

Space Weather Highlights
22-28 February 1999

Solar activity was low during most of the period, but rose to high levels on 28 February. Region 8471(N29, L = 100, class/area Eao/120 on 28 February) produced an impulsive M6/2B parallel-ribbon flare at 28/1638UT with moderate discrete radio emission. This flare followed a period of minor growth in the region.

Real-time solar wind data were available from the Advanced Composition Explorer (ACE) spacecraft during most of the period. Earth was within an away (positive polarity) solar sector during most of the period, but the sector shifted to toward (negative polarity) on the last day of the period. Solar wind velocities ranged from 320 - 460 km/sec. IMF Bz hovered around zero in the plus to minus 06 nT (GSM) range during most days, but was more variable on 25 and 28 February with maximum southerly deflections to minus 10 nT. Particle densities were enhanced on 24 and 27 - 28 February with peaks near 20 p/cc.

There were no significant proton enhancements detected at geo-synchronous altitude.

The greater than 2 MeV electron flux at geosynchronous altitude was at moderate to high levels on 22 February, then decreased to normal to moderate levels for the rest of the period.

The geomagnetic field was at mostly quiet to unsettled levels during 22 - 27 February with brief, localized active to minor storm intervals at high latitudes. Activity increased during the latter half of 28 February with active to major storm periods (the major storm periods were limited to high latitudes).

Space Weather Outlook
03 March - 02 March 1999

Solar activity is expected to be low during most of the period. However, an increasing trend is expected during 07 - 21 March as previously active solar longitudes (roughly L = 275 - 260) return to the visible disk. Isolated M-class flares are possible during this period.

No significant proton enhancements are expected at geosynchronous altitude.

The greater than 2 MeV electron flux at geosynchronous altitude is expected to be at normal to moderate levels during most of the period. However, fluxes may reach high levels during 11 - 12 and 28 - 29 March.

The geomagnetic field is expected to be at quiet to unsettled levels during most of the period. However, active levels are possible around 10 - 11 and 27 - 28 March due to recurrent coronal hole effects.



Daily Solar Data

Date	Radio Flux 10.7 cm	Sun spot No. (10 ⁶ hemi.)	Sunspot Area	X-ray Background	Flares							
					X-ray Flux			Optical				
					C	M	X	S	1	2	3	4
22 February	130	108	200	B4.6	1	0	0	1	0	0	0	0
23 February	127	38	200	B4.4	0	0	0	0	0	0	0	0
24 February	120	56	130	B2.4	0	0	0	2	0	0	0	0
25 February	120	66	70	B2.3	3	0	0	3	0	0	0	0
26 February	115	70	160	B2.1	2	0	0	4	0	0	0	0
27 February	115	93	140	B2.2	2	0	0	3	0	0	0	0
28 February	123	145	240	B2.0	3	1	0	7	0	1	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
22 February	6.2E+5	1.6E+4	4.4E+3		1.0E+8	
23 February	1.6E+6	1.6E+4	4.4E+3		3.2E+7	
24 February	1.0E+6	1.6E+4	4.1E+3		3.1E+7	
25 February	1.7E+5	1.6E+4	4.6E+3		6.8E+6	
26 February	1.4E+5	1.7E+4	4.5E+3		6.4E+6	
27 February	1.5E+5	1.8E+4	4.9E+3		5.5E+6	
28 February	5.5E+5	1.8E+4	5.0E+3		5.6E+6	

Daily Geomagnetic Data

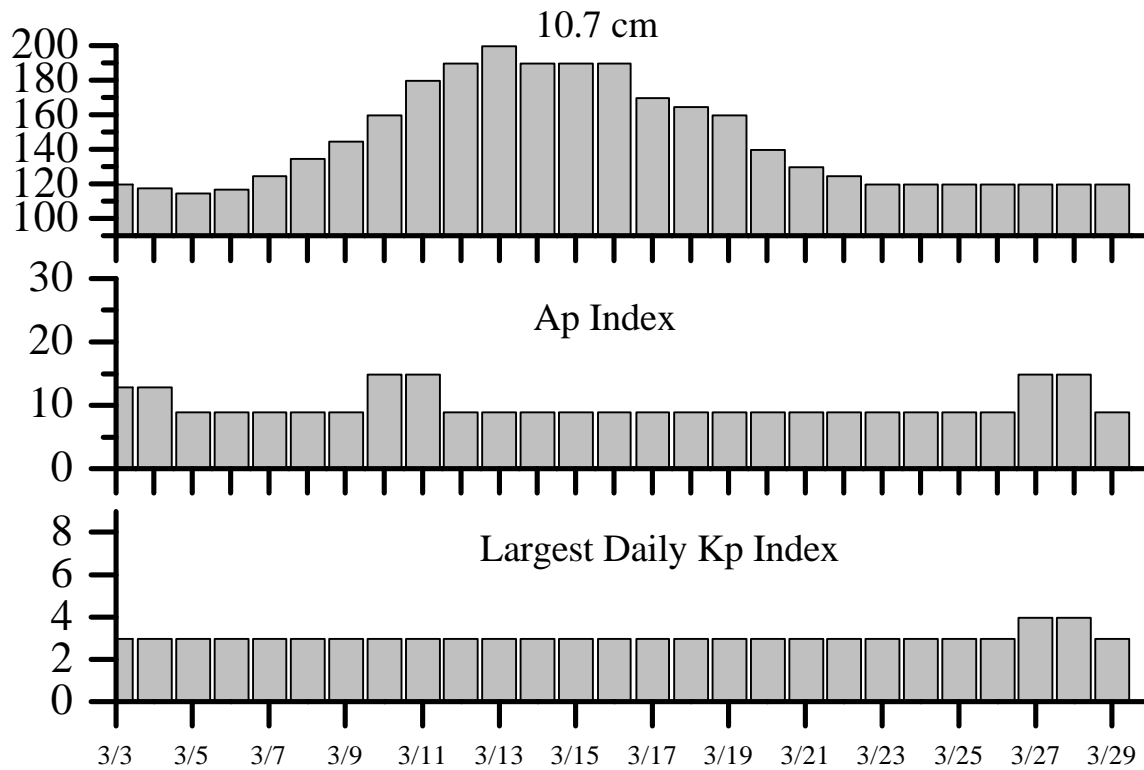
Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
22 February	5	2-2-2-1-1-0-1-2	*	1-*-2-0-0-0-1-2	4	2-1-2-1-2-0-0-2
23 February	7	2-3-2-1-2-3-1-0	*	2-2-2-*-3-2-0	7	2-2-2-3-3-2-2-0
24 February	6	1-2-2-2-2-2-2-1	*	*-0-3-5-4-4-*-*	11	0-2-3-4-4-3-2-0
25 February	5	0-4-1-1-1-1-1-0	*	0-3-1-*-1-3-1-0	7	0-4-1-3-1-2-1-1
26 February	1	0-0-0-0-2-0-0-0	1	0-0-0-0-1-1-0-0	3	0-0-0-0-1-2-1-1
27 February	4	1-0-2-3-1-1-0-1	6	0-0-2-3-4-0-0-0	5	1-0-3-3-2-1-1-1
28 February	10	0-1-1-1-3-3-3-4	17	0-0-1-0-4-5-4-4	14	0-2-2-1-3-4-4-5



Alerts and Warnings Issued

<u>Date and Time of Issue (UT)</u>	<u>Type of Alert or Warning</u>	<u>Date and Time of Event (UT)</u>
22 Feb 0019	4 - 245 MHz Bursts	21 Feb
22 Feb 0019	1- 245 MHz Noise Storms	21 Feb
22 Feb 1339	Stratwarm Alert EXISTS Monday	22 Feb
23 Feb 1200	>2MeV Electron Event ≥ 1000 pfu CONTINUED	21 Feb 1700
23 Feb 1346	Stratwarm Alert EXISTS Tuesday	23 Feb
24 Feb 0222	Type II Radio Emission	24 Feb 0151
24 Feb 1320	Stratwarm Alert EXISTS Wednesday	24 Feb
25 Feb 0602	K= 4 Observed	25 Feb 03 - 06
25 Feb 1325	Stratwarm Alert EXISTS Thursday	25 Feb
26 Feb 1306	Stratwarm Alert EXISTS Friday	26 Feb
27 Feb 1236	Stratwarm Alert EXISTS Saturday	27 Feb
27 Feb 0007	1-245 MHz Burst	26 Feb
28 Feb 1252	Stratwarm Alert EXISTS Sunday	28 Feb
28 Feb 1650	X-Ray event M6.6	28 Feb 1639
28 Feb 1825	10cm Radio Burst 310 s.f.u.	28 Feb 1635





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
03 Mar	120	13	3	17 Mar	170	9	3
04	118	13	3	18	165	9	3
05	115	9	3	19	160	9	3
06	117	9	3	20	140	9	3
07	125	9	3	21	130	9	3
08	135	9	3	22	125	9	3
09	145	9	3	23	120	9	3
10	160	15	3	24	120	9	3
11	180	15	3	25	120	9	3
12	190	9	3	26	120	9	3
13	200	9	3	27	120	15	4
14	190	9	3	28	120	15	4
15	190	9	3	29	120	9	3
16	190	9	3				



Energetic Events

Date	Time (UT)			X-ray		Optical Information			Peak		Sweep Freq	
	Begin	Max	Max	Class	Flux	Imp Brtns	Location Lat CMD	Rgn #	Radio Flux		Intensity	
									245	2695	II	IV
28 Feb	1631	1639	1643	M6.6	.022	2B	N28W06	8471	310			

Flare List

Date	Time			X-ray Class	Imp / Brtns	Optical		Rgn #
	Begin	Max	End			Location Lat CMD		
22 February	0134	0138	0143	B7.4				
	1230	1301	1425	C3.8				
	2338	2339	2342		SF	N19W68	8462	
	2355	2359	0003	B7.8				
23 February	1243	1246	1250	B6.1				
24 February	1657	1658	1701		SF	N18W29	8467	
	1726	1726	1729		SF	N17W28	8467	
25 February	0614	0617	0619	B4.8				
	0736	0741	0750	B6.7				
	0812	0816	0819	B5.9				
	0957	1000	1003	B4.8				
	1020	1027	1032	C1.1				
	1043	1048	1050	C2.4				
	1241	1242	1254		SF	N29E37	8471	
	1339	1342	1345	B4.2				
	1520	1521	1524		SF	N32E54	8472	
	1751	1757	1812	C1.2	SF	S24E36	8470	
	1823	1826	1828	B5.5				
	1936	1940	1945	B6.7				
	2056	2101	2103	B6.5				
	2215	2223	2234	B9.1				
2318	2324	2328	B4.8					
26 February	0748	0750	0755	B3.6	SF	S22E29	8470	
	0921	0943	1045	B3.9				
	B1156	U1156	1200		SF	N31E62		
	1903	1905	1914	C1.1	SF	N30E18	8471	
2019	2021	2034	C1.5	SF	N30E19	8471		
27 February	0329	0337	0349	B7.8				
	0855	0856	0904	C1.0	SF	N30E09	8471	
	1203	1208	1233	C2.1	SF	N27E09	8471	
28 February	1912	1913	1922	B8.5	SF	N28E04	8471	
	0346	0349	0352	B4.0				
	0522	0555	0628	B5.4				
	0657	0701	0711	C1.0	SF	N27W06	8471	
	1402	1402	1406		SF	N28W10	8471	
1523	1524	1534	B6.3	SF	N28W10	8471		
1618	1619	1621		SF	N28W06	8471		



Flare List-continued

Date	Time			X-ray Class	Imp / Brtns	Optical	Rgn #
	Begin	Max	End			Location Lat CMD	
28 February	1635	1638	1745	M6.6	2B	N28W06	8471
	1917	1931	1950	C2.0	SF	N28W09	8471
	2116	2118	2121		SF	N29W12	8471
	2135	2138	2219	C2.2	SF	N28W14	8471

Region Summary

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

		<i>Region 8460</i>															
10 Feb	S17E70	256	0050	02	HSX	001	A										
11 Feb	S17E61	252	0100	14	ESO	003	B										
12 Feb	S16E50	249	0050	03	CSO	005	B										
13 Feb	S16E30	256	0030	03	HSX	004	A										
14 Feb	S17E17	256	0030	04	CSO	009	B										
15 Feb	S17E04	256	0050	03	CSO	005	B										
16 Feb	S18W10	257	0020	02	CSO	003	B										
17 Feb	S17W22	256	0020	03	DAO	003	B										
18 Feb	S17W35	255	0010	03	BXO	005	B										
19 Feb	S17W48	255															
20 Feb	S17W61	255															
21 Feb	S17W74	255															
22 Feb	S17W87	255															
								0 0 0 0 0 0 0 0									

Crossed West Limb.

Absolute heliographic longitude: 256

Region 8462

12 Feb	N20E34	265	0030	05	CRO	007	B	1		1							
13 Feb	N21E21	265	0050	07	DSO	016	B	6		11							
14 Feb	N20E07	266	0080	08	DAO	021	B	3		3							
15 Feb	N19W06	266	0130	10	DAO	017	B	3	1	3	2						
16 Feb	N18W20	267	0150	11	EAO	015	B	2	1	4	3						
17 Feb	N20W27	261	0170	06	DAO	009	B	2		9							
18 Feb	N20W40	260	0160	06	DAO	006	B	2		6							
19 Feb	N20W50	256	0160	05	DAO	006	B			2							
20 Feb	N21W65	258	0130	05	CAO	005	B	4		6							
21 Feb	N20W79	259	0010	01	AXX	001	A		1	3							
22 Feb	N21W90	257	0010	01	HRX	001	A			1							
								23 3 0 49 5 0 0 0									

Crossed West Limb.

Absolute heliographic longitude: 266



Region Summary-continued

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

Region 8463

12 Feb	S16E59	240	0040	02	HSX	001	A											
13 Feb	S15E45	241	0070	02	HSX	001	A											
14 Feb	S16E33	240	0060	01	HSX	001	A											
15 Feb	S16E20	240	0080	02	HSX	002	A											
16 Feb	S17E06	241	0070	02	HSX	001	A											
17 Feb	S17W07	241	0070	02	HSX	001	A											
18 Feb	S17W19	239	0050	02	HSX	001	A											
19 Feb	S18W33	239	0050	01	HSX	001	A											
20 Feb	S17W46	239	0040	01	HSX	001	A											
21 Feb	S17W62	242	0040	10	CSO	002	B											
22 Feb	S17W72	239	0010	01	HRX	001	A											
23 Feb	S17W85	239																

0 0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 241

Region 8464

12 Feb	N19E64	235	0070	13	EAO	001	B											
13 Feb	N21E55	231	0160	13	ESO	004	B											
14 Feb	N20E42	231	0090	12	CSO	007	B											
15 Feb	N20E28	232	0090	11	CSO	006	B	2			2							
16 Feb	N19E15	232	0080	09	CSO	007	B											
17 Feb	N20E02	232	0070	09	DSO	007	B											
18 Feb	N18W11	231	0070	06	CSO	010	B	1			1							
19 Feb	N18W26	232	0050	05	CSO	006	B	1			1							
20 Feb	N18W40	233	0030	03	CSO	003	B											
21 Feb	N18W53	233	0020	03	CSO	003	B											1
22 Feb	N18W65	232	0000	00	AXX	001	A											
23 Feb	N18W78	232																

4 0 0 5 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 232



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 8466

16 Feb	S23E59	188	0000	00	AXX	001	A										
17 Feb	S24E44	190	0000	00	AXX	001	A										
18 Feb	S24E32	188	0000	00	AXX	001	A										
19 Feb	S22E20	186	0000	01	BXO	002	B										
20 Feb	S22E05	188	0000	03	BXO	002	B										
21 Feb	S22W14	194	0010	03	BXO	002	B										
22 Feb	S21W25	192	0010	04	BXO	006	B										
23 Feb	S21W38	192															
24 Feb	S21W51	192															
25 Feb	S21W64	192															
26 Feb	S21W77	192															

0 0 0 0 0 0 0 0

Died on Disk.

Absolute heliographic longitude: 188

Region 8467

16 Feb	N16E65	182	0060	01	HSX	001	A										
17 Feb	N16E56	178	0080	02	HSX	001	A										
18 Feb	N16E43	177	0090	02	HSX	002	A										
19 Feb	N16E29	177	0110	03	HSX	002	A										
20 Feb	N16E16	177	0100	03	HAX	005	A										
21 Feb	N16E03	177	0080	03	CAO	005	B										
22 Feb	N16W10	177	0060	03	CSO	005	B										
23 Feb	N17W23	176	0030	02	HSX	001	A										
24 Feb	N16W36	176	0020	01	HSX	002	A										
25 Feb	N15W49	176	0000	01	AXX	002	A										
26 Feb	N15W62	176															
27 Feb	N15W75	176															

0 0 0 2 0 0 0 0

Died on Disk.

Absolute heliographic longitude: 177

Region 8468

20 Feb	N35W66	259	0050	09	CSO	008	B										
21 Feb	N35W75	255	0070	07	CSO	005	B										
22 Feb	N35W87	254	0060	02	HSX	001	A										

1

0 0 0 1 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 259



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 8469

21 Feb	N15W18	198	0030	04	CSO	004	B											
22 Feb	N15W32	199	0040	04	CRO	009	B											
23 Feb	N15W45	199																
24 Feb	N15W58	199																
25 Feb	N15W71	199																
26 Feb	N15W84	199																
												0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 198

Region 8470

22 Feb	S23E72	095	0010	05	BXO	004	B											
23 Feb	S24E59	094	0090	07	DAO	003	B											
24 Feb	S24E45	095	0060	07	DSO	005	B											
25 Feb	S23E32	095	0040	10	CAO	009	B	1			1							
26 Feb	S24E19	095	0040	10	CSO	004	B				1							
27 Feb	S23E04	097	0030	01	HSX	001	A											
28 Feb	S23W10	098	0010	01	HSX	001	A											
												1	0	0	2	0	0	0

Still on Disk.

Absolute heliographic longitude: 097

Region 8471

23 Feb	N28E55	098	0080	02	DAO	004	B											
24 Feb	N29E41	099	0050	03	CSO	008	B											
25 Feb	N30E26	101	0020	07	BXO	011	B				1							
26 Feb	N28E15	099	0060	09	CRO	015	B	2			2							
27 Feb	N29E01	100	0080	09	DSO	014	B	2			3							
28 Feb	N29W12	100	0120	12	EAO	026	BG	3	1		7		1					
								7	1	0	13	0	1	0	0			

Still on Disk.

Absolute heliographic longitude: 100

Region 8472

24 Feb	N28E63	077	0000	00	AXX	001	A											
25 Feb	N30E50	077	0010	06	BXO	004	B				1							
26 Feb	N29E40	074	0050	07	CSO	008	B											
27 Feb	N30E27	074	0010	07	BXO	009	B											
28 Feb	N30E11	077	0030	08	CSO	011	B											
												0	0	0	1	0	0	0

Still on Disk.

Absolute heliographic longitude: 077



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 8473

26 Feb	N18E10	104	0010	03	BXO	003	B												
27 Feb	N18W04	105	0000	02	BXO	002	B												
28 Feb	N16W21	109	0000	02	BXO	002	B												
																			0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 105

Region 8474

27 Feb	S24W38	139	0010	03	BXO	002	B												
28 Feb	S24W52	140	0010	02	BXO	002	B												
																			0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 139

Region 8475

27 Feb	N32E43	058	0010	03	BXO	005	B												
28 Feb	N32E29	059	0030	07	CAO	010	B												1
																			0 0 0 0 1 0 0 0

Still on Disk.

Absolute heliographic longitude: 059

Region 8476

28 Feb	N20E19	069	0010	05	BXO	009	B												1
																			0 0 0 1 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 069

Region 8477

28 Feb	S25E77	011	0030	10	CSO	004	B												
																			0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 011



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

Month	Sunspot Numbers			Radio Flux		Geomagnetic			
	<u>Observed values</u> SWO	RI	Ratio RI/SWO	<u>Smooth values</u> SWO	RI	**Penticton 10.7 cm	Smooth Value	<u>Planetary</u> Ap	<u>Smooth</u> Value
1997									
March	14.4	08.7	0.60	20.4	13.5	73.5	75.1	08	08.9
April	24.5	15.5	0.63	24.0	16.5	74.5	76.8	10	08.6
May	28.6	18.5	0.65	26.4	18.3	74.6	78.4	08	08.6
June	22.1	12.7	0.57	29.0	20.3	71.7	80.1	07	08.6
July	17.0	10.4	0.61	32.4	22.6	71.1	81.8	06	08.5
August	36.7	24.4	0.66	35.9	25.0	79.0	83.4	07	08.3
September	52.8	51.3	0.88	40.5	28.3	96.2	85.7	10	08.4
October	33.6	22.8	0.68	45.4	31.8	84.9	88.6	11	08.6
November	53.5	39.0	0.73	49.3	35.0	99.5	91.3	11	09.0
December	57.9	41.2	0.71	54.2	39.0*	98.8	94.2*	05	09.5
1998									
January	51.8	31.9	0.62	60.6	43.7*	93.4	97.5*	08	09.9*
February	54.4	40.3	0.74	67.4	48.8*	93.4	101.7*	08	10.5*
March	81.8	54.8	0.67	73.3	53.4*	109.1	105.8*	13	11.2*
April	73.6	53.4	0.73	77.7	56.5*	108.3	109.1*	10	11.4*
May	74.3	56.3	0.76	81.4	59.3*	106.7	112.4*	18	11.7*
June	93.6	70.7*	0.76*	85.9	62.4*	108.4*	116.2*	10	12.0*
July	98.3	66.2*	0.67*	90.3	65.4*	114.0*	120.3*	11*	12.2*
August	118.6	91.7*	0.77*			136.0*		18*	
September	119.0	92.9*	0.78*			138.4*		14*	
October	77.0	55.6*	0.72*			121.9*		13*	
November	99.5	73.6*	0.74*			140.2*		16*	
December	120.8	81.6*	0.68*			150.1*		08*	
1999									
January	94.3	62.4*	0.66*			140.6*		08*	
February	93.4	66.1	0.70*			142.0*		11*	

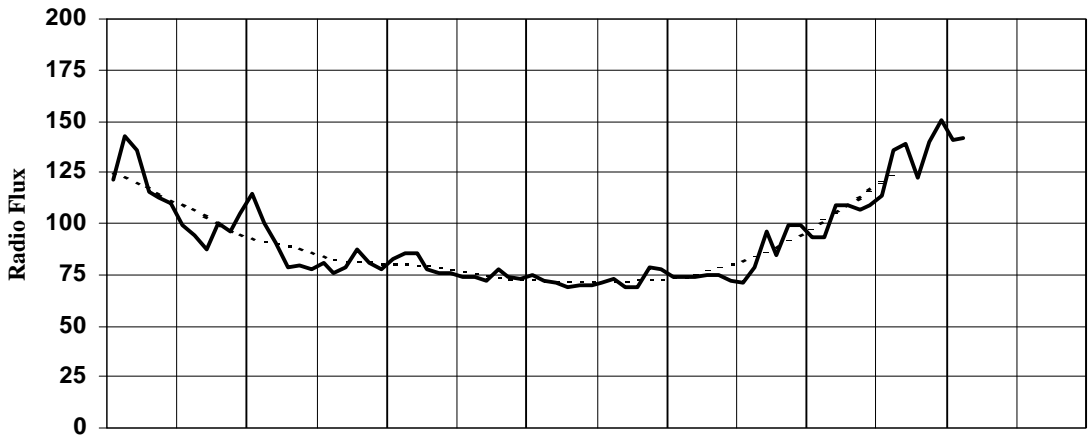
*Preliminary estimates.

The lowest smoothed sunspot indices 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.

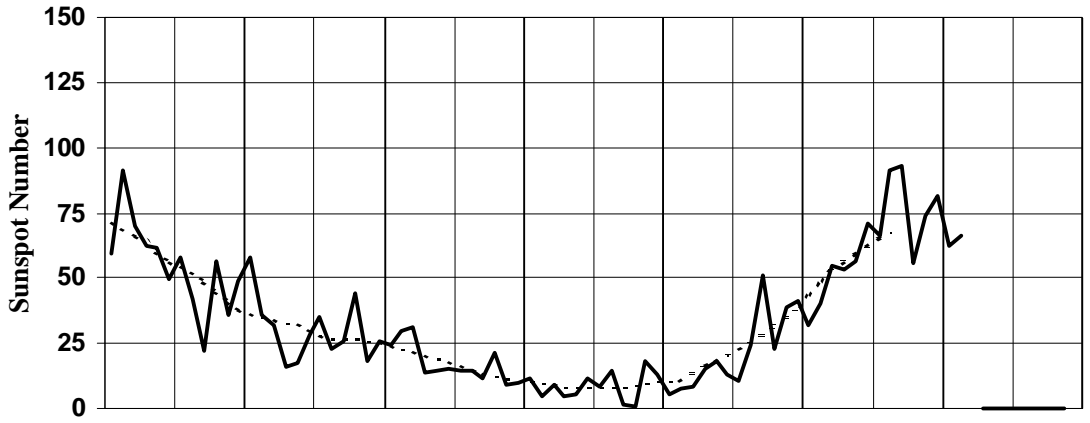
** From June 1991 onward, the 10.7-cm radio flux data source is Penticton, B.C. Canada. Prior to that, it was Ottawa.



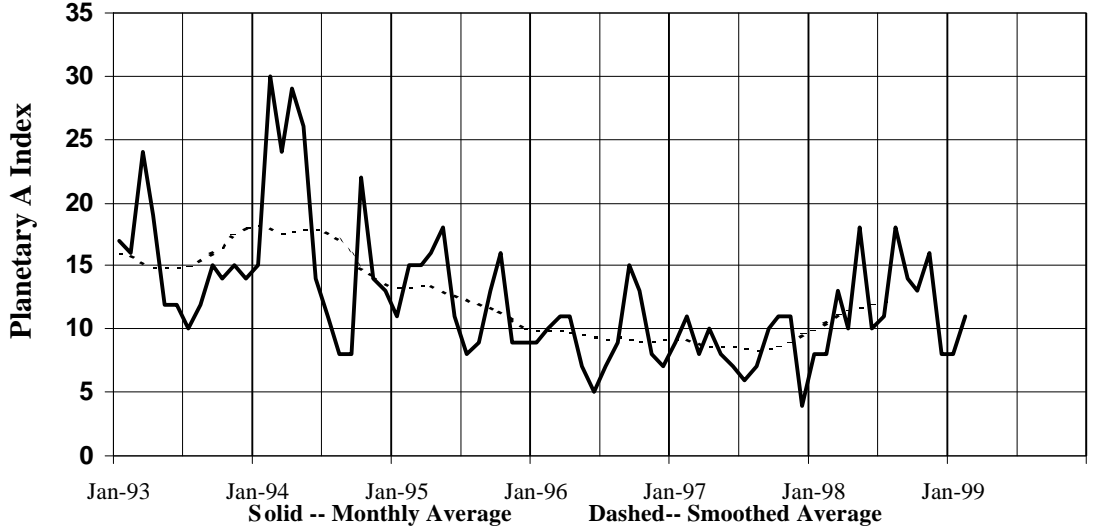
Penticton (DRAO) Radio Flux 2800MHz (10.7cm)
 (With data through 1 Mar 99 for all graphs)

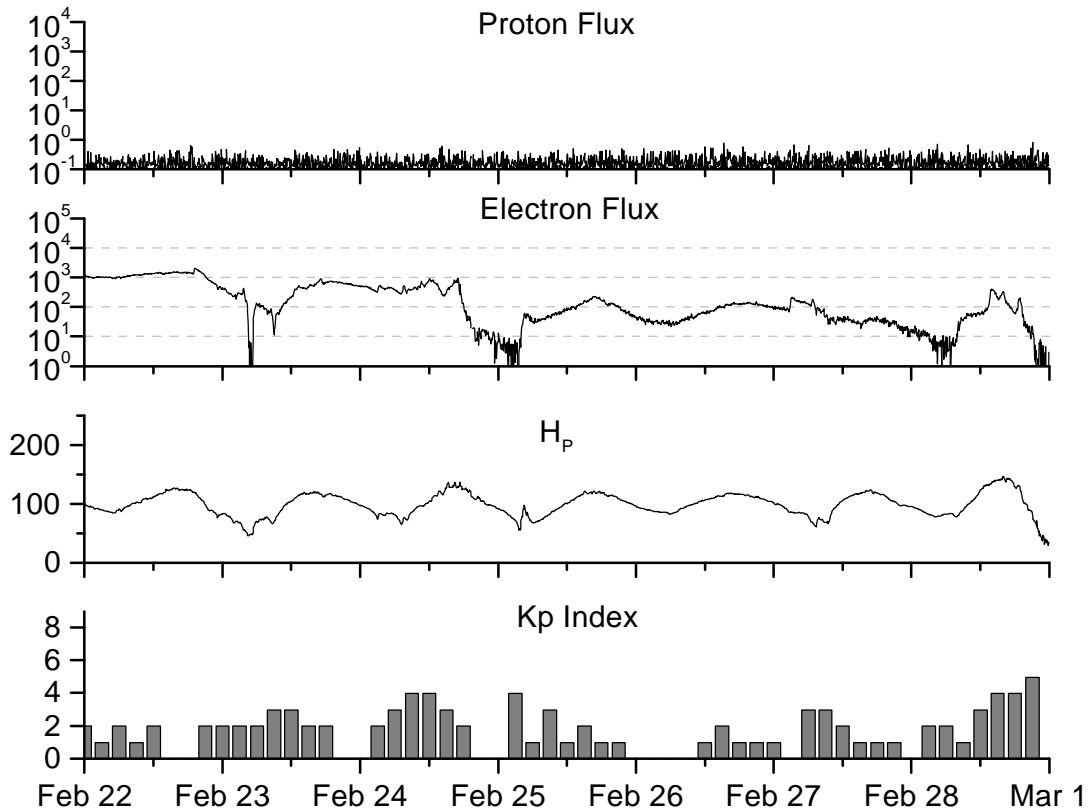


International Sunspot Number



Planetary Geomagnetic A Index (Estimated)





*Weekly Geosynchronous Satellite Environment Summary
Week Beginning 22 February 1999*

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

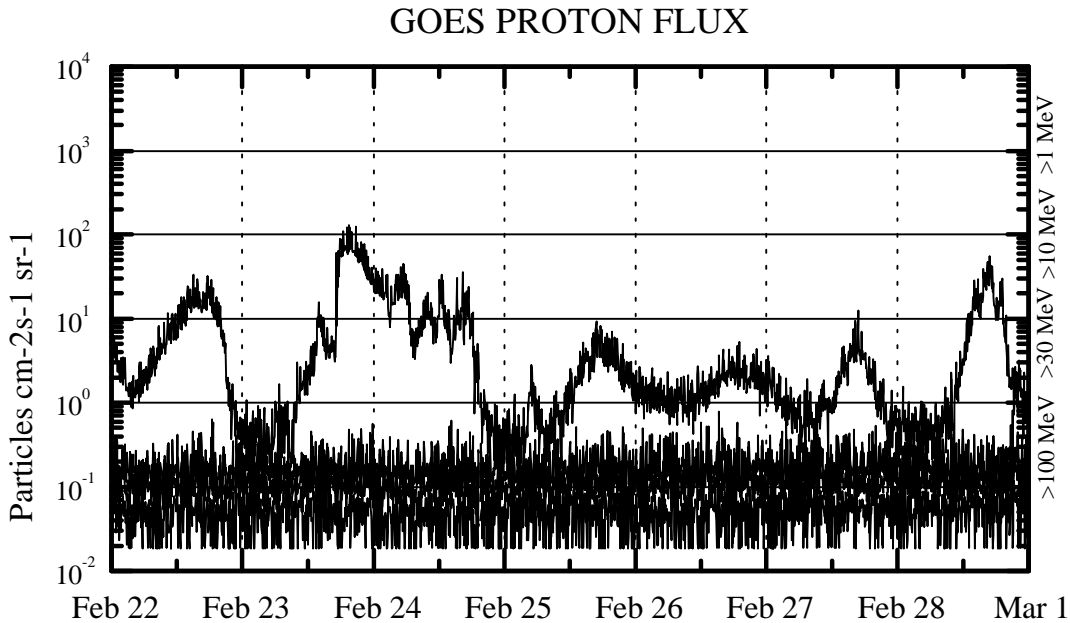
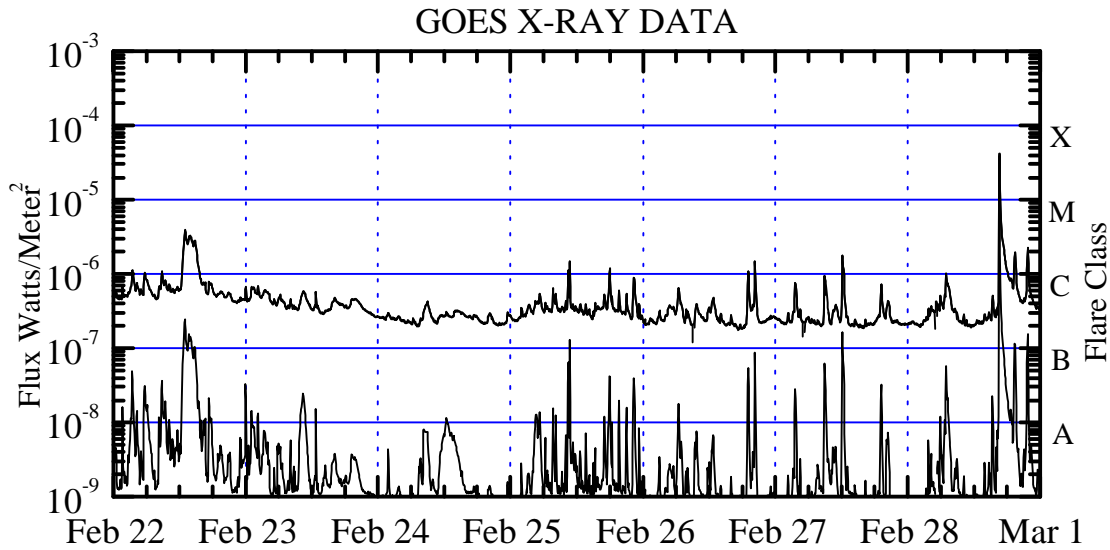
Electrons plot contains the five-minute averaged integral electron flux (electrons/ cm² -sec-sr) with energies greater than 2 MeV at GOES-8.

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

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

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





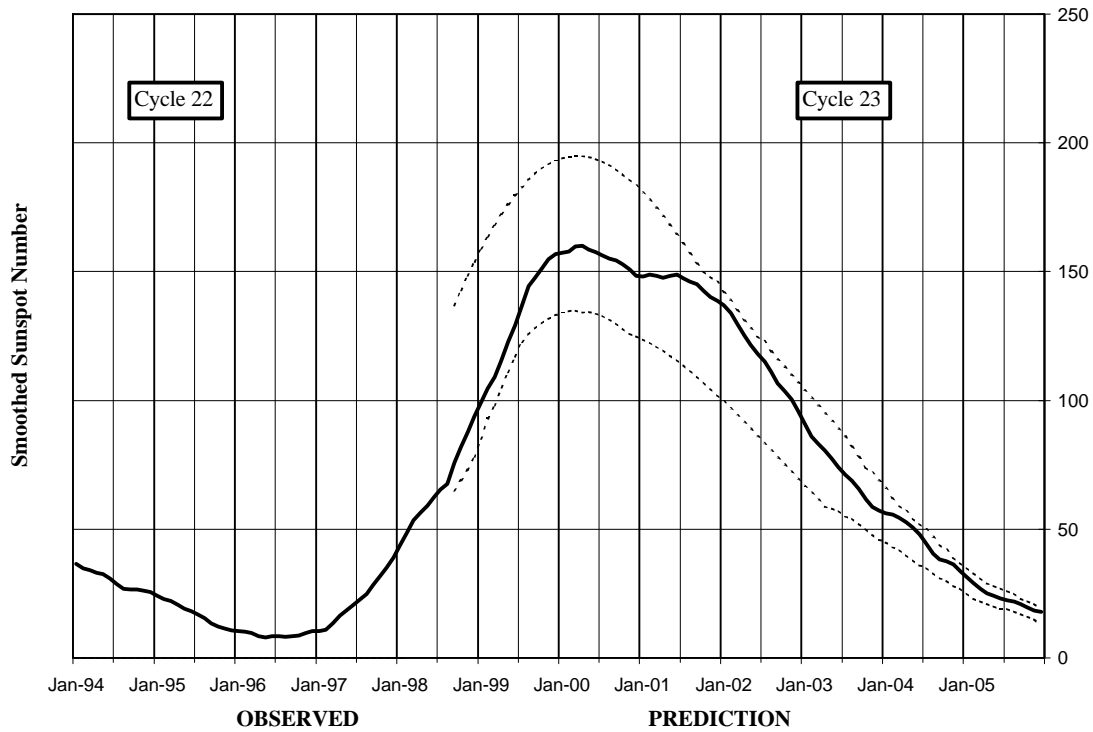
Weekly GOES Satellite X-ray and Proton Plots

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



ISES Prediction of Smoothed Sunspot Number
(With smoothed data through 1 Aug 98)

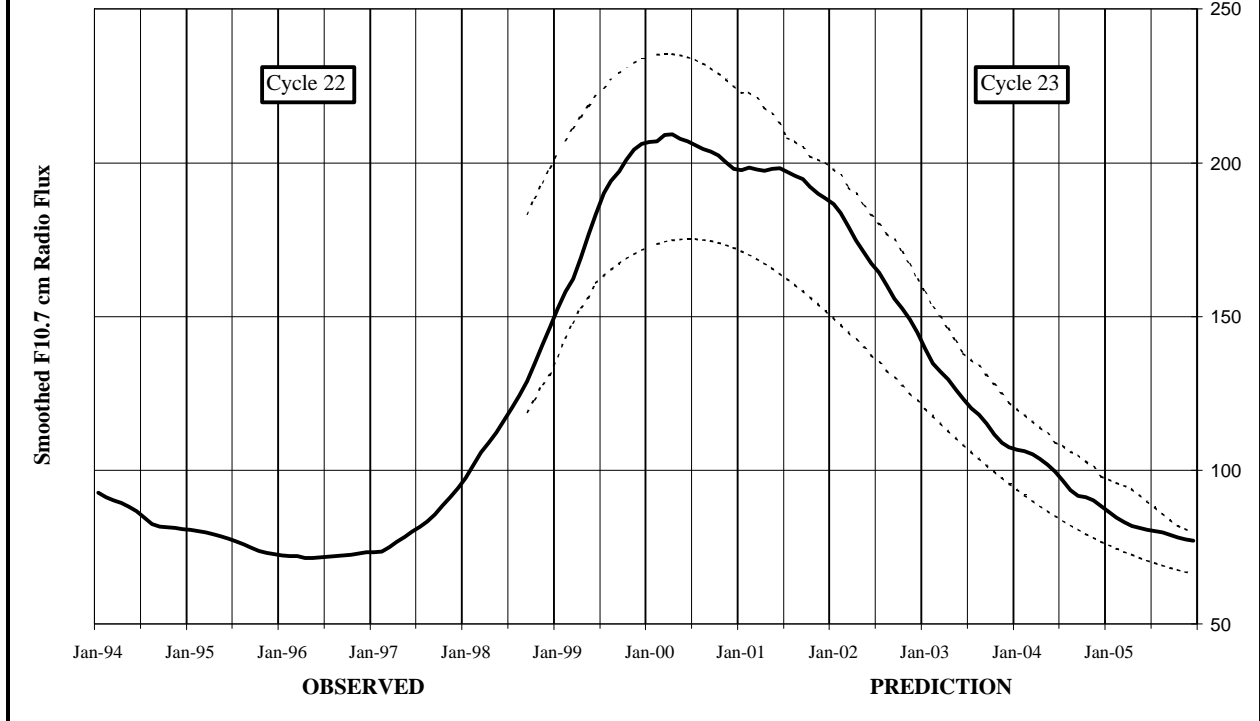


SEC Prediction of Smoothed Sunspot Number

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1996	10 (***)	10 (***)	10 (***)	8 (***)	8 (***)	9 (***)	8 (***)	8 (***)	8 (***)	9 (***)	10 (***)	10 (***)
1997	11 (***)	11 (***)	14 (***)	17 (***)	18 (***)	20 (***)	23 (***)	25 (***)	28 (***)	32 (***)	35 (***)	39 (***)
1998	44 (***)	49 (***)	53 (***)	57 (***)	59 (***)	62 (***)	65 (***)	68 (***)	76 (2)	82 (4)	88 (6)	94 (8)
1999	99 (10)	105 (13)	109 (15)	115 (17)	123 (20)	129 (22)	136 (25)	144 (27)	148 (27)	151 (28)	155 (29)	157 (29)
2000	157 (29)	158 (29)	160 (29)	160 (30)	159 (29)	158 (29)	156 (29)	155 (29)	154 (28)	153 (28)	151 (28)	148 (27)
2001	148 (27)	149 (27)	148 (27)	148 (27)	149 (27)	149 (27)	147 (27)	146 (27)	145 (27)	143 (26)	140 (26)	139 (26)
2002	137 (25)	134 (25)	130 (24)	125 (23)	122 (22)	118 (22)	115 (21)	111 (20)	107 (20)	104 (19)	100 (18)	96 (17)
2003	91 (17)	86 (16)	83 (15)	81 (15)	77 (14)	74 (13)	71 (13)	69 (12)	66 (12)	62 (11)	59 (10)	57 (10)
2004	56 (10)	56 (10)	55 (10)	53 (9)	51 (9)	48 (9)	44 (8)	41 (7)	38 (7)	38 (7)	36 (6)	34 (6)
2005	31 (5)	29 (5)	27 (5)	25 (4)	24 (4)	23 (4)	23 (4)	22 (4)	21 (3)	20 (3)	19 (3)	18 (3)



ISES Prediction of Smoothed F10.7 cm Radio Flux
(With smoothed data through 1 Aug 98)



SEC Prediction of Smoothed F10.7cm Radio Flux

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1996	73 (***)	72 (***)	72 (***)	71 (***)	71 (***)	72 (***)	71 (***)	71 (***)	71 (***)	72 (***)	72 (***)	73 (***)
1997	73 (***)	74 (***)	75 (***)	77 (***)	78 (***)	80 (***)	82 (***)	83 (***)	86 (***)	89 (***)	91 (***)	94 (***)
1998	98 (***)	102 (***)	106 (***)	109 (***)	112 (***)	116 (***)	120 (***)	124 (***)	125 (2)	131 (4)	137 (6)	142 (8)
1999	148 (10)	154 (13)	158 (15)	165 (17)	172 (20)	179 (22)	186 (25)	194 (27)	197 (26)	201 (27)	204 (28)	206 (27)
2000	207 (27)	207 (27)	209 (27)	209 (28)	208 (27)	207 (27)	206 (27)	204 (28)	204 (27)	202 (27)	200 (27)	198 (26)
2001	198 (26)	198 (26)	198 (26)	197 (26)	198 (26)	198 (26)	197 (26)	196 (26)	195 (26)	192 (26)	190 (26)	188 (26)
2002	187 (25)	184 (25)	179 (24)	175 (23)	171 (22)	167 (22)	164 (21)	160 (20)	156 (20)	153 (19)	149 (18)	145 (17)
2003	140 (17)	135 (16)	132 (15)	130 (15)	126 (14)	123 (12)	120 (12)	118 (11)	115 (11)	112 (10)	110 (9)	108 (9)
2004	107 (9)	106 (9)	105 (9)	104 (8)	102 (8)	100 (8)	97 (7)	94 (6)	92 (5)	91 (5)	90 (5)	88 (5)
2005	87 (4)	85 (4)	83 (4)	82 (3)	81 (3)	81 (3)	80 (3)	80 (3)	79 (2)	78 (2)	78 (2)	77 (2)

