

Space Weather Highlights
27 May - 02 June 2002

SWO PRF 1396
04 June 2002

Solar activity was at moderate levels during most of the period due to isolated, low-level M-class flares. Activity increased to moderate levels on 27 May due to an M2/2f flare at 27/1810 UTC from Region 9957 (N10, L = 010, class area Fkc/830 on 17 May). This region showed gradual decay before it crossed the west limb on 29 May. A filament erupted from the northeast quadrant on 27 May associated with a C2 X-ray flare and a partial-halo coronal mass ejection (CME). Activity decreased to low levels on 28 – 29 May. Activity increased to moderate levels for the rest of the period with isolated M-class flares from Regions 9973 and 9979 (for flare specifics, please refer to the Energetic Events or Optical Flares lists). Region 9973 (S16, L = 211, class/area Eki/960 on 29 May) produced C-class subflares as it rotated into view on 28 May. It also produced M1 flares on 30 May and 01 June. The 01 June flare, an M1/1n at 01/0357 UTC, was associated with Type II and IV radio sweep events. Region 9973 was large, moderately complex, and showed little change during most of the period. However, it appeared to enter a decay phase on 02 June. Region 9979 (S30, L = 171, class/area Dao/130 on 01 June) produced M1 flares during 01 – 02 June and appeared to be in a gradual growth phase.

Solar wind data were available from the NASA Advanced Composition Explorer (ACE) spacecraft for most of the summary period. A high-speed stream occurred during 27 – 29 May associated with a recurrent, positive-polarity coronal hole. The highest wind speeds occurred during 28 May and were in the 800 to 850-km/sec range. The high-speed stream gradually subsided on 29 May. A weak shock passed the ACE spacecraft on 30 May at approximately 0130 UTC. The shock was followed by a modest increase in velocities, proton densities, proton temperatures, and total IMF field intensities. This shock passage may have been associated with the filament eruption/partial-halo CME of 27 May. Velocities were elevated on 02 June with peaks to around 430 km/sec. This may have been due to weak coronal hole effects

There were no proton events during the period.

Greater than 2 MeV electron fluxes at geo-synchronous orbit were at normal to moderate levels.

Geomagnetic field activity ranged from quiet to minor storm levels on 27 May due to recurrent coronal hole effects. Activity decreased to quiet to unsettled levels during 29 May – 01 June. Field activity increased to quiet to active levels on 02 June. This modest increase may have been due to weak coronal hole effects.

Space Weather Outlook
05 June - 01 July 2002

Solar activity is expected to be at low to moderate levels during the period. Isolated low-level M-class flares are likely. There is a slight chance for isolated major flare activity during the period.

There will be a slight chance for a proton event during the period.

Greater than 2 MeV electron fluxes at geo-synchronous orbit are expected to be at normal to moderate levels for most of the period.

Geomagnetic field activity is expected to be at quiet to unsettled levels during most of the period. However, active conditions are possible during 23 June and 29 June - 01 July.



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
27 May	187	227	1280	B8.5	10	1	0	11	0	1	0	0
28 May	186	218	1440	C1.4	12	0	0	6	0	0	0	0
29 May	185	206	1850	C1.3	16	0	0	10	0	0	0	0
30 May	180	190	1620	B9.7	8	2	0	5	0	0	0	0
31 May	182	202	1540	C1.9	5	1	0	3	0	0	0	0
01 June	179	192	1460	C1.1	4	2	0	9	1	0	0	0
02 June	175	189	1250	C1.6	9	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	>4MeV
	27 May	2.6E+5	1.5E+4	2.3E+3		9.3E+5
28 May	3.1E+5	1.1E+4	2.2E+3		2.1E+6	
29 May	2.7E+5	1.2E+4	2.4E+3		1.0E+7	
30 May	6.3E+5	1.4E+4	2.4E+3		1.5E+7	
31 May	5.3E+5	1.2E+4	2.6E+3		1.5E+7	
01 June	1.0E+6	1.1E+4	2.6E+3		1.9E+7	
02 June	2.5E+5	1.2E+4	2.7E+3		2.0E+5	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	27 May	22	3-2-4-4-4-5-2-3	*	*_*_*_*_*_*_*_*	28
28 May	8	2-2-2-1-2-2-3-2	10	2-3-3-2-3-2-2-2	12	2-3-3-3-3-3-3-3
29 May	6	3-1-1-1-2-1-2-1	7	3-2-2-2-2-1-1-1	12	3-3-2-3-3-3-3-2
30 May	5	2-1-2-1-2-1-1-2	11	2-1-3-3-4-3-0-1	9	2-1-3-3-3-3-2-2
31 May	6	1-1-1-3-2-1-2-1	*	*_*_*_*_*_*_*_*	6	2-1-1-2-2-3-2-2
01 June	3	0-0-1-1-1-1-2-2	1	0-0-1-0-0-0-1-1	8	1-0-2-2-2-3-3-3
02 June	11	3-3-1-2-2-2-3-3	23	4-3-2-2-4-5-5-2	16	4-3-2-3-3-4-3-4

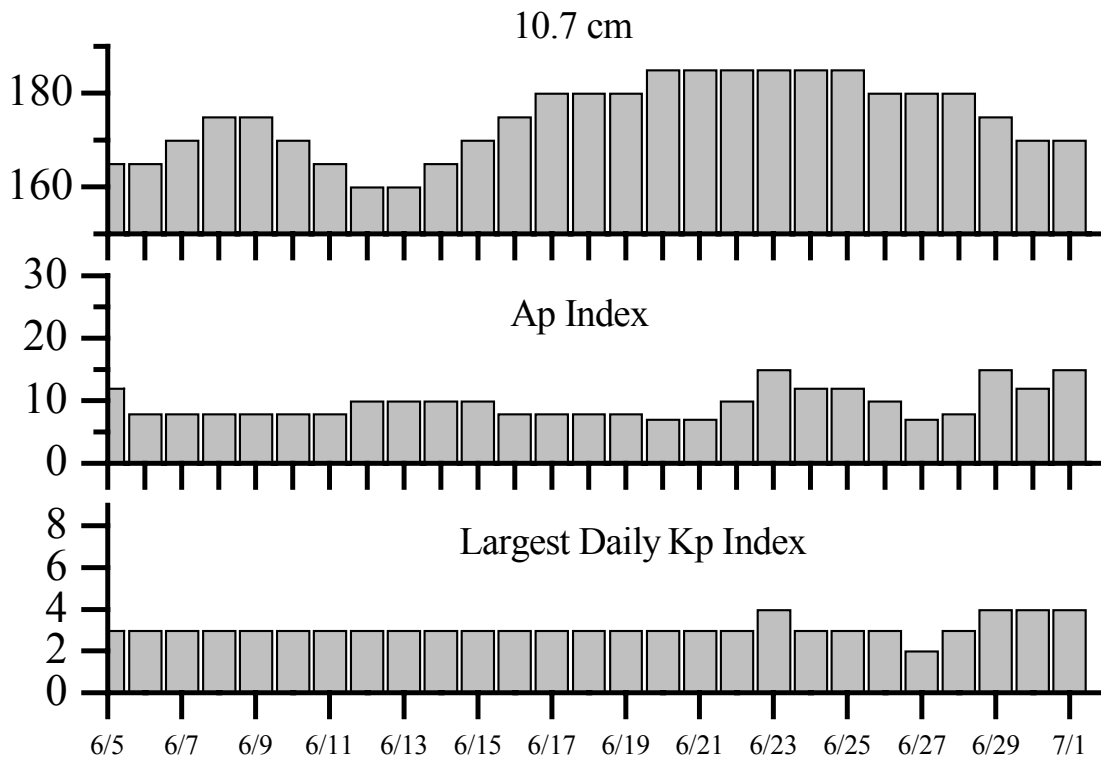


Alerts and Warnings Issued

<u>Date & Time of Issue</u>	<u>Type of Alert or Warning</u>	<u>Date & Time of Event UT</u>
27 May 0003	2 - 245 MHz Radio Bursts	26 May
27 May 0704	WARNING: Geomagnetic K= 4 expected	27 May 0710 - 1500
27 May 0708	ALERT: Geomagnetic K= 4	27 May 0711
27 May 1451	EXTENDED WARNING: Geomagnetic K= 4 expected	27 May 0710 -2359
27 May 2009	EXTENDED WARNING: Geomagnetic K= 4 expected	27 May 0710 -28 May 1500
30 May 0021	2 - 245 MHz Radio Bursts	29 May
30 May 0021	1 - 245 MHz Radio Noise Storms	29 May
31 May 0036	1 - 245 MHz Radio Bursts	30 May
31 May 0039	ALERT: Type IV Radio Emission	30 May 2312
31 May 0429	ALERT: Type II Radio Emission	31 May 0304
01 Jun 0014	1 - 245 MHz Radio Bursts	31 May
01 Jun 0644	ALERT: Type II Radio Emission	01 Jun 0356
01 Jun 0644	ALERT: Type IV Radio Emission	01 Jun 0356
01 Jun 0646	SUMMARY: 10cm Radio Burst	01 Jun 0354
02 Jun 0009	SUMMARY: 10cm Radio Burst	01 Jun 2347
02 Jun 0052	2 - 245 MHz Radio Bursts	01 Jun
02 Jun 0018	ALERT: Type II Radio Emission	01 Jun 2348
02 Jun 0148	ALERT: Geomagnetic K= 4	02 Jun 0130
02 Jun 1104	ALERT: Type II Radio Emission	02 Jun 1017
02 Jun 1105	ALERT: Type IV Radio Emission	02 Jun 1019
02 Jun 1736	ALERT: Geomagnetic K= 4	02 Jun 1723
02 Jun 1740	WARNING: Geomagnetic K= 4 expected	02 Jun 1800 - 03 Jun 1800
02 Jun 2110	ALERT: Type II Radio Emission	02 Jun 2040
02 Jun 2114	SUMMARY: 10cm Radio Burst	02 Jun 2041
02 Jun 2132	WATCH: Geomagnetic A \geq 20	04 Jun



Twenty-seven Day Outlook



Date	Radio Flux 10.7 cm	Planetary A Index	Largest Kp Index	Date	Radio Flux 10.7 cm	Planetary A Index	Largest Kp Index
05 Jun	165	12	3	19 Jun	180	8	3
06	165	8	3	20	185	7	3
07	170	8	3	21	185	7	3
08	175	8	3	22	185	10	3
09	175	8	3	23	185	15	4
10	170	8	3	24	185	12	3
11	165	8	3	25	185	12	3
12	160	10	3	26	180	10	3
13	160	10	3	27	180	7	2
14	165	10	3	28	180	8	3
15	170	10	3	29	175	15	4
16	175	8	3	30	170	12	4
17	180	8	3	01 Jul	170	15	4
18	180	8	3				



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
27 May	1800	1810	1823	M2.0	.019	2f	N11W69	9957		70		
30 May	0424	0532	0613	M1.3	.054			9957				
30 May	1711	1724	1739	M1.6	.022	Sf	S16E49	9973				
31 May	0004	0016	0025	M2.4	.022				57	100		
01 Jun 02	0350	0357	0401	M1.5	.005	In	S19E29	9973	60	260	2	2
01 Jun 02	1044	1049	1052	M1.1	.003	Sf	S32E71	9979		21		
02 Jun 02	2033	2044	2058	M1.1	.011	lf	S30E50	9979		530		1

Flare List

Date	Time			X-ray Class.	Imp / Brtns	Optical		Rgn
	Begin	Max	End			Location Lat CMD		
27 May	0157	0208	0226	C1.4				
	0308	0312	0316	C1.1				
	0423	0423	0429	B9.7	Sf	S20W23	9961	
	0505	0507	0516		Sf	S19W26	9961	
	0602	0605	0619	C3.5	Sf	N09W65	9957	
	0744	0749	0753	C2.8				
	1158	1206	1232	C2.7				
	1236	1259	1351	C3.7				
	B1308	U1314	1405		Sf	N22E15		
	1507	1508	1512	C2.4	Sf	N06W68	9957	
	1518	1520	1524		Sf	S17E90		
	1703	1711	1715	C4.0				9957
	1709	1710	1712		Sf	S21E77		
	1715	1717	1733		Sf	N06W69	9957	
	1803	1811	1839	M2.0	2f	N11W69	9957	
	1902	1904	1909	C7.5	Sf	S17E90		
	2125	2125	2129	C3.4	Sf	S17E90		
	2154	2158	2203		Sf	N11W75	9957	
	28 May	0043	0047	0053	C2.1	Sf	S17E90	
0341		0349	0359	C2.7				
0604		0607	0609	C2.2				
0624		0709	0745	C2.9				
1159		1203	1209	C2.8				
1305		1308	1311	C2.0				
1315		1335	1341	C2.3				
1413		1428	1445	C2.0				
1531		1550	1603	C2.6				
1630		1632	1645	C3.6	Sf	N06W82	9957	
1720		1721	1724		Sf	N12W78	9957	
1826		1828	1834		Sf	S12E09		
2155		2157	2201	C2.9	Sf	N12W30	9963	
2247	2248	2250	C1.8	Sf	S18E78	9973		



Flare List - continued.

Date	Time			X-ray Class.	Optical		Rgn	
	Begin	Max	End		Imp / Brtns	Location Lat CMD		
29 May	0215	0246	0322	C8.6				
	0331	0332	0338		Sf	S17E68	9973	
	0509	0512	0515	C8.1	Sf	S20E53	9972	
	0655	0706	0716	C4.7				
	0740	0740	0745		Sf	S17E70	9973	
	0835	0854	0906	C3.5				
	1008	1011	1018	C2.1				
	1024	1027	1033	C3.4	Sf	S19E66	9973	
	1157	1201	1209	C2.4				
	1254	1259	1308	C3.3	Sf	N17W65	9960	
	1322	1326	1329	C2.6				
	1353	1412	1419	C2.1				
	1445	1449	1453	C1.8				
	1500	1505	1510	C3.3				
	1548	1551	1602	C5.9	Sn	S17E64	9973	
	1609	1610	1616		Sf	S18E63	9973	
	1621	1623	1631		Sf	N13W34	9967	
	1745	1751	1800	C2.5				
	30 May	2244	2245	2252	C1.2	Sf	S17E61	9973
		2325	2325	2335	C1.4	Sf	S18E59	9973
0010		0012	0017	C1.2	Sf	S18E59	9973	
0424		0532	0613	M1.3			9957	
0832		0841	0849	C3.2				
1203		1218	1238	C2.2				
1401		1432	1458	C4.1				
1528		1540	1555	C3.3				
1620		1625	1644		Sf	S17E53	9973	
1628		1637	1646	C3.5	Sf	S22E38	9972	
1711		1726	1828	M1.6	Sf	S16E49	9973	
1948		1949	2003	C1.6	Sf	N12W48	9963	
2323		2325	2328	C1.4				
31 May	0004	0016	0025	M2.4				
	0237	0321	0506	C3.1				
	0943	0948	0951	C1.1				
	1302	1306	1315	C2.7	Sf	S18E36	9973	
	1518	1518	1527	C3.0	Sf	S17E37	9973	
	1905	1907	1910		Sf	S21E60		
	1933	1940	1951	C3.2				
01 June	0308	0308	0316		Sf	S22W44	9977	
	0353	0356	0407	M1.5	ln	S19E29	9973	
	0633	0637	0652	C4.8	Sf	S32E75	9979	
	0654	0655	0716		Sf	N05W18	9970	



Flare List - continued.

Date	Time			X-ray Class.	Optical		Rgn
	Begin	Max	End		Imp / Brtns	Location Lat CMD	
01 June	0658	0658	0706		Sf	S30E70	9979
	0841	0844	0851	C1.5	Sf	S21W47	9977
	1048	1049	1059	M1.1	Sf	S32E71	9979
	1202	1205	1208	C1.2			
	1953	1957	2002		Sf	S19E51	9978
	2012	2012	2019		Sf	S19E51	9978
	2348	2351	2359	C5.1	Sf	S20E17	9973
02 June	0010	0050	0155	C3.5			
	B0431	U0442	0445	C4.1	Sf	S20W58	9977
	0813	0816	0818		Sf	S21W60	9977
	1007	1014	1029	C8.0	Sf	S20W61	9977
	1144	1145	1155	C9.4	Sf	S20E09	9973
	1557	1601	1620	C1.4	Sf	N25E16	9975
	1658	1659	1708	C3.3	Sn	S19E06	9973
	1858	1904	1911	C2.3			
	2021	2028	2031	C1.7			
	2036	2054	2155	M1.1	1f	S30E50	9979
	2200	2207	2209		Sf	N24E68	9983
	2301	2304	2309	C2.5			



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 9955</i>																							
15 May	S14E67	032	0040	01	Hsx	001	A																
16 May	S14E55	031	0040	01	Hsx	001	A																
17 May	S14E42	031	0050	02	Hsx	001	A																
18 May	S14E28	032	0030	02	Hsx	001	A	2				2											
19 May	S14E15	031	0030	01	Hsx	002	A																
20 May	S15E02	030	0020	02	Hsx	001	A																
21 May	S13W11	030	0010	01	Hrx	001	A																
22 May	S13W24	030	0010	03	Cro	002	B																
23 May	S13W37	030																					
24 May	S13W50	030																					
25 May	S13W63	030																					
26 May	S13W76	030																					
27 May	S13W89	030																					
								2	0	0	2	0	0	0	0	0							

Crossed West Limb.

Absolute heliographic longitude: 030

Region 9957

16 May	N06E67	019	0570	15	Eko	004	B														
17 May	N08E58	015	0830	17	Fkc	027	Bgd	3	1			1									1
18 May	N08E47	013	0810	14	Ekc	027	Bgd	3				4									
19 May	N08E34	012	0830	14	Ekc	038	Bgd	2				3									
20 May	N09E22	010	0830	13	Ekc	037	Bgd														
21 May	N09E08	011	0760	14	Ekc	059	Bgd														
22 May	N10W04	010	0520	15	Eai	047	Bgd														
23 May	N10W19	012	0420	12	Eac	046	Bgd														
24 May	N11W32	012	0350	14	Eac	046	Bg						1								
25 May	N10W45	012	0310	13	Eai	026	Bgd						1								
26 May	N10W58	011	0280	13	Eai	022	Bg						2								
27 May	N10W73	013	0290	11	Eao	026	Bg	3	1			4									1
28 May	N12W86	013	0210	10	Dao	010	B	1				2									
								12	2	0	18	0	2	0	0						

Crossed West Limb.

Absolute heliographic longitude: 010



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

Region 9958

17 May	N04E50	023	0140	05	Cso	004	B													
18 May	N04E37	023	0100	05	Cso	006	B													
19 May	N04E24	022	0090	03	Cso	002	B													
20 May	N04E09	023	0090	02	Hsx	002	A													
21 May	N04W04	023	0080	02	Hsx	001	A													
22 May	N04W17	023	0070	02	Hsx	001	A													
23 May	N04W32	025	0060	02	Hsx	001	A													
24 May	N04W44	024	0040	02	Hsx	001	A													
25 May	N05W58	025	0030	02	Hsx	001	A													
26 May	N04W71	024	0040	02	Hsx	001	A													
27 May	N04W85	025	0040	02	Hsx	001	A													
								0	0	0	0	0	0	0	0	0	0	0	0	

Crossed West Limb.

Absolute heliographic longitude: 023

Region 9960

18 May	N15E74	346	0100	09	Dao	004	B						2								
19 May	N14E58	348	0140	09	Dao	007	B	1													
20 May	N14E46	346	0140	06	Dao	006	B					1									
21 May	N14E35	344	0140	03	Dac	005	Bd	2	1		2			1							
22 May	N14E19	347	0120	08	Dac	006	Bd														
23 May	N14E06	347	0100	06	Dac	010	Bd														
24 May	N14W09	349	0070	10	Cao	013	Bd														
25 May	N14W20	347	0060	09	Dao	013	Bd	1			1										
26 May	N15W31	344	0030	04	Dso	006	B														
27 May	N15W43	343	0030	04	Cso	006	B														
28 May	N14W56	343	0010	01	Hsx	001	A														
29 May	N14W69	343	0000	00	Axx	001	A	1			1										
30 May	N14W82	343																			
								5	1	0	7	0	1	0	0	0					

Crossed West Limb.

Absolute heliographic longitude: 347



Region Summary - continued.

Date	Location		Sunspot Characteristics				Flares									
	(° Lat ° CMD)	Helio	Area (10 ⁻⁶ hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical					
		Lon						C	M	X	S	1	2	3	4	
<i>Region 9961</i>																
19 May	S22E76	330	0110	09	Dao	005	B	1				2				
20 May	S22E62	330	0480	13	Eai	014	Bg	4	2	1	8	1	1			
21 May	S23E48	331	0330	13	Eai	016	Bgd	1			1					
22 May	S22E34	332	0330	13	Eai	021	Bg	2			2					
23 May	S22E22	331	0290	14	Eai	027	Bgd				1					
24 May	S22E09	331	0260	15	Eai	023	Bgd									
25 May	S21W04	331	0280	15	Eai	024	Bgd	1			1					
26 May	S21W17	330	0250	14	Eai	023	Bg	1			1					
27 May	S22W30	330	0180	14	Eao	019	Bg				2					
28 May	S22W44	331	0120	12	Eao	006	Bg									
29 May	S21W59	333	0110	02	Hax	002	A									
30 May	S21W72	333	0110	02	Hsx	001	A									
31 May	S21W85	332	0080	02	Hsx	001	A									
								10	2	1	18	1	1	0	0	

Crossed West Limb.

Absolute heliographic longitude: 331

<i>Region 9962</i>																
20 May	N15E59	333	0020	01	Hrx	001	A									
21 May	N15E47	332	0020	01	Hsx	001	A									
22 May	N15E34	332	0030	02	Hsx	001	A									
23 May	N15E21	332	0030	06	Cso	005	B									
24 May	N15E08	332	0040	07	Cao	004	B				1					
25 May	N16W07	334	0030	02	Hsx	001	A									
26 May	N16W21	334	0030	02	Hsx	001	A									
27 May	N16W34	334	0020	02	Hsx	001	A									
28 May	N15W47	334	0020	01	Hsx	001	A									
29 May	N16W61	335	0010	01	Axx	001	A									
30 May	N16W74	335														
31 May	N16W87	335														
								0	0	0	1	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 334



Region Summary - continued.

Date	Location		Sunspot Characteristics				Flares											
	(° Lat ° CMD)	Helio	Area (10 ⁻⁶ hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical							
		Lon						C	M	X	S	1	2	3	4			
<i>Region 9963</i>																		
20 May	N17E75	317	0120	03	Hax	001	A											
21 May	N17E60	319	0210	03	Hax	002	A	1				2						
22 May	N16E48	318	0340	11	Dho	012	B											
23 May	N14E36	317	0420	10	Dho	010	B	1				1						
24 May	N15E23	317	0360	09	Dko	016	B	2	1			5						
25 May	N14E09	318	0380	11	Eho	027	B											
26 May	N14W03	316	0410	11	Ehi	029	B	1				1						
27 May	N14W17	317	0390	11	Eai	019	Bg											
28 May	N14W30	317	0300	09	Dai	022	Bg	1				1						
29 May	N16W43	317	0350	07	Dki	016	Bg											
30 May	N16W56	317	0260	06	Dkc	012	B	1				1						
31 May	N16W70	317	0250	07	Cao	006	B											
01 Jun	N17W84	318	0220	03	Hax	001	A											
								7	1	0	11	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 316

<i>Region 9964</i>																		
22 May	S15E08	358	0010	04	Bxo	004	B											
23 May	S14W05	358	0010	03	Bxo	004	B											
24 May	S14W16	356	0010	05	Bxo	003	B											
25 May	S14W29	356																
26 May	S14W42	356																
27 May	S14W59	359	0020	03	Bxo	004	B											
28 May	S14W72	359																
29 May	S14W85	359																
30 May	S14W98	359																
								0	0	0	0	0	0	0	0	0	0	

Crossed West Limb.

Absolute heliographic longitude: 358



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

Region 9965

22 May	S10E62	304	0080	04	Cao	004	B				1			
23 May	S10E48	305	0060	08	Cso	006	B							
24 May	S10E37	303	0030	09	Cso	003	B							
25 May	S08E19	308	0040	02	Hsx	002	A							
26 May	S08E05	308	0040	02	Hsx	002	A							
27 May	S08W07	307	0040	07	Cao	004	B							
28 May	S07W21	308	0050	03	Cao	003	B							
29 May	S08W34	308	0050	06	Cso	005	B							
30 May	S08W47	308	0040	03	Cso	005	B							
31 May	S08W61	308	0030	04	Cso	003	B							
01 Jun	S07W75	309	0030	01	Hsx	001	A							
02 Jun	S07W88	309												

0 0 0 1 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 308

Region 9966

23 May	N10E34	319	0010	04	Bxo	004	B							
24 May	N09E20	320	0010	04	Bxo	003	B							
25 May	N10E04	323	0000	01	Axx	001	A							
26 May	N11W06	319	0020	03	Cso	005	B							
27 May	N11W21	321	0020	03	Cro	004	B							
28 May	N11W36	323	0020	01	Hsx	001	A							
29 May	N10W49	323	0010	01	Hsx	001	A							
30 May	N10W62	323												
31 May	N10W75	323												
01 Jun	N10W88	323												

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 323



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

Region 9967

23 May	N13E46	307	0010	01	Axx	001	A											
24 May	N13E33	307	0030	05	Cso	005	B											
25 May	N14E19	308	0010	01	Hrx	001	A											
26 May	N13E05	308	0020	04	Cso	007	B											
27 May	N14W08	308	0010	02	Cso	004	B											
28 May	N12W23	310	0020	05	Cro	007	B											
29 May	N12W38	312	0020	01	Bxo	002	B											1
30 May	N12W51	312	0010	03	Bxo	003	B											
31 May	N12W65	312	0020	01	Hrx	001	A											
01 Jun	N13W78	312																
																		0 0 0 1 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 308

Region 9968

24 May	S13E26	314	0020	03	Cso	004	B											
25 May	S14E13	314	0010	01	Hrx	001	A											
26 May	S14E00	313	0000	00	Axx	001	A											
27 May	S14W13	313																
28 May	S14W26	313																
29 May	S14W39	313																
30 May	S14W52	313																
31 May	S14W65	313																
																		0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 313

Region 9969

25 May	N09E67	260	0040	04	Dso	003	B											6
26 May	N09E55	258	0100	08	Dao	009	B	1										4
27 May	N09E42	258	0060	05	Dao	007	B											
28 May	N09E30	257	0040	06	Dso	012	B											
29 May	N09E17	257	0040	04	Dso	007	B											
30 May	N09E04	257	0010	04	Bxo	005	B											
31 May	N09W09	257																
01 Jun	N09W22	257																
02 Jun	N09W35	257																
																		1 0 0 10 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 257



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 9970

26 May	N05E54	259	0180	07	Dao	006	B											
27 May	N05E41	259	0180	08	Dao	012	B											
28 May	N05E28	259	0170	09	Dao	011	B											
29 May	N06E14	260	0160	08	Dao	010	B											
30 May	N06E01	260	0120	08	Dso	008	B											
31 May	N06W13	260	0120	07	Dso	007	B											
01 Jun	N05W26	260	0090	07	Dso	005	B											1
02 Jun	N06W40	261	0070	07	Dso	002	B											
																		0 0 0 1 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 260

Region 9971

28 May	N21E00	287	0010	02	Bxo	003	B											
29 May	N21W13	287																
30 May	N21W26	287																
31 May	N21W39	287																
																		0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 287

Region 9972

28 May	S21E56	231	0050	05	Cao	006	B											
29 May	S21E44	230	0090	07	Dao	009	B	1				1						
30 May	S21E31	230	0110	06	Dso	011	B	1				1						
31 May	S21E17	230	0100	06	Cao	011	B											
01 Jun	S21E04	230	0070	06	Dso	010	B											
02 Jun	S20W11	232	0030	03	Dso	004	B											
																		2 0 0 2 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 230

Region 9973

28 May	S16E73	214	0420	11	Eki	005	B	1				1						
29 May	S16E61	213	0960	13	Eki	019	Bg	4				7						
30 May	S16E48	213	0880	13	Ekc	023	Bg	1	1			3						
31 May	S16E34	213	0800	14	Eki	017	Bg	2				2						
01 Jun	S17E23	211	0790	15	Eki	030	Bg	1	1			1	1					
02 Jun	S17E10	211	0720	13	Eki	027	Bg	2				2						
																		11 2 0 16 1 0 0 0

Still on Disk.

Absolute heliographic longitude: 211



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

Region 9974

29 May	N18E58	216	0030	01	Hsx	001	A										
30 May	N18E45	216	0040	01	Hsx	001	A										
31 May	N18E31	216	0020	01	Hsx	001	A										
01 Jun	N19E19	215	0020	01	Hsx	001	A										
02 Jun	N18E06	215	0010	01	Hrx	002	A										
										0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 215

Region 9975

29 May	N23E63	211	0020	02	Bxo	002	B										
30 May	N23E50	211	0020	07	Bxo	005	B										
31 May	N23E36	211	0030	08	Cso	006	B										
01 Jun	N22E19	215	0010	02	Bxo	002	B										
02 Jun	N22E06	215	0020	03	Cso	002	B	1			1						
								1	0	0	1	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 215

Region 9976

30 May	S10E01	260	0020	05	Bxo	006	B										
31 May	S10W13	260	0020	05	Cso	007	B										
01 Jun	S10W27	261	0010	04	Bxo	003	B										
02 Jun	S10W40	261															
										0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 260

Region 9977

31 May	S20W41	288	0020	03	Dso	004	B										
01 Jun	S20W54	288	0050	03	Cso	007	B	1			2						
02 Jun	S21W67	288	0090	06	Dso	008	B	2			3						
								3	0	0	5	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 288

Region 9978

31 May	S20E62	185	0020	05	Bxo	002	B										
01 Jun	S20E47	187	0040	03	Cso	003	B				2						
02 Jun	S19E34	187	0130	06	Dao	010	B										
										0	0	0	2	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 187



Region Summary - continued.

Date	Location		Sunspot Characteristics				Flares										
	(° Lat ° CMD)	Helio	Area (10 ⁻⁶ hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical						
		Lon						C	M	X	S	1	2	3	4		
<i>Region 9979</i>																	
31 May	S31E77	170	0030	04	Cso	006	B										
01 Jun	S30E63	171	0130	07	Dao	007	Bg	1	1		3						
02 Jun	S30E50	171	0070	07	Dso	009	B		1			1					
								1	2	0	3	1	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 171																	
<i>Region 9980</i>																	
01 Jun	S29E08	226	0000	01	Axx	002	A										
02 Jun	S29W05	226	0010	01	Hsx	001	A										
								0	0	0	0	0	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 226																	
<i>Region 9981</i>																	
02 Jun	S22E70	151	0050	02	Hax	001	A										
								0	0	0	0	0	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 151																	
<i>Region 9982</i>																	
02 Jun	S03E74	147	0000	00	Axx	001	A										
								0	0	0	0	0	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 147																	
<i>Region 9983</i>																	
02 Jun	N24E72	149	0050	06	Cao	002	B				1						
								0	0	0	1	0	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 149																	

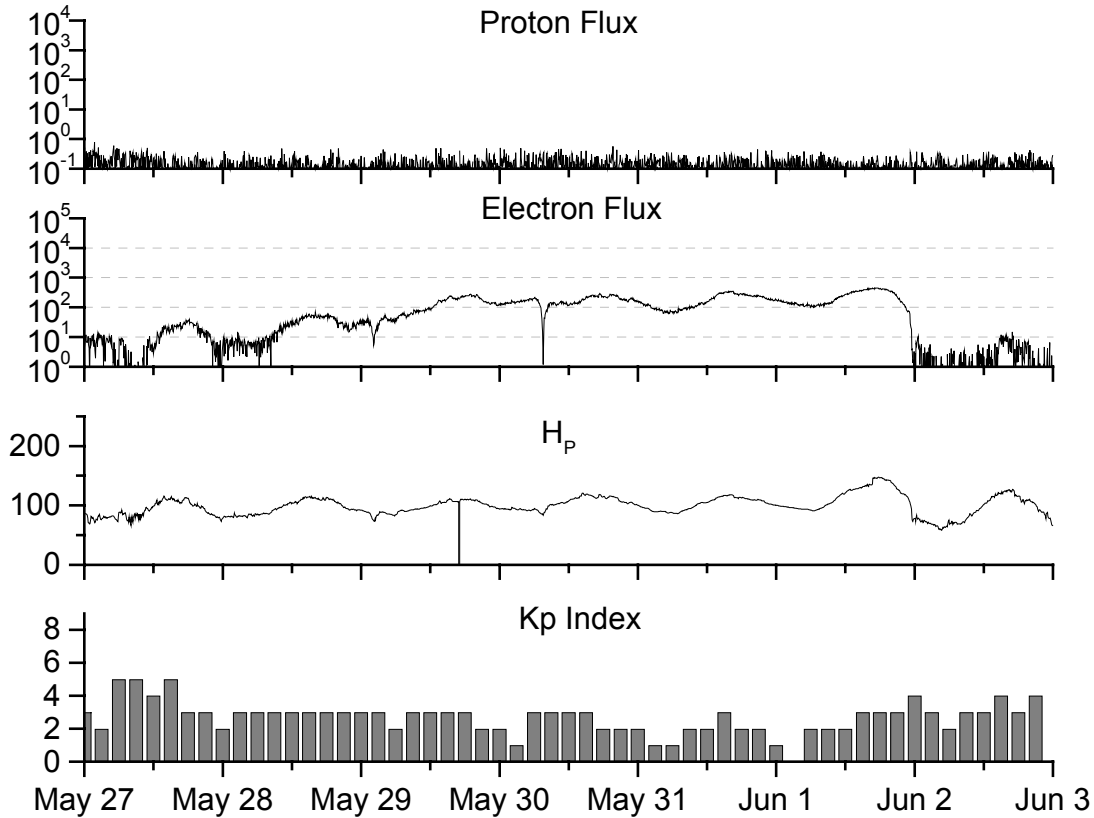


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

Month	Sunspot Numbers			Radio Flux		Geomagnetic			
	Observed values SWO	Ratio RI	Ratio RI/SWO	Smooth values SWO	Smooth Value	*Penticton 10.7 cm	Smooth Value	Planetary Ap	Smooth Value
2000									
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	179.5	114.1	208.2	191.9	18	11.9
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	
April	194.9	120.4	0.62			189.7		15	

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 27 May 2002

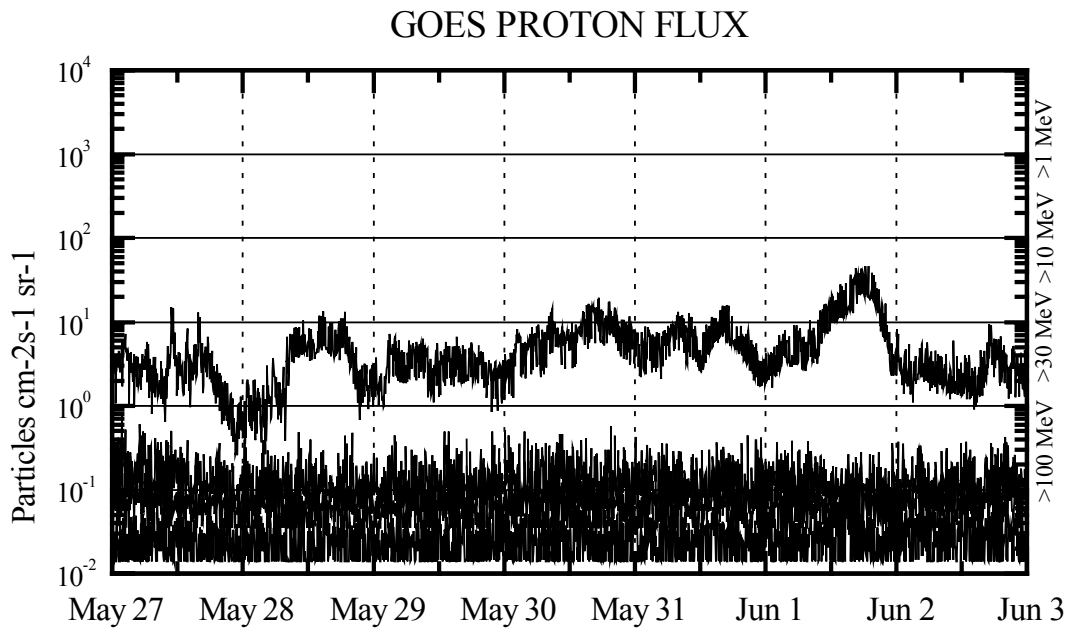
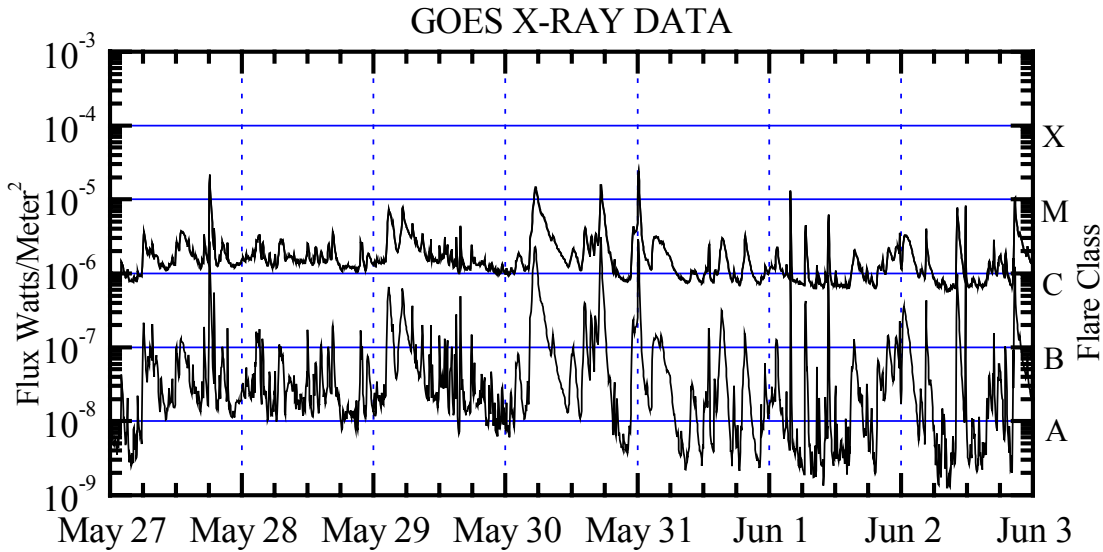
Protons plot contains the five-minute averaged integral proton flux (protons/cm²-sec-sr) as measured by GOES-8 (W75) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

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.

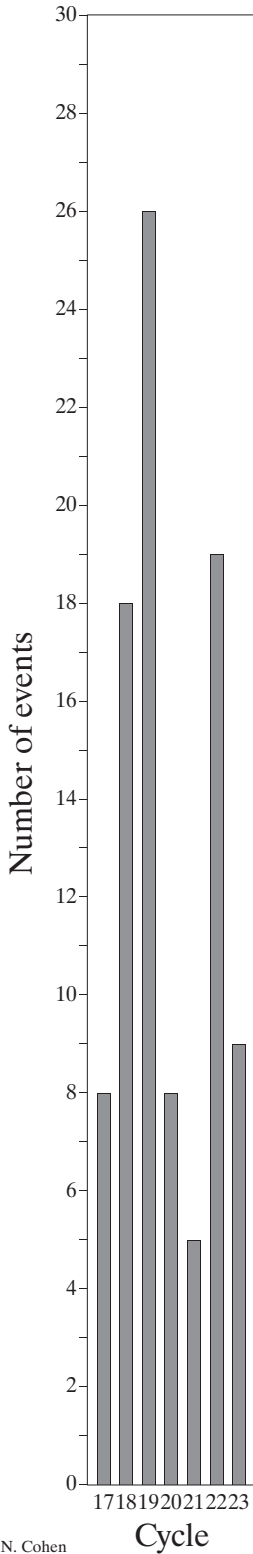


Severe Storm ($A_p \geq 100$) Geomagnetic Conditions



Space Environment Center

Comparison of Cycles at current month in cycle



N. Cohen

