

Space Weather Highlights

07 - 13 May 2001

SWO PRF 1341
15 May 2001

Solar activity ranged from low to moderate levels. Activity was low through 11 May, mostly due to C-class flares from Regions 9445 (N24, L = 027, class/area Fai/390 on 01 May) and 9455 (S18, L = 273, class/area Dao/190 on 12 May). Region 9445 gradually decayed before crossing the west limb on 10 May. Multiple CMEs were observed early on 07 May from beyond the west limb, one of which was associated with a solar proton event (see the description below). Activity increased to moderate levels during 12 - 13 May due to two low-level M-class flares from Region 9455 (see the Energetic Events listing for flare specifics). Coronal mass ejections were observed in the wake of both flares, but neither appeared Earth-directed. Region 9455 was a moderate-sized group with a minor degree of magnetic complexity that showed little change during the period. The same was true of Region 9454 (N13, L = 231, class/area Eko/430 on 11 May), which produced isolated C-class flares early in the period. Old Region 9415 (S22, L = 001, class/area Eko/880 on 07 April), which was responsible for major flare activity during its previous rotation, returned as a spotless plage area. Enhanced emission near the northeast limb at the time of this report suggest the possible active return of old Region 9433 (N17, L = 155, class/area Fki/790 on 21 April).

Data were available from the Advanced Composition Explorer (ACE) spacecraft for most of the period. Multiple CME passages occurred during the period. The first CME passage began around 08/1500 UTC and continued through 10 May. Winds gradually increased to a peak of 610 km/sec by 09/0000 UTC, then gradually decreased to near nominal speeds by the end of 09 May. A prolonged period of southward IMF Bz was also associated with this passage. It occurred during 09/0800 - 10/0800 UTC with maximum southerly deflections to minus 09 nT (GSM). Two CME passages occurred during 11 - 12 May. The first CME boundary reached Earth around 11/2100 UTC followed by a second at around 12/1000 UTC. Velocities increased following the passages with peaks to near 700 km/sec detected on 12 May. Intermittent periods of southward IMF Bz were associated with these passages as well, with maximum deflections to minus 15 nT. A high-speed coronal hole wind stream commenced around 13/1500 UTC associated with increased velocities (peaks to around 600 km/sec) and decreased densities.

A proton event at greater than 10 MeV occurred during 07 - 08 May, likely associated with an event beyond the west limb early on 07 May. The proton event began at 07/1915 UTC, reached a peak of 29 PFU at 08/0825 UTC, then ended around 08/1730 UTC.

The greater than 2 MeV electron flux at geosynchronous orbit was at normal to high levels. High flux levels occurred on 09, 11, and 13 May.

The geomagnetic field was disturbed during the period due to multiple CME passages and a high speed stream associated with a coronal hole. Unsettled to minor storm periods occurred during most days with isolated major storm periods at high latitudes.

Space Weather Outlook

16 May - 11 June 2001

Solar activity is expected to range from low to moderate levels during the period. Isolated M-class flares will be possible during the period.

No proton events are expected 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. High flux levels will be possible during the last few days of the period.

The geomagnetic field is expected to be at quiet to unsettled levels during most of the period (barring an Earth-directed CME). However, active conditions will be possible around 09 June due to 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
07 May	138	103	610	B3.1	4	0	0	3	0	0	0	0
08 May	129	88	440	C1.0	2	0	0	0	1	0	0	0
09 May	129	98	440	B4.4	2	0	0	3	0	0	0	0
10 May	130	94	650	B8.6	3	0	0	1	0	0	0	0
11 May	137	96	810	B3.2	4	0	0	1	0	0	0	0
12 May	138	127	900	B3.7	5	1	0	8	2	0	0	0
13 May	139	119	840	B7.7	7	1	0	7	1	0	0	0

Daily Particle Data

Date	Proton Fluence (protons/cm ² -day-sr)			Electron Fluence (electrons/cm ² -day-sr)		
	>1MeV	>10MeV	>100MeV	>.6MeV	>2MeV	>4Me
07 May	1.7E+6	4.0E+5	3.5E+3		5.3E+5	
08 May	1.7E+7	1.4E+6	3.2E+3		4.2E+6	
09 May	4.3E+6	9.4E+4	3.0E+3		1.8E+7	
10 May	9.6E+5	2.6E+4	2.8E+3		9.0E+6	
11 May	1.2E+6	1.9E+4	2.9E+3		4.4E+7	
12 May	8.7E+5	1.3E+4	2.9E+3		2.1E+7	
13 May	3.6E+5	1.2E+4	2.8E+3		2.8E+7	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	07 May	1.7E+6	4.0E+5	3.5E+3		5.3E+5
08 May	1.7E+7	1.4E+6	3.2E+3		4.2E+6	
09 May	4.3E+6	9.4E+4	3.0E+3		1.8E+7	
10 May	9.6E+5	2.6E+4	2.8E+3		9.0E+6	
11 May	1.2E+6	1.9E+4	2.9E+3		4.4E+7	
12 May	8.7E+5	1.3E+4	2.9E+3		2.1E+7	
13 May	3.6E+5	1.2E+4	2.8E+3		2.8E+7	



Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UT
07 May 0312	K= 4 Warning	07 May 0320 - 1500
07 May 0552	K= 5 Observed	07 May 0300 - 0600
07 May 1509	Proton >10MeV >=10pfu Warning	07/1508 -08/0000 May
07 May 1936	Protons Event >10 MeV >=10pfu	07 May 1915
07 May 2325	CONTINUED Proton >10MeV >=10pfu Warning	07/1508 - 08/0000 May
08 May 0100	CONTINUED Protons Event >10 MeV >=10pfu	07 May 1915
08 May 0110	2 – 245 MHz Radio Bursts	07 May
08 May 2258	K= 4 Warning	08/2305 -09/1500
08 May 2331	CONTINUED Proton >10MeV >=10pfu Warning	07/1508 - 8/0000 May
09 May 0100	CONTINUED Protons Event >10 MeV >=10pfu	07 May 1915
09 May 0304	K= 5 Observed	09 May 0000 - 0300
09 May 0433	ENDED Protons Event >10 MeV >=10pfu	08 May 1935
09 May 0444	CANCELLED Proton >10MeV >=10pfu Warning	07/1508 - 08/0000 May
09 May 0559	K= 5 Observed	09 May 0300 - 0600
09 May 0600	A >= 20 Observed	09 May 0600
09 May 0900	K= 4 Observed	09 May 0600 - 0900
09 May 1457	CONTINUED K= 4 Warning	08/2305 - 09/2359 May
09 May 1616	Electron Event >2MeV >=1000pfu	09 May 1600
09 May 2313	EXTENDED K= 4 Warning	08 /2305 - 10 /1500
10 May 0300	K= 5 Observed	10 May 0000 - 0300
10 May 0559	K= 5 Observed	10 May 0300 - 0600
10 May 0643	A >= 30 Warning	10/0645 - 11/0000 May
10 May 0900	K 5 Observed	10 May 0600 - 0900
10 May 0900	A >= 30 Observed	10 May 0900
10 May 1559	Type II Radio Emission	10 May 1504
10 May 2035	ENDED A >=30 Observed	10 May 1800
11 May 0033	1 – 245 MHz Radio Bursts	10 May
11 May 0602	ENDED A >= 20 Observed	09 May 0600
11 May 1337	Electron Event >2MeV >= 1000pfu	11 May 1250
12 May 0106	CONTINUED Electron Event >2MeV >= 1000pfu	11 May 1250
12 May 0110	1 – 245 MHz Radio Burst	11 May
12 May 0724	K= 4 Warning	12 May 0730 - 1500
12 May 1200	K= 5 Observed	12 May 0900 - 1200
12 May 1505	K= 5 Observed	12 May 1200 - 1500
12 May 1510	A >=20 Observed	12 May 1500
12 May 1650	K= 4 Warning	12 May 1650 - 2359
12 May 1806	K= 4 Observed	12 May 1500 - 1800
12 May 2352	10cm Radio Burst 230 F.U.	12 May 2327
12 May 2354	EXTENDED K= 4 Warning	12/1650 – 13/1500 May
13 May 0000	K= 4 Observed	12 May 2100 - 0000
13 May 0020	5 - 245 MHz Radio Bursts	12 May
13 May 0020	245 MHz Radio Noise Storm	12 May
13 May 0042	10cm Radio Burst 250 F.U.	12 May 2347
13 May 0207	Type IV Radio Emission	12 May 2340
13 May 0258	K= 5 Warning	13 May 0300 - 1500

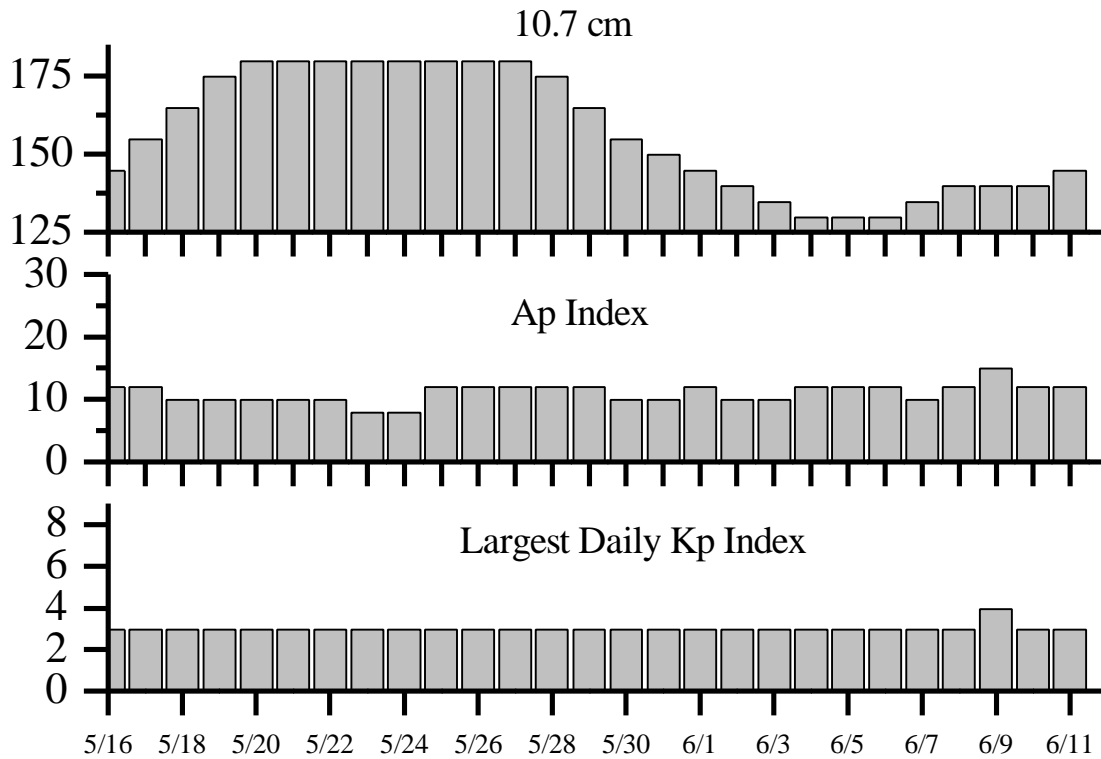


Alerts and Warnings Issued – continued.

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UT
13 May 0258	K= 5 Observed	13 May 0000 - 0300
13 May 0322	10cm Radio Burst 220 F.U.	13 May 0300
13 May 0324	Type II Radio Emission	13 May 0303
13 May 0506	A \geq 30 Warning	13 May 0530 - 1500
13 May 0521	Type IV Radio Emission	13 May 0310
13 May 0601	A \geq 30 Observed	13 May 0556
13 May 1201	ENDED A \geq 30 Observed	13 May 0556
13 May 1202	CANCELLED A \geq 30 Warning	13 May 0530 - 1500
13 May 1622	Electron Event $>2\text{MeV}$ $\geq 1000\text{pfu}$	13 May 1600
13 May 1643	K= 4 Warning	13 May 1645 - 2100
13 May 1801	K= 4 Observed	13 May 1500 - 1800
13 May 2040	EXTENDED K= 4 Warning	13/1645 – 14/0600 May



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
16 May	145	12	3	30 May	155	10	3
17	155	12	3	31	150	10	3
18	165	10	3	01 June	145	12	3
19	175	10	3	02	140	10	3
20	180	10	3	03	135	10	3
21	180	10	3	04	130	12	3
22	180	10	3	05	130	12	3
23	180	8	3	06	130	12	3
24	180	8	3	07	135	10	3
25	180	12	3	08	140	12	3
26	180	12	3	09	140	15	4
27	180	12	3	10	140	12	3
28	175	12	3	11	145	12	3
29	165	12	3				



Energetic Events

Date	Time		X-ray		Optical Information			Peak		Sweep Freq		
	Begin	Max	½ Max	Class	Integ Flux	Imp/ Brtns	Location Lat CMD	Rgn #	Radio Flux		Intensity	
									245	2695	II	IV
12 May	2242	2335	2345	M3.0	.029	1B	S17E00	9455	2400	230		1
13 May	0258	0304	0308	M3.6	.012	SN	S18W01	9455	2200	220	1	1

Flare List

Date	Time			X-ray Class.	Optical		Rgn
	Begin	Max	End		Imp / Brtns	Location Lat CMD	
07 May	0231	0245	0250	B7.7			
	0358	0403	0422	B6.2			
	0620	0624	0627	B7.7			
	0632	0643	0656	C1.0			
	1138	1142	1148		SF	N26W32	9445
	1205	1214	1241	C3.9	SF	N25W35	9445
	1538	1544	1613	C2.2	SF	N24W40	9445
	1819	1831	1846	C1.7			
08 May	0041	0052	0137	C9.9	1F	N23W43	9445
	0929	0932	0935	B6.4			
09 May	1610	1622	1631	C1.6			
	0512	0516	0520	B6.7			
	0533	0535	0544		SF	N22W60	9445
	0557	0558	0619	C1.1	SF	N26W57	9445
	B0857	0857	0909	C1.5	SF	N26W56	9445
	1234	1238	1241	B7.2			
	1513	1517	1519	B8.8			
	1633	1637	1640	B8.5			
10 May	1800	1803	1807	B8.4			
	0105	0203	0443	C5.6			
	1020	1022	1034	C1.8	SF	S18W26	9449
11 May	1448	1519	1547	C6.1			9454
	0642	0717	0745	C1.6			
	1004	U1005	1018	C1.6	SF	S18E25	9455
12 May	2017	2022	2031	C3.7			
	2231	2244	2254	C2.7			
	0036	0044	0047	B7.4			
	0603	0607	0611	B7.5			
	0844	0844	0848	B9.5	SF	N15E56	9454
	0942	1001	1035	C2.8	1F	S17E11	9455
	1204	1211	1218	C5.7	SF	N15E53	9454
	1240	1242	1255		SF	S14E08	9455
1326	1412	1440		SN	S18E08	9455	
1326	1347	1413		SF	N12E55	9454	
1410	1412	1516	C4.0	SF	S17E08	9455	



Flare List – continued.

Date	Time			X-ray Class.	Imp / Brtns	Optical	Rgn
	Begin	Max	End			Location Lat CMD	
12 May	1443	1446	1503	C4.2	SF	S18E08	9455
	1716	1721	1749	C3.5	SF	S19E04	9455
	2326	2335	0008	M3.0	1B	S17E00	9455
13 May	0022	0024	0033	C3.4	SF	S15E01	9455
	0143	0144	0147	C1.1	SF	S17E02	9455
	0301	0304	0322	M3.6	SN	S18W01	9455
	0817	0818	0837	C3.4	SF	S17W04	9455
	1001	1001	1005	B9.7	SF	S15W04	9455
	1402	1404	1422	C4.9	1F	S16W04	9455
	1607	1607	1614		SF	S21W33	9451
	1620	1627	1642		SF	S22W34	9451
	1912	1918	1923	C3.3			
	2047	2052	2102	C1.6			
2303	2309	2324	C1.1				

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

Region 9442

26 Apr N28E59	069	0040	02	HSX	001	A
27 Apr N28E47	068	0060	01	HSX	001	A
28 Apr N28E34	068	0070	02	HAX	001	A
29 Apr N28E22	067	0060	01	HSX	001	A
30 Apr N28E09	066	0050	02	HSX	001	A
01 May N29W05	067	0060	06	CSO	004	B
02 May N27W17	066	0060	01	HSX	001	A
03 May N27W30	066	0050	01	HSX	001	A
04 May N27W41	064	0040	01	HSX	001	A
05 May N27W53	063	0030	01	HSX	001	A
06 May N26W69	065	0050	01	HSX	001	A
07 May N26W83	066					

0 0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 067



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 9444

28 Apr	S11E67	035	0060	02	HSX	003	A													2
29 Apr	S11E52	037	0050	05	CSO	006	B													
30 Apr	S11E38	037	0020	05	BXO	004	B													
01 May	S09E24	038	0020	04	BXO	003	B													
02 May	S11E13	036	0000	01	AXX	002	A													
03 May	S11W01	037	0010	02	AXX	004	A													
04 May	S11W16	039	0000	00	AXX	001	A													
05 May	S11W29	039																		
06 May	S11W42	039																		
07 May	S11W55	039																		
08 May	S11W68	039																		
09 May	S11W81	039																		
																				0 0 0 2 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 037

Region 9445

28 Apr	N23E76	026	0060	05	CAO	004	B													
29 Apr	N24E61	028	0190	10	DAO	010	B	3												8
30 Apr	N24E48	027	0330	15	EAO	021	B	4												8
01 May	N26E37	025	0390	17	FAI	028	B	1	1											4
02 May	N25E23	026	0330	18	FAI	040	BG	1												5
03 May	N25E10	026	0240	20	FAI	030	BG	1												5
04 May	N25W04	027	0300	19	FAI	037	BG	1												4
05 May	N24W16	026	0220	20	FAI	033	BG	1	1											1 1
06 May	N23W30	026	0180	20	FAI	034	BG	1												2
07 May	N25W42	024	0110	18	FAI	015	BG	2												3
08 May	N24W54	023	0100	19	FAI	009	BG	1												1
09 May	N25W67	023	0080	15	EAO	007	BG	2												3
10 May	N21W88	031	0030	01	HSX	001	A													
																				18 2 0 43 2 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 027



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 9447

30 Apr	N12E15	060	0010	03	BXO	003	B											
01 May	N12E01	061	0010	03	CRO	003	B											
02 May	N12W13	062	0060	06	DSO	013	B											
03 May	N12W27	063	0090	10	DAO	021	B	2				6						
04 May	N12W41	064	0260	12	EAI	026	BG	1				2						
05 May	N12W55	065	0260	13	EAI	017	BG											
06 May	N11W71	067	0200	14	EAO	006	B											
07 May	N12W84	066	0120	11	EAO	003	B											
								3	0	0	0	8	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 061

Region 9448

01 May	N22E73	349	0070	02	HSX	001	A											
02 May	N22E60	349	0140	03	HAX	002	A											
03 May	N21E47	349	0100	04	CAO	006	B											
04 May	N20E34	349	0120	04	CAO	005	B											
05 May	N21E22	348	0110	04	CAO	007	B					2						
06 May	N21E07	349	0100	02	HAX	004	A											
07 May	N22W06	348	0130	06	CSO	006	B											
08 May	N22W16	345	0110	05	CSO	008	B											
09 May	N21W30	346	0110	06	CSO	003	B											
10 May	N21W44	347	0110	03	HSX	002	A											
11 May	N21W57	346	0120	02	HSX	001	A											
12 May	N22W71	347	0100	02	HAX	001	A											
13 May	N23W84	347	0110	03	HSX	001	A											
								0	0	0	0	2	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 348



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 9452

07 May S09E67	275	0020	01	HSX	001	A											
08 May S09E54	275	0020	01	HSX	001	A											
09 May S09E41	275	0020	01	AXX	001	A											
10 May S09E27	276	0010	00	HRX	001	A											
11 May S09E14	275	0010	00	AXX	001	A											
12 May S10E02	274	0000	06	BXO	002	B											
13 May S10W11	274																

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 274

Region 9453

09 May S08W28	344	0020	04	CSO	005	B											
10 May S08W41	344	0010	00	HRX	001	A											
11 May S08W54	344																
12 May S08W67	344																
13 May S08W80	344																

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 344

Region 9454

10 May N15E74	229	0300	13	EAO	008	B	1										
11 May N13E58	231	0430	11	EKO	013	B											
12 May N13E46	230	0410	12	EAO	016	BG	1			3							
13 May N12E32	231	0400	13	EAO	018	BG											

2 0 0 3 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 231

Region 9455

11 May S18E17	272	0100	06	DAO	012	B	1			1							
12 May S16E03	273	0190	10	DAO	022	B	4	1		5	2						
13 May S18W11	274	0160	12	EAI	021	BG	4	1		5	1						

9 2 0 11 3 0 0 0

Still on Disk.

Absolute heliographic longitude: 273



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 9456

12 May N06W04 280 0060 06 DAO 010 B
 13 May N06W18 281 0050 07 DAO 011 B

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 280

Region 9457

13 May S19E03 260 0000 01 AXX 002 A

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 260

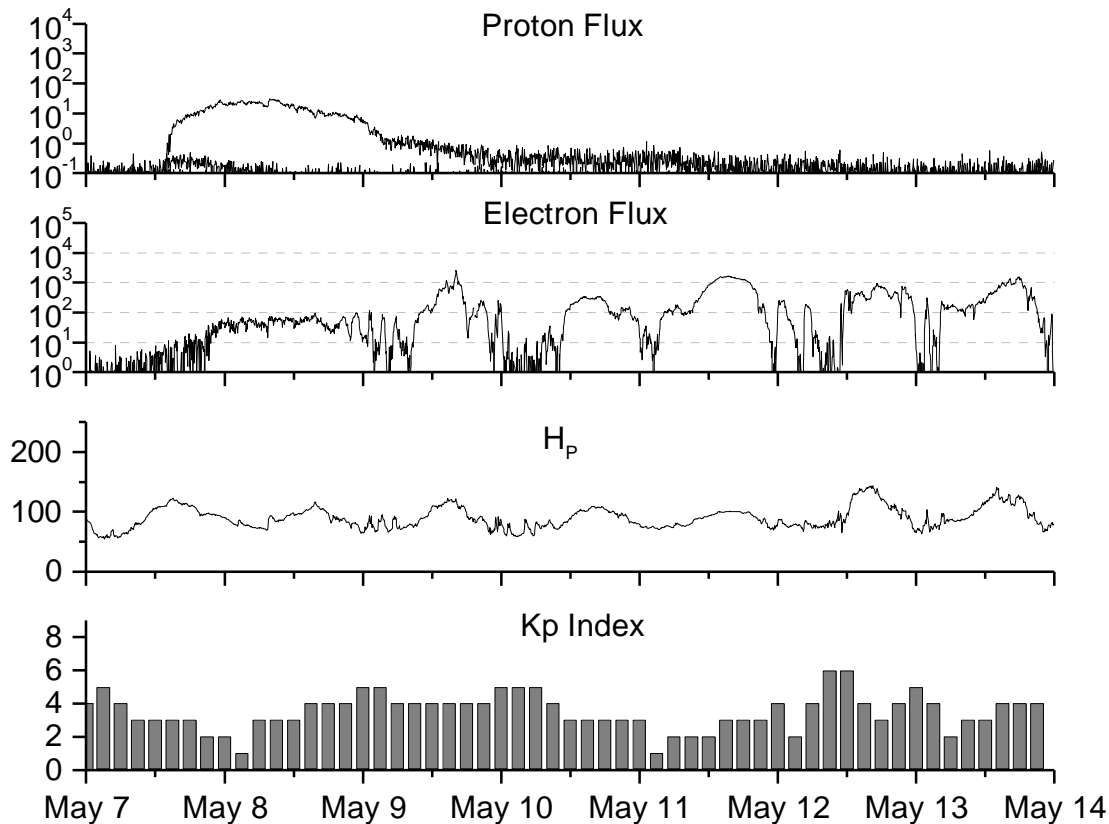


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

Month	Sunspot Numbers				Radio Flux		Geomagnetic		
	Observed values		Ratio	Smooth values		*Penticton	Smooth	Planetary	Smooth
	SWO	RI	RI/SWO	SWO	RI	10.7 cm	Value	Ap	Value
1999									
May	140.5	106.4	0.76	131.7	90.5	148.6	149.9	08	12.4
June	208.3	137.7	0.66	136.0	93.1	169.8	152.9	07	12.4
July	169.2	113.5	0.67	138.0	94.3	165.6	154.4	10	12.6
August	136.1	93.7	0.69	142.8	97.5	170.8	156.3	15	12.9
September	107.4	71.5	0.67	150.0	102.3	135.7	161.0	19	12.8
October	167.7	116.7	0.70	158.5	107.8	164.8	167.2	19	12.7
November	199.3	133.2	0.67	164.7	110.0	191.5	171.5	14	13.1
December	123.5	86.4	0.69	165.9	111.1	169.8	173.4	10	13.8
2000									
January	140.8	90.1	0.64	168.0	112.9	158.1	175.5	13	14.5
February	161.9	112.9	0.70	172.1	116.7	173.2	176.8	15	15.0
March	203.6	138.5	0.68	175.4	119.9	208.2	178.4	09	15.0
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			178.8		17	
December	146.4	104.5	0.71			173.6		08	
2001									
January	142.7	95.1	0.67			166.7		08	
February	131.0	80.1	0.61			147.3		06	
March	166.7	114.2	0.69			177.7		17	
April	163.6	108.2	0.66			178.3		18	

NOTE: All smoothed values after December 1999 and monthly values after June 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 07 May 2001*

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

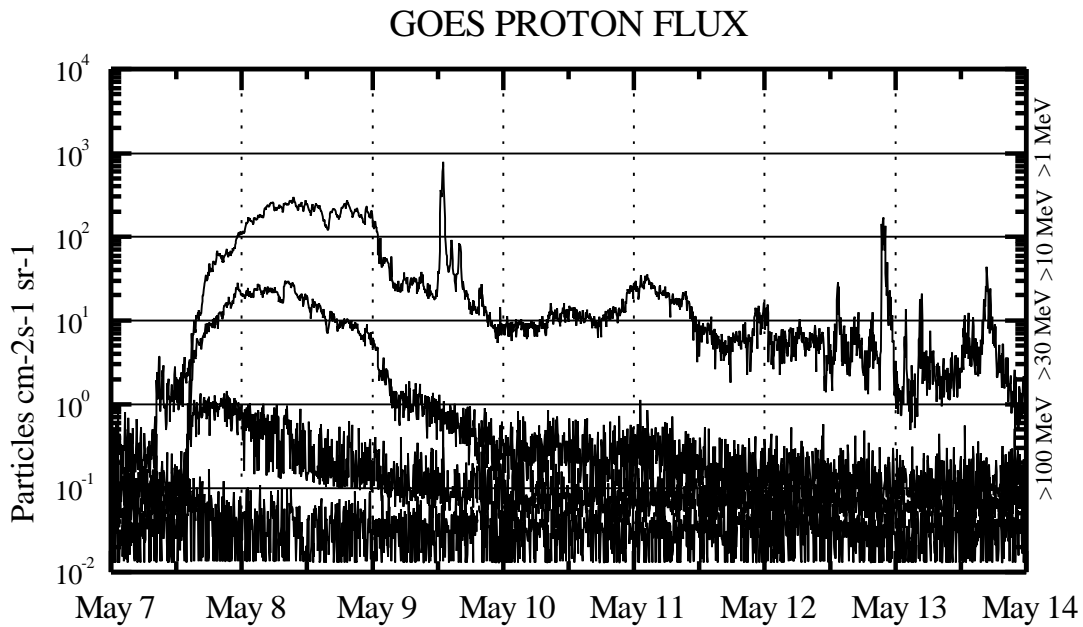
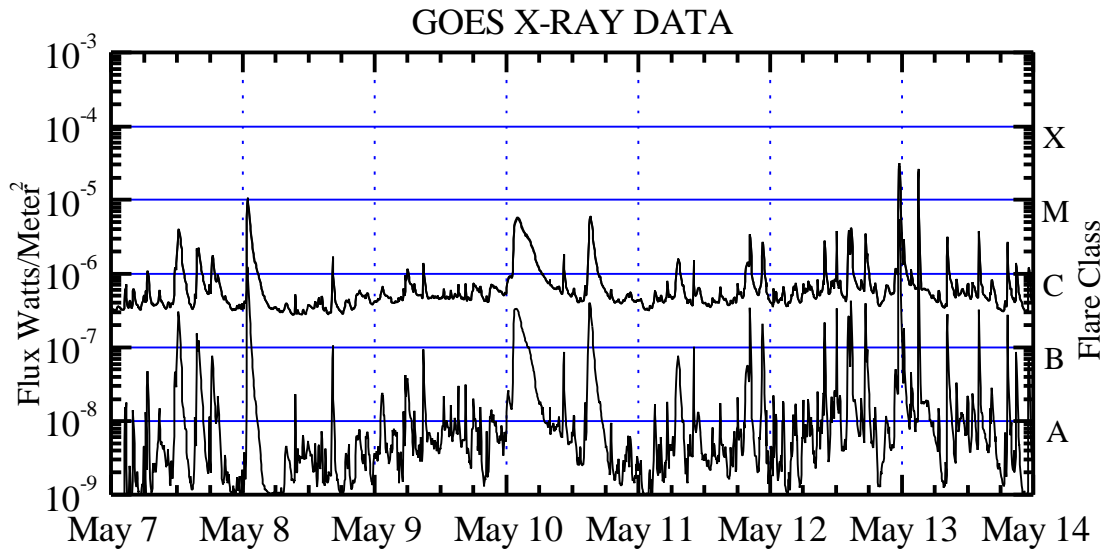
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV at GOES-8.

H_p plot contains the five minute averaged magnetic field H - component in nanoteslas (nT) as measured by GOES-8. The H component is parallel to the spin axis of the satellite, which is nearly parallel to the Earth's rotation axis.

K_p plot contains the estimated planetary 3-hour K-index (derived by the USAF 55th Space Weather Squadron) in real time from magnetometers at Meanook, Canada; Sitka, AK; Glenlea, Canada; St. Johns, Canada; Ottawa, Canada; Newport, WA; Fredericksburg, VA; Boulder, CO; Fresno, CA and Heartland, UK. These data are made available through cooperation from the Geological Survey of Canada (GSC) and the US Geological Survey. These may differ from the final K_p values derived from a more extensive network of magnetometers.

The data included here are those now available in real time at the SWO and are incomplete in that they do not include the full set of parameters and energy ranges known to cause satellite operating anomalies. The proton and electron fluxes and K_p are “ global ” parameters that are applicable to a first order approximation over large areas. H_p is subject to more localized phenomena and the measurements generally are applicable to within a few degrees of longitude of the measuring satellite.





Weekly GOES Satellite X-ray and Proton Plots

X-ray plot contains five-minute averaged x-ray flux (watts/m²) as measured by GOES 8 and 10 in two wavelength bands, .05 - .4 and .1 - .8 nm. The letters A, B, C, M and X refer to x-ray event levels for the .1 - .8 nm band.

Proton plot contains the five-minute averaged integral proton flux (protons/cm²-sec-sr) as measured by GOES-8 (W75) for each of the energy thresholds: >1, >10, >30 and >100 MeV. P10 event threshold is 10 pfu (protons/cm²-sec-sr) at greater than 10 MeV.

