	S25E07	070	0010	04	BXO	002	B								
14 Apr	S25W06	070													
15 Apr	S25W19	070									1				
16 Apr	S25W32	070													
								0	0	0	1	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		070													
			Region 8962												
13 Apr	N21E76	001	0070	03	HSX	001	A								
14 Apr	N22E62	002	0060	02	HSX	001	A								
15 Apr	N22E49	002	0060	02	HSX	001	A								
16 Apr	N23E36	001	0070	04	CSO	002	B								
								0	0	0	0	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		001													
			Region 8963												
13 Apr	N15E74	003	0060	02	HAX	001	A								
14 Apr	N16E62	002	0040	02	HSX	003	A								
15 Apr	N16E49	002	0010	02	AXX	002	A								
16 Apr	N16E36	001	0020	02	HRX	004	A								
								0	0	0	0	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		001													

Region Summary-continued

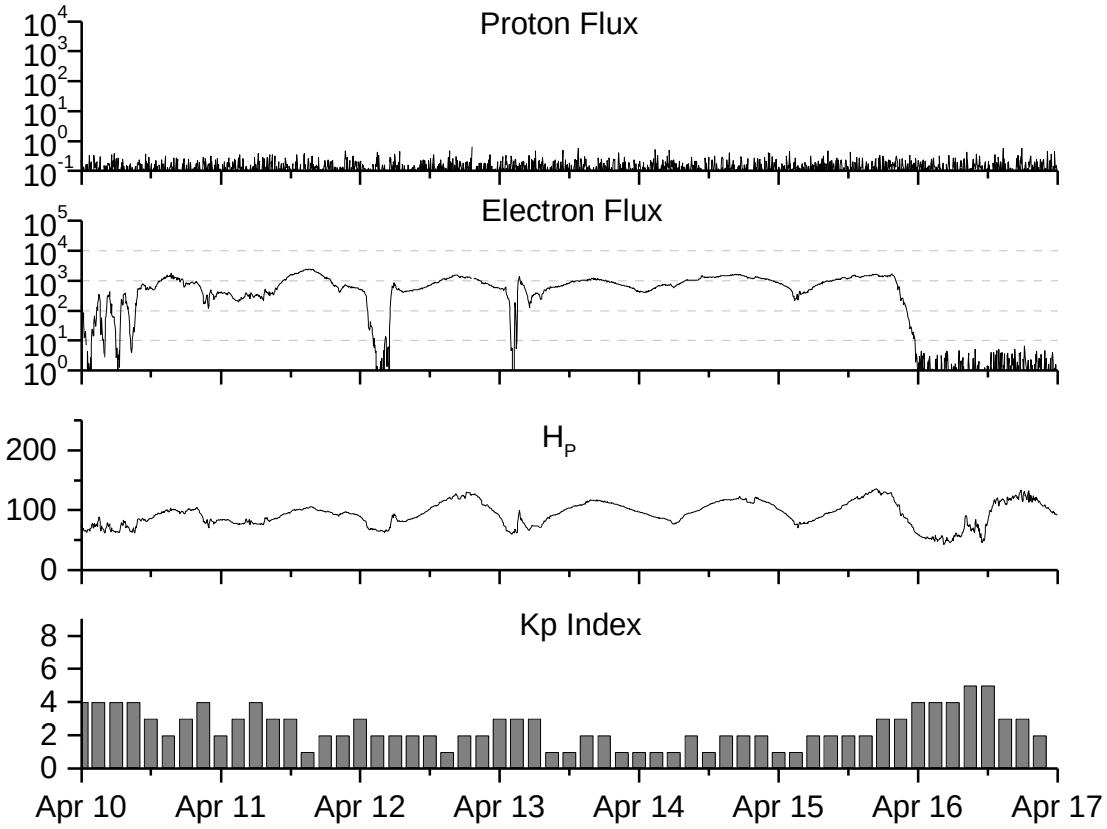
	Location		Sunspot Characteristics					Flares							
		Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical				
Date	(° Lat ° CMD)	Lon	(10^{-6} hemi)	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4
	Region 8964														
16 Apr	N34E21	016	0010	04	BXO	003	B				1				
								0	0	0	1	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 016

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

	Sunspot Numbers					Radio Flux		Geomagnetic	
	Observed values		Ratio	Smooth values		*Penticton	Smooth	Planetary	Smooth
Month	SWO	RI	RI/SWO	SWO	RI	10.7 cm	Value	Ap	Value
				1998					
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 03 Apr 2000

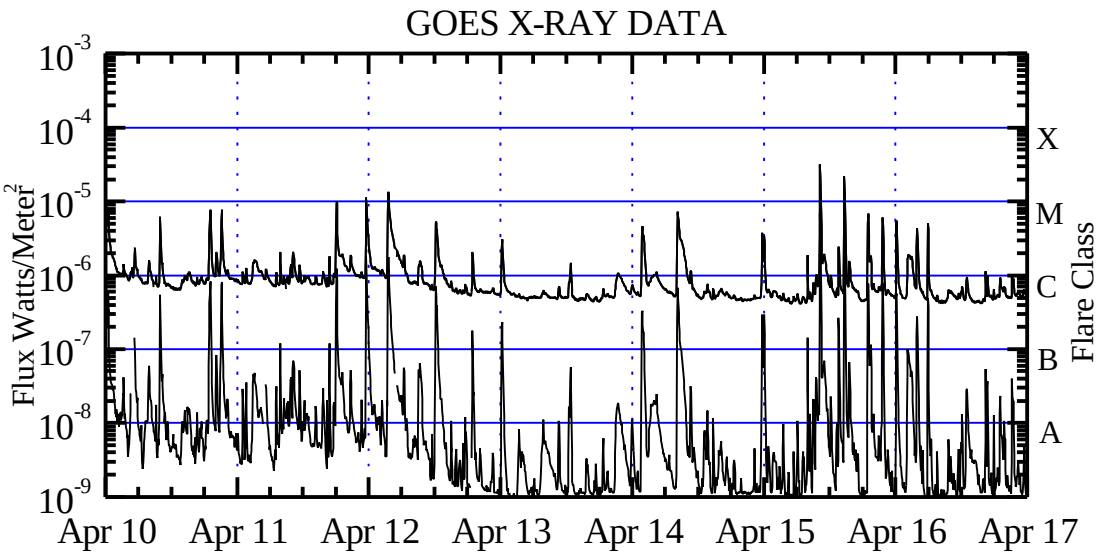
Protons plot contains the five-mine averaged integral proton flux (protons/cm^2 –sec –sr) as measured by GOES-8 (W75) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

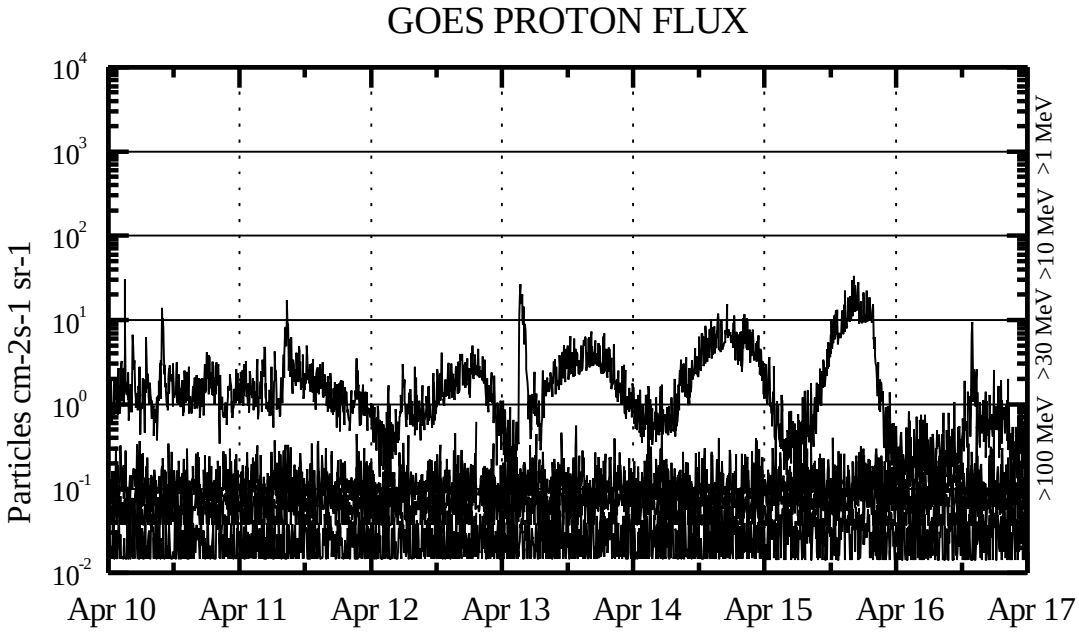
Electrons plot contains the five-mine averaged integral electron flux (electrons/cm^2 –sec –sr) with energies greater than 2 MeV at GOES-8.

Hp plot contains the five mine 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.

Kp 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 Kp 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 Kp are " global " parameters that are applicable to a first order approximation over large areas. Hparallel is subject to more localized phenomena and the measurements generally are applicable to within a few degrees of longitude of the measuring satellite.





Weekly GOES Satellite X-ray and Proton Plots

X-ray plot contains five mine averaged x-ray flux (watts/m$^{2)}$ as measured by GOES 8 and 10 in two wavelength bands, .05 -. 4 and .1 - .8 nm. The letters A, B, C, M and X refer to x-ray event levels for the .1 - .8 nm band.

Proton plot contains the five mine averaged integral proton flux (protons/cm^2 –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/cm^2-sec-sr) at greater than 10 MeV.