

Space Weather Highlights 14 - 20 January 2002

**SWO PRF 1377
22 January 2002**

Solar activity was at low to moderate levels. The period began with activity at moderate levels due to isolated low-level M-class flares from Regions 9775 and 9782 (for flare specifics, please refer to the Energetic Events or Optical Flares lists). Region 9775 (S05, L = 310, class/area Fki/280 on 15 January) also produced an M-class flare on 16 January as it rotated out of view. It was moderately complex and may have been in a growth phase as it crossed the west limb. Region 9782 (N06, L = 223, class/area Dao/320 on 12 January) was in a gradual growth phase through 17 January, then gradually decayed during the rest of the period. A long-duration M4 X-ray flare occurred at 14/0627 UTC from a source beyond the Sun's southwest limb. This flare was associated with a Type II radio sweep and a non-Earth-directed halo CME. Activity dropped to low levels on 15 January, then returned to moderate levels on 16 January as Region 9775 produced an M-class flare while crossing the west limb. Region 9773 (N14, L = 326, class/area Eki/570 on 11 January) also crossed the west limb on 16 January following a period of gradual decay. Activity decreased to low levels during 17 – 18 January with isolated C-class flares. Activity rose to moderate levels on 19 January by virtue of an impulsive M-class flare from Region 9787 (S07, L = 130, class/area Cko/420 on 20 January), which had begun to gradually develop. Activity dropped to low levels on the last day of the period with isolated C-class subflares.

Solar wind data were available from the NASA Advanced Composition Explorer (ACE) spacecraft for most of the period. No significant disturbances were observed during 14 – 18 January. A high-speed stream associated with a coronal hole commenced on 19 January and was in progress as the period came to a close. Solar wind velocities increased to as high as 570 km/sec during the course of this stream (which subsided on 21 January).

A greater than 10 MeV proton event occurred during 15 – 16 January. It began at 15/1435 UTC, reached a maximum of 15 PFU at 15/2000 UTC, and ended at 16/1205 UTC. The source for this event may have been the long-duration M4 X-ray flare on 14 January.

The greater than 2 MeV electron flux at geosynchronous orbit ranged from normal to (briefly) high levels during 14 – 19 January, then decreased to normal to moderate levels.

Geomagnetic field activity was at quiet to unsettled levels through 18 January. Activity increased to unsettled to minor storm levels during the latter half of 19 January, then decreased to quiet to unsettled levels on 20 January.

Space Weather Outlook 23 January - 18 February 2002

Solar activity is expected to be at low to moderate levels. Isolated low-level M-class flares will be possible throughout the period. There will be a chance for isolated major flare activity beginning 30 January as old Region 9773 returns to the visible disk.

There will be a chance for a proton event at geosynchronous orbit during the latter half of the forecast period.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at normal to moderate levels during most of the period. However, high flux levels will be possible during 07 – 10 February.

Geomagnetic field activity is expected to be at quiet to unsettled levels during most of the period. However, active conditions will be possible during 06 – 08 February due to coronal hole effects.



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
14 January	229	191	1580	C2.0	4	4	0	7	0	1	0	0
15 January	218	155	1510		6	0	0	11	0	0	0	0
16 January	216	131	1030		12	1	0	15	0	0	0	0
17 January	212	122	1140	C1.8	7	0	0	3	0	0	0	0
18 January	211	156	1030	C1.1	2	0	0	1	0	0	0	0
19 January	214	153	1110	C1.0	8	1	0	3	0	0	0	0
20 January	222	212	1150	C1.1	2	0	0	7	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
14 January	1.3E+7	5.6E+5	3.5E+3		2.9E+7	
15 January	1.2E+7	8.2E+5	4.4E+3		3.2E+7	
16 January	9.0E+6	7.9E+5	3.8E+3		3.4E+7	
17 January	5.7E+6	3.9E+5	3.2E+3		2.3E+7	
18 January	2.5E+6	1.6E+5	3.0E+3		7.8E+6	
19 January	1.8E+6	5.6E+4	2.8E+3		8.5E+6	
20 January	3.7E+5	3.1E+4	2.9E+3		3.1E+5	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	14 January	7	2-2-1-1-3-2-1-2	11	1-1-2-3-4-2-2-3	8
15 January	4	1-1-1-2-2-1-1-1	11	1-1-1-4-4-3-1-1	6	1-2-2-2-2-2-2-2
16 January	3	1-0-2-0-1-1-1-0	4	3-1-2-2-0-0-0-0	4	1-1-3-1-1-2-1-1
17 January	6	3-1-0-2-2-2-1-1	8	0-0-1-4-2-4-1-0	6	3-1-1-2-2-3-1-2
18 January	5	2-1-1-1-3-2-1-0	10	1-1-0-3-1-2-5-0	5	2-1-0-3-2-2-1-1
19 January	11	0-2-2-3-3-4-2-2	27	0-1-1-2-6-6-3-4	11	1-1-2-2-4-4-3-3
20 January	6	2-3-1-1-1-1-2-1	8	1-1-0-4-1-3-2-1	7	3-2-1-2-2-3-2-2

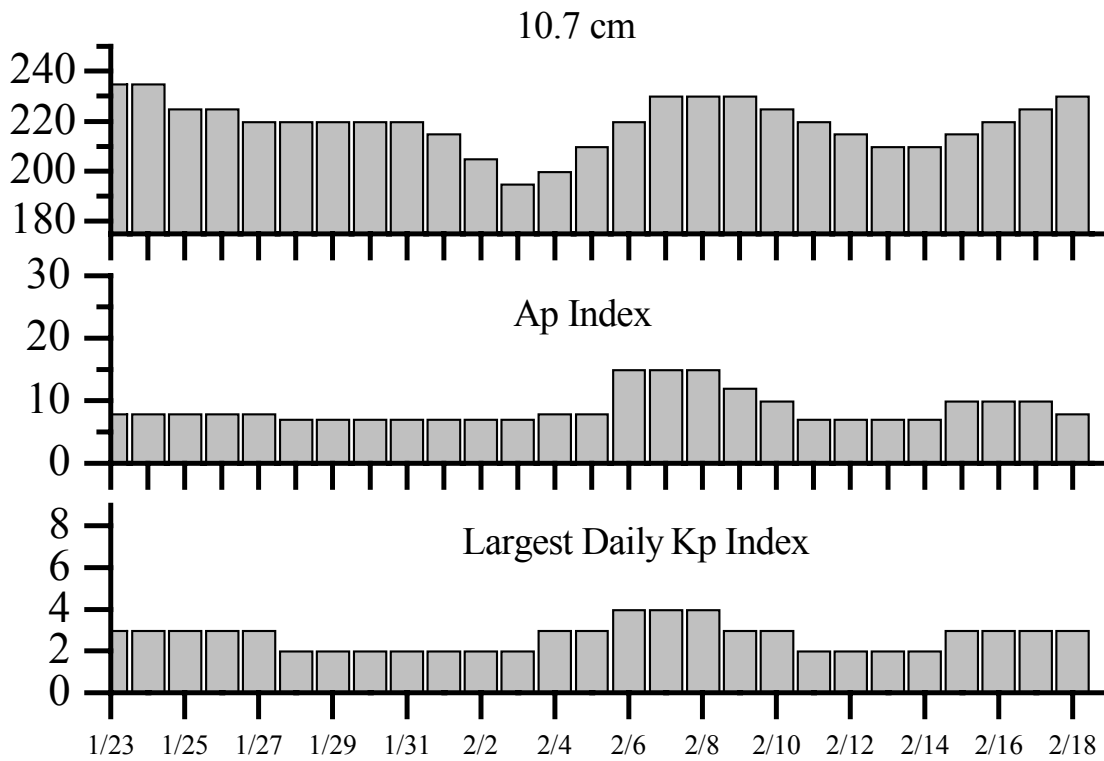


Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UT
14 Jan 0044	3 - 245 MHz Radio Bursts	13 Jan
15 Jan 1117	Proton Event $>10\text{MeV} \geq 10\text{pfu}$ Warning	15 Jan 1116 - 1500
15 Jan 1407	Protons Event $>10\text{ MeV} \geq 10\text{pfu}$	15 Jan 1320
15 Jan 1419	Electron Event $>2\text{MeV} \geq 1000\text{pfu}$	15 Jan 1355
15 Jan 1458	CONTINUED Proton Event $>10\text{MeV} \geq 10\text{pfu}$ Warning	15/1116 - 16/0000
16 Jan 0009	CONTINUED Protons Event $>10\text{ MeV} \geq 10\text{pfu}$	15 Jan 1320
16 Jan 0052	245 MHz Radio Noise Storm	15 Jan
16 Jan 1736	ENDED Protons Event $>10\text{ MeV} \geq 10\text{pfu}$	15 Jan 1320
17 Jan 0020	CONTINUED Electron Event $>2\text{MeV} \geq 1000\text{pfu}$	15 Jan 1355
17 Jan 0028	3 - 245 MHz Radio Bursts	16 Jan
18 Jan 0016	3 - 245 MHz Radio Bursts	17 Jan
18 Jan 0019	CONTINUED Electron Event $>2\text{MeV} \geq 1000\text{pfu}$	15 Jan 1355
19 Jan 1358	Electron Event $>2\text{MeV} \geq 1000\text{pfu}$	19 Jan 1340
19 Jan 1532	K= 4 Warning	19/1532 - 20/1600
19 Jan 1806	K= 5 Observed	19 Jan 1500 - 1800
20 Jan 0020	245 MHz Radio Burst	19 Jan
20 Jan 0340	CONTINUED Electron Event $>2\text{MeV} \geq 1000\text{pfu}$	19 Jan 1340



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 Jan	235	8	3	06 Jan	220	15	4
24	235	8	3	07	230	15	4
25	225	8	3	08	230	15	4
26	225	8	3	09	230	12	3
27	220	8	3	10	225	10	3
28	220	7	2	11	220	7	2
29	220	7	2	12	215	7	2
30	220	7	2	13	210	7	2
31	220	7	2	14	210	7	2
01 Feb	215	7	2	15	215	10	3
02	205	7	2	16	220	10	3
03	195	7	2	17	225	10	3
04	200	8	3	18	230	8	3
05	210	8	3				



Energetic Events

Date	Time		X-ray		Optical Information			Peak		Sweep Freq		
	Begin	Max	$\frac{1}{2}$	Class	Integ Flux	Imp/Location		Rgn #	Radio Flux		Intensity	
			Max			Brtns	Lat		CMD	245	2695	II
14 Jan 02	0120	0136	0144	M1.0	.010	Sf	S07W52	9775				
14 Jan 02	0152	0156	0203	M1.7	.008	2n	N05E44	9782	140			
14 Jan 02	0529	0627	0825	M4.4	.340						1	
14 Jan 02	2235	2246	2258	M1.1	.012	Sf	S05W65	9775				
16 Jan 02	1005	1013	1018	M1.5	.008	Sf	S05W75	9775				
19 Jan 02	1000	1005	1007	M1.2	.002	Sf	S08E64	9787	100			

Flare List

Date	Time			X-ray Class.	Optical Imp / Brtns	Optical Location Lat CMD	Rgn
	Begin	Max	End				
14 January	0123	0124	0135		Sf	N05E44	9782
	0126	U0145	0155	M1.0	Sf	S07W52	9775
	0148	0155	0310	M1.7	2n	N05E44	9782
	0359	0403	0415	C3.0	Sf	S15W03	9778
	0529	0627	0825	M4.4			
	1422	1423	1427	C7.7	Sf	S07W59	9775
	2057	2057	2101	C3.7	Sf	N03E34	9782
	2238	2238	2242	M1.1	Sf	S05W65	9775
15 January	2335	2336	2340	C4.9	Sf	N17W70	9773
	0302	0303	0308		Sf	N17W73	9773
	0433	0435	0438	C2.1	Sf	N16W76	9773
	0955	1001	1010	C2.6	Sf	N07E25	9782
	1750	1751	1756	C4.6	Sf	S06W70	9775
	1808	U1808	1830	C3.4	Sf	S08W71	9775
	1856	1907	1913		Sf	S05W75	9775
	1927	1934	1943		Sf	S05W75	9775
	2026	2027	2031		Sf	S05W75	9775
	B2120	2121	2123		Sf	S07W76	9775
16 January	2131	2132	2135		Sf	S07W76	9775
	2150	2152	2213	C3.9	Sf	S08W76	9775
	2320	2323	2328	C4.7			
	0149	0150	0203		Sf	S08W79	9775
	0306	0306	0310		Sf	S08W80	9775
	0734	0740	0744	C4.3			
	0805	0809	0814	C7.1	Sf	S07W80	9775
	0813	0813	0817		Sf	N14W89	9773
	0917	0918	0921	C4.3	Sf	S07W85	9775
	0927	0932	0938	C6.6			
1009	1010	1020	M1.5	Sf	S05W75	9775	
1226	1237	1244		Sf	S06W82	9775	
1351	1413	1438	C9.5				
1502	1508	1513	C4.6				
1525	1527	A1545	C4.1	Sf	S05W83	9775	



1542 1557 1608 C5.0

Flare List - continued.

Date	Time			X-ray Class.	Optical		Rgn
	Begin	Max	End		Imp / Brtns	Location Lat CMD	
16 January	1650	1655	1712	C4.3	Sf	S07W88	9775
	1753	1756	1816	C6.2	Sn	N15W89	9773
	1804	1804	1817		Sf	N15W89	9773
	1929	1929	1938		Sf	S06W88	9775
	2005	2005	2028	C5.8	Sf	N14W79	9773
	2019	2024	2030	C9.2			
	2046	2047	2050		Sf	S05W86	9775
	2238	2239	2243		Sf	S05W88	9775
17 January	0107	0116	0124	C3.9			
	0215	0219	0224	C2.9	Sf	S08W91	9775
	0309	0311	0319	C4.2	Sf	S09W78	9775
	0432	0435	0437	C3.0			
	0517	0521	0525	C3.1			
	1142	1146	1152	C2.5			
	1210	1215	1228	C2.4	Sf	S11E23	9783
18 January	1156	1156	1210	C1.7	Sf	N18E24	
	1520	1606	1621	C2.6			
19 January	0052	0053	0059	C4.0	Sf	S08E71	9787
	0738	0752	0800	C1.3			
	1004	1005	1011	M1.2	Sf	S08E64	9787
	1230	1239	1245	C1.5			
	1550	1559	1604	C1.6			
	1847	1852	1858	C1.7			
	2008	2008	2012	C1.8	Sf	N15E42	9788
	2116	2121	2125	C1.9			
20 January	2255	2301	2308	C1.4			
	0256	0301	0306		Sf	S08E55	9787
	0457	0459	0511		Sf	N16E37	9788
	0638	0642	0647		Sf	S07E52	9787
	0652	0655	0706		Sf	S07E51	9787
	1603	1608	1610	C3.8	Sf	N18E34	9788
	1624	1625	1638		Sf	S09E46	9787
	2310	2323	2337	C2.8	Sf	N18E28	9788



Region Summary

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

Region 9772

03 Jan	S18E83	317	0120	02	Hax	001	A											
04 Jan	S16E65	322	0060	02	Hax	001	A											
05 Jan	S17E52	321	0050	02	Hsx	001	A											
06 Jan	S17E38	322	0070	02	Hsx	001	A											
07 Jan	S17E24	323	0060	01	Hsx	001	A											
08 Jan	S16E11	323	0060	02	Hsx	001	A											
09 Jan	S16W02	323	0060	01	Hsx	001	A											
10 Jan	S16W14	321	0040	02	Hsx	001	A											
11 Jan	S16W28	322	0060	02	Hsx	002	A											
12 Jan	S16W41	322	0060	02	Hsx	002	A											
13 Jan	S17W54	322	0030	01	Hsx	001	A											
14 Jan	S17W67	322	0030	02	Hsx	001	A											
15 Jan	S17W81	323	0030	01	Hsx	001	A											
								0	0	0	0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 323

Region 9773

04 Jan	N14E64	323	0080	07	Cso	006	B	2			1	2							
05 Jan	N13E52	321	0130	08	Dso	008	B	3	1		5	1							
06 Jan	N13E36	324	0140	07	Dao	008	B	2			7								
07 Jan	N12E22	325	0120	08	Dao	013	B	4			4	1							
08 Jan	N13E07	327	0090	08	Dao	019	B	3			4								
09 Jan	N14W05	326	0300	11	Eai	027	Bgd		2		7	1	1						
10 Jan	N14W17	324	0510	14	Eac	044	Bgd	5			9								
11 Jan	N14W32	326	0570	15	Eki	028	Bgd	3			5								
12 Jan	N15W46	327	0500	16	Fki	016	Bgd	3			5	1							
13 Jan	N16W57	325	0530	16	Fki	015	Bgd	2	1		3	1							
14 Jan	N16W70	325	0460	17	Fki	012	Bgd	1			1								
15 Jan	N16W82	324	0260	13	Eao	007	Bg	1			2								
								29	4	0	53	7	1	0	0				

Crossed West Limb.

Absolute heliographic longitude: 326



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	4								
<i>Region 9775</i>																							
07 Jan	S06E37	310	0020	03	Cro	003	B																
08 Jan	S05E24	310	0040	07	Cso	010	B																
09 Jan	S05E11	310	0080	09	Dso	015	B																
10 Jan	S05W03	310	0080	07	Dso	017	B														1		
11 Jan	S05W16	310	0140	08	Dao	016	B	2													4		
12 Jan	S05W30	311	0140	12	Eao	019	Bg	1	3												4	1	
13 Jan	S05W43	311	0180	14	Eao	022	Bg	3	1													6	
14 Jan	S06W57	312	0220	16	Fai	021	Bg	1	2													3	
15 Jan	S06W69	311	0280	16	Fki	014	Bgd	3														8	
16 Jan	S06W86	314	0160	11	Eao	006	Bg	4	1													11	
								14	7	0	37	1	0	0	0	0							

Crossed West Limb.

Absolute heliographic longitude: 310

Region 9776

07 Jan	N10E59	288	0010	00	Axx	001	A															
08 Jan	N11E46	288	0040	03	Cso	003	B															
09 Jan	N11E32	289	0070	06	Dso	004	B															
10 Jan	N10E19	288	0040	07	Cso	004	B															
11 Jan	N11E04	290	0030	07	Cso	004	B															
12 Jan	N11W13	294	0020	06	Cso	005	B															
13 Jan	N11W26	294	0020	04	Cso	003	B															
14 Jan	N10W40	295	0010	03	Cso	003	B															
15 Jan	N08W50	292	0010	02	Cso	002	B															
16 Jan	N08W60	289																				
17 Jan	N08W73	289																				
18 Jan	N08W86	289																				
								0	0	0	0	0	0	0	0	0	0	0				

Crossed West Limb.

Absolute heliographic longitude: 290



Region Summary - continued.

Date	Location		Sunspot Characteristics				Flares											
	Helio		Area (10 ⁻⁶ hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical							
	(° Lat ° CMD)	Lon						C	M	X	S	1	2	3	4			
<i>Region 9779</i>																		
08 Jan	N28E65	269	0150	03	Hsx	001	A											
09 Jan	N28E53	268	0170	09	Cao	003	B						1					
10 Jan	N28E40	267	0100	04	Cao	002	B											
11 Jan	N28E27	267	0120	07	Cso	005	B						2					
12 Jan	N29E13	268	0120	06	Cso	003	B											
13 Jan	N30E02	266	0130	02	Hsx	001	A	1					3					
14 Jan	N29W12	267	0100	03	Hsx	001	A											
15 Jan	N29W24	266	0110	02	Hsx	001	A											
16 Jan	N29W38	266	0110	03	Hsx	002	A											
17 Jan	N29W53	268	0120	04	Cso	003	B											
18 Jan	N29W64	266	0090	02	Hax	002	A											
19 Jan	N28W77	266	0070	02	Hsx	001	A											
20 Jan	N27W90	266	0030	02	Hsx	002	A											
											1	0	0	6	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 266

<i>Region 9781</i>																		
11 Jan	S06E64	230	0090	02	Hsx	001	A											
12 Jan	S05E52	229	0080	02	Hsx	001	A											
13 Jan	S05E39	229	0060	02	Hsx	001	A											
14 Jan	S04E25	230	0060	03	Hsx	001	A											
15 Jan	S05E13	229	0060	02	Hsx	001	A											
16 Jan	S05W01	229	0080	02	Hax	002	A											
17 Jan	S04W14	229	0100	01	Hsx	001	A											
18 Jan	S05W28	230	0080	02	Hsx	001	A											
19 Jan	S05W42	231	0080	02	Hsx	001	A											
20 Jan	S04W55	231	0060	02	Hsx	002	A											
											0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 229



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

Region 9785

13 Jan	N12E53	215	0110	07	Cao	006	B										
14 Jan	N11E41	214	0200	07	Dao	006	Bg										
15 Jan	N11E28	214	0190	06	Dao	005	Bg										
16 Jan	N10E14	214	0180	08	Dao	007	B										
17 Jan	N10E01	214	0250	07	Dao	012	B										
18 Jan	N09W14	216	0180	07	Dso	011	B										
19 Jan	N09W26	215	0120	05	Dao	007	B										
20 Jan	N11W39	215	0110	07	Dao	006	B										
									0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 214

Region 9786

16 Jan	S26E07	221	0030	06	Dso	003	B										
17 Jan	S26W06	221	0050	06	Dso	007	B										
18 Jan	S26W19	221	0030	06	Cso	015	B										
19 Jan	S25W32	221	0090	08	Dao	012	B										
20 Jan	S25W45	221	0080	08	Dao	006	B										
									0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 221

Region 9787

17 Jan	S08E85	130	0120	05	Hhx	001	A										
18 Jan	S07E71	131	0210	04	Hax	002	A										
19 Jan	S07E59	130	0360	10	Cko	006	B	1	1		2						
20 Jan	S07E46	130	0420	10	Cko	006	B				4						
								1	1	0	6	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 130

Region 9788

18 Jan	N16E52	150	0030	01	Cro	002	B										
19 Jan	N17E40	149	0080	07	Dso	008	B	1			1						
20 Jan	N17E27	149	0090	07	Dso	016	B	2			3						
								3	0	0	4	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 149



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	4									
<i>Region 9789</i>																								
18 Jan	N15E10	192	0020	04	Bxo	004	B																	
19 Jan	N15W02	191	0020	03	Bxo	005	B																	
20 Jan	N15W15	191	0020	03	Cso	007	B																	
Still on Disk.													0	0	0	0	0	0	0	0	0	0	0	0
Absolute heliographic longitude: 191																								
<i>Region 9790</i>																								
19 Jan	N28E25	164	0010	01	Hsx	001	A																	
20 Jan	N28E12	164	0000	00	Axx	001	A																	
Still on Disk.													0	0	0	0	0	0	0	0	0	0	0	0
Absolute heliographic longitude: 164																								
<i>Region 9791</i>																								
20 Jan	S03W19	195	0030	04	Cso	009	B																	
Still on Disk.													0	0	0	0	0	0	0	0	0	0	0	0
Absolute heliographic longitude: 195																								
<i>Region 9792</i>																								
20 Jan	N07E23	153	0010	03	Bxo	002	B																	
Still on Disk.													0	0	0	0	0	0	0	0	0	0	0	0
Absolute heliographic longitude: 153																								
<i>Region 9793</i>																								
20 Jan	S15E32	144	0020	05	Cro	005	B																	
Still on Disk.													0	0	0	0	0	0	0	0	0	0	0	0
Absolute heliographic longitude: 144																								
<i>Region 9794</i>																								
20 Jan	N11E65	111	0010	01	Axx	001	A																	
Still on Disk.													0	0	0	0	0	0	0	0	0	0	0	0
Absolute heliographic longitude: 111																								

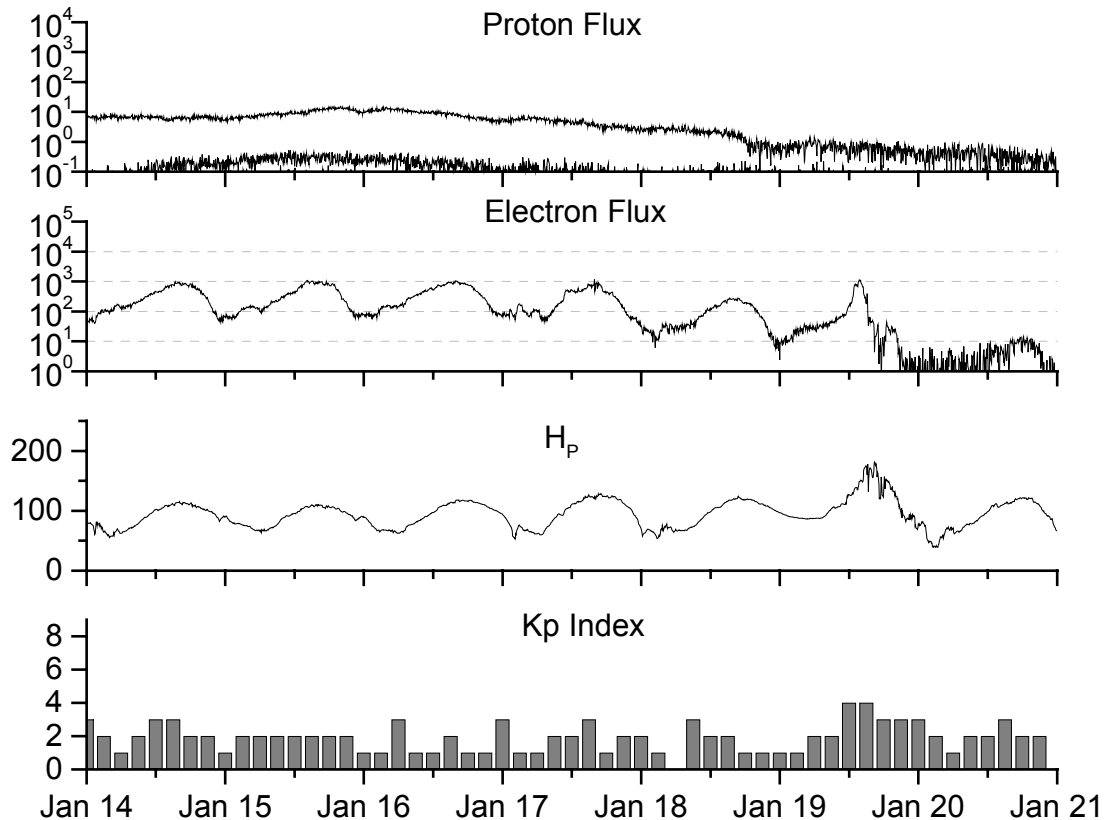


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

Month	Sunspot Numbers			Radio Flux		Geomagnetic			
	Observed values SWO	Ratio RI	Ratio RI/SWO	Smooth values SWO	Smooth values RI	*Penticton 10.7 cm	Smooth Value	Planetary Ap	Smooth Value
2000									
January	140.8	90.1	0.64	168.0	112.9	158.1	175.5	13	14.5
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
2001									
January	142.7	95.1	0.67	156.3	108.8	166.7	168.8	08	13.8
February	131.0	80.1	0.61	151.4	104.2	147.3	165.8	06	13.3
March	166.7	114.2	0.69	154.0	104.9	177.7	167.9	17	12.9
April	163.6	108.2	0.66	159.4	107.7	178.3	171.7	18	12.7
May	135.1	97.3	0.72	163.1	108.8	148.7	174.8	12	12.5
June	196.7	134.0	0.68	167.2	109.9	173.7	178.8	12	12.4
July	124.6	82.2	0.66			131.3		11	
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	

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 14 January 2002

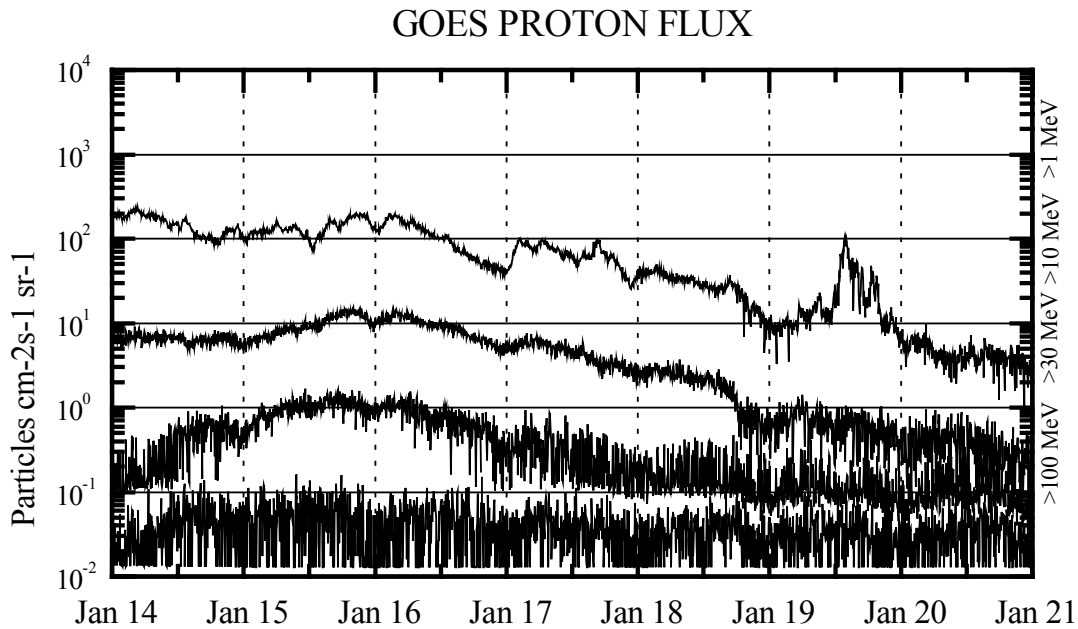
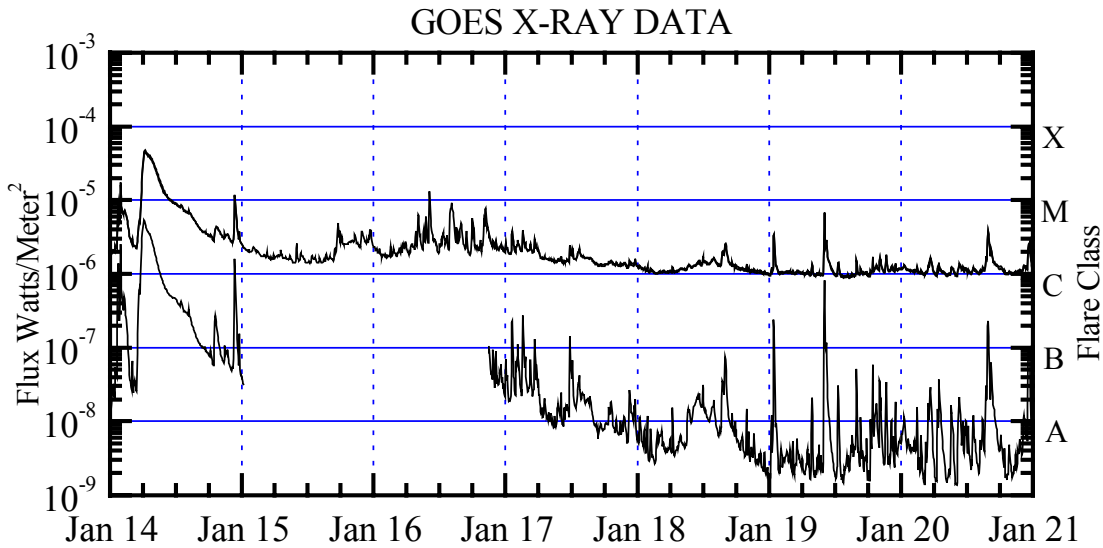
Protons plot contains the five-minute averaged integral proton flux (protons/cm²-sec-sr) as measured by GOES-8 (W75) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

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

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

K_p plot contains the estimated planetary 3-hour K-index (derived by the Air Force Weather Agency) in real time from magnetometers at Meanook, Canada; Sitka, AK; Glenlea, Canada; St. Johns, Canada; Ottawa, Canada; Newport, WA; Fredericksburg, VA; Boulder, CO; Fresno, CA and Heartland, UK. These data are made available through cooperation from the Geological Survey of Canada (GSC) and the US Geological Survey. These may differ from the final K_p values derived from a more extensive network of magnetometers. The data included here are those now available in real time at the SWO and are incomplete in that they do not include the full set of parameters and energy ranges known to cause satellite operating anomalies. The proton and electron fluxes and K_p are "global" parameters that are applicable to a first order approximation over large areas. H_p is subject to more localized phenomena and the measurements generally are applicable to within a few degrees of longitude of the measuring satellite.





Weekly GOES Satellite X-ray and Proton Plots

X-ray plot contains five-minute averaged x-ray flux (watts/m²) as measured by GOES 8 and 10 in two wavelength bands, .05 - .4 and .1 - .8 nm. The letters A, B, C, M and X refer to x-ray event levels for the .1 - .8 nm band.

Proton plot contains the five-minute averaged integral proton flux (protons/cm²-sec-sr) as measured by GOES-8 (W75) for each of the energy thresholds: >1, >10, >30 and >100 MeV. P10 event threshold is 10 pfu (protons/cm²-sec-sr) at greater than 10 MeV.

