

**Space Weather Highlights**  
**14 - 20 Feb 2000**

Solar activity ranged from low to moderate levels. Region 8869 (S20, L = 118, class/area Eai/300 on 20 February), was the most active region, producing multiple C and M-class events. The largest being an M2/1B accompanied by a Type II radio sweep on 17/1852UT. Region 8872 (S29, L = 093, class/area Bxo/020 on 17 February) produced a long duration M1/1N on 17/2035UT. This event also produced a Type II radio sweep, a 200 SFU Tenflare, and a Full-halo CME. This was thought to be a sympathetic flare due to its close proximity to Region 8896. The rest of the regions during the period were mostly quiet and of simple magnetic classification.

Real-time solar wind data were available from the NASA Advanced Composition Explorer (ACE) spacecraft for most of the period; data from the SWEPAM instrument was interrupted during a maneuver from approximately 16/1900-18/1500UT. The period began with enhanced speeds due to a 11/2353UT shock, a second transient was observed at 14/0700UT, further increasing observed speeds to over 700 km/s. Following this, available data showed nominal values through 19 February. At 20/2046UT a shock associated with a previously observed full halo CME passed ACE, raising speeds briefly as high as 500 km/s.

There was a greater than 10 MeV proton event at geosynchronous orbit on 18 February. The event began 18/1130UT, reached a maximum flux of 13 pfu's at 1215UT and ended at 18/1405UT. Proton fluxes were at background levels during the rest of the period.

The greater than 2 MeV electron flux at geosynchronous orbit was at moderate levels for most of the period, occasionally dropping to normal levels.

The geomagnetic field began the period at quiet to major storm levels due to the passage of a solar transient. By the 15th the field dropped back to quiet to unsettled at mid latitudes and quiet to active at high latitudes. It remained at nominal levels through most of the 20th, but activity picked up again with the passage of another transient late in the day.

**Space Weather Outlook**  
**23 February - 20 March 2000**

Solar activity is expected to range from low to moderate levels throughout the period with C-class flares being the most likely. The probability for M-class flares will diminish as active region 8869 (S18, L = 116) rotates off the disk on the first day of the period.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at normal to moderate levels during most of the period.

Geomagnetic field activity is expected to be at mostly quiet to unsettled levels for the period with possible active periods on March 03-06, due to recurrent coronal hole effects. Quiet to unsettled levels are expected for the rest of the period, barring an Earth-directed CME.



**Daily Solar Data**

Date	Radio Flux 10.7 cm	Sun spot No. (10 <sup>6</sup> hemi.)	Sunspot Area	X-ray Background	Flares							
					X-ray Flux			Optical				
					C	M	X	S	1	2	3	4
14 February	159	158	470	B8.1	0	0	0	2	0	0	0	0
15 February	156	158	440	B3.7	1	0	0	12	0	0	0	0
16 February	160	182	690	B4.6	7	0	0	9	0	0	0	0
17 February	168	152	670	B5.9	6	2	0	3	1	1	0	0
18 February	141	146	700	B8.1	5	0	0	5	0	0	0	0
19 February	145	126	590	B4.2	6	1	0	8	2	0	0	0
20 February	153	131	840	B9.0	11	1	0	6	1	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
	14 February	1.0E+6	1.2E+4	2.1E+3		1.3E+7
15 February	8.2E+5	1.2E+4	2.5E+3		6.0E+6	
16 February	1.3E+5	1.2E+4	2.7E+3		8.2E+6	
17 February	1.0E+5	1.3E+4	2.6E+3		1.6E+7	
18 February	1.2E+6	3.1E+5	6.5E+3		1.2E+7	
19 February	1.5E+6	1.0E+5	3.4E+3		2.0E+7	
20 February	1.7E+6	4.1E+4	3.1E+3		1.9E+7	

**Daily Geomagnetic Data**

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	14 February	20	3-4-4-3-5-3-2-2	38	3-3-4-6-6-5-4-3	29
15 February	11	3-3-2-1-2-1-2-4	15	4-4-3-3-2-2-2-3	11	3-4-2-1-2-2-3-2
16 February	6	2-3-1-0-2-1-2-2	20	6-3-1-2-4-3-2-1	5	2-2-0-1-2-2-2-0
17 February	6	0-1-1-3-3-2-2-1		0-0-*-*-*-2-0	6	0-0-1-3-3-2-2-2
18 February	2	0-2-1-0-1-1-0-1	0	0-0-0-0-0-0-0-0	2	0-0-1-0-1-1-1-1
19 February	3	0-0-1-2-1-1-1-1	6	0-0-1-5-0-0-0-0	4	0-0-2-3-0-1-1-1
20 February	5	0-0-2-0-0-0-1-4	4	0-0-1-3-0-0-0-3	5	1-0-3-1-0-0-2-3

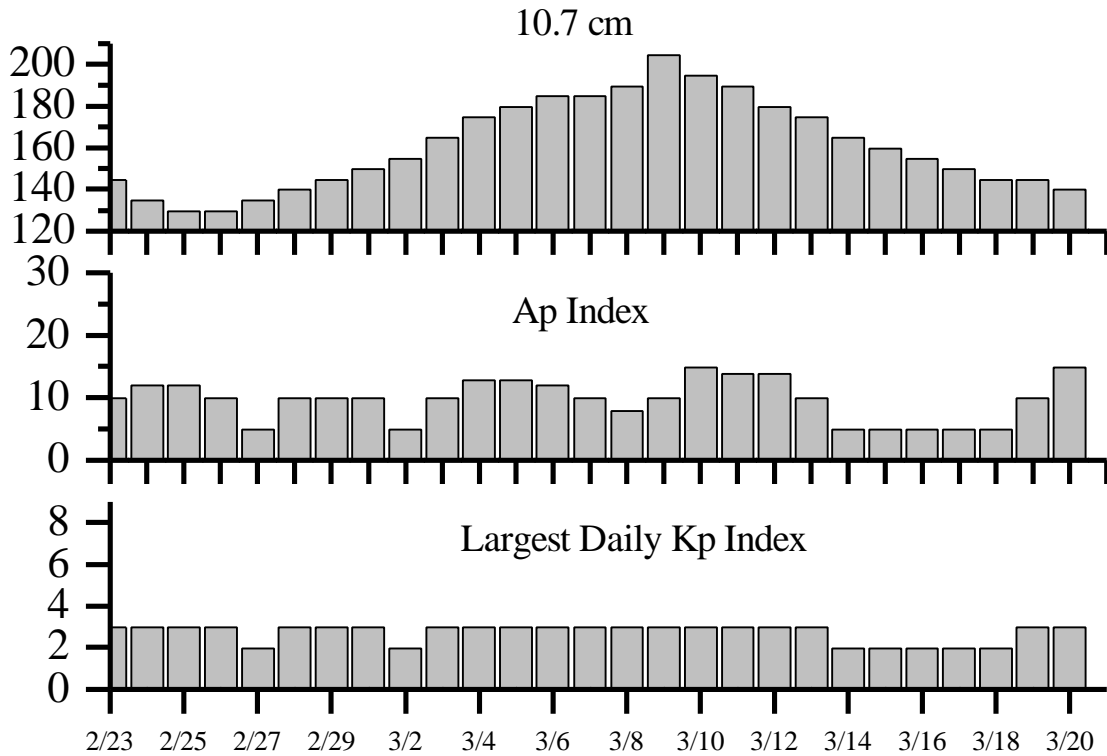


*Alerts and Warnings Issued*

Date & Time of Issue ()	Type of Alert or Warning	Date & Time of Event ()
14 Feb 600	K= 4 Observed	14 Feb 03 - 06
14 Feb 821	K= 4 Warning	14 Feb 09 - 15
14 Feb 900	K= 4 Observed	14 Feb 06 - 09
14 Feb 1200	Stratwarm Alert Exists Monday	
14 Feb 1339	K= 5 Warning	14/1500 - 15/1500 Feb
14 Feb 1440	A ≥ 20 Observed	14 Feb 1500
14 Feb 1450	K= 5 Observed	14 Feb 12- 15
15 Feb 900	ENDED A ≥ 20 Observed	14 Feb 1500
15 Feb 1250	Stratwarm Alert Exists Tuesday	
16 Feb 0047	1 -245 MHz Bursts	15 Feb
17 Feb 0009	1 -245 MHz Bursts	16 Feb
17 Feb 1936	Type II Radio Emission	17 Feb 1852
17 Feb 2052	10cm Radio Burst 200 F.U.	17 Feb 2025
17 Feb 2143	Proton Event ≥ 10pfu @ >10MeV Warning	18 Feb 02-15
17 Feb 2223	Type II Radio Emission	17 Feb 2024
18 Feb 0058	3 - 245 MHz Bursts	17 Feb
18 Feb 027	Type II Radio Emission	17 Feb 2038
18 Feb 1011	Type II Radio Emission	18 Feb 0919
18 Feb 1146	Proton Event ≥ 10pfu @ >10 MeV	18 Feb 1130
18 Feb 1500	Proton Event ≥=10pfu @ >10MeV Warning	18 Feb 15- 21
18 Feb 1540	A ≥ 30 Watch	20 Feb
18 Feb 2142	A ≥ 30 Watch	21 Feb
18 Feb 2156	ENDED 18/1405 Feb Proton Event ≥ 10pfu @ >10 MeV	18 Feb 1130
19 Feb 933	Type II Radio Emission	19 Feb 0840
19 Feb 0029	1 - 245 MHz Bursts	18 Feb
19 Feb 0029	245 MHz Noise Storms	18 Feb
20 Feb 0031	1 - 245 MHz Bursts	19 Feb
20 Feb 2223	Sudden Impulse observed Boulder	20 Feb 2140



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
23 Feb	145	10	3	08 Mar	190	8	3
24	135	12	3	09	205	10	3
25	130	12	3	10	195	15	3
26	130	10	3	11	190	14	3
27	135	5	2	12	180	14	3
28	140	10	3	13	175	10	3
29	145	10	3	14	165	5	2
01 Mar	150	10	3	15	160	5	2
02	155	5	2	16	155	5	2
03	165	10	3	17	150	5	2
04	175	13	3	18	145	5	2
05	180	13	3	19	145	10	3
06	185	12	3	20	140	15	3
07	185	10	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
17 Feb	1841	1852	1905	M2.5	.023	1B	S25W16	8869	1300	78	2	
17 Feb	2017	2035	2107	M1.3	.027	2N	S29E07	8872	200	180	3	
19 Feb	1539	1554	1610	M1.3	.018	1N	S19W42	8869				
20 Feb	2200	2207	2213	M2.4	.011				1100	130	2	

### *Flare List*

Date	Time			X-ray Class.	Imp / Brtns	Optical Location Lat CMD	Rgn #
	Begin	Max	End				
14 February	0530	0530	0535		SF	N27W51	8858
	1003	1003	1012	B8.0	SF	S29E51	8872
15 February	0406	0408	0411	B8.1	SF	S15W39	8867
	0446	0447	0452		SF	N24W65	8858
	0515	0519	0522		SF	N24W65	8858
	0527	0536	0543		SF	N24W65	8858
	0546	0547	0600		SF	N24W65	8858
	0600	0606	0617		SF	N24W65	8858
	0740	0741	0743		SF	N24W66	8858
	1008	1010	1013		SF	N24W67	8858
	1522	1525	1527	B6.6			
	1618	1619	1623		SF	N26W70	8858
1639	1641	1653		SF	S23E13	8869	
16 February	1848	1855	1904	C2.1	SF	S18W45	8867
	2130	2134	2138		SF	N25W67	
	0243	0246	0250		SF	N28W69	
	0534	0537	0547		SF	N27W69	
	0605	0617	0629	C1.7			
	0842	0846	0907	C1.3	SF	S14W53	8867
	1004	1008	1016		SF	N27W69	
	1141	1145	1153	C1.3			
	1536	1536	1540	C1.3	SF	S22W04	8869
	1609	1613	1619		SF	S24W55	8868
17 February	1723	1724	1729	C1.0	SF	S15W58	8867
	1831	1831	1840	B9.2	SF	S25W03	8869
	1926	1929	1931	B9.0			
	2030	2035	2038	C2.4	SF	S17W62	8867
	2132	2139	2158	C1.8			
	0145	0150	0203	C1.8			
	0425	0432	0437	C2.6			
	0445	0447	0454		SF	S23E39	8875
	0627	0645	0719	C2.7			
	0722	0740	0750	C3.2			



*Flare List-continued*

Date	Time			X-ray Class.	Optical		Rgn #	
	Begin	Max	End		Imp / Brtns	Location Lat CMD		
17 February	1020	1026	1028	C1.2				
	1416	1443	1501	C2.5				
	1546	1546	1550		SF	S17W71	8867	
	1845	1848	1948	M2.5	1B	S25W16	8869	
	1918	1918	1931		SF	S27W10		
18 February	2019	U2031	2218	M1.3	2N	S29E07	8872	
	0016	0021	0025	C1.7				
	0509	0538	0619	C2.7				
	0726	0730	0735	C1.3				
	0840	0842	0852	C1.4	SF	S20W26	8869	
	B0938	U0939	0943	C1.1	SF	S16W78	8867	
	1803	1805	1807		SF	S18W31	8869	
	1850	1853	1857	B6.9				
	1943	1946	1952		SF	S19W33	8869	
	1957	2003	2010	B9.0	SF	S18W33	8869	
	2212	2215	2217	B6.7				
	2336	2340	2342	B7.8				
	2349	2352	2355	B8.8				
	19 February	0152	0159	0214		SF	S25W31	8869
		0224	0240	0308		SF	S25W31	8869
0308		0341	0415		SF	S25W32	8869	
0609		U0641	0648	C8.5	SF	S20W39	8869	
0613		0618	0622	C4.5				
0803		0809	0815	C1.4				
1021		1028	1048	C1.4				
1506		1547	1732	M1.3	1N	S19W42	8869	
1740		1743	1757		SF	S20W45	8869	
1902		1903	1930	C1.5	SF	S22W47	8869	
1930		1937	1941		SF	S21W46	8869	
2019		2022	2038		SF	S19W45	8869	
2134		U2213	2320	C3.7	1F	S19W47	8869	
20 February		0001	0011	0025	C5.5			
	0054	0057	0114	C8.5	1N	S25W43	8869	
	0234	0239	0243	C1.8				
	0405	0416	0447	C4.0	SF	S25W45	8869	
	0717	U0717	A0750	C3.1	SF	S19W51	8869	
	0804	0852	0924	C2.3				
	0954	0958	1002	C1.5				
	1021	U1025	A1029	C4.9	SF	S21W57	8869	
	1126	1138	1154	C2.3				
	1522	1525	1528	C1.8				



**Flare List-continued**

Date	Time			X-ray Class.	Imp / Brtns	Optical		Rgn #
	Begin	Max	End			Location Lat CMD		
20 February	1538	1539	1544	C1.9	SF	S19W55	8869	
	1732	1732	1739		SF	S19W57	8869	
	1746	1747	1750		SF	S19W55	8869	
	2200	2207	2213	M2.4				

**Region Summary**

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 8854*

01 Feb	S33E81	225	0020	02	HSX	001	A											
02 Feb	S35E70	224	0080	03	HAX	001	A											
03 Feb	S34E59	221	0100	12	CAO	005	B					1						
04 Feb	S35E46	221	0100	04	DAO	003	B											
05 Feb	S34E35	218	0080	07	DAO	005	B											
06 Feb	S34E23	217	0040	08	CSO	006	B											
07 Feb	S34E09	218	0020	03	CSO	003	B					2						
08 Feb	S33W03	217	0010	03	CSO	004	B											
09 Feb	S34W15	216	0010	03	BXO	004	B											
10 Feb	S34W31	219	0020	04	CRO	004	B											
11 Feb	S34W44	219																
12 Feb	S34W57	219																
13 Feb	S34W70	219																
14 Feb	S34W83	219																

0 0 0 3 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 217



**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								
<i>Region 8856</i>																							
02 Feb	S13E81	213	0040	02	HSX	001	A																
03 Feb	S13E69	211	0180	13	ESO	003	B																
04 Feb	S13E59	208	0120	13	ESO	003	B																
05 Feb	S13E46	207	0190	11	ESO	003	B																
06 Feb	S13E32	208	0120	11	EAO	004	B																
07 Feb	S14E19	208	0110	13	ESO	006	B														1		
08 Feb	S14E07	207	0110	11	EAO	008	B	1													1		
09 Feb	S14W07	208	0070	10	DSO	008	B																
10 Feb	S13W19	207	0060	10	DSO	007	B																
11 Feb	S14W34	208	0060	11	EAO	004	B																
12 Feb	S14W48	209	0040	10	DSO	004	B																
13 Feb	S16W61	209	0040	09	CSO	002	B																
14 Feb	S16W75	210	0030	09	CSO	003	B																
15 Feb	S16W89	211	0020	02	HAX	001	A																
																					1 0 0 2 0 0 0 0		

Crossed West Limb.

Absolute heliographic longitude: 207

<i>Region 8858</i>																							
03 Feb	N24E72	208	0030	02	HRX	001	A																
04 Feb	N26E64	203	0090	10	DSO	005	B	4	1			6	1										
05 Feb	N26E53	200	0170	13	EAI	011	B	2			1	11									1		
06 Feb	N27E40	200	0120	12	EAO	021	B	2				2											
07 Feb	N27E27	200	0110	10	DSO	019	B					4											
08 Feb	N28E14	200	0100	10	CAO	017	B	1	1			5	1										
09 Feb	N27E01	200	0070	10	CAO	016	B	1				2											
10 Feb	N27W10	198	0050	10	DSO	012	B	1					1										
11 Feb	N24W25	199	0040	11	CAO	010	B	1				4											
12 Feb	N25W38	199	0040	10	DSO	007	B		1				1										
13 Feb	N24W50	198	0020	06	CSO	004	B	1				1											
14 Feb	N25W61	196	0020	02	HRX	002	A					1											
15 Feb	N25W72	194	0040	06	CSO	003	B					8											
16 Feb	N27W79	187	0100	07	DAO	002	B																
																						13 3 1 44 4 0 1 0	

Crossed West Limb.

Absolute heliographic longitude: 200





**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</i>		<i>8862</i>																
06 Feb	S04E75	165	0090	03	HSX	001	A											
07 Feb	S05E61	166	0110	02	HAX	001	A											
08 Feb	S05E48	166	0150	02	HAX	001	A											
09 Feb	S06E35	166	0140	02	HSX	002	A											
10 Feb	S06E21	167	0140	02	HSX	001	A											
11 Feb	S06E08	166	0150	03	HSX	002	A											
12 Feb	S06W06	167	0140	02	HSX	001	A											
13 Feb	S06W19	167	0150	02	HSX	001	A											
14 Feb	S06W33	168	0140	02	HSX	001	A											
15 Feb	S06W46	168	0120	02	HSX	001	A											
16 Feb	S06W59	167	0130	02	HSX	001	A											
17 Feb	S06W72	167	0110	02	HSX	001	A											
18 Feb	S06W87	169	0080	03	HSX	001	A											

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 167

*Region 8863*

08 Feb	S14E70	144	0040	06	CSO	003	B											
09 Feb	S14E57	144	0040	02	HSX	002	A											
10 Feb	S15E44	144	0000	01	AXX	001	A											
11 Feb	S16E30	144	0000	00	AXX	002	A											
12 Feb	S16E17	144																
13 Feb	S16E04	144																
14 Feb	S16W09	144																
15 Feb	S16W22	144																
16 Feb	S16W35	144																
17 Feb	S16W48	144																
18 Feb	S16W61	144																

0 0 0 1 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 144



**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

<i>Region 8865</i>																			
08 Feb	S12E22	192	0000	00	AXX	001	A												
09 Feb	S12E09	192																	
10 Feb	S12W04	192																	
11 Feb	S12W17	192																	
12 Feb	S12W30	192																	
13 Feb	S12W43	192																	
14 Feb	S12W56	192																	
15 Feb	S12W69	192																	
16 Feb	S12W82	192																	

Crossed West Limb.

Absolute heliographic longitude: 192

<i>Region 8866</i>																			
08 Feb	N18E64	150	0000	00	AXX	001	A												
09 Feb	N15E51	150	0000	00	AXX	001	A												
10 Feb	N15E38	150																	
11 Feb	N15E25	150																	
12 Feb	N15E12	150																	
13 Feb	N15W01	150																	
14 Feb	N15W14	150																	
15 Feb	N15W27	150																	
16 Feb	N15W40	150																	
17 Feb	N15W53	150																	
18 Feb	N15W66	150																	

Still on Disk.

Absolute heliographic longitude: 150

<i>Region 8867</i>																			
09 Feb	S14E32	169	0010	04	BXO	004	B												
10 Feb	S15E19	169	0000	04	BXO	003	B												
11 Feb	S16E08	166	0020	04	BXO	007	B												
12 Feb	S16W07	168	0020	04	BXO	009	B												
13 Feb	S16W19	167	0030	08	CRO	012	B												
14 Feb	S16W33	168	0040	07	CAO	010	B												
15 Feb	S16W47	169	0070	08	DAO	011	B	1				2							
16 Feb	S16W60	168	0110	09	DAO	010	B	3				3							
17 Feb	S16W73	168	0100	09	DAO	008	B					1							
18 Feb	S16W84	166	0100	07	CAO	005	B	1				1							
								5	0	0	7	0	0	0	0				

Crossed West Limb.

Absolute heliographic longitude: 168





**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 8870*

10 Feb	N20E77	111	0060	02	HSX	001	A										
11 Feb	N18E64	110	0060	02	HAX	001	A										
12 Feb	N20E51	110	0060	02	HSX	001	A										
13 Feb	N20E38	110	0080	02	HSX	001	A										
14 Feb	N19E25	110	0060	02	HSX	001	A										
15 Feb	N19E13	109	0060	02	HSX	001	A										
16 Feb	N19E00	108	0090	02	HSX	001	A										
17 Feb	N19W14	109	0070	02	HSX	001	A										
18 Feb	N19W27	109	0090	02	HSX	001	A										
19 Feb	N18W40	109	0070	01	HSX	001	A										
20 Feb	N18W52	108	0050	02	HAX	001	A										
																	0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 108

*Region 8871*

11 Feb	S14W09	183	0010	01	AXX	003	A										
12 Feb	S14W24	185	0030	04	CSO	005	B										
13 Feb	S15W35	183	0030	05	CSO	008	B										1
14 Feb	S15W48	183	0060	06	DAO	011	B										
15 Feb	S15W62	184	0020	02	HSX	002	A										
16 Feb	S14W74	182	0000	06	BXO	002	B										
17 Feb	S14W87	182															
																	0 0 0 1 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 183

*Region 8872*

11 Feb	S28E79	095	0070	04	HSX	002	A										
12 Feb	S27E65	096	0090	04	DAO	004	B										
13 Feb	S26E53	095	0070	04	DAO	005	B										
14 Feb	S27E40	095	0050	04	DAO	005	B										1
15 Feb	S28E28	094	0030	04	CSO	006	B										
16 Feb	S28E16	092	0020	04	CRO	004	B										
17 Feb	S29E02	093	0020	05	BXO	006	B										1
18 Feb	S29W11	093	0010	03	BXO	003	B										1
19 Feb	S31W22	091	0000	01	AXX	003	A										
20 Feb	S31W34	090	0000	00	AXX	001	A										
																	0 1 0 1 0 1 0 0

Still on Disk.

Absolute heliographic longitude: 093





**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 8877</i>																	
16 Feb	S26E28	080	0010	01	HRX	001	A										
17 Feb	S25E12	083	0000	00		000											
18 Feb	S22E10	072	0010	01	HAX	001	A										
19 Feb	S22W03	072															
20 Feb	S22W16	072															
								0	0	0	0	0	0	0	0	0	
Still on Disk.																	
Absolute heliographic longitude: 072																	
<i>Region 8878</i>																	
16 Feb	S27W42	150	0030	04	CRO	004	B										
17 Feb	S26W55	150	0050	05	DAO	003	B										
18 Feb	S26W71	153	0020	01	HRX	001	A										
19 Feb	S25W85	154	0000	00	AXX	001	A										
								0	0	0	0	0	0	0	0	0	
Still on Disk.																	
Absolute heliographic longitude: 150																	
<i>Region 8879</i>																	
17 Feb	N21E74	021	0110	02	HSX	001	A										
18 Feb	N22E62	020	0170	03	HSX	001	A										
19 Feb	N22E49	020	0200	03	HSX	001	A										
20 Feb	N22E37	019	0240	03	HSX	001	A										
								0	0	0	0	0	0	0	0	0	
Still on Disk.																	
Absolute heliographic longitude: 019																	
<i>Region 8880</i>																	
20 Feb	S08W69	125	0010	04	BXO	003	B										
								0	0	0	0	0	0	0	0	0	
Still on Disk.																	
Absolute heliographic longitude: 125																	

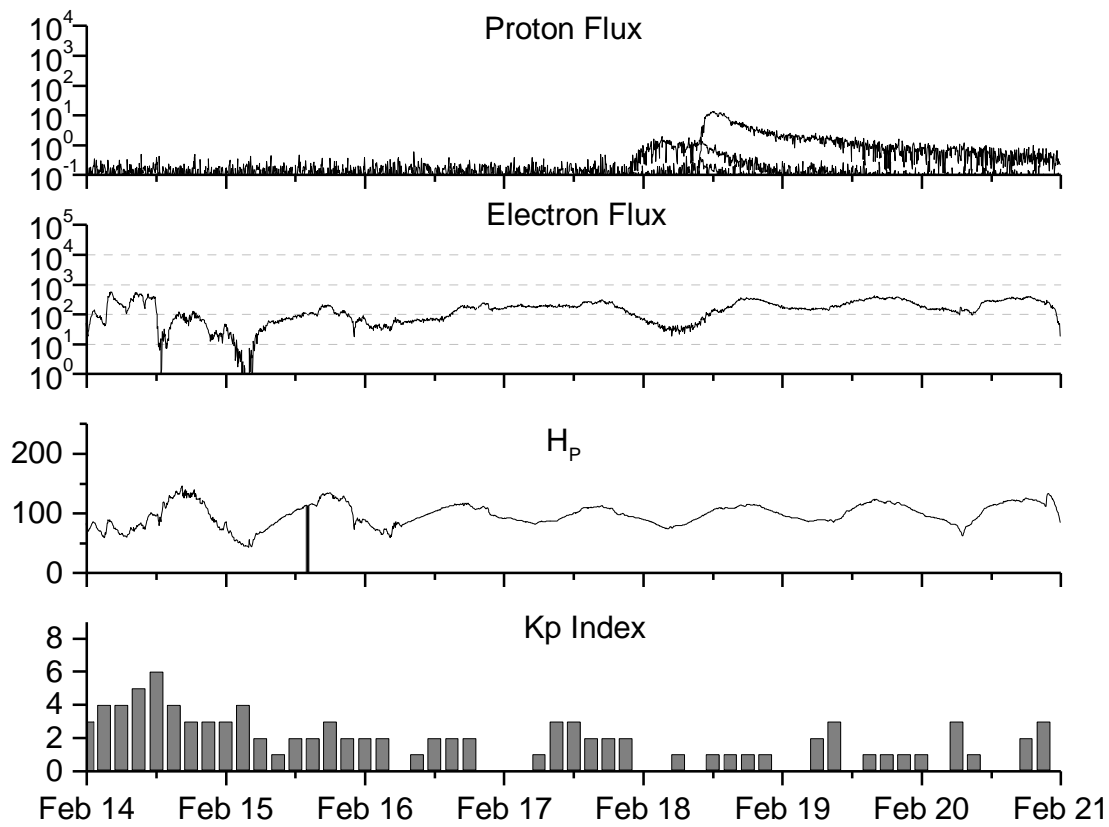


**Recent Solar Indices (preliminary)  
of the observed monthly mean values**

Month	Sunspot Numbers			Radio Flux		Geomagnetic			
	<u>Observed values</u> SWO	<u>Ratio</u> RI	<u>Smooth values</u> RI/SWO	<u>Smooth values</u> SWO	<u>*Penticton</u> SWO	<u>Smooth</u> 10.7 cm	<u>Planetary</u> Ap	<u>Smooth</u> Value	
<b>1998</b>									
February	54.4	40.3	0.74	67.4	48.9	93.4	101.7	08	10.5
March	81.8	54.8	0.67	73.3	53.4	109.1	105.8	13	11.1
April	73.6	53.4	0.73	77.7	56.5	108.3	108.9	10	11.3
May	74.3	56.3	0.76	81.4	59.4	106.7	112.0	18	11.6
June	93.6	70.7	0.76	85.9	62.5	108.4	115.8	10	11.9
July	98.3	66.6	0.68	90.3	65.5	114.0	120.3	11	12.2
August	118.6	92.2	0.78	93.7	67.8	136.0	124.1	18	12.4
September	119.0	92.9	0.78	96.1	69.5	138.3	126.8	13	12.6
October	77.0	55.5	0.72	97.7	70.5	117.3	127.9	13	12.8
November	99.5	74.0	0.74	101.3	73.0	140.2	130.0	16	12.4
December	120.8	81.9	0.68	108.8	77.9	150.1	134.3	08	11.9
<b>1999</b>									
January	94.3	62.0	0.66	116.5	82.6	142.6	139.0	10	11.7
February	93.4	66.3	0.71	120.2	84.6	142.0	142.6	12	11.6
March	100.5	68.8	0.68	120.5	83.8	126.3	144.0	14	11.7
April	92.9	63.7	0.69	123.8	85.4	117.2	145.8	12	12.2
May	140.5	106.3	0.76	131.7	90.4	148.6	150.0	08	12.4
June	208.3	137.4	0.66	136.0	93.0	169.8	152.9	07	12.4
July	169.2	113.5	0.67	138.0	94.4	165.6	154.4	10	12.3
August	136.1	93.7	0.69			170.8		15	
September	107.4	70.9	0.66			135.7		19	
October	167.7	116.4	0.69			164.9		19	
November	199.3	132.7	0.67			191.7		14	
December	123.5	86.4	0.70			169.8		10	
<b>2000</b>									
January	140.8	90.2	0.64			158.3		06	

**NOTE:** All smoothed values after November 1998 and monthly values after June 1999 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 14 February 2000*

*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.

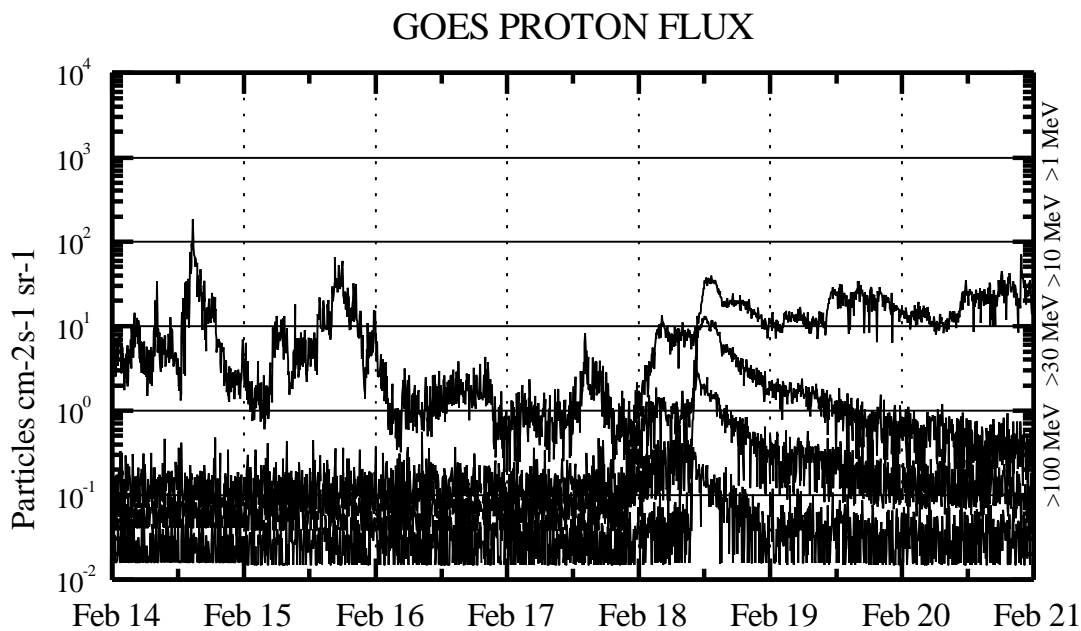
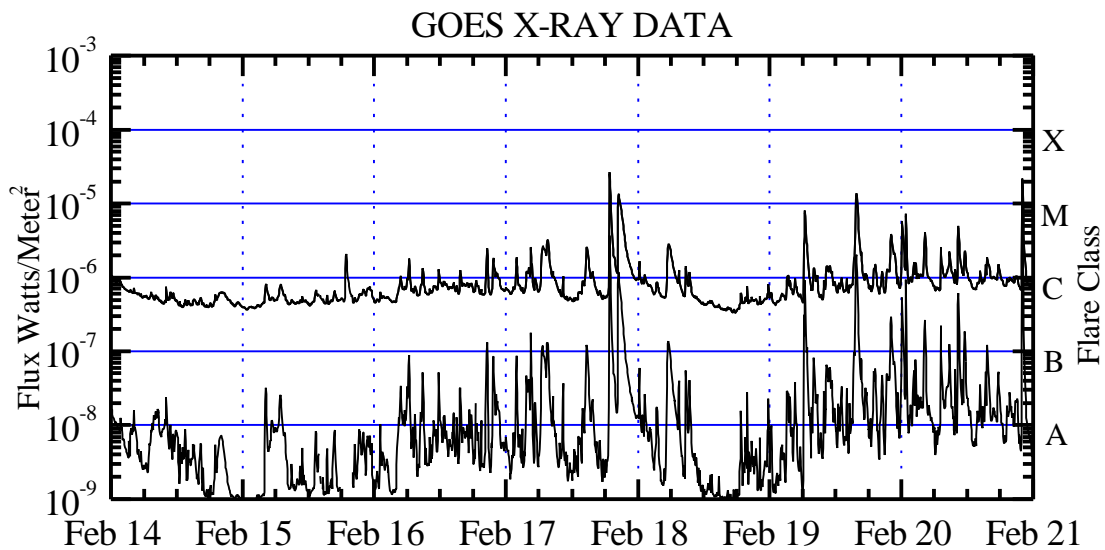
*H<sub>p</sub>* plot contains the five minute averaged magnetic field H - component in nanoteslas (nT) as measured by GOES-8. The H component is parallel to the spin axis of the satellite, which is nearly parallel to the Earth's rotation axis.

*K<sub>p</sub>* plot contains the estimated planetary 3-hour K-index (derived by the USAF 55<sup>th</sup> 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<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.

