

Space Weather Highlights
22 - 28 April 2002

SWO PRF 1391
30 April 2002

Solar activity was at low to moderate levels during the summary period. Activity was moderate on 24 April due to an M1/1f flare at 24/2156 UTC from Region 9912 (N10, L= 069, class/area Dai/270 on 21 April). Activity was low during 22- 23 April and 25 - 28 April with predominantly minor C-class activity. Region 9912 produced a C2/Sf flare on 22/1210 UTC with an associated Type II radio sweep (estimated velocity 804 km/s). Other notable activity during the period included two filament eruptions. The first off the southwest quadrant on 22/2230 UTC with a non-Earth-directed CME. The second filament eruption occurred late in the day on 26 April at S32, L=003. This filament eruption also produced a large non-Earth-directed CME.

Solar wind data were available from the NASA Advanced Composition Explorer (ACE) spacecraft for most of the summary period. A coronal mass ejection arrived at ACE on 23/0400 UTC with IMF Bz turning southward for approximately a half hour. Maximum deflection was minus 20 nT (GSM). Solar wind speed reached a maximum of about 670 km/s at 23/0500 UTC. After the CME shock passage solar wind speed gradually decayed until 28 April when it increased to approximately 550 km/s due to recurrent high speed stream effects.

At the start of the summary period a greater than 100 MeV proton event and a greater than 10 MeV proton event were in progress due to the X1 west limb flare on 21 April. The greater than 100 MeV event began on 21 April 0155 UTC and ended on 22 April 2335 UTC (peak flux of 22.9 pfu on 21 April 1025 UTC). The greater than 10 MeV proton event began on 21 April 0225 UTC and ended on 26 April 0715 UTC (peak flux of 2520 pfu on 21 April 2320 UTC).

The greater than 2 MeV electrons at geo-synchronous orbit were at high levels on 22 April due to the effects of the X1 flare on 21 April. Greater than 2 MeV electrons reached moderate levels on 26 - 27 April.

Geomagnetic activity was at quiet to major storm levels during the summary period. Early on 23 April the CME shock arrived from the X1 flare on 21 April. A 60 nT sudden impulse was measured on the Boulder magnetometer and minor storm conditions resulted. An isolated severe storm period (09 - 12 UTC) was observed at the higher latitudes. On 24 - 27 April the geomagnetic field was quiet to unsettled. Late in the period, 28 April, activity increased to unsettled to active conditions with isolated major storming at high latitudes due the return of a high speed stream.

Space Weather Outlook
01 May - 27 May 2002

Solar activity is expected to be low to moderate with a chance of an isolated period of high activity early in the period. M-Class activity is expected during the first 1-2 weeks of the period due to returning active regions. During the later part of the period only C-class and isolated low-level M-class activity is expected.

There is a slight chance of a proton event early in the forecast period in conjunction with the potential for increased solar activity.

Greater than 2 MeV electron fluxes are expected for 01 - 02 May due to coronal hole effects. Normal to moderate flux levels are expected during the rest of the period.

The geomagnetic field is expected to be quiet to unsettled during most of the period. Active conditions are possible on 24 - 27 May due to a returning coronal hole.



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
22 April	170	155	980	C1.0	7	0	0	5	0	0	0	0
23 April	175	180	1060	B9.9	4	0	0	3	0	0	0	0
24 April	177	256	1290	B9.2	14	1	0	14	2	0	0	0
25 April	167	208	850	B5.9	3	0	0	3	0	0	0	0
26 April	163	160	920	B4.9	6	0	0	1	0	0	0	0
27 April	157	173	880	B7.2	3	0	0	2	0	0	0	0
28 April	147	121	690	B4.4	3	0	0	2	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
	22 April	3.3E+8	8.0E+7	2.9E+5		5.6E+7
23 April	6.5E+7	1.4E+7	3.0E+4		5.1E+5	
24 April	1.7E+7	5.6E+6	5.2E+3		2.7E+5	
25 April	3.3E+6	1.2E+6	3.4E+3		1.4E+6	
26 April	2.1E+6	6.5E+5	2.9E+3		1.9E+7	
27 April	2.0E+6	3.6E+5	3.0E+3		1.6E+7	
28 April	1.2E+6	1.3E+5	2.8E+3		6.2E+6	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	22 April	8	2-4-1-2-2-2-1-1	17	2-5-1-4-3-4-2-1	12
23 April	21	1-5-4-3-3-5-2-2	36	1-5-7-2-5-4-2-2	22	1-4-6-3-3-4-2-3
24 April	6	3-1-1-1-1-2-1-2	8	3-2-1-2-2-2-2-2	7	3-1-1-2-2-3-2-2
25 April	2	2-1-0-0-1-0-1-0	2	1-1-0-1-2-0-1-0	5	2-1-0-2-2-3-2-1
26 April	2	0-0-0-0-0-1-1-2	*	1-0-0-0-0*-1-1	6	2-1-1-2-2-2-2-2
27 April	10	1-1-1-2-3-3-3-3	9	1-2-0-4-2-3-2-2	8	2-1-1-2-3-3-3-3
28 April	14	2-4-3-3-3-3-2-2	28	3-2-6-4-5-4-3-2	19	3-4-4-4-4-3-3-2

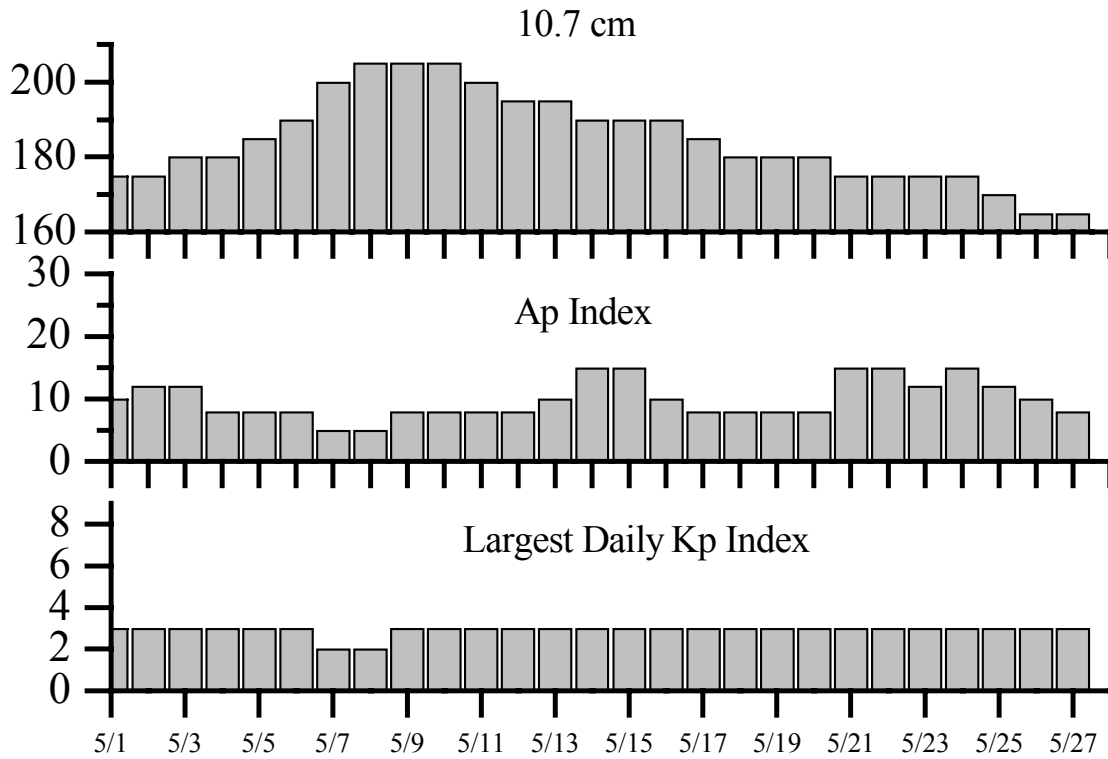


Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UT
22 Apr 0053	2 - 245 MHz Bursts	21 Apr
22 Apr 0015	CONT ALERT: Proton Event 10MeV > 1000pfu	21 Apr 0510
22 Apr 0018	CONT ALERT: Proton Event 100MeV > 1pfu	21 Apr 0155
22 Apr 0348	ALERT: Geomagnetic K= 4	22 Apr 0345
22 Apr 1235	ALERT: Type II Radio Emission	22 Apr 1207
22 Apr 1716	EXT WARNING: Proton 100MeV > 1pfu	21/0200 -23/0600 Apr
22 Apr 1945	EXT WARNING: Proton 10MeV > 10pfu	21/0140 - 25/0000
22 Apr 1955	SUMMARY: Proton Event 10MeV > 1000pfu	21 Apr 2320
23 Apr 0019	7 - 245 MHz Bursts	22 Apr
23 Apr 0015	CONT ALERT: Proton Event 100MeV > 1pfu	21 Apr 21 0155
23 Apr 0021	CONT ALERT: Proton Event 10MeV > 100pfu	21 Apr 21 0300
23 Apr 0425	WARNING: Geomagnetic Sudden Impulse	23/0430 - 23/0530 Apr
23 Apr 0454	ALERT: Geomagnetic K= 4	23 Apr 0454
23 Apr 0456	WARNING: Geomagnetic K= 4	23 Apr 0456 - 1800
23 Apr 0501	SUMMARY: Geomagnetic Sudden Impulse	23 Apr 0450
23 Apr 0709	ALERT: Geomagnetic K= 4	23 Apr 0707
23 Apr 0821	WARNING: Geomagnetic K= 5	23 Apr 0830 -1800
23 Apr 0834	ALERT: Geomagnetic K= 5	23 Apr 0832
23 Apr 1650	SUMMARY: Proton Event 100MeV > 1pfu	21 Apr 1025
23 Apr 1755	EXT WARNING: Geomagnetic K= 4	23/0456 -24/1500 Apr
24 Apr 0019	2 - 245 MHz Bursts	23 Apr 23 Apr
24 Apr 0048	CONT ALERT: Proton Event 10MeV >100pfu	21 Apr 0300
24 Apr 1556	SUMMARY: Proton Event 10MeV >100pfu	21 Apr 2320
24 Apr 2342	EXT WARNING: Proton 10MeV > 10pfu	21/0140 - 25/1500
25 Apr 0008	7 - 245 MHz Bursts	24 Apr
25 Apr 0027	CONT ALERT: Proton Event 10MeV > 10pfu	21 Apr 0225
26 Apr 0004	6 - 245 MHz Bursts	25 Apr
26 Apr 0126	CONT ALERT: Proton Event 10MeV > 10pfu	21 Apr 0225
26 Apr 1500	SUMMARY: Proton Event 10MeV Integral Flux > 10pfu	21Apr 2320
27 Apr 0033	1 - 245 MHz Burst	26 Apr
27 Apr 0033	1 - 245 MHz Noise Storms	26 Apr
28 Apr 0410	WARNING: Geomagnetic K= 4	28 Apr 0410 - 1450
28 Apr 0411	ALERT: Geomagnetic K= 4	28 Apr 0411



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
01 May	175	10	3	15 May	190	15	3
02	175	12	3	16	190	10	3
03	180	12	3	17	185	8	3
04	180	8	3	18	180	8	3
05	185	8	3	19	180	8	3
06	190	8	3	20	180	8	3
07	200	5	2	21	175	15	3
08	205	5	2	22	175	15	3
09	205	8	3	23	175	12	3
10	205	8	3	24	175	15	3
11	200	8	3	25	170	12	3
12	195	8	3	26	165	10	3
13	195	10	3	27	165	8	3
14	190	15	3				



Energetic Events

Date	Time		X-ray		Optical Information			Peak		Sweep Freq		
	Begin	Max	½	Integ	Imp/Location		Rgn	Radio Flux		Intensity		
			Max		Class	Flux		Brtns	Lat	CMD	245	2695
24 Apr	2146	2156	2201	M1.7	.007	1f	N09W49	9912				

Flare List

Date	Time			X-ray Class.	Imp / Brtns	Optical		Rgn
	Begin	Max	End			Location	Lat CMD	
22 April	0003	0019	0021	C7.7				9906
	0050	0050	0104	C3.5	Sf	N11E54		9915
	0448	0506	0520	C2.1				
	0545	0546	0557	C5.5	Sf	S17E67		9916
	1007	1008	1014	C1.3	Sf	N03E39		9914
	1204	1207	1216	C2.8	Sf	N12W19		9912
	1440	1441	1451	C1.4	Sf	N03E37		9914
23 April	B0001	U0003	A0024	C1.6	Sf	N04E32		9914
	1246	1249	1259		Sf	S14E52		9916
	1545	1545	1548	C1.1	Sf	N12E28		9915
	2005	2030	2041	C1.8				
	2245	2250	2255	C1.2				
24 April	0409	0415	0424	C1.5				
	0505	0517	0525	C1.4				
	0537	0539	0555	C1.7	Sf	S15W34		9913
	0638	0641	0646	C1.4	Sf	S16W34		9913
	0709	0709	0714		Sf	S15W33		9913
	0732	0735	0744	C1.7	Sf	S18E03		
	0756	0805	0809	C1.4				
	1023	1029	1034	C1.2	Sf	S17E00		
	1046	1050	1119	C2.0	Sf	S15W37		9913
	1121	1122	1129		Sf	N12E17		9915
	1125	1125	1132		Sf	N13W47		9912
	1126	1130	1137		Sf	S23W09		9920
	1315	1317	1328	C1.0	Sf	S18E01		
	1335	1342	1354		Sf	S18E00		
	1348	1354	1409		Sf	S14W39		9913
	1412	1423	1457	C1.7	Sf	S14W40		9913
	1547	1552	1633	C4.8	1n	N09W47		9912
	1634	1637	1649	C2.3	Sf	S14E40		9916
	1743	1754	1805	C1.9				
	2013	2018	2022	C1.2				
2149	2156	A2206	M1.7	1f	N09W49		9912	
25 April	0541	0546	0551	C2.8	Sf	N10W56		9912
	0555	0557	0600		Sf	S19W08		9924



Flare List - continued.

Date	Time			X-ray Class.	Imp / Brtns	Optical		Rgn
	Begin	Max	End			Location Lat CMD		
25 April	0601	0606	0612	C2.5	Sf	N10W56		9912
	1855	1905	1924	C1.6				
26 April	0133	0141	0150	C1.2	Sf	N05W18		9914
	0958	1029	1044	C1.2				
	1325	1327	1335	B9.0				
	1452	1504	1516	C2.0				
	1931	1937	1954	C2.1				
	2043	2101	2119	C1.6				
27 April	2247	2256	2314	C1.3	Sf	N13E23		9919
	0923	0927	0930	C1.1				
	1053	1053	1057	C2.1				
28 April	1529	1548	1629	C4.0	Sf	N16E22		9919
	1820	1822	A1853	C1.0	Sf	S15W57		9924
	2058	2101	2109	C1.2	Sf	N15W39		9915
	2231	2241	2256	C1.3				

Region Summary

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 9907</i>																	
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					
15 Apr	S04E21	115	0270	11	Eai	035	Bg										
16 Apr	S03E07	116	0170	11	Eao	023	B										
17 Apr	S03W07	117	0100	11	Eai	025	B										
18 Apr	S02W22	118	0070	07	Dao	016	B	1				1					
19 Apr	S03W32	115	0070	07	Dso	008	B										
20 Apr	S03W48	118	0070	06	Dao	005	B										
21 Apr	S03W63	120	0020	05	Cro	002	B										
22 Apr	S03W76	120															
23 Apr	S03W89	120															

9 0 0 13 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 116



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 9909</i>														
14 Apr	N06E70	079	0130	02	Hsx	001	A							
15 Apr	N11E56	080	0180	02	Hsx	001	A				1			
16 Apr	N11E42	081	0120	02	Hax	002	A							
17 Apr	N08E28	082	0100	03	Cso	003	B				1			
18 Apr	N08E15	081	0100	03	Cso	003	B				1			
19 Apr	N07E02	081	0120	04	Cso	004	B							
20 Apr	N07W10	080	0100	06	Cao	006	B							
21 Apr	N07W24	081	0050	02	Hsx	002	A							
22 Apr	N08W37	081	0050	02	Hsx	001	A							
23 Apr	N08W50	080	0040	02	Hsx	001	A							
24 Apr	N07W64	081	0050	01	Hsx	001	A							
25 Apr	N08W76	080	0020	01	Hsx	001	A							
26 Apr	N08W89	080												

0 0 0 3 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 081

<i>Region 9910</i>														
15 Apr	S21E50	086	0030	04	Bxo	005	B							
16 Apr	S20E37	086	0030	06	Cso	004	B							
17 Apr	S20E22	088	0060	08	Dao	008	B							
18 Apr	S20E07	089	0210	10	Dao	018	B							
19 Apr	S20W06	089	0210	10	Dao	017	B							
20 Apr	S20W18	088	0180	12	Eao	023	B							
21 Apr	S20W33	090	0100	11	Cao	013	B							
22 Apr	S21W47	091	0080	11	Cso	006	B							
23 Apr	S19W62	092	0080	03	Hsx	001	A							
24 Apr	S21W74	091	0080	10	Hsx	002	A							
25 Apr	S21W86	090	0040	02	Hsx	002	A							

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 089



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 9911

18 Apr	S13E23	073	0020	03	Bxo	004	B										
19 Apr	S13E11	072	0040	04	Cao	006	B										
20 Apr	S13W04	074	0030	06	Dso	008	B										
21 Apr	S13W17	074															
22 Apr	S13W30	074															
23 Apr	S13W43	074															
24 Apr	S13W56	074															
25 Apr	S13W69	074															
26 Apr	S13W82	074															
								0	0	0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 074

Region 9912

18 Apr	N11E28	068	0050	04	Dso	004	B										
19 Apr	N09E15	068	0060	05	Dao	012	B										
20 Apr	N10E02	068	0200	06	Dao	026	B	1			2						
21 Apr	N10W12	069	0270	07	Dai	021	Bg				2						
22 Apr	N10W25	069	0320	07	Dai	015	Bg	1			1						
23 Apr	N11W38	068	0240	07	Dai	016	B										
24 Apr	N09W52	069	0230	06	Dao	015	B	1	1		1	2					
25 Apr	N11W65	069	0130	06	Dao	006	B	2			2						
26 Apr	N11W78	069	0130	09	Cao	007	B										
27 Apr	N11W90	068	0090	02	Hax	002	A										
								5	1	0	8	2	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 068

Region 9913

19 Apr	S15E23	060	0030	05	Bxo	006	B										
20 Apr	S16E10	060	0030	06	Cso	006	B										
21 Apr	S17W02	059	0010	05	Bxo	008	B										
22 Apr	S15W19	063	0020	01	Hrx	001	A										
23 Apr	S15W31	061	0030	06	Cso	006	B										
24 Apr	S16W44	061	0040	05	Cso	013	B	4			6						
25 Apr	S14W58	062	0040	05	Cso	006	B										
26 Apr	S15W72	063	0040	05	Cro	006	B										
27 Apr	S15W85	063															
								4	0	0	6	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 059



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 9914

19 Apr	N04E72	011	0010	01	Axx	001	A											
20 Apr	N05E59	011	0040	05	Cao	004	B											
21 Apr	N04E44	013	0070	06	Cao	005	B											
22 Apr	N04E31	013	0150	07	Dso	009	B	3			2							
23 Apr	N04E18	012	0140	09	Dao	015	B				1							
24 Apr	N04E04	013	0230	10	Dao	023	B											
25 Apr	N04W10	014	0180	09	Dao	010	B											
26 Apr	N04W25	016	0260	09	Dso	008	B				1							
27 Apr	N05W38	016	0220	09	Dso	009	B											
28 Apr	N05W51	016	0170	09	Dso	005	B											
								3	0	0	4	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 013

Region 9915

21 Apr	N11E54	003	0030	01	Hrx	001	A											
22 Apr	N12E42	002	0120	06	Dao	009	B	1			1							
23 Apr	N11E28	002	0180	07	Dao	013	B	1			1							
24 Apr	N12E14	003	0180	06	Cao	011	B				1							
25 Apr	N12E01	003	0130	05	Cao	010	B											
26 Apr	N11W12	003	0190	07	Dao	012	B											
27 Apr	N11W26	004	0280	07	Dko	015	B											
28 Apr	N12W40	005	0240	09	Dai	018	B	1			1							
								3	0	0	4	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 003

Region 9916

21 Apr	S17E71	346	0150	06	Dao	004	B											
22 Apr	S17E60	344	0150	10	Dso	008	B	1			1							
23 Apr	S18E47	343	0150	09	Dao	009	B				1							
24 Apr	S18E32	345	0100	12	Eao	019	B	1			1							
25 Apr	S17E20	344	0050	08	Dao	009	B											
26 Apr	S18E07	344	0020	08	Cro	005	B											
27 Apr	S18W06	344	0020	06	Cso	006	B											
28 Apr	S18W19	344	0030	06	Cro	007	B											
								2	0	0	3	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 344



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 9917

22 Apr	S30E45	359	0020	03	Cro	002	B											
23 Apr	S30E32	359																
24 Apr	S30E19	359																
25 Apr	S30E06	359																
26 Apr	S30W07	359																
27 Apr	S30W20	359																
28 Apr	S30W33	359																

Still on Disk.

Absolute heliographic longitude: 359

Region 9918

22 Apr	N06E00	044	0010	03	Bxo	003	B											
23 Apr	N06W13	044																
24 Apr	N06W26	044																
25 Apr	N06W39	044																
26 Apr	N06W52	044																
27 Apr	N06W65	044																
28 Apr	N06W78	044																

Still on Disk.

Absolute heliographic longitude: 044

Region 9919

22 Apr	N11E80	324	0060	03	Hsx	001	A											
23 Apr	N10E66	324	0160	05	Dso	002	B											
24 Apr	N12E57	320	0230	17	Fao	006	B											
25 Apr	N12E46	318	0100	15	Eao	007	B											
26 Apr	N12E33	318	0190	14	Eso	006	B											
27 Apr	N12E14	324	0110	05	Dso	003	B	2			2							
28 Apr	N14E01	324	0130	06	Dso	008	B											

Still on Disk.

Absolute heliographic longitude: 324



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 9920

23 Apr	S23W03	033	0030	03	Cso	004	B											
24 Apr	S23W15	032	0020	03	Cso	002	B						1					
25 Apr	S24W28	032	0020	01	Cso	002	B											
26 Apr	S24W41	032																
27 Apr	S20W52	030	0010	02	Cro	002	B											
28 Apr	S20W65	030																

0 0 0 1 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 033

Region 9921

23 Apr	N12E41	349	0000	01	Axx	001	A											
24 Apr	N12E28	349																
25 Apr	N12E15	349																
26 Apr	N12E02	349																
27 Apr	N13W13	351	0030	03	Dao	005	B											
28 Apr	N14W27	352	0050	05	Dso	005	B											

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 349

Region 9922

23 Apr	N19E56	334	0010	02	Axx	002	A											
24 Apr	N21E40	337	0010	00	Bxo	003	B											
25 Apr	N23E25	339	0030	07	Bxo	005	B											
26 Apr	N22E13	338	0020	11	Bxo	003	B											
27 Apr	N22E04	334	0020	02	Hax	001	A											
28 Apr	N22W13	338	0010	00	Axx	001	A											

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 334

Region 9923

24 Apr	S03W31	048	0020	04	Cro	008	B											
25 Apr	S03W47	051	0040	07	Cro	006	B											
26 Apr	S03W60	051	0040	07	Cso	007	B											
27 Apr	S03W72	050	0020	05	Bxo	004	B											
28 Apr	S03W85	050																

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 048



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 9924

24 Apr	S17W07	024	0060	07	Dao	018	B											
25 Apr	S15W20	024	0030	08	Dao	006	B							1				
26 Apr	S16W36	027	0010	01	Hrx	001	A											
27 Apr	S15W51	029	0010	00	Hrx	001	A											
28 Apr	S15W64	029		1		1												
										1	0	0	2	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 024

Region 9925

24 Apr	S14W21	038	0040	04	Dso	005	B											
25 Apr	S14W36	040	0040	04	Dso	008	B											
26 Apr	S14W49	040	0020	05	Cro	005	B											
27 Apr	S14W65	043	0010	02	Bxo	002	B											
28 Apr	S14W78	043																
										0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 038

Region 9926

27 Apr	N12E26	312	0060	03	Dao	003	B											
28 Apr	N13E11	314	0060	03	Dso	007	B											
										0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 314

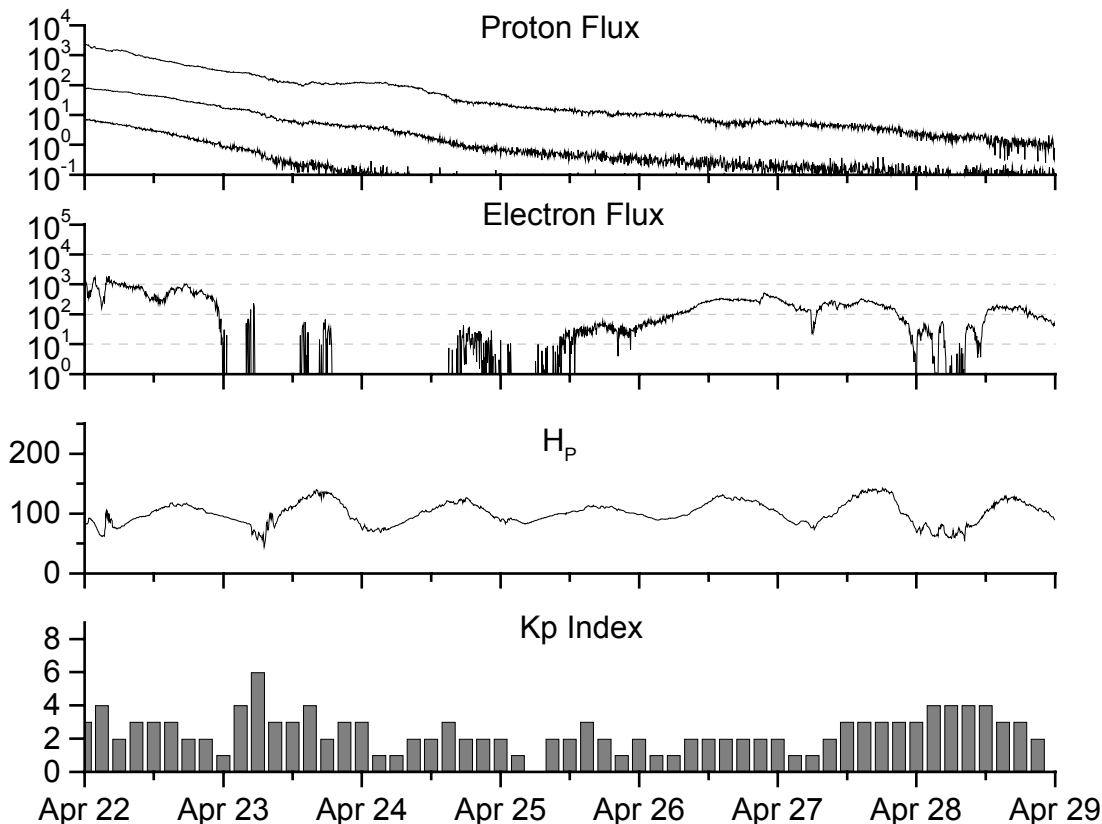


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

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 22 April 2002

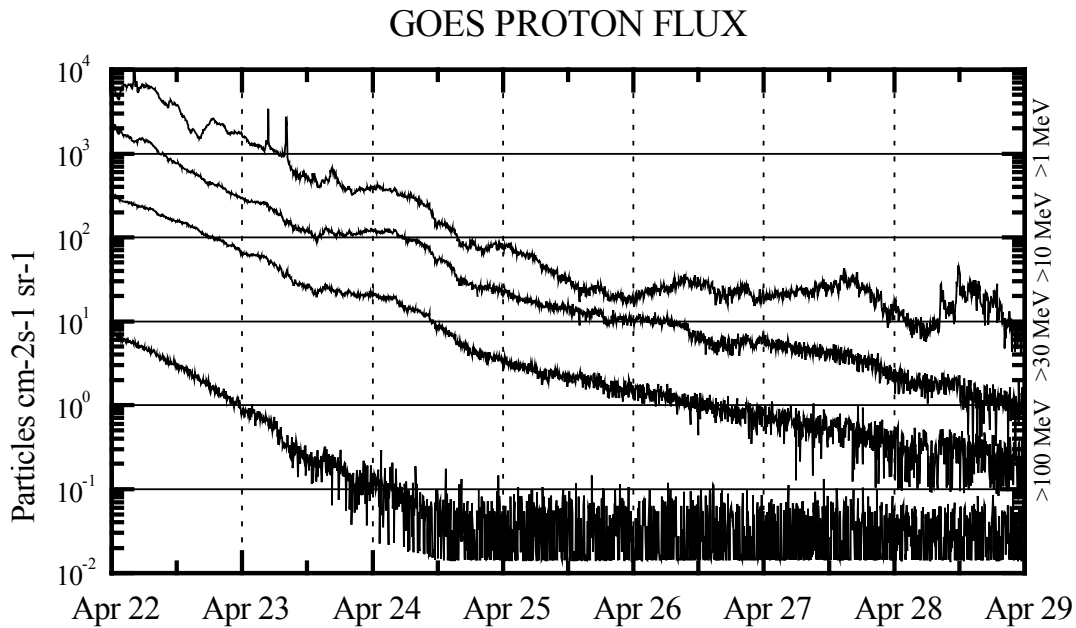
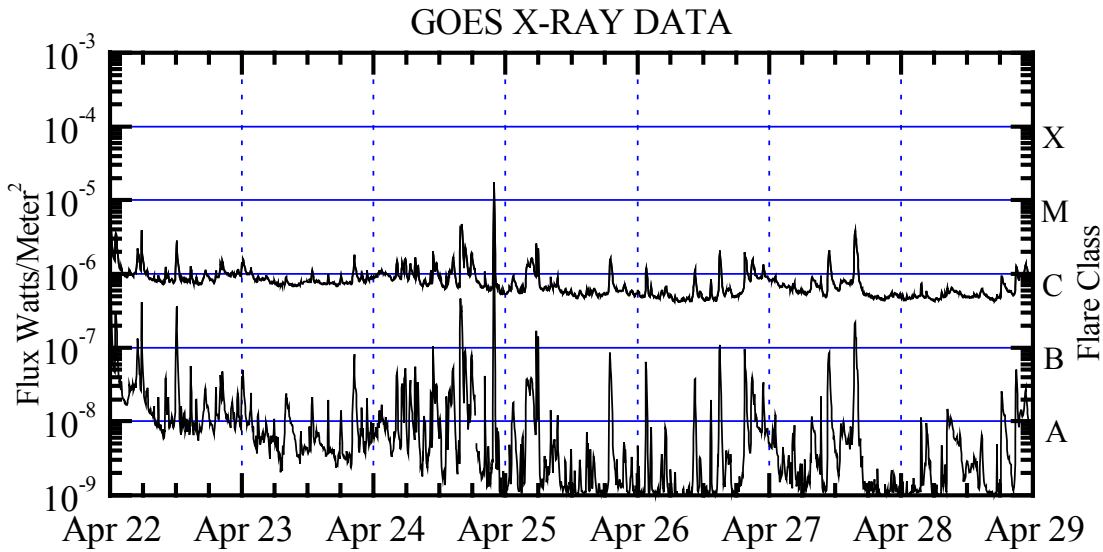
Protons plot contains the five-minute averaged integral proton flux (protons/cm²-sec -sr) as measured by GOES-8 (W75) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

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.

