

Solar activity was at low to moderate levels. Activity increased to moderate levels on 15 and 17 May due to low-level M-class flares from Regions 9948 and 9957. Region 9948 (S22, L = 085, class/area Eko/430 on 12 May) produced an M1/Sf flare on 15 May. It also produced a long-duration C4 X-ray flare at 16/0035 UTC associated with Type II and IV radio sweep events and a halo CME. Region 9948 was simply structured and largely stable. Its distinguishing characteristic was a very large, symmetric leader spot. Region 9957 (N07, L = 017, class/area Fkc/760 on 17 May) produced an M1 X-ray flare at 17/0123 UTC. It rotated into view on 16 May as a large, magnetically complex E-type spot group with compact spot distribution and a delta magnetic configuration within its northern spots. It produced C-class flares during the rest of the period and was stable in terms of size and complexity. Region 9961 (S22, L = 330, class/area Dao/110 on 19 May) produced C-class flares as it rotated into view on 19 May. Note: Region 9961 produced major flare activity on 20 May, which will be summarized in next week's report. On the day of this report Region 9961 appeared to be moderate-sized and magnetically complex with a delta magnetic configuration within its leader spots.

Solar wind data were available from the NASA Advanced Composition Explorer (ACE) spacecraft for most of the summary period. A CME passage occurred during 18 – 19 May following the halo-CME observed on 16 May. The shock front passed ACE at approximately 18/1920 UTC accompanied by abrupt increases in velocity (with peaks in the 500 to 520 km/sec range), total IMF field intensity, proton temperatures, and proton densities. IMF Bz showed increased variability for a few hours following the shock with a range of approximately plus to minus 15 nT (GSM). CME effects subsided by midday on 19 May.

There were no proton events at geo-synchronous orbit.

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

Geomagnetic field activity was at quiet to unsettled levels on 13 May. Activity increased to active to major storm levels on 14 May. Active periods occurred during the first half of 15 May. Activity decreased to quiet to unsettled levels during the latter half of 15 May and prevailed until late on 18 May. A geomagnetic disturbance began late on 18 May associated with the halo CME observed on 16 May. The disturbance began with a sudden impulse 18/2007 UTC (31 nT, as measured by the Boulder USGS magnetometer) followed by active to minor storm conditions. The disturbance subsided by midday on 19 May.

Space Weather Outlook

22 May - 17 June 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 chance for isolated major flare activity until 01 June.

There will be a chance for a proton event until 01 June.

Greater than 2 MeV electron fluxes at geo-synchronous orbit are expected to be at normal to moderate levels for most of the period. However, high flux levels will be possible during 26 - 27 May.

Active geomagnetic field conditions are possible during 23 - 25 May. Quiet to unsettled conditions are expected 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			Optical				
					C	M	X	S	1	2	3	4
13 May	172	168	1640	B7.5	7	0	0	7	0	0	0	0
14 May	161	134	880	B8.2	5	0	0	3	0	0	0	0
15 May	159	137	990	B8.0	3	1	0	5	0	0	0	0
16 May	158	120	1440	C2.1	3	0	0	2	0	0	0	0
17 May	157	134	1820	B7.2	6	3	0	5	0	1	0	0
18 May	163	140	1760	B7.0	6	0	0	8	0	0	0	0
19 May	171	155	1730	B7.6	13	0	0	5	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
	13 May	2.6E+5	1.1E+4	2.3E+3		2.1E+7
14 May	2.1E+5	1.1E+4	2.4E+3		3.7E+6	
15 May	6.5E+4	1.1E+4	2.3E+3		3.9E+6	
16 May	1.9E+5	1.1E+4	2.3E+3		7.9E+6	
17 May	6.8E+5	1.2E+4	2.3E+3		3.0E+7	
18 May	3.2E+6	1.2E+4	2.6E+3		3.5E+7	
19 May	1.1E+6	1.0E+4	2.1E+3		2.2E+6	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	13 May	9	4-2-1-1-2-2-2-2	*	4-5-2-4-*-1-1-1	12
14 May	20	3-4-4-4-3-3-3-3	34	3-4-6-5-4-5-3-3	32	4-5-6-4-4-4-4-4
15 May	7	3-2-2-1-2-1-2-2	18	3-4-3-5-2-3-2-2	16	4-4-3-4-3-3-2-2
16 May	6	1-2-2-2-2-1-2-2	12	2-2-3-3-3-1-2-4	12	3-3-2-3-3-3-3-3
17 May	4	1-0-2-0-1-2-2-2	8	1-0-1-0-5-1-1-1	10	1-1-2-2-3-4-3-2
18 May	15	1-2-1-1-2-1-5-5	9	1-1-0-1-1-1-4-4	15	2-1-1-2-3-3-5-5
19 May	8	3-3-4-1-1-0-0-1	16	3-5-5-2-1-0-1-1	18	3-4-5-2-3-3-2-2

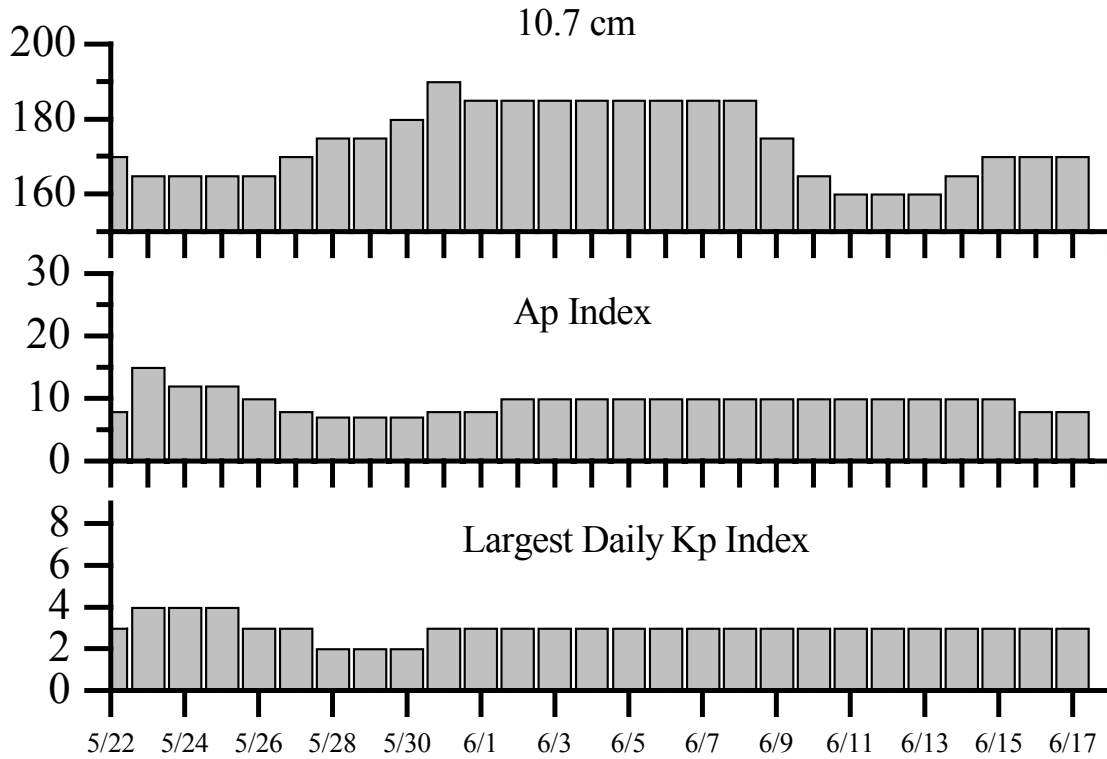


Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UT
13 May 0026	6- 245 MHz Radio Bursts	12 May
13 May 0026	2 - 245 MHz Radio Noise Storms	12 May
13 May 0230	ALERT: Geomagnetic K= 4	13 May 0230
13 May 2117	ALERT: Type II Radio Emission	13 May 2058
14 May 0035	3 - 245 MHz Bursts	13 May
14 May 0035	2 - 245 MHz Radio Noise Storms	13 May
14 May 0242	ALERT: Geomagnetic K= 4	14 May 0240
14 May 0416	ALERT: Geomagnetic K= 4	14 May 0415
14 May 0417	WARNING: Geomagnetic K= 4	14 May 0420 - 1500
14 May 0420	ALERT: Geomagnetic K= 5	14 May 0420
14 May 0443	WARNING: Geomagnetic K= 5 expected	14 May 0450 - 1500
14 May 0757	ALERT: Type II Radio Emission	14 May 0738
14 May 0806	ALERT: Type IV Radio Emission	14 May 0747
14 May 1720	ALERT: Geomagnetic K= 4	14 May 1720
15 May 0145	ALERT: Geomagnetic K= 4	15 May 0145
16 May 0021	1 - 245 MHz Burst	15 May
16 May 0048	ALERT: Type II Radio Emission	16 May 0028
16 May 0557	ALERT: Type IV Radio Emission	16 May 0041
16 May 2018	WATCH: Geomagnetic A \geq 20	19 May
17 May 0012	3 - 245 MHz Bursts	16 May
17 May 0723	WARNING: Geomagnetic Sudden Impulse	17 May 0740 - 0815
17 May 0946	ALERT: Type II Radio Emission	17 May 0810
18 May 1937	WARNING: Geomagnetic Sudden Impulse	18 May 2000 - 2030
18 May 2015	WARNING: Geomagnetic K= 4	18/2016 -19/2100 May
18 May 2017	ALERT: Geomagnetic K= 4	18 May 2014
18 May 2027	SUMMARY: Geomagnetic Sudden Impulse	18 May 2007
18 May 2310	WARNING: Geomagnetic K= 5 expected	18/2310 -19/1500 May
18 May 2320	ALERT: Geomagnetic K= 5	18 May 2318
19 May 0011	1- 245 MHz Noise Storms	18 May
19 May 1750	CANCEL ALERT: Geomagnetic K= 4	18/2016-19/2100 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
22 May	170	8	3	05 Jun	185	10	3
23	165	15	4	06	185	10	3
24	165	12	4	07	185	10	3
25	165	12	4	08	185	10	3
26	165	10	3	09	175	10	3
27	170	8	3	10	165	10	3
28	175	7	2	11	160	10	3
29	175	7	2	12	160	10	3
30	180	7	2	13	160	10	3
31	190	8	3	14	165	10	3
01 Jun	185	8	3	15	170	10	3
02	185	10	3	16	170	8	3
03	185	10	3	17	170	8	3
04	185	10	3				



Energetic Events

Date	Time		X-ray		Optical Information			Peak		Sweep Freq		
	Begin	Max	$\frac{1}{2}$	Class	Flux	Imp/Location		Rgn	Radio Flux		Intensity	
			Max			Brtns	Lat		CMD	245	2695	II
15 May	0800	0813	0825	M1.0	.010	Sf	S23E23	9948				
17 May	0055	0123	0130	M1.5	.014			9957				
17 May	0727	0754	0840	M1.5	.052				21		1	
17 May	1550	1608	1614	M2.9	.017	Sf	S25E47	9954	31			

Flare List

Date	Time			X-ray Class.	Imp / Brtns	Optical		Rgn
	Begin	Max	End			Location	Lat	
13 May	0059	0059	0108	C3.9	Sf	S17W77		9934
	0236	0236	0241	C1.1	Sf	S04E10		9946
	0337	0338	0349	C1.8	Sf	S25E47		9948
	0501	0507	0511	C1.5				
	1638	1639	1649	C2.3	Sf	S05W01		9945
	1724	1727	1737		Sf	N21W75		9933
	1740	1745	1749	C2.3				
	1855	1855	1859		Sf	N22W77		9933
	1902	1902	1906		Sf	N20W77		9933
14 May	2049	2056	2103	C2.2				
	0345	0350	0356	C3.6				
	0453	0504	0516	C1.9				
	0539	0603	0609	C2.2				
	0934	0939	1002	C3.2	Sf	S24E35		9948
	1258	1303	1320	C4.2				
	1546	1549	1553		Sf	S22E31		9948
	1842	1843	1853		Sf	S25E26		9948
15 May	0817	0831	0848	M1.0	Sf	S23E23		9948
	0909	0909	0915		Sf	S03W32		9945
	1421	1438	1500	C1.6				
	1447	1448	1450		Sf	S05W27		9946
	1447	1448	1449		Sf	S22E07		9948
	1534	1536	1551		Sf	S06W31		9945
	2108	2114	2120	C1.1				
16 May	2344	2359	0006	C3.5				9948
	0011	0035	0118	C4.5				9948
	0451	0521	0601	C5.0				9948
	0624	0627	0655		Sf	S03W15		9950
	0941	0945	0954	C1.7	Sf	S01W47		9945
17 May	0055	0123	0130	M1.5				9957
	0520	0523	0534	C7.0	2n	N10E70		9957
	0710	0711	0717		Sf	S23W01		9948
	0727	0754	0840	M1.5				
	1054	1101	1123	C2.1				
	1210	1210	1216	C2.4	Sf	N13E82		



Flare List - continued.

Date	Time			X-ray Class.	Optical		Rgn
	Begin	Max	End		Imp / Brtns	Location Lat CMD	
17 May	1434	1437	1440	C1.8			
	1556	1558	1622	M2.9	Sf	S25E47	9954
	1611	1614	1621		Sf	N12E83	9954
	2210	2215	2221	C1.3			9957
	2307	2308	2325	C1.6	Sf	N12E63	9957
18 May	0922	0925	0945	C2.6	Sf	N12E61	9957
	0947	0949	0953		Sf	N13E85	9960
	1114	1114	1129		Sf	S14E36	9955
	1130	1139	1154	C3.0	Sf	S17E36	9955
	1236	1239	1242	C2.5			9955
	1248	1249	1253		Sf	N12E80	9960
	1537	1542	1553	C3.4	Sf	N11E54	9957
	1707	1707	1711		Sf	N12E53	9957
	1826	1828	1836	C2.2	Sf	N11E53	9957
	2122	2126	2131	C1.4			
19 May	0017	0020	0023	C1.3			
	0138	0143	0149	C1.4			
	0625	0640	0656	C1.1	Sf	N14E45	9957
	0808	0834	0902	C2.5			9960
	1323	1326	1328		Sf	N11E43	9957
	1407	1410	1412	C1.4			
	1554	1558	1603	C1.4			
	1621	1621	1627	C2.3	Sf	N08E37	9957
	1706	1707	1713	C2.2	Sf	S22E76	9961
	1812	1813	1816		Sf	S21E79	9961
	1841	1846	1849	C2.7			
	1909	1914	1919	C3.1			
	1946	1950	1954	C2.1			
2001	2023	2027	C2.8				
2143	2148	2152	C4.7				



Region Summary

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 9933</i>																					
01 May	N16E	221	0090	02	Hsx	001	A														
02 May	N17E	220	0090	02	Hsx	001	A														
03 May	N18E	222	0100	04	Cso	004	B														
04 May	N17E	220	0070	03	Cso	002	B														
05 May	N18E	220	0100	04	Hsx	003	A														
06 May	N18E	219	0100	03	Hsx	001	A														
07 May	N18W	220	0070	02	Hsx	001	A														
08 May	N18W	220	0080	02	Hsx	001	A														
09 May	N18W	220	0080	03	Hsx	002	A														
10 May	N18W	220	0060	01	Hsx	001	A														
11 May	N18W	219	0090	02	Hax	001	A														
12 May	N18W	220	0050	02	Hsx	001	A														
13 May	N18W	218	0040	02	Hsx	001	A											3			
													0	0	0	3	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 219

<i>Region 9934</i>																					
01 May	S18E	212	0240	10	Dao	006	B														
02 May	S18E	210	0420	13	Eao	011	Bg											1			
03 May	S17E	211	0580	14	Eki	021	Bgd	1										8 1			
04 May	S17E	210	0520	12	Eki	027	Bgd	2										2			
05 May	S17E	211	0540	15	Eki	036	Bgd	3										3			
06 May	S17E	211	0500	11	Eki	023	Bg											1			
07 May	S17W	211	0510	11	Eki	021	Bg														
08 May	S16W	211	0540	14	Eki	018	Bg	2										5			
09 May	S16W	211	0610	14	Eki	037	Bg											1			
10 May	S16W	211	1050	13	Eki	032	Bgd	4										4			
11 May	S17W	211	1060	16	Fko	027	Bgd	1										5			
12 May	S16W	211	0960	14	Eki	025	Bgd	3										6			
13 May	S16W	210	0700	10	Dki	008	Bgd	1										1			
14 May	S15W	211	0060	02	Cso	002	B														
													17	0	0	37	1	0	0	0	0

Crossed West Limb.

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	4			
<i>Region 9937</i>																		
03 May	S09E68	191	0070	03	Cso	003	B											
04 May	S10E56	189	0100	04	Dao	003	B	2				2						
05 May	S09E42	190	0210	07	Dai	010	B	1				1						
06 May	S10E29	190	0180	06	Dko	009	B											
07 May	S09E15	190	0120	05	Dao	008	B		1									
08 May	S08E02	190	0150	06	Dao	009	B						2					
09 May	S08W11	190	0150	06	Dao	012	B	1					2					
10 May	S08W25	190	0190	06	Dao	020	B	3					5					
11 May	S09W38	190	0240	08	Dai	018	B		1				1					
12 May	S08W50	189	0150	06	Dai	014	Bgd											
13 May	S07W64	190	0090	06	Dso	009	B											
14 May	S07W77	190	0030	04	Dro	004	B											
15 May	S08W89	188	0030	02	Axx	002	A											
								7	2	0	13	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 190

<i>Region 9938</i>																		
03 May	S04E72	187	0030	01	Hsx	001	A											
04 May	S05E59	186	0040	01	Hsx	001	A											
05 May	S05E46	186	0030	01	Hsx	001	A											
06 May	S05E32	187	0030	01	Hax	001	A											
07 May	S05E18	187	0020	01	Hsx	001	A											
08 May	S05E05	187	0020	01	Hax	002	B											
09 May	S05W08	187	0020	01	Hsx	001	A											
10 May	S05W21	187	0030	01	Hsx	001	A											
11 May	S05W34	186	0010	01	Hsx	001	A											
12 May	S06W47	186	0000	00	Axx	001	A											
13 May	S06W60	186																
14 May	S06W73	186																
15 May	S06W86	186																
								0	0	0	0	0	0	0	0	0	0	

Crossed West Limb.

Absolute heliographic longitude: 187



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 9939

04 May	N16E67	178	0050	02	Hax	001	A												
05 May	N17E52	180	0050	02	Hsx	001	A												
06 May	N17E40	179	0040	01	Hsx	001	A												
07 May	N16E27	178	0020	01	Hsx	001	A												
08 May	N16E14	178	0020	01	Hax	002	B												
09 May	N19W01	180	0030	01	Hsx	001	A												
10 May	N19W12	179	0060	08	Cso	017	B												
11 May	N21W25	179																	
12 May	N21W38	179																	
13 May	N21W51	179																	
14 May	N21W64	179																	
15 May	N21W77	179																	
16 May	N21W90	179																	
																			0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 180

Region 9940

04 May	N14E72	173	0070	02	Hax	001	A												
05 May	N13E55	177	0040	02	Hsx	002	A												
06 May	N13E42	177	0040	02	Hax	001	A												
07 May	N15E28	177	0020	01	Hsx	001	A												
08 May	N15E15	177	0050	05	Dso	011	B	1				1							
09 May	N15E03	176	0080	06	Dso	014	B												
10 May	N17W11	176	0040	08	Dso	013	B												
11 May	N17W24	176	0030	11	Eso	007	B												
12 May	N18W38	177	0030	05	Cso	006	B												
13 May	N19W51	177	0010	05	Bxo	003	B												
14 May	N19W67	180	0010	01	Axx	001	A												
15 May	N19W80	180																	
16 May	N19W93	180																	
																			1 0 0 1 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 176



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 9942

05 May	N22E34	198	0020	04	Cso	004	B											
06 May	N21E21	198	0010	01	Axx	001	A											
07 May	N21E10	195	0010	04	Axx	002	A											
08 May	N21W03	195	0010	04	Bxo	002	B											
09 May	N22W16	195																
10 May	N22W29	195																
11 May	N22W42	195																
12 May	N22W55	195																
13 May	N22W68	195																
14 May	N22W81	195																

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 195

Region 9943

05 May	S11E63	169	0050	07	Cao	004	B	1										
06 May	S11E50	169	0020	01	Hsx	001	A											
07 May	S10E37	168	0030	03	Cso	003	B	1			1							
08 May	S10E24	168	0020	06	Bxo	005	B											
09 May	S10E11	168	0010	03	Cso	003	B	1			1							
10 May	S10W03	168	0010	07	Bxo	003	B											
11 May	S10W16	168	0000	00	Axx	001	A											
12 May	S10W31	170																
13 May	S10W44	170																
14 May	S10W57	170																
15 May	S10W70	170																
16 May	S10W83	170																

3 0 0 2 1 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 168



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 9944

07 May	N08E35	170	0040	06	Cro	003	B								
08 May	N08E22	170	0010	01	Axx	002	B								
09 May	N08E09	170	0020	08	Bxo	005	B								
10 May	N09W04	170													
11 May	N09W17	170													
12 May	N09W30	170													
13 May	N09W43	170													
14 May	N09W56	170													
15 May	N09W69	170													
16 May	N09W82	170													

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 170

Region 9945

07 May	S05E66	139	0240	03	Hkx	001	A								
08 May	S05E53	139	0290	03	Hkx	002	A								
09 May	S05E40	139	0370	04	Cko	004	B								
10 May	S04E27	139	0400	09	Cko	006	B								
11 May	S04E14	138	0310	05	Dko	009	B					2			
12 May	S04E02	137	0320	08	Dki	020	B								
13 May	S04W12	138	0260	09	Cao	011	B	1			1				
14 May	S04W26	139	0270	07	Dao	013	Bg								
15 May	S05W39	138	0280	09	Dao	018	Bg					2			
16 May	S03W54	140	0250	05	Cao	006	B	1			1				
17 May	S02W68	141	0180	05	Dao	005	B								
18 May	S02W84	144	0180	03	Hsx	002	A								
19 May	S01W95	141	0050	03	Cao	003	B								

2 0 0 6 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 137



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 9946

08 May	S08E65	127	0070	04	Dao	003	B													
09 May	S06E52	127	0100	03	Dao	004	B													
10 May	S06E38	127	0050	06	Cso	014	B	2				3								
11 May	S06E25	127	0060	07	Dao	016	B	1				1								
12 May	S05E12	127	0040	07	Dao	010	B													
13 May	S05W02	128	0030	04	Cso	004	B	1				1								
14 May	S06W17	130	0010	02	Axx	002	A													
15 May	S06W30	130											1							
16 May	S06W43	130																		
17 May	S06W56	130																		
18 May	S06W69	130																		
19 May	S06W82	130																		
								4	0	0	6	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 128

Region 9947

10 May	N23W46	211	0020	03	Bxo	003	B												
11 May	N23W59	211	0020	01	Axx	001	A												
12 May	N22W74	213																	
13 May	N22W87	213																	
								0	0	0	0	0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 211

Region 9948

10 May	S21E71	094	0280	04	Cho	003	B													
11 May	S21E61	091	0420	14	Eko	006	B													
12 May	S22E50	089	0430	14	Eko	008	B	1				1								
13 May	S22E38	088	0360	13	Eko	005	B	1				1								
14 May	S22E26	087	0410	13	Eko	006	B	1				3								
15 May	S22E14	085	0420	14	Eko	007	B		1			2								
16 May	S22E01	085	0370	14	Eko	004	B	2												
17 May	S21W15	088	0390	10	Cho	005	B						1							
18 May	S21W31	091	0380	05	Cho	002	B													
19 May	S21W44	090	0330	04	Hkx	001	A													
								5	1	0	8	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 085



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 9949

11 May	S16W06	158	0010	02	Hsx	003	A												
12 May	S16W20	159	0040	05	Dso	006	B												
13 May	S16W34	160	0030	00	Cso	004	A												
14 May	S16W47	160	0010	03	Bxo	002	B												
15 May	S16W61	160	0000	00	Axx	001	A												
16 May	S16W77	163																	
17 May	S16W90	163																	

0 0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 158

Region 9950

11 May	S06E44	108	0030	04	Bxo	005	B	1			1								
12 May	S06E31	108	0090	06	Cso	008	B												
13 May	S06E18	108	0100	07	Dao	009	B												
14 May	S05E04	109	0060	07	Dso	012	B												
15 May	S06W09	108	0050	05	Cso	011	B												
16 May	S05W23	109	0030	04	Cso	005	B				1								
17 May	S05W37	110	0030	03	Cso	004	B												
18 May	S05W51	111	0020	01	Hsx	001	A												
19 May	S04W64	110	0050	01	Hsx	001	A												

1 0 0 2 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 109

Region 9951

12 May	N10E68	071	0020	01	Axx	001	A												
13 May	N10E55	071	0020	01	Axx	001	A												
14 May	N11E41	072	0020	01	Hsx	002	A												
15 May	N11E28	071	0010	01	Hsx	001	A												
16 May	N11E14	072	0000	00	Axx	001	A												
17 May	N11E01	072																	
18 May	N12W12	072	0010	03	Bxo	003	B												
19 May	N12W25	072																	

0 0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 072



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 9952

13 May	S15W22	148	0000	01	Axx	003	A												
14 May	S15W35	148																	
15 May	S15W48	148																	
16 May	S15W61	148																	
17 May	S15W74	148																	
18 May	S15W87	148																	
												0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 148

Region 9953

15 May	N06W52	151	0010	03	Dro	003	B												
16 May	N06W65	151	0050	05	Bxo	005	B												
17 May	N06W78	151																	
18 May	N06W91	151																	
												0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 151

Region 9954

15 May	S22E65	034	0150	04	Cao	003	B												
16 May	S22E54	032	0130	04	Hax	003	A												
17 May	S22E40	033	0170	03	Dao	004	B		1		2								
18 May	S22E27	033	0130	03	Dao	004	B												
19 May	S22E14	032	0100	05	Dao	006	B												
									0	1	0	2	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 032

Region 9955

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												
									2	0	0	2	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 031



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 9956

16 May	S08W04	090	0000	00	Axx	001	B											
17 May	S08W17	090																
18 May	S08W30	090																
19 May	S08W43	090																
										0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 090

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							
								8	1	0	8	0	1	0	0			

Still on Disk.

Absolute heliographic longitude: 012

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											
								0	0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 022

Region 9959

17 May	N10E09	064	0030	03	Bxo	004	B											
18 May	N10W04	064																
19 May	N10W17	064																
								0	0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 064



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 9960

18 May	N15E74	346	0100	09	Dao	004	B					2			
19 May	N14E58	348	0140	09	Dao	007	B	1							
								1	0	0	2	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 348

Region 9961

19 May	S22E76	330	0110	09	Dao	005	B	1				2			
								1	0	0	2	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 330

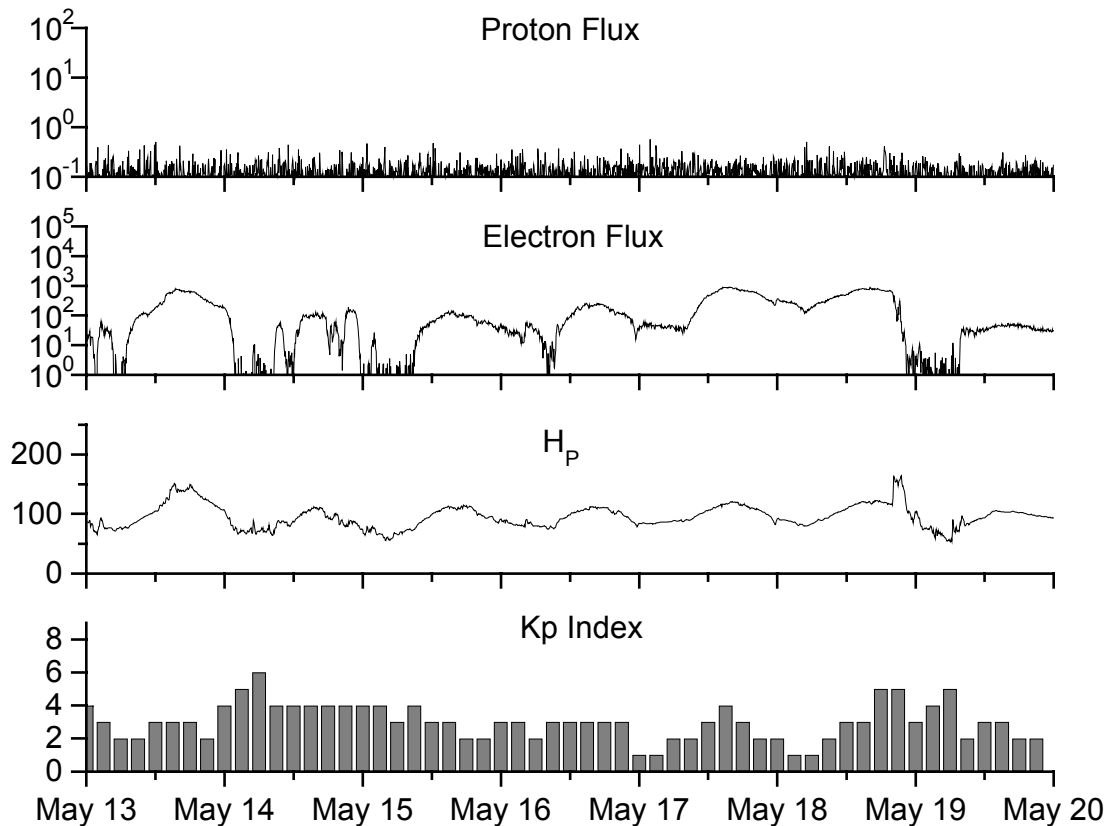


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

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									
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 13 May 2002

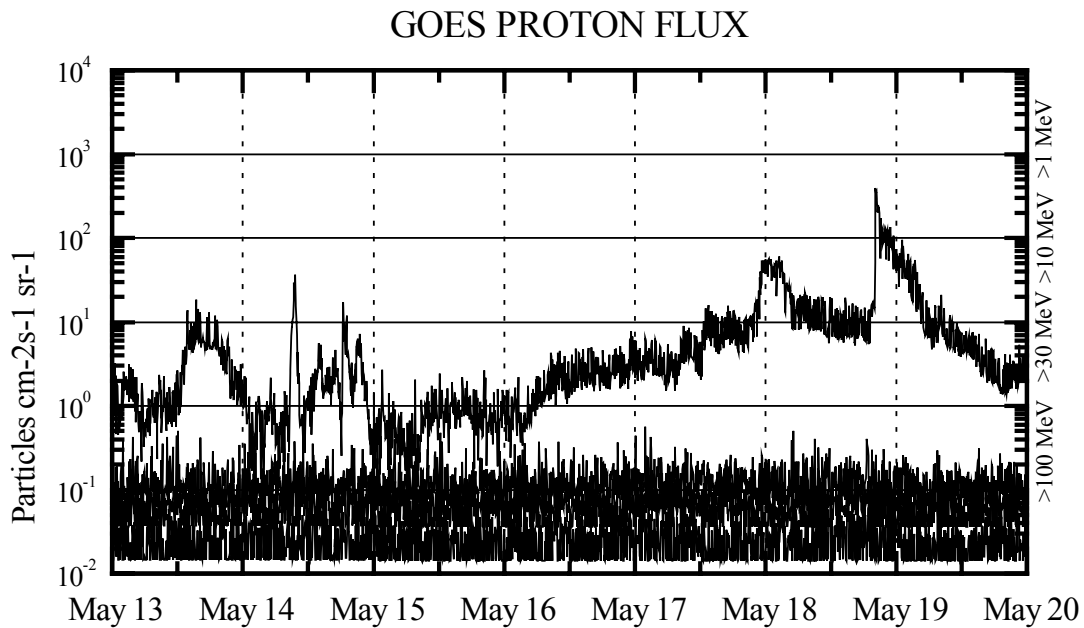
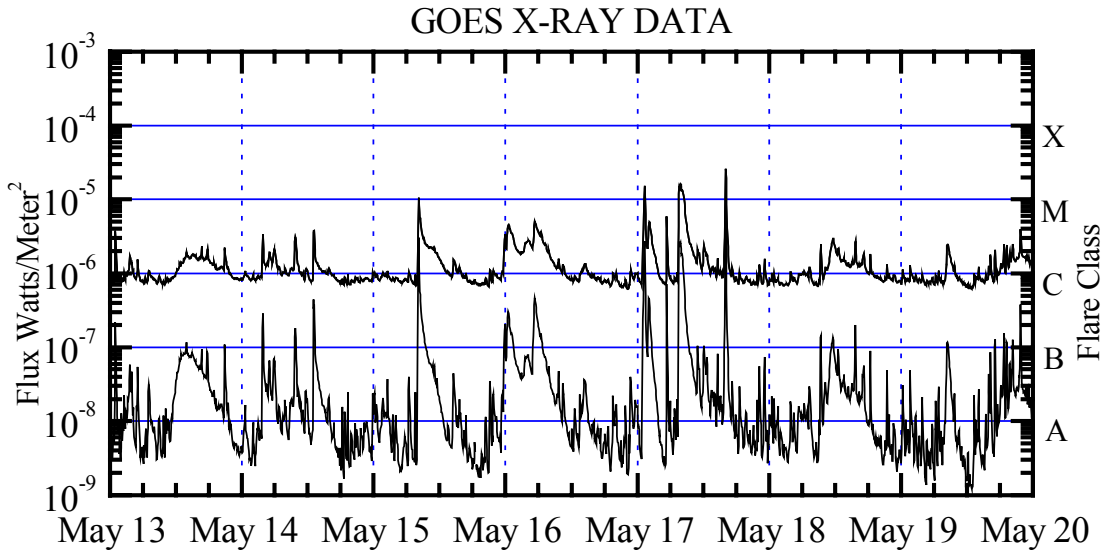
Protons plot contains the five-minute averaged integral proton flux (protons/cm²-sec-sr) as measured by GOES-8 (W75) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

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.

