

**Space Weather Highlights**  
**18 - 24 February 2002**

**SWO PRF 1382**  
**26 February 2002**

Solar activity ranged from low to high levels. Activity was at low to moderate levels during 18 – 19 February with an isolated M1/Sf long-duration flare and some C-class flares from Region 9830 (S19, L = 134, class/area Fkc/610 on 19 February). Region 9830 was in a gradual growth phase during 16 – 19 February and developed multiple delta magnetic configurations within its leader spots. It began to gradually decay on 20 February, but remained complex as a (weakened) magnetic delta persisted within its leader spots. Activity increased to high levels on 20 February due to an M5/1n flare at 20/0612 UTC from Region 9825 (N14, L = 206, class/area Fkc/500 on 14 February), which was crossing the west limb at the time. Region 9825 “awoke” with three M-class flares on 20 February (including the aforementioned M5/1n) following several days of gradual decay and inactivity. The sudden increase in flare activity coincided with the rapid emergence of opposite-polarity flux northwest of its leader spots. Activity dropped to moderate levels on 22 February with multiple low-level M-class flares from Region 9825 as it rotated out of view. Activity remained at moderate levels on 22 February with an M2/2n flare from Region 9830, which continued to gradually decay. Activity dropped to low levels during the last two days of the period due to occasional C-class flares.

Solar wind data were available from the NASA Advanced Compositions Explorer (ACE) spacecraft for most of the period. A relatively weak recurrent high-speed stream was observed during 21 February. Solar wind speeds increased early on 21 February with peak velocities in the 490 to 520 km/sec range. Velocities gradually decreased during the later half of the day as the high-speed stream subsided. This stream was likely associated with a small, negative-polarity coronal hole.

A brief greater than 10 MeV proton event occurred at geosynchronous orbit on 20 February following the M5/1n flare at 20/0612 UTC from Region 9825. The event began at 20/0700 UTC, reached a peak of 13.5 PFU at 20/0755 UTC, and ended at 20/0800 UTC.

The greater than 2 MeV electron flux at geosynchronous orbit was at normal levels.

Geomagnetic field activity was at quiet to unsettled levels throughout the period.

**Space Weather Outlook**  
**27 February - 25 March 2002**

Activity is expected to be at low to moderate levels. Isolated low-level M-class flares are expected during the period. There will also be an increased chance for isolated major flare activity beginning on 07 March with the return of old Region 9825.

The greater than 2MeV electron flux may reach high levels during 06 – 08 March. Otherwise, normal to moderate levels will be the norm.

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

Active periods are possible during 04 – 06 March due to recurrent coronal hole effects. Otherwise, quiet to unsettled conditions will be the norm.



### *Daily Solar Data*

Date	Radio Flux 10.7 cm	Sun spot No.	Sunspot Area (10 <sup>-6</sup> hemi.)	X-ray Background	Flares							
					X-ray Flux			Optical				
					C	M	X	S	1	2	3	4
18 February	193	103	840	B7.2	1	1	0	5	1	0	0	0
19 February	189	130	990	B7.6	3	0	0	6	1	0	0	0
20 February	193	157	910	B9.5	7	5	0	15	3	0	0	0
21 February	201	148	1130	C1.4	6	4	0	10	1	1	0	0
22 February	192	161	810	C5.0	7	0	0	6	0	0	0	0
23 February	188	176	910	C1.1	9	0	0	9	0	0	0	0
24 February	193	191	1170	B7.8	9	0	0	12	0	0	0	0

### *Daily Particle Data*

Date	Proton Fluence (protons/cm <sup>2</sup> -day-sr)			Electron Fluence (electrons/cm <sup>2</sup> -day-sr)		
	>1MeV	>10MeV	>100MeV	>.6MeV	>2MeV	>4MeV
	18 February	2.8E+5	1.2E+4	2.8E+3		9.5E+5
19 February	1.7E+5	1.2E+4	2.7E+3		1.1E+5	
20 February	1.4E+6	1.6E+5	3.3E+3		2.7E+5	
21 February	1.3E+6	4.8E+4	3.0E+3		2.4E+5	
22 February	5.2E+5	1.8E+4	3.0E+3		2.3E+5	
23 February	2.7E+5	1.3E+4	3.0E+3		2.4E+5	
24 February	1.9E+5	1.2E+4	2.7E+3		4.2E+5	

### *Daily Geomagnetic Data*

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	18 February	6	1-2-1-0-2-2-2-3	7	0-0-3-2-0-1-3-3	9
19 February	4	2-1-1-1-0-1-2-1	2	1-0-1-0-0-1-2-1	4	2-1-1-1-1-2-2-1
20 February	6	1-0-2-1-2-2-2-3	11	0-0-4-3-4-2-2-2	8	2-0-3-2-3-2-2-3
21 February	6	1-2-1-1-2-1-2-3	9	0-1-2-2-3-2-4-2	6	1-1-2-1-2-2-3-3
22 February	6	1-2-1-0-2-1-3-2	4	1-1-0-0-3-0-2-1	5	2-2-0-1-1-2-3-2
23 February	3	2-2-0-0-1-1-0-1	2	1-2-0-0-1-0-0-0	4	2-1-1-0-1-2-2-1
24 February	4	1-1-1-1-2-1-1-1	5	0-0-0-2-4-0-1-0	4	2-1-1-1-2-1-1-1

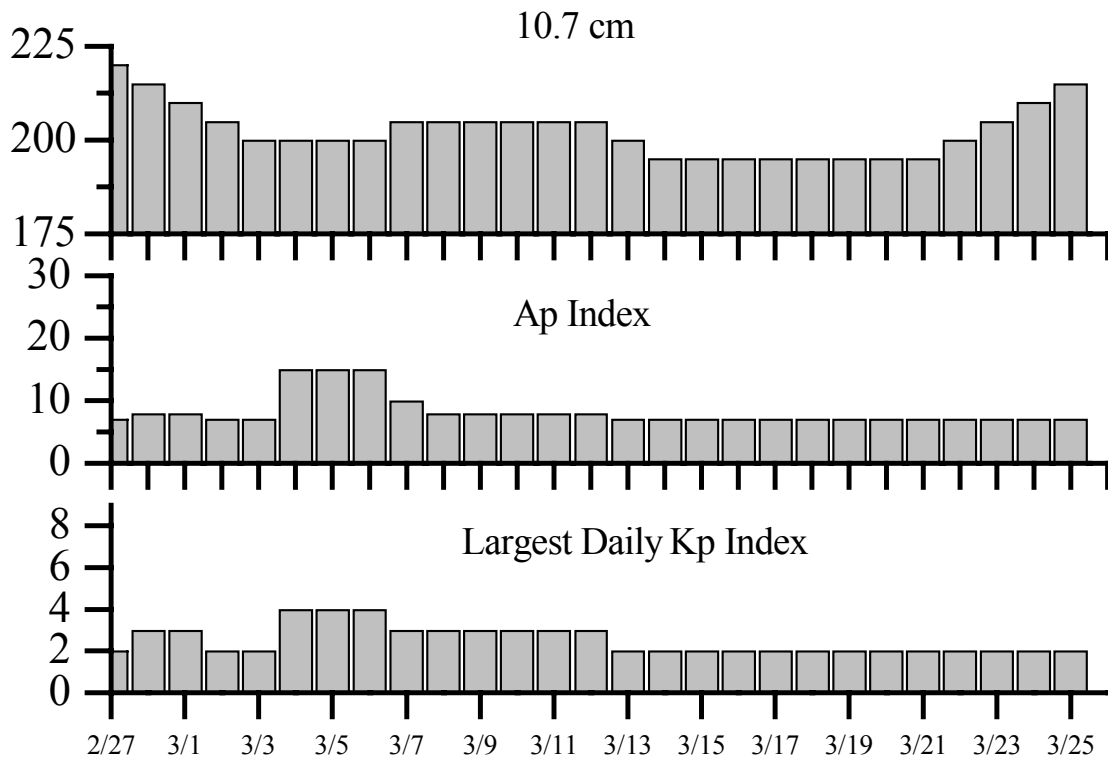


*Alerts and Warnings Issued*

<u>Date &amp; Time of Issue</u>	<u>Type of Alert or Warning</u>	<u>Date &amp; Time of Event UT</u>
18 Feb 1312	Stratwarm Alert Exists Monday	
19 Feb 0001	K= 4 Observed	18 Feb 2100 - 0000
19 Feb 0012	4 - 245 MHz Bursts	18 Feb
19 Feb 1340	Stratwarm Alert Exists Tuesday	
20 Feb 0014	1 - 245 MHz Radio Noise Storm	19 Feb
20 Feb 0340	Type II Radio Emission	20 Feb 0327
20 Feb 0623	X-Ray event M5.1	20 Feb 0612
20 Feb 0629	Type IV Radio Emission	20 Feb 0626
20 Feb 0638	Type II Radio Emission	20 Feb 0620
20 Feb 0743	Proton Event $>10\text{MeV} \geq 10\text{pfu}$ Warning	20 Feb 0743 - 1500
20 Feb 0759	Protons Event $>10 \text{ MeV} \geq 10\text{pfu}$	20 Feb 0730
20 Feb 1206	Stratwarm Alert Exists Wednesday	
20 Feb 1644	ENDED Protons Event $>10 \text{ MeV} \geq 10\text{pfu}$	20 Feb 0800
21 Feb 0024	3 - 245 MHz Bursts	20 Feb
21 Feb 1047	Stratwarm Alert Exists Thursday	
22 Feb 1228	Stratwarm Alert Exists Friday	
23 Feb 1332	Stratwarm Alert Exists Saturday	
24 Feb 1404	Stratwarm Alert Exists Sunday	
24 Feb 1535	Type II Radio Emission	24 Feb 1453



*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
27 Feb	220	7	2	13 Mar	200	7	2
28	215	8	3	14	195	7	2
01 Mar	210	8	3	15	195	7	2
02	205	7	2	16	195	7	2
03	200	7	2	17	195	7	2
04	200	15	4	18	195	7	2
05	200	15	4	19	195	7	2
06	200	15	4	20	195	7	2
07	205	10	3	21	195	7	2
08	205	8	3	22	200	7	2
09	205	8	3	23	205	7	2
10	205	8	3	24	210	7	2
11	205	8	3	25	215	7	2
12	205	8	3				



### *Energetic Events*

Date	Time		X-ray		Optical Information			Peak		Sweep Freq		
	Begin	Max	½ Max	Class	Flux	Imp/Location		Rgn #	Radio Flux		Intensity	
						Brtns	Lat CMD		245	2695	II	IV
18 Feb	2018	2115	2158	M1.0	.042	Sf	S20E16	9830				
20 Feb	0244	0251	0256	M4.2	.017	Sf	N15W58	9825	140	28		
20 Feb	0552	0612	0616	M5.1	.022	1n	N12W72	9825	44	49	1	1
20 Feb	0946	0959	1004	M4.3	.022	Sf	N18W83	9825				
20 Feb	1703	1711	1718	M3.5	.017	Sf	S09W62	9835		56		
20 Feb	2100	2107	2109	M2.4	.005	1b	S18W11	9830		85		
21 Feb	1156	1226	1236	M3.9	.044			9825				
21 Feb	1807	1823	1844	M1.0	.017			9825				
21 Feb	2028	2037	2047	M1.4	.013	28						
21 Feb	2349	0010	0027	M4.4	.065	2n	S20W20	9830		89		

### *Flare List*

Date	Time			X-ray Class.	Optical Imp / Brtns	Location Lat CMD	Rgn
	Begin	Max	End				
18 February	0747	0757	0822	C5.9	1f	S06E34	9829
	0834	0846	0905		Sf	S19E21	9830
	1345	1345	1349		Sf	N22W56	9822
	1448	1449	1451		Sf	N20W58	9822
	2046	2052	2137		M1.0	Sf	S20E16
	B2319	U2332	A2334		Sf	S17E14	9830
19 February	0046	0047	0053		Sf	S18E13	9830
	0526	0529	0532		Sf	S17E10	9830
	0557	0557	0600		Sf	S20E16	9830
	0625	0625	0633		Sf	S20E16	9830
	0734	0735	0738		Sf	S20E15	9830
	1152	1219	1249	C2.7			
	1601	1602	1607	C2.9	1f	N18W66	9825
	2227	2231	2233	C1.3			
	2317	2319	2323		Sf	S13W59	9828
20 February	0001	0004	0009		Sf	S13W59	9828
	0111	0116	0131	C2.1	Sf	S16W02	9830
	0214	0218	0221	C1.7			
	0247	0254	0307	M4.2	Sf	N15W58	9825
	0555	0611	0628	M5.1	1n	N12W72	9825
	0632	0632	0637		Sf	S21E02	9830
	0643	0644	0647		Sf	N17W79	9825
	0743	0745	0753	C2.5	Sf	N17W81	9825
	0755	0757	0801		Sf	N18W80	9825
	1001	1001	1007	M4.3	Sf	N18W83	9825
	1106	1107	1111	C7.5	Sf	N15W77	9825
	1136	1139	1144	C4.5	Sf	N21W87	9825
	1410	1411	1419		Sf	S18W08	9830
1426	1429	1433	C3.1				
1620	U1627	1647	C9.7	1n	S16W12	9830	
1712	1712	1714	M3.5	Sf	S09W62	9835	



*Flare List - continued.*

Date	Time			X-ray Class.	Optical		Rgn
	Begin	Max	End		Imp / Brtns	Location Lat CMD	
20 February	2103	2108	2156	M2.4	1b	S18W11	9830
	2118	2125	2129		Sf	S08W60	9831
	2152	2159	2228		Sf	S10W61	9835
	2338	2342	2348		Sf	S16W12	9830
21 February	0045	0054	0127	C5.7			9825
	0441	0448	0510	C3.6			9825
	0706	0757	0846	C5.6			9825
	0828	0839	0843		Sf	S07W71	9835
	B0931	U0931	A0939	C7.0	Sf	N12W83	9825
	1156	1226	1236	M3.9			9825
	1205	1207	1214		1f	S09W70	9835
	1346	1347	1351		Sf	S08W71	9835
	1413	1416	1424		Sf	S08W72	9835
	1648	1649	1656	C3.5	Sf	S17W23	9830
	1807	1823	1844	M1.0			9825
	2028	2037	2047	M1.4			
	2102	2103	2108		Sf	S07W75	9835
	2133	2134	2138		Sf	S08W72	9835
	2205	2215	2224	C3.9			
	2349	2356	0002		Sf	S08W73	9835
	2353	2353	0006		Sf	S06W12	9829
	2354	2358	0105	M4.4	2n	S20W20	9830
	2356	2358	0001		Sf	S14W17	9832
	22 February	0213	0229	0240	C6.0		
0620		0630	0646	C5.0			
0801		0805	0817		Sf	S18W30	9830
0906		0918	0925	C2.7			
1107		1112	1117	C2.2			
1457		1457	1502		Sf	S20W34	9830
1810		1839	1919	C2.2			
1935		1936	1946		Sf	N10E49	9837
2205		2208	2217		Sf	S17W40	9830
2231		2235	2251	C2.7	Sf	S21W33	9830
2240		2240	2248	C2.9	Sf	N11E47	9837
23 February		0105	0147	0230	C2.8		
	0439	0440	0446	C2.2	Sf	S16W10	9839
	0619	0625	0701	C4.9	Sf	S18W26	9841
	B0649	U0649	A0710		Sf	S19W27	9841
	0810	0811	0823	C2.6	Sf	S20W36	9830
	0825	0825	0830		Sf	S20W37	9830
	1153	1157	1212	C2.1	Sf	S19W43	9830
	1243	1315	1325	C2.9			



**Flare List - continued.**

Date	Time			X-ray Class.	Imp / Brtns	Location Lat CMD	Rgn
	Begin	Max	End				
23 February	1356	1356	1413	C4.3	Sf	S21W43	9830
	1425	1437	1442	C3.4			
	1559	1600	1603		Sf	S16W16	9839
	2249	2249	2318	C7.0	Sf	S15W47	9830
24 February	0007	0012	0017	C1.5			
	0236	0237	0247		Sf	N22E27	9844
	0435	0437	0441	C1.3	Sf	S19W52	9830
	0620	0621	0632	C2.2	Sf	N23E24	9844
	0755	0755	0759		Sf	N21E27	9844
	1253	1256	1300	C1.7			
	1440	1448	1515	C4.4	Sf	S18W44	9841
	1539	1541	1547	C2.4	Sf	S19W62	9830
	1659	1659	1716		Sf	N18E65	9845
	1733	1747	1759		Sf	N22E19	9844
	1808	1808	1823		Sf	S18W33	9839
	1908	1912	1916		Sf	N22E18	9844
	2032	2043	2103	C9.0	Sf	S16W68	9830
	2052	2054	2059	C5.2	Sf	N21E21	9844
2314	2317	2322	C3.7				

**Region Summary**

Date	Location		Sunspot Characteristics				Flares								
	Helio		Area (10 <sup>-6</sup> 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 9822</i>															
08 Feb	N18E69	217	0150	09	Dao	009	B								
09 Feb	N17E56	217	0070	06	Cso	005	B	1		1					
10 Feb	N17E40	220	0070	05	Cso	007	B								
11 Feb	N18E26	221	0040	05	Cao	007	B	1							
12 Feb	N18E12	221	0030	07	Cso	004	B								
13 Feb	N17W05	225	0010	03	Bxo	004	B	1		2					
14 Feb	N17W18	225	0010	02	Bxo	004	B	1		1	1				
15 Feb	N17W31	225						1		1					
17 Feb	N17W57	225													
18 Feb	N17W70	225								2					
19 Feb	N17W83	225													
								5	0	0	7	1	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 225



**Region Summary - continued.**

Date	Location		Sunspot Characteristics				Flares																
	Helio		Area (10 <sup>-6</sup> 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 9824</i>																							
09 Feb	N21E67	206	0100	02	Hsx	001	A																
10 Feb	N21E54	206	0130	03	Hsx	001	A																
11 Feb	N21E41	206	0130	03	Hax	001	A																
12 Feb	N22E30	203	0140	03	Hax	001	A																
13 Feb	N22E16	204	0180	03	Hsx	001	A																
14 Feb	N22E04	203	0130	03	Hsx	001	A																
15 Feb	N23W09	203	0180	03	Hsx	001	A																
16 Feb	N23W22	203	0140	04	Cso	002	B																
17 Feb	N23W35	202	0140	01	Hsx	001	A																
18 Feb	N23W48	202	0110	02	Hsx	001	A																
19 Feb	N23W60	201	0100	02	Hsx	001	A																
20 Feb	N24W74	202	0100	02	Hsx	001	A																
21 Feb	N24W86	201	0080	03	Hsx	001	A																

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 203

<i>Region 9825</i>																							
09 Feb	N12E69	204	0320	13	Eko	006	B						1										
10 Feb	N12E57	203	0480	13	Eki	012	B	1						1									
11 Feb	N12E43	204	0380	14	Eki	016	B	2						3									
12 Feb	N13E30	203	0310	13	Eki	030	Bg	3						4	1								
13 Feb	N14E16	204	0460	17	Fai	038	Bg	5						8	1								
14 Feb	N13E01	206	0500	18	Fkc	053	Bg	5						6									
15 Feb	N14W13	207	0500	18	Fac	053	Bg	2						3									
16 Feb	N13W24	205	0290	18	Fai	032	Bg																
17 Feb	N12W36	203	0290	17	Fai	024	Bg																
18 Feb	N14W51	205	0230	19	Fao	010	Bg																
19 Feb	N16W66	207	0210	10	Dao	011	Bg	1							1								
20 Feb	N16W81	209	0150	07	Dao	006	Bg	3	3					7	1								
21 Feb	N13W92	207	0120	02	Cao	002	Bg	4	2					1									
								26	5	0	33	5	0	0	0								

Crossed West Limb.

Absolute heliographic longitude: 206





*Region Summary - continued.*

Date	Location		Sunspot Characteristics				Flares							
	(° Lat ° CMD)	Helio	Area (10 <sup>-6</sup> hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical			
		Lon						C	M	X	S	1	2	3

*Region 9826*

10 Feb	S23E39	221	0020	03	Cao	005	B													
11 Feb	S23E25	222	0040	06	Dso	007	B													
12 Feb	S22E12	221	0030	07	Cso	006	B													
13 Feb	S23W02	222	0080	04	Dso	004	B													
14 Feb	S22W15	222	0010	04	Bxo	005	B	1					1							
15 Feb	S22W28	222																		
16 Feb	S22W41	222																		
17 Feb	S22W54	222																		
18 Feb	S22W67	222																		
19 Feb	S22W80	222																		
								1	0	0	1	0	0	0	0	0				

Crossed West Limb.

Absolute heliographic longitude: 222

*Region 9828*

11 Feb	S15E50	197	0020	01	Hsx	001	A													
12 Feb	S16E38	195	0010	00	Axx	001	A													
13 Feb	S16E25	195																		
14 Feb	S16E10	197	0010	02	Cso	005	B													
15 Feb	S16W04	198	0000	01	Bxo	002	B													
16 Feb	S15W18	199	0010	02	Bxo	002	B													
17 Feb	S15W31	199																		
18 Feb	S15W44	199																		
19 Feb	S15W57	199																		1
20 Feb	S14W71	199	0010	01	Axx	002	A													1
21 Feb	S14W84	199																		
								0	0	0	2	0	0	0	0	0				

Crossed West Limb.

Absolute heliographic longitude: 198



**Region Summary - continued.**

Date	Location		Sunspot Characteristics				Flares							
	( ° Lat ° CMD)	Helio	Area (10 <sup>-6</sup> hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical			
		Lon						C	M	X	S	1	2	3

*Region 9829*

14 Feb	S07E74	133	0020	06	Cro	004	B											
15 Feb	S06E62	132	0040	09	Dso	003	B	1				1						
16 Feb	S06E52	129	0040	12	Eso	004	B											
17 Feb	S05E36	131	0050	08	Cso	005	B											
18 Feb	S05E23	131						1					1					
19 Feb	S05E10	131																
20 Feb	S06W01	129	0000	00	Axx	001	A											
21 Feb	S11W12	127											1					
22 Feb	S11W25	127																
23 Feb	S09W39	127																
24 Feb	S09W52	127																
									2	0	0	2	1	0	0	0	0	

Still on Disk.

Absolute heliographic longitude: 129

*Region 9830*

14 Feb	S22E73	134	0030	01	Hrx	001	A											
15 Feb	S21E58	136	0050	10	Dso	011	B											
16 Feb	S20E44	137	0210	17	Fai	021	B					1						
17 Feb	S18E32	135	0360	18	Fai	028	Bg	3				8						
18 Feb	S18E20	134	0480	20	Fki	043	Bg		1			3						
19 Feb	S20E07	134	0610	19	Fkc	046	Bgd					5						
20 Feb	S20W07	135	0530	22	Fkc	049	Bgd	2	1			4	2					
21 Feb	S19W22	137	0530	20	Fki	029	Bgd	1	1			1		1				
22 Feb	S19W34	136	0440	20	Fki	032	Bgd	1				4						
23 Feb	S19W49	137	0480	16	Fai	034	Bgd	4				5						
24 Feb	S17W64	139	0650	17	Fkc	020	Bgd	3				3						
									14	3	0	34	2	1	0	0	0	

Still on Disk.

Absolute heliographic longitude: 134

*Region 9831*

16 Feb	S11W41	222	0010	03	Bxo	002	B											
17 Feb	S11W52	219	0000	00	Axx	001	A											
18 Feb	S11W65	219																
19 Feb	S11W78	219																
									0	0	0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 222



**Region Summary - continued.**

Date	Location		Sunspot Characteristics				Flares							
	( ° Lat ° CMD)	Helio	Area (10 <sup>-6</sup> hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical			
		Lon						C	M	X	S	1	2	3

*Region 9832*

18 Feb	S13E25	129	0020	12	Bxo	009	B										
19 Feb	S14E10	131	0020	05	Cso	004	B										
20 Feb	S15W03	131	0010	01	Hsx	001	A										
21 Feb	S13W15	130	0030	02	Cso	002	B		1			1					
22 Feb	S03W28	130															
23 Feb	S03W41	130															
24 Feb	S03W54	130															
									0	1	0	1	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 131

*Region 9833*

19 Feb	N11W16	157	0040	03	Cro	006	B										
20 Feb	N11W29	157															
21 Feb	N11W42	157															
22 Feb	N11W55	157															
23 Feb	N11W68	157															
24 Feb	N11W81	157															
									0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 157

*Region 9834*

19 Feb	N03E55	086	0010	02	Bxo	002	B										
20 Feb	N03E42	086															
21 Feb	N03E27	088	0010	00	Hsx	001	A										
22 Feb	N03E13	089	0010	00	Hsx	002	A										
23 Feb	N03E00	089															
24 Feb	N03W13	089															
									0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 089

*Region 9835*

20 Feb	S09W61	189	0040	04	Dso	004	B					2					
21 Feb	S09W75	190	0170	08	Dao	003	B					6	1				
22 Feb	S08W87	189	0110	06	Dao	003	B										
									0	0	0	8	1	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 189



**Region Summary - continued.**

Date	Location		Sunspot Characteristics				Flares							
	( ° Lat ° CMD)	Helio	Area (10 <sup>-6</sup> hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical			
		Lon						C	M	X	S	1	2	3

*Region 9836*

20 Feb	S02W26	154	0010	05	Bxo	002	B											
21 Feb	S02W39	154																
22 Feb	S02W52	154																
23 Feb	S02W65	154																
24 Feb	S02W78	154																
										0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 154

*Region 9837*

20 Feb	N07E69	059	0060	03	Hsx	001	A											
21 Feb	N08E57	058	0140	03	Hax	001	A											
22 Feb	N09E44	058	0120	04	Cao	006	B	1			2							
23 Feb	N09E32	056	0080	04	Dao	008	B											
24 Feb	N10E18	057	0080	05	Dao	008	B											
								1	0	0	2	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 057

*Region 9838*

21 Feb	N05W18	133	0020	03	Cro	004	B											
22 Feb	N05W31	133	0020	04	Cso	004	B											
23 Feb	N05W45	133	0030	05	Cro	005	B											
24 Feb	N06W58	133																
								0	0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 133

*Region 9839*

21 Feb	S16E06	109	0010	01	Bxo	003	B											
22 Feb	S17W06	108	0000	00	Axx	001	A											
23 Feb	S18W20	108	0030	04	Cso	006	B	1			2							
24 Feb	S17W35	110	0080	06	Dai	014	B				1							
								1	0	0	3	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 109



**Region Summary - continued.**

Date	Location		Sunspot Characteristics				Flares							
	( ° Lat ° CMD)	Helio Lon	Area (10 <sup>-6</sup> hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical			
							C	M	X	S	1	2	3	4

*Region 9840*

21 Feb	S12E72	043	0020	02	Axx	002	A								
22 Feb	S12E58	044	0020	04	Cso	002	B								
23 Feb	S11E46	042	0040	03	Cso	002	B								
24 Feb	S11E33	042	0020	01	Hsx	001	A								

Still on Disk.

Absolute heliographic longitude: 042

*Region 9841*

22 Feb	S21W20	122	0060	05	Dao	006	B								
23 Feb	S20W33	121	0070	05	Dao	009	B	1			2				
24 Feb	S20W47	122	0070	07	Dao	007	B	1			1				
								2	0	0	3	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 122

*Region 9842*

22 Feb	S18E03	099	0010	02	Axx	002	A								
23 Feb	S18W11	099	0010	01	Hrx	002	A								
24 Feb	S19W23	098	0020	03	Cso	005	B								

Still on Disk.

Absolute heliographic longitude: 099

*Region 9843*

22 Feb	S26E58	044	0020	02	Axx	003	A								
23 Feb	S26E46	042	0050	04	Cao	004	B								
24 Feb	S25E33	042	0020	06	Cro	002	B								

Still on Disk.

Absolute heliographic longitude: 042

*Region 9844*

23 Feb	N22E33	055	0040	06	Cso	004	B								
24 Feb	N22E18	057	0100	07	Dso	010	B	2			6				
								2	0	0	6	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 057



***Region Summary - continued.***

Date	Location		Sunspot Characteristics				Flares															
	( ° Lat ° CMD)	Helio	Area (10 <sup>-6</sup> hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical											
		Lon						C	M	X	S	1	2	3	4							
<i>Region 9845</i>																						
23 Feb	N15E71	017	0080	02	Hax	002	A															
24 Feb	N15E58	017	0060	01	Hax	002	A						1									
								0	0	0	0	1	0	0	0	0	0	0	0	0	0	
Still on Disk.																						
Absolute heliographic longitude: 017																						
<i>Region 9846</i>																						
24 Feb	S04W37	112	0020	05	Dao	005	B															
								0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Still on Disk.																						
Absolute heliographic longitude: 112																						
<i>Region 9847</i>																						
24 Feb	S14E50	025	0050	04	Cso	007	B															
								0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Still on Disk.																						
Absolute heliographic longitude: 025																						

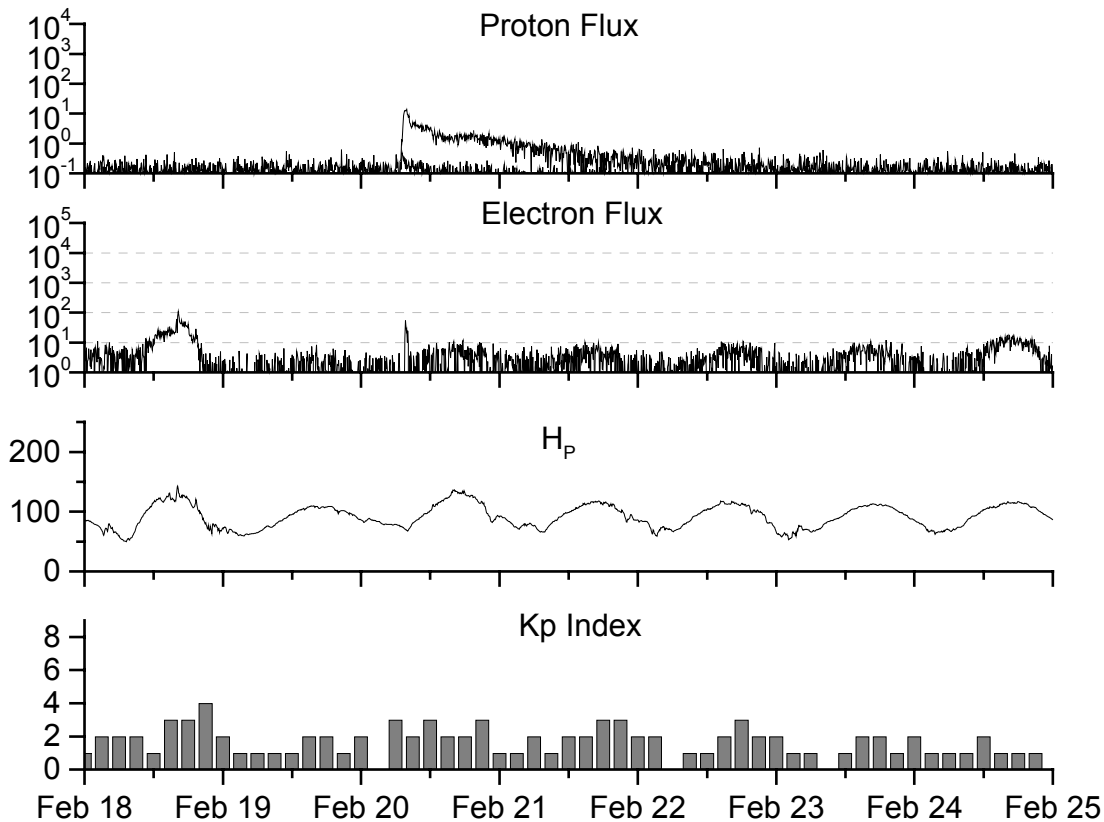


**Recent Solar Indices (preliminary)  
of the observed monthly mean values**

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
<b>2000</b>									
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	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
<b>2001</b>									
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			163.2		13	
September	229.1	150.7	0.66			233.3		12	
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	
<b>2002</b>									
January	189.0	113.9	0.60			226.4		07	

**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 18 February 2002*

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

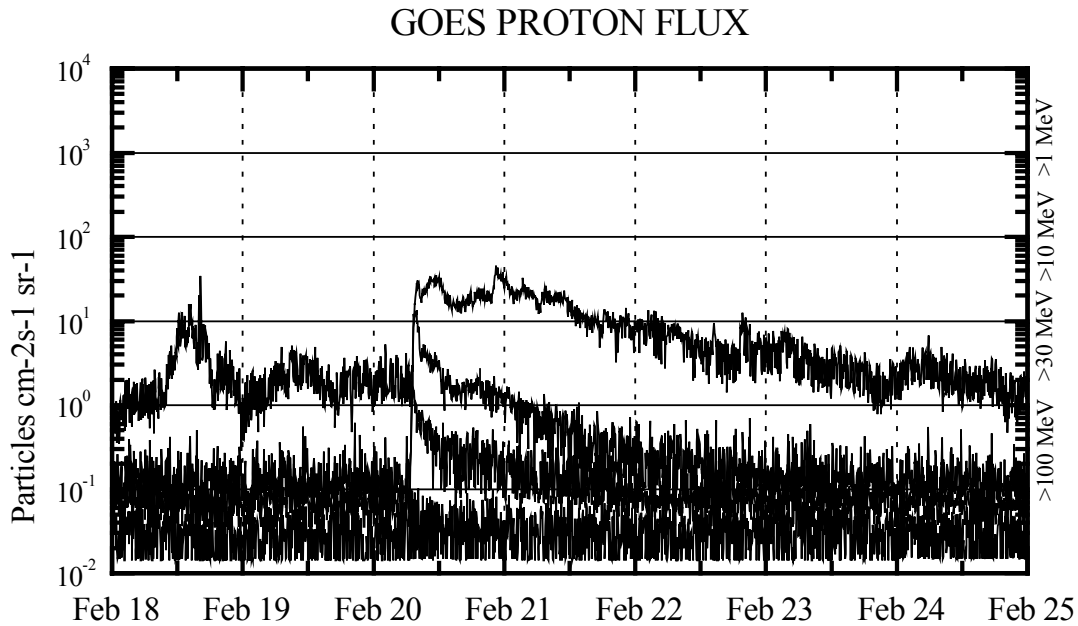
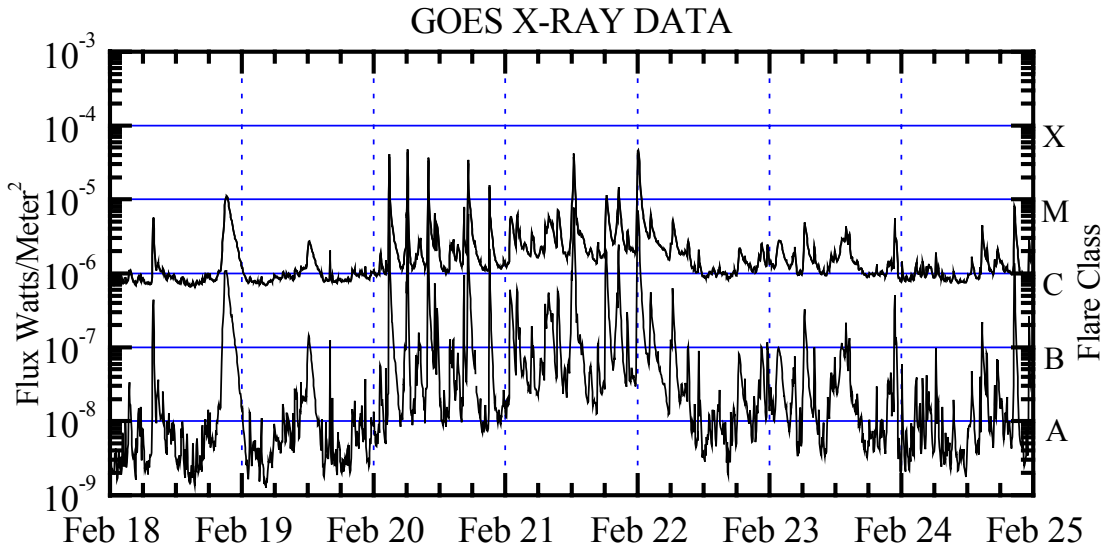
*Electrons* plot contains the five-minute averaged integral electron flux (electrons/cm<sup>2</sup>-sec-sr) with energies greater than 2 MeV at GOES-8.

*H<sub>p</sub>* 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<sub>p</sub>* 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<sub>p</sub> 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<sub>p</sub> are "global" parameters that are applicable to a first order approximation over large areas. H<sub>p</sub> 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/m<sup>2</sup>) 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/cm<sup>2</sup>-sec-sr) as measured by GOES-8 (W75) for each of the energy thresholds: >1, >10, >30 and >100 MeV. P10 event threshold is 10 pfu (protons/cm<sup>2</sup>-sec-sr) at greater than 10 MeV.

