

Space Weather Highlights 10 - 16 February 2003

**SWO PRF 1433
18 February 2003**

Solar activity was at low to moderate levels. The period began with B-class and minor C-class flares on 10 – 11 February. The most significant activity during this time was a long duration C1 on the west limb that occurred on 10 February at 2124 UTC. An associated CME was not Earth directed. On 12 February, Region 280 (S07, L=149, class/area Dso/40 on 08 February) produced two C-class flares, the largest was a C8.7 flare at 0151 UTC with an associated Type II radio sweep (632 km/s) and minor centimetric radio bursts. LASCO imagery indicated a narrow CME that was not Earth directed. On 12 – 13 February, Region 282 (N10, L=128, class/area Dso/50 on 13 February) produced four C-class events as the region exhibited a two-day growth phase. Moderate levels were observed on 14 February with a west limb, impulsive M1.2/Sf at 0918 UTC from Region 284 (N13, L=162, class/area Cso/20 on 09 February). While transiting the west limb Region 284 was also the source of 3 C-class flares. Activity on 15 – 16 February was at low levels. A long duration C4.5 flare was observed on 15 February from Region 276 (S14, L=160) on the west limb at 0810 UTC. Associated with this event was a CME that did not appear to be Earth directed.

Solar wind data were available from the NASA Advanced Composition Explorer (ACE) spacecraft for most of the summary period. The period began with declining solar wind speed to near 400 km/s and was associated with the subsiding effects of a coronal hole. Late on 13 February, solar wind speed increased as part of a co-rotating interacting region (CIR). On 14-15 February, following the CIR, solar wind speeds began a gradual rise marking arrival of the high speed flow from a large southern coronal hole. Solar wind speed stabilized near 650 km/s on 16 February.

There were no greater than 10 MeV proton events at geo-synchronous orbit during the summary period.

The greater than 2 MeV electron flux at geo-synchronous orbit reached high levels at the beginning and end of the period. High levels were observed on 10 – 11 February and again on 15 – 16 February.

The geomagnetic field was at quiet to active levels. The period began with residual effects of a coronal hole producing unsettled to active conditions on 10-11 February. Activity was mostly quiet to unsettled on 12 – 13 February. A CIR and large southern coronal hole increased activity to quiet to active conditions on 14 – 16 February.

Space Weather Outlook 19 February - 17 March 2003

Solar activity is expected to be at low levels early in the period. Activity and growth of Regions 276, 280, 282 and 284 as they transited the west limb, would indicate the potential for continued growth of these regions as they transit the backside. With the return of these regions around 28 February, there is an increased potential for isolated

No greater than 10 MeV proton events are expected during the forecast period.

The greater than 2 MeV electron flux is expected to reach high levels on 19 – 25 February due to recurring coronal holes.

The geomagnetic field is expected to be at quiet to isolated minor storm levels during the period. Minor storm conditions are possible on 19 - 22 February due to the large southern coronal hole and on 03 March due to a returning coronal hole. Isolated active conditions are possible on 03 - 05 March and 13 - 17 March due to returning coronal holes.



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
10 February	136	163	290	B3.1	2	0	0	0	0	0	0	0
11 February	135	134	250	B3.1	1	0	0	2	0	0	0	0
12 February	132	119	260	B2.9	4	0	0	4	1	0	0	0
13 February	131	113	250	B2.7	2	0	0	4	0	0	0	0
14 February	131	113	270	B4.1	9	1	0	2	1	0	0	0
15 February	124	96	210	B4.7	4	0	0	1	0	0	0	0
16 February	119	41	100	B2.8	3	0	0	0	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
10 February	1.3E+5	1.3E+4	3.1E+3		6.1E+7	
11 February	8.2E+4	1.4E+4	3.1E+3		3.8E+7	
12 February	2.3E+5	1.3E+4	3.0E+3		4.0E+7	
13 February	5.1E+4	1.3E+4	2.9E+3		4.5E+6	
14 February	9.1E+5	1.3E+4	3.1E+3		1.3E+7	
15 February	5.9E+5	1.3E+4	2.9E+3		1.6E+7	
16 February	7.4E+5	1.3E+4	2.9E+3		3.4E+7	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	10 February	10	3-3-3-2-2-1-1-3	34	2-3-7-5-4-3-3-2	16
11 February	7	3-2-3-1-1-1-1-1	15	3-2-4-3-4-3-2-1	12	4-3-3-2-2-3-3-1
12 February	8	2-2-1-2-2-3-2-2	18	1-0-2-5-3-5-3-2	12	2-2-2-3-3-4-3-3
13 February	3	1-1-0-1-1-1-1-2	5	1-1-0-3-3-1-0-1	8	2-2-1-2-3-3-2-3
14 February	16	5-3-1-2-4-3-2-2	30	3-3-1-5-6-5-4-2	19	4-3-2-3-4-4-4-3
15 February	14	3-3-2-3-4-4-2-1	36	3-3-2-6-6-6-3-1	18	3-3-3-4-4-4-3-2
16 February	9	2-2-3-2-2-2-2-3	28	2-3-3-5-6-4-3-3	15	2-3-4-3-4-3-3-4

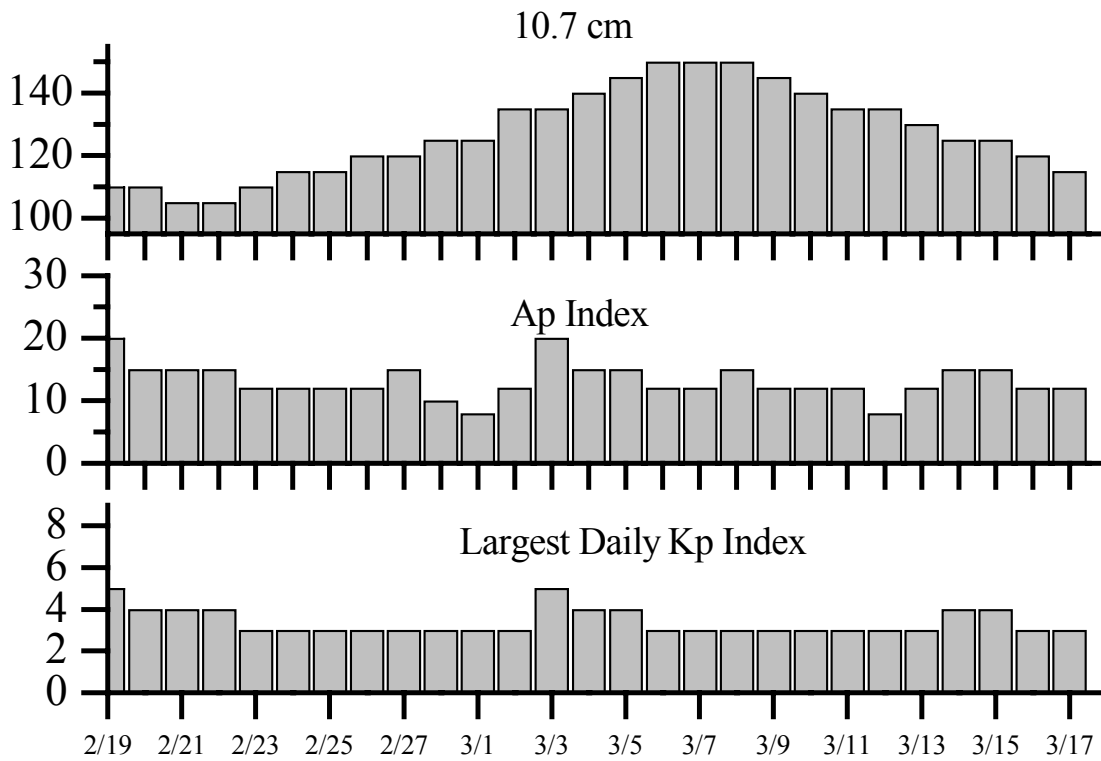


Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UT
10 Feb 0546	WARNING: Geomagnetic K= 4	10 Feb 0547 - 1500
10 Feb 0548	ALERT: Geomagnetic K= 4	10 Feb 0547
10 Feb 1321	ALERT: STRATWARM	10 Feb
10 Feb 1346	ALERT: Electron 2MeV Integral Flux > 1000pfu	10 Feb 1330
10 Feb 2339	WARNING: Geomagnetic K= 4	10 Feb 2340 - 11 Feb 1500
11 Feb 1318	ALERT: STRATWARM	11 Feb
11 Feb 1547	ALERT: Electron 2MeV Integral Flux > 1000pfu	11 Feb 1530
12 Feb 0301	ALERT: Type II Radio Emission	12 Feb 0151
12 Feb 1220	ALERT: STRATWARM	12 Feb
12 Feb 1542	ALERT: Electron 2MeV Integral Flux > 1000pfu	12 Feb 1535
13 Feb 0012	1 - 245 MHz Burst	12 Feb
13 Feb 1329	ALERT: STRATWARM	13 Feb
14 Feb 0054	ALERT: Geomagnetic K = 4	14 Feb 0052
14 Feb 0434	WARNING: Geomagnetic K = 4	14 Feb 0435 - 1500
14 Feb 0438	ALERT: Geomagnetic K = 4	14 Feb 0437
14 Feb 1333	ALERT: STRATWARM	14 Feb
14 Feb 1456	EXTENDED WARNING: Geomagnetic K= 4	14 Feb 0435 - 2359
14 Feb 2328	EXTENDED WARNING: Geomagnetic K= 4	14 Feb 0435 - 15 Feb 2359
15 Feb 1228	ALERT: STRATWARM	15 Feb
15 Feb 2348	EXTENDED WARNING: Geomagnetic K= 4	14 Feb 0435 - 16 Feb 2359
16 Feb 1405	ALERT: Electron 2MeV Integral Flux exceeded 1000pfu	16 Feb 1345
16 Feb 1728	ALERT: STRATWARM	16 Feb
16 Feb 2354	EXTENDED WARNING: Geomagnetic K= 4	14 Feb 0435 - 17 Feb 1500



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
19 Feb	110	20	5	05 Feb	145	15	4
20	110	15	4	06	150	12	3
21	105	15	4	07	150	12	3
22	105	15	4	08	150	15	3
23	110	12	3	09	145	12	3
24	115	12	3	10	140	12	3
25	115	12	3	11	135	12	3
26 Feb	120	12	3	12	135	8	3
27	120	15	3	13	130	12	3
28	125	10	3	14	125	15	4
01 Mar	125	8	3	15	125	15	4
02	135	12	3	16	120	12	3
03	135	20	3	17	115	12	3
04	140	15	4				



Energetic Events

Date	Time			X-ray		Optical Information			Peak		Sweep Freq	
	Begin	Max	½	Class	Integ Flux	Imp/ Brtns	Location		Radio Flux		Intensity	
			Max				Lat	CMD	245	2695	II	IV
14 Feb	0907	0918	0923	M1.2	.006	Sf	N13W86	284				

Flare List

Date	Time			X-ray Class.	Imp / Brtns	Optical		Rgn
	Begin	Max	End			Location	Lat CMD	
10 February	0222	0230	0242	C1.2				277
	0344	0348	0407	B6.6				
	2124	2242	2341	C1.1				
11 February	0050	0056	0103	B7.0				
	0837	0840	0859		Sf	S05W33		280
	1512	1515	A1532		Sf	S19W15		277
	1718	1731	1743	C2.3				280
	2155	2200	2204	B9.9				276
12 February	0145	0157	0248	C8.7	1f	S05W43		280
	0525	0528	0530	B7.2				283
	0539	0539	0601	C2.4	Sf	N10W22		282
	0744	0751	0757	B8.0				
	0954	1001	1009	B7.5				
	B1356	U1356	1423	B7.7	Sf	N11W26		282
	B1603	U1603	1607	C2.9	Sf	S03W54		280
	B1604	U1604	1639		Sf	N11W29		282
	1745	1748	1750	B7.2				280
	1846	1855	1906	B5.0				282
13 February	2101	2112	2123	C2.3				282
	0123	0125	0133	B8.4	Sf	S03W55		280
	0457	0505	0509	C1.8	Sf	N09W39		282
	1110	1120	1143	B7.1				282
	1547	1551	1554	B5.4				276
	B1616	U1616	1625	B8.2	Sf	N11W42		282
	2327	2328	2339	C2.2	Sf	N13W84		284
14 February	0203	0205	0208	C5.0	Sf	N13W82		284
	0402	0406	0411	B5.6				276
	0519	0521	0536	C5.2	1f	N13W84		284
	0628	0637	0646	C1.7				282
	0702	0711	0718	C1.2				
	0837	0847	0857	C1.4				284
	0914	0917	0924	M1.2	Sf	N13W86		284
	1126	1147	1157	C1.2				284
	1247	1303	1311	C1.3				284
1417	1425	1433	C2.2				276	



Flare List - continued.

Date	Time			X-ray Class.Brtns	Imp /	Optical		Rgn Lat CMD
	Begin	Max	End			Location		
14 February	1919	1928	1937	C2.1				280
	2127	2131	2137	B9.4				287
15 February	0046	0052	0056	B9.1				
	0310	0328	0338	C1.2				
	0606	0610	0615	C1.2				282
	0727	0810	0902	C4.5				276
	1356	1405	1417	C1.4				282
	1622	1622	1626	B6.4	Sf	S20E73		288
	1733	1738	1741	B5.4				
	1820	1830	1840	B6.2				
16 February	0130	0145	0216	C1.0				276
	0302	0325	0340	C1.1				276
	1005	1008	1010	B4.6				
	1320	1326	1330	B9.5				
	2014	2024	2039	B6.6				
	2236	2242	2254	C1.4				

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 276</i>																	
01 Feb	S15E78	162	0180	09	Dao	007	B	8	1	3							
02 Feb	S14E66	161	0240	11	Eai	008	B	7		5							
03 Feb	S14E54	160	0280	12	Eai	025	B	1									
04 Feb	S13E40	162	0260	13	Eai	020	Bg										
05 Feb	S13E27	161	0180	13	Eai	021	Bg										
06 Feb	S13E15	160	0130	14	Eai	026	B			1							
07 Feb	S13W01	162	0090	14	Esi	031	Bg										
08 Feb	S13W14	163	0060	12	Eso	014	B										
09 Feb	S12W26	162	0070	15	Eac	028	B			1							
10 Feb	S14W39	161	0040	10	Dso	016	B										
11 Feb	S14W51	160	0030	06	Dso	004	B										
12 Feb	S14W64	160	0060	07	Cso	006	B										
13 Feb	S14W77	160	0070	06	Cao	005	B										
14 Feb	S14W90	160	0090	07	Dao	004	B										
								16	1	0	10	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 162



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 277

04 Feb	S20E66	136	0010	03	Bxo	002	B	1				1					
05 Feb	S20E54	134	0020	02	Bxo	002	B					1					
06 Feb	S18E41	134	0020	06	Bxo	007	B	1				5					
07 Feb	S19E25	134	0020	00	Hrx	001	B					1					
08 Feb	S21E17	132	0020	06	Cro	008	B										
09 Feb	S19E06	130	0030	05	Dso	008	B										
10 Feb	S19W07	129	0040	06	Dso	012	B	1									
11 Feb	S18W21	130	0030	06	Dso	011	B					1					
12 Feb	S18W34	130	0030	09	Dso	009	B										
13 Feb	S18W47	130	0020	05	Bxo	005	B										
14 Feb	S18W60	130	0020	04	Cro	004	B										
15 Feb	S18W73	130															
16 Feb	S18W86	130															
									3	0	0	9	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 130

Region 278

04 Feb	N20E77	125	0080	09	Dso	006	B	1									
05 Feb	N19E65	122	0110	06	Dso	006	B					2					
06 Feb	N18E53	121	0170	07	Dao	016	B	2				8	1				
07 Feb	N18E40	122	0130	07	Dao	021	Bg										
08 Feb	N18E26	123	0070	08	Dso	014	B										
09 Feb	N17E12	124	0060	06	Dao	013	B										
10 Feb	N18W02	124	0040	04	Dao	011	B										
11 Feb	N18W16	125	0030	03	Cso	007	B										
12 Feb	N18W29	125	0020	02	Hsx	002	A										
13 Feb	N18W42	125	0020	01	Hsx	001	A										
14 Feb	N18W55	125	0030	05	Cao	005	B										
15 Feb	N18W68	125	0010	01	Axx	002	A										
16 Feb	N18W82	126															
									3	0	0	10	1	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 124



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 279

05 Feb	S10E02	186	0010	05	Bxo	004	B										
06 Feb	S13W12	187	0020	04	Bxo	007	B										
07 Feb	S13W25	187															
08 Feb	S12W35	184	0010	02	Bxo	003	B										
09 Feb	S12W48	184															
10 Feb	S12W61	184															
11 Feb	S12W74	184															
12 Feb	S12W87	184															
								0	0	0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 186

Region 280

06 Feb	S08E29	146	0040	04	Dso	005	B				2						
07 Feb	S07E16	146	0040	05	Dso	009	B										
08 Feb	S07E00	149	0040	04	Dso	009	B										
09 Feb	S07W13	149	0030	06	Dso	008	B				1						
10 Feb	S05W28	150	0030	07	Dso	009	B										
11 Feb	S06W42	151	0030	04	Dso	008	B				1						
12 Feb	S06W55	151	0020	04	Cro	005	B	2			1	1					
13 Feb	S06W68	151	0040	03	Cso	004	B				1						
14 Feb	S04W81	151						1									
15 Feb	S04W94	151															
								3	0	0	6	1	0	0	0	0	

Crossed West Limb.

Absolute heliographic longitude: 149

Region 281

06 Feb	S14E73	102	0030	01	Hsx	001	A										
07 Feb	S14E60	102	0050	01	Hax	001	A										
08 Feb	S13E46	103	0040	01	Hsx	001	A										
09 Feb	S15E33	103	0030	01	Hsx	001	A										
10 Feb	S14E20	102	0030	01	Hsx	002	A										
11 Feb	S15E07	102	0020	02	Hsx	002	A										
12 Feb	S15W06	102	0020	01	Hsx	001	A										
13 Feb	S15W19	102	0010	01	Hsx	001	A										
14 Feb	S15W32	102	0010	01	Hsx	001	A										
15 Feb	S15W45	102	0010	02	Hsx	003	A										
16 Feb	S15W58	102															
								0	0	0	0	0	0	0	0	0	

Still on Disk.

Absolute heliographic longitude: 102



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 282

07 Feb	N12E35	127	0020	03	Bxo	004	B								
08 Feb	N12E22	127	0000	00		000									
09 Feb	N11E08	128	0010	02	Axx	002	A								
10 Feb	N11W06	128	0010	00	Axx	002	A								
11 Feb	N10W19	128	0030	02	Hrx	004	A								
12 Feb	N10W32	128	0040	05	Dao	009	B	2		3					
13 Feb	N10W45	128	0050	06	Dso	011	B	1		2					
14 Feb	N10W58	128	0050	08	Dso	007	B	1							
15 Feb	N10W71	128	0100	05	Dao	003	B								
16 Feb	N11W82	125	0040	07	Cao	003	B								
								4	0	0	5	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 128

Region 283

07 Feb	N01E52	110	0040	04	Cso	003	B								
08 Feb	N01E38	111	0050	06	Dao	005	B								
09 Feb	N00E25	111	0050	07	Dso	013	B								
10 Feb	N01E13	109	0030	06	Dso	005	B								
11 Feb	N00E00	109	0020	06	Dso	005	B								
12 Feb	N00W13	109	0020	04	Cso	005	B								
13 Feb	N00W26	109	0010	02	Axx	003	A								
14 Feb	N00W39	109	0020	05	Cso	004	B								
15 Feb	N00W52	109	0020	05	Cro	005	B								
16 Feb	N01W67	111													
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 109

Region 284

08 Feb	N12W14	163	0020	04	Cro	004	B								
09 Feb	N13W26	162	0020	04	Cso	004	B								
10 Feb	N14W41	163	0000	00	Axx	001	A								
11 Feb	N12W56	165	0000	00	Axx	001	A								
12 Feb	N12W69	165													
13 Feb	N12W82	165						1		1					
14 Feb	N12W95	165						4	1	2	1				
								5	1	0	3	1	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 163



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 285

08 Feb	S10E75	074	0060	04	Hsx	001	A								
09 Feb	S11E65	071	0070	02	Hax	001	A								
10 Feb	S11E51	071	0070	03	Cao	002	B								
11 Feb	S11E38	071	0060	03	Cao	002	B								
12 Feb	S11E25	071	0050	04	Cso	002	B								
13 Feb	S11E12	071	0030	03	Cao	003	B								
14 Feb	S11W01	071	0030	04	Cao	004	B								
15 Feb	S11W14	071	0020	06	Bxo	008	B								
16 Feb	S12W27	070	0010	03	Cso	004	B								

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 071

Region 286

09 Feb	S11W17	153	0010	03	Cso	005	B								
10 Feb	S13W32	154	0000	03	Bxo	003	B								
11 Feb	S13W45	154													
12 Feb	S13W58	154													
13 Feb	S13W71	154													
14 Feb	S13W84	154													
15 Feb	S13W97	154													

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 153

Region 287

14 Feb	N12W50	120	0020	03	Cro	004	B								
15 Feb	N12W63	120	0040	02	Hax	004	A								
16 Feb	N12W77	121													

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 120

Region 288

15 Feb	N12E72	345	0010	01	Hsx	001	A				1				
16 Feb	N11E59	344	0050	06	Dso	004	B								

0 0 0 1 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 344

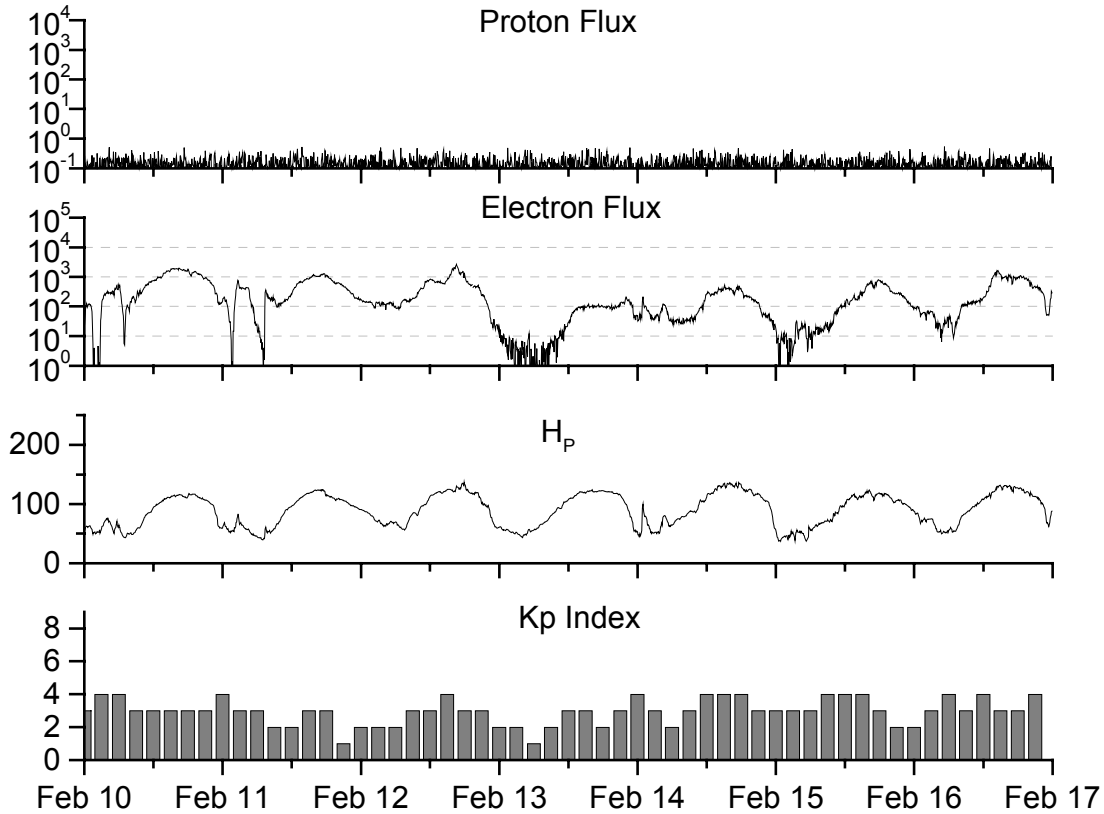


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

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
2001									
February	131.0	80.1	0.61	151.4	104.2	146.7	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	178.1	171.7	18	12.7
May	135.1	97.3	0.72	163.1	108.8	147.9	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	163.1	188.8	13	12.5
September	229.1	150.7	0.66	178.8	114.3	233.8	191.3	13	12.8
October	197.4	125.6	0.64	179.5	114.1	208.1	191.9	20	12.0
November	178.6	106.5	0.60	183.7	115.6	212.7	193.7	16	12.0
December	217.5	131.8	0.61	184.5	114.7	235.6	193.9	09	12.2
2002									
January	189.0	113.9	0.60	184.8	113.5	227.3	194.6	08	12.4
February	194.5	108.0	0.56	188.6	114.7	205.0	197.2	10	12.8
March	153.1	98.1	0.64	188.9	113.3	180.3	195.7	10	13.0
April	194.9	120.4	0.62	186.2	110.4	189.8	191.5	15	13.2
May	204.1	120.8	0.59	183.6	108.8	178.4	188.0	15	13.3
June	146.0	88.5	0.61	179.9	106.2	148.7	183.0	11	13.5
July	183.5	99.9	0.54	175.4	102.7	173.5	176.3	13	13.9
August	191.0	116.4	0.61			183.9		16	
September	206.4	109.3	0.53			175.8		14	
October	153.9	97.5	0.63			167.0		23	
November	159.8	95.0	0.59			168.7		16	
December	147.9	81.6	0.55			158.6		13	
2003									
January	150.0	79.5	0.53			144.0		13	

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 10 February 2003

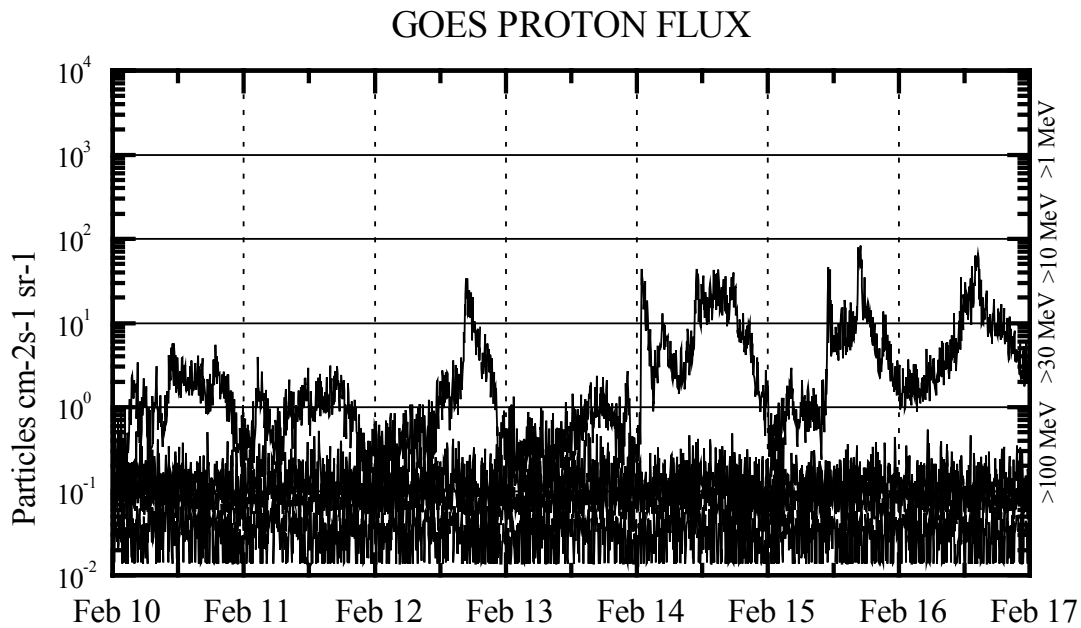
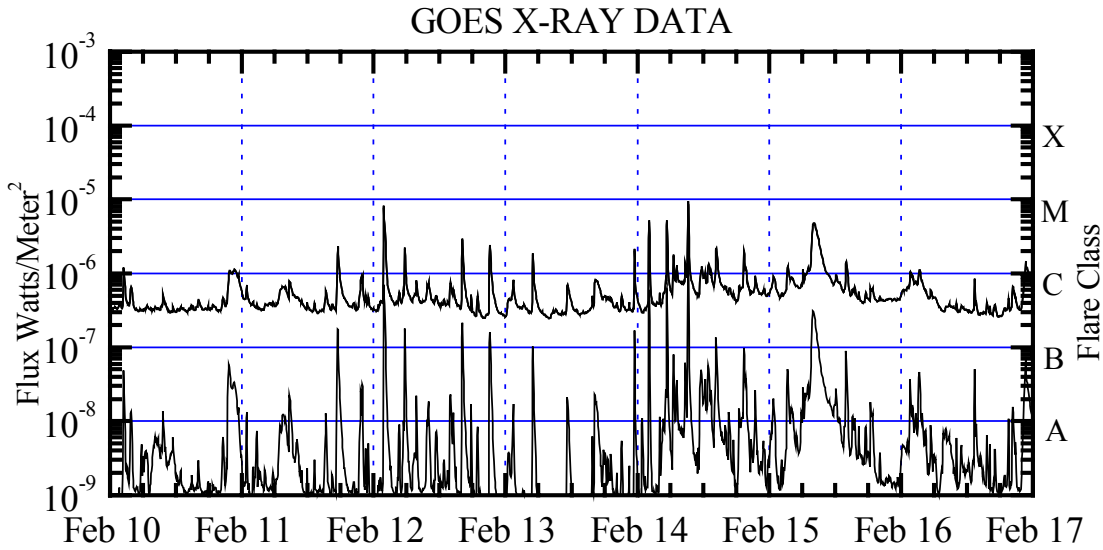
Protons plot contains the five-minute averaged integral proton flux (protons/cm²-sec -sr) as measured by GOES-8 (W75) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

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.

