

## **Space Weather Highlights** **22 – 28 January 2001**

**SWO PRF 1326**  
**30 January 2001**

Solar activity was at low to moderate levels during the period. Moderate levels occurred on 24, 26, and 28 January due to isolated M-class flares from several different regions. Activity was at low levels on 22 and 23 January but increased to moderate levels on 24 January due to an M1/2f flare at 24/1447 UTC from Region 9311 (N06, L=335, class/area Dao/140 on 24 January). This flare occurred during a period of gradual growth in the region. Activity returned to low levels on 25 January due to the occurrence of only C-class flares. An M1/1b flare on 26 January at 26/0607 UTC from Region 9325 (N10, L=184, class/area Hsx/050 26 January) with an associated Type II radio sweep increased activity levels back to moderate. Only isolated low-level C-class subflares occurred on 27 January. Activity increased to moderate levels on 28 January with an isolated M1/1n flare at 28/1603 UTC from Region 9313 (S04, L=272, class/area Cso/030 on 28 January) with an associated full halo CME. Significant decay was observed in Region 9313 just prior to the flare. Active Region 9306 (N12, L=058) is scheduled to return on 02 February.

Data were available from the Advanced Composition Explorer (ACE) spacecraft for most of the period. A shock passed the spacecraft at approximately 23/1008 UTC, presumably associated with the full halo CME observed on 20 January. The IMF Bz oscillated but stayed predominately positive after the shock. There were no significant transient or high speed stream signatures observed during the period.

An enhancement of the greater than 10 MeV proton flux at geosynchronous orbit was observed on 22 January and presumably related to the CME on 20 January. On 23 January the 10 MeV protons remained slightly enhanced (at about 2 pfu) and did not increase following the shock passage. The 10 MeV protons returned to baseline levels on 25 January. On 28 January a greater than 10 MeV proton event at geosynchronous orbit began at 28/2025 UTC following an M1/1n flare from Region 9313. The proton event had reached a peak of 23 pfu's at the end of the period and was still increasing.

The greater than 2 MeV electron flux at geosynchronous orbit was at normal levels during most of the period, reaching high levels only momentarily on 28 January.

The geomagnetic field activity was at quiet to active levels during most of the period.

Activity levels briefly increased to minor storm conditions during the 22/0900 - 1200 UTC interval. An isolated period of minor storm conditions was detected at high latitudes on 25 January during the 1200 - 1500 UTC interval.

## **Space Weather Outlook** **31 January - 26 February 2001**

Solar activity is expected to be at mostly low levels with isolated M-class flares possible sometime during the period.

No proton events are expected during the period.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at normal to moderate levels.

Geomagnetic field activity is expected to be at unsettled to active levels during 31 January with a fair chance for some isolated storm periods. This activity is expected in response to the CME activity observed on 28 January. Activity is expected to taper off on 01 February and be at quiet to unsettled levels for the remainder of the period, barring another Earth-directed CME.



**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
22 January	162	108	570	B6.2	2	0	0	3	0	0	0	0
23 January	167	178	610	B5.6	3	0	0	5	0	0	0	0
24 January	173	186	750	C1.1	15	1	0	14	1	1	0	0
25 January	169	163	540	B5.2	15	0	0	3	0	0	0	0
26 January	166	157	580	B5.4	5	1	0	5	1	0	0	0
27 January	167	134	580	B5.9	8	0	0	2	0	0	0	0
28 January	168	124	470	B8.1	4	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	>4Me
22 January	4.6E+6	1.5E+5	2.9E+3		2.0E+5	
23 January	1.2E+7	1.1E+5	2.4E+3		2.9E+6	
24 January	7.5E+6	7.9E+4	2.0E+3		6.1E+5	
25 January	1.2E+6	2.6E+4	2.2E+3		1.8E+6	
26 January	1.6E+6	2.6E+4	1.9E+3		8.6E+6	
27 January	8.5E+5	2.0E+4	2.1E+3		8.2E+6	
28 January	1.9E+6	2.7E+5	6.0E+3		3.0E+7	

**Daily Geomagnetic Data**

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
22 January	8	3-2-2-2-2-2-2	17	2-2-2-4-3-4-4-3	10	3-3-2-2-3-3-2-2
23 January	7	1-1-0-3-2-2-3-2	15	2-1-0-3-4-4-3-4	11	1-1-0-3-3-3-4-3
24 January	12	2-2-0-3-4-3-3-2	44	2-3-1-6-6-6-6-2	18	2-3-1-4-5-4-4-3
25 January	2	2-0-0-0-0-1-1-1	3	2-1-0-1-0-0-2-1	4	1-0-0-1-1-2-2-2
26 January	9	2-1-4-2-2-2-2-2	15	1-2-5-4-3-2-2-1	10	2-2-4-3-2-2-2-3
27 January	2	1-2-0-0-1-1-0-0	2	1-1-1-2-0-0-0-1	4	2-2-1-0-1-2-2-1
28 January	6	0-1-1-1-3-2-2-2	10	0-0-2-4-4-2-2-1	6	0-1-1-2-3-2-2-2

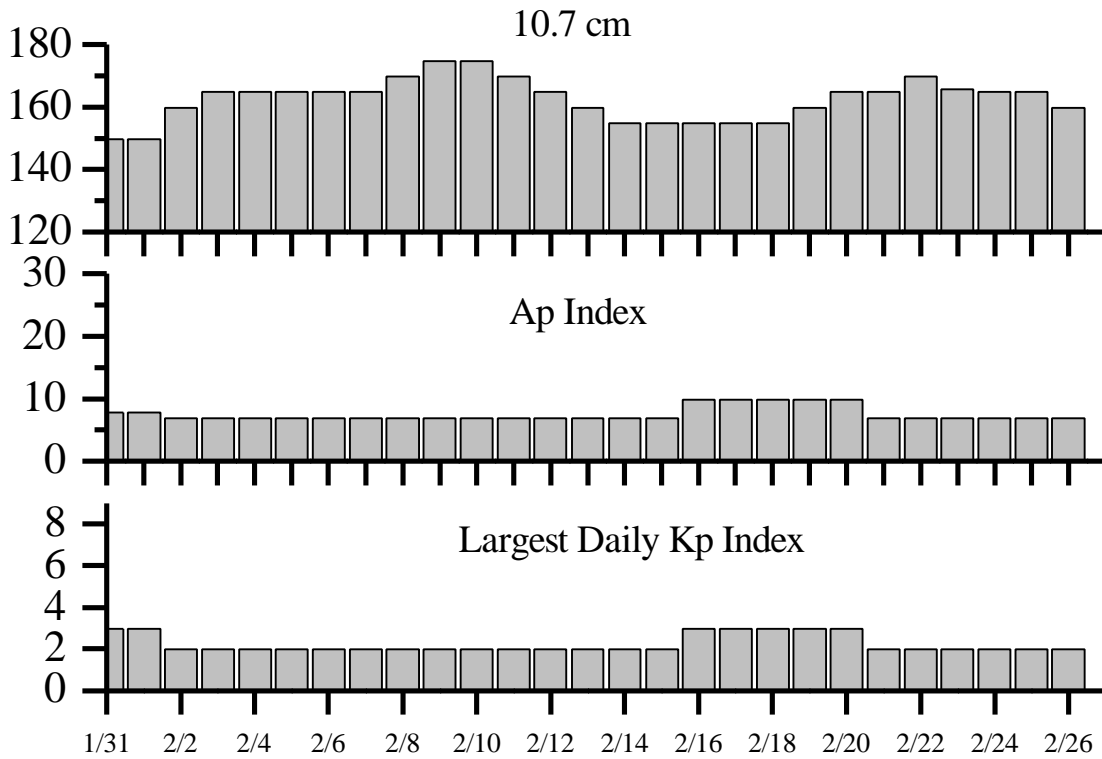


### *Alerts and Warnings Issued*

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UT
22 Jan 0025	3 - 245 MHz Bursts	21 Jan
22 Jan 2037	A $\geq$ 20 Watch	23 Jan
22 Jan 2038	A $\geq$ 20 Watch	24 Jan
23 Jan 1113	Sudden Impulse observed at Boulder	23 Jan 1047
23 Jan 1310	K = 4 Warning	23/1315 - 24/1200 Jan
23 Jan 1812	K = 4 Observed	23 Jan 15 - 18
24 Jan 0012	1 - 245 MHz Burst	23 Jan
24 Jan 1500	K = 4 Observed	24 Jan 12 - 15
24 Jan 1713	K = 4 Warning	24/1713 - 25/1200 Jan
24 Jan 1803	K = 4 Observed	24 Jan 15 - 18
25 Jan 1216	Stratwarm Alert Exists Thursday	
26 Jan 0043	2 - 245 MHz Bursts	25 Jan
26 Jan 0612	Type II Radio Emission	26 Jan 0604
26 Jan 0857	K = 4 Observed	26 Jan 0600 - 0900
26 Jan 1231	Type II Radio Emission	26 Jan 1157
26 Jan 1328	Stratwarm Alert Exists Friday	
27 Jan 0040	4 - 245 MHz Bursts	26 Jan
27 Jan 1236	Stratwarm Alert Exists Saturday	
28 Jan 0016	1 - 245 MHz Burst	27 Jan
28 Jan 1231	Stratwarm Alert Exists Sunday	
28 Jan 1448	K = 4 Warning	28 Jan 1450 - 1800
28 Jan 1509	K = 4 Observed	28 Jan 1200 to 1500
28 Jan 1526	Electron Event $>2\text{MeV} \geq 1000\text{pfu}$	28 Jan 1510
28 Jan 1710	K = 4 Warning (Cancelled)	28 Jan 1450 - 1800
28 Jan 1953	Proton Event $>10\text{MeV} \geq 10\text{pfu}$ Warning	28 Jan 1951 to 2359
28 Jan 2044	Protons Event $>10\text{MeV} \geq 10\text{pfu}$	28 Jan 2025
28 Jan 2340	Proton Event $>10\text{MeV} \geq 10\text{pfu}$ Warning (Cont)	28/1951 - 29/1200 Jan



*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
31 Jan	150	8	3	14 Feb	155	7	2
01 Feb	150	8	3	15	155	7	2
02	160	7	2	16	155	10	3
03	165	7	2	17	155	10	3
04	165	7	2	18	155	10	3
05	165	7	2	19	160	10	3
06	165	7	2	20	165	10	3
07	165	7	2	21	165	7	2
08	170	7	2	22	170	7	2
09	175	7	2	23	166	7	2
10	175	7	2	24	165	7	2
11	170	7	2	25	165	7	2
12	165	7	2	26	160	7	2
13	160	7	2				



### *Energetic Events*

Date	Time		X-ray		Optical Information			Peak		Sweep Freq		
	Begin	Max	½ Max	Class	Integ Flux	Imp/ Brtns	Location		Radio Flux		Intensity	
							Lat	CMD	245	2695	II	IV
24 Jan	1437	1447	1450	M1.0	.004	2f	N06W77					
26 Jan	0553	0607	0613	M1.0	.005	1b	N10E63		350	79	2	
28 Jan	1540	1600	1624	M1.5	.030	1n	S04W59		690	130		

### *Flare List*

Date	Time			X-ray Class.	Optical Imp / Brtns	Location Lat CMD	Rgn
	Begin	Max	End				
22 January	0542	0545	0550		Sf	N07W38	9311
	0642	0646	0707	C2.7	Sf	S05E24	9313
	0934	0935	0942		Sf	N06W39	9311
23 January	2157	2205	2215	C2.8			
	0256	0303	0326	B9.8			
	0443	0444	0449		Sf	S06E13	9313
	0936	0936	0940		Sf	S06E49	9321
	1747	1759	1818	C2.5			
	2036	2037	2044	C4.3	Sf	N05W65	9311
	2154	2156	2200		Sf	N05W65	9311
	2312	2313	2317		Sf	S07E01	9313
24 January	2319	2324	2334	C2.2			
	0010	0023	0033		Sf	N04W65	9311
	0041	0051	0247	C9.2	1f	N06W65	9311
	0124	0124	0129		Sf	S07E00	9313
	0202	0205	0226		Sf	S06E00	9313
	0220	0220	0225		Sf	S06E45	9321
	0249	0254	0255		Sf	N04W67	9311
	0249	0249	0255		Sf	S21W03	9322
	0404	0419	0425	C1.6			
	0525	0534	0547	C2.6			
	B0723	U0723	0732	C1.8	Sf	S05E41	9321
	0818	0818	0827	C1.3	Sf	N04W69	9311
	0828	0831	0834	C1.2			
	0842	0842	0905		Sf	N03W70	9311
	1055	1106	1111	C6.4			
	1230	1231	1252	C2.2	Sf	S17W80	9319
	1441	1444	1501	M1.0	2f	N06W77	9311
	1548	1548	1557	C6.3	Sf	N06W78	9311
1708	1713	1722	C1.4				
1825	1829	1848	C4.5	Sf	N06W78	9311	
1929	1933	1939	C2.1	Sf	N07W79	9311	
2019	2022	2025	C1.9				



*Flare List – continued.*

Date	Time			X-ray Class.	Optical		Rgn
	Begin	Max	End		Imp / Brtns	Location Lat CMD	
24 January	2046	2047	2049	C1.4	Sf	N07W80	9311
	2323	2345	2348	C4.2			
25 January	0026	0031	0035	C1.7			
	0145	0150	0155	C1.0			
	0213	0219	0224	C2.9			
	0313	0319	0324	C1.3			
	0547	0551	0600	C1.2			
	0608	0614	0619	C1.5			
	0707	0713	0718	C7.4			
	0816	0823	0835	C4.0			
	0850	0854	0857	C4.2			
	1022	1028	1036	C2.9			
	1102	1106	1115	C1.2			
	1143	1147	1152	C1.8			
	1220	1220	1226	C1.1	Sf	N05W89	9311
	1400	1402	1415	C1.4	Sf	S06W29	9313
1442	1443	1446		Sf	S08W28	9313	
26 January	1552	1557	1605	C1.4			
	0253	0300	0309	C1.6			
	0558	0607	0630	M1.0	1b	N10E63	9325
	0853	0853	0907	C1.3	Sf	S07W28	9313
	1220	1222	1226	C1.6	Sf	S23W57	9320
	1424	1425	1429	B8.9	Sf	S04W32	9313
	1454	1458	1505		Sf	S27W35	9323
	1556	1752	1915	C1.3			
	2010	2012	2017	C2.4	Sf	S05W35	9313
	0555	0555	0604	C1.6	Sf	N11E48	9325
27 January	0746	0747	0800	C1.2	Sf	S05W04	9321
	1110	1114	1117	C1.0			9326
	1209	1228	1246	C2.1			
	1854	1903	1911	C3.1			
	2037	2041	2046	C1.2			
	2223	2227	2231	C1.4			
	2346	2351	2358	C1.6			
	0026	0028	0040	C1.4	Sf	S05W49	9313
28 January	0458	0459	0515	C1.6	Sf	S12E76	
	0711	0711	0714	C1.0	Sf	S04W16	9321
	0727	0727	0735	B7.7	Sf	N11E31	9325
	1255	1259	1303	B9.5			



**Flare List – continued.**

Date	Time			X-ray Class	Imp / Brtns	Location Lat CMD	Rgn
	Begin	Max	End				
28 January	1508	1546	1730	M1.5	1n	S04W59	9313
	1714	1716	1727		Sf	S05W23	9321
	1846	U1846	A2016	C2.9	Sf	S14E67	

**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 9310*

14 Jan	N26E52	341	0030	02	Cso	002	B										
15 Jan	N26E37	343	0020	01	Hrx	001	A										
16 Jan	N26E22	344	0000	00	Axx	001	A										
17 Jan	N26E09	344															
18 Jan	N26W04	344															
19 Jan	N27W15	341	0010	01	Axx	002	A										
20 Jan	N27W28	341															
21 Jan	N27W41	341															
22 Jan	N27W54	341															
23 Jan	N27W67	341															

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 344

*Region 9311*

15 Jan	N04E53	327	0050	03	Cao	004	B										
16 Jan	N04E36	330	0030	05	Cso	007	B										
17 Jan	N04E25	327	0040	05	Dso	006	B										
18 Jan	N04E11	328	0060	08	Dao	016	B										
19 Jan	N04W04	330	0080	09	Dso	011	B										
20 Jan	N05W20	333	0060	10	Cso	004	B										
21 Jan	N05W36	336	0050	08	Cso	006	B	1	1		4						
22 Jan	N05W48	335	0100	09	Dso	007	B				2						
23 Jan	N06W62	335	0140	10	Dao	011	B	1			2						
24 Jan	N06W76	336	0230	12	Eao	009	B	6	1		8	1	1				
25 Jan	N05W86	333	0060	01	Hsx	002	A	1			1						

9 2 0 17 1 1 0 0

Crossed West Limb.

Absolute heliographic longitude: 330



**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 9312</i>																		
16 Jan	N08E60	306	0060	02	Hsx	002	A											
17 Jan	N08E47	305	0020	01	Hsx	001	A											
18 Jan	N08E36	303	0020	01	Hsx	002	A											
19 Jan	N08E22	304	0020	05	Bxo	002	B											
20 Jan	N06E07	306	0010	04	Bxo	003	B											
21 Jan	N06W06	306																
22 Jan	N06W19	306																
23 Jan	N06W32	306																
24 Jan	N06W45	306																
25 Jan	N06W58	306																
26 Jan	N06W71	306																
27 Jan	N06W84	306																

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 306

*Region 9313*

18 Jan	S08E72	267	0120	10	Dao	014	B											
19 Jan	S07E57	269	0190	11	Eao	016	B		1	2								
20 Jan	S07E42	271	0220	12	Eao	014	Bg		2		1	2						
21 Jan	S07E28	272	0160	10	Dao	011	B	1		2								
22 Jan	S07E15	272	0190	12	Eai	019	B	1		1								
23 Jan	S06E01	272	0100	11	Cao	020	Bg			2								
24 Jan	S07W12	272	0130	10	Dai	034	Bg			2								
25 Jan	S07W27	274	0130	14	Eai	027	Bg	1		2								
26 Jan	S07W40	274	0140	13	Eso	020	B	2		3								
27 Jan	S06W52	273	0120	09	Dai	013	Bg											
28 Jan	S04W65	272	0030	09	Cso	007	B	1	1		1	1						

6 4 0 15 2 2 0 0

Still on Disk.

Absolute heliographic longitude: 272

*Region 9315*

19 Jan	S28E44	282	0030	06	Cso	002	B											
20 Jan	S28E31	282																
21 Jan	S28E18	282																
22 Jan	S28E05	282																
23 Jan	S28W09	282	0000	00	Axx	001	A											
25 Jan	S28W35	282																

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 282





***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

*Region 9316*

19 Jan	S17E75	251	0100	02	Hsx	003	A										
20 Jan	S17E64	249	0200	09	Dso	007	B										
21 Jan	S16E50	250	0130	07	Dao	004	B										
22 Jan	S16E38	249	0130	06	Dao	006	B										
23 Jan	S16E23	250	0100	07	Cao	008	B										
24 Jan	S15E11	249	0100	06	Cao	009	B										
25 Jan	S16W03	250	0080	05	Cao	010	B										
26 Jan	S17W16	250	0060	07	Cao	009	B										
27 Jan	S16W29	250	0040	06	Dao	005	B										
28 Jan	S14W44	251	0000	01	Axx	001	A										
										0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 250

*Region 9318*

20 Jan	S05E05	308	0020	03	Dso	002	B										
21 Jan	S04W09	309	0010	04	Bxo	006	B										
22 Jan	S04W22	309															
23 Jan	S04W35	309															
24 Jan	S04W48	309															
25 Jan	S04W61	309															
26 Jan	S04W74	309															
27 Jan	S04W87	309															
										0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 308

*Region 9319*

21 Jan	S20W43	343	0030	03	Cso	005	B										
22 Jan	S18W56	343	0030	06	Dro	007	B										
23 Jan	S18W70	343	0030	07	Bxo	005	B										
24 Jan	S18W89	349	0010	01	Axx	001	A	1			1						
								1	0	0	1	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 343



**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 9320</i>																		
21 Jan	S25E01	299	0020	03	Cso	003	B											
22 Jan	S24W11	298	0020	03	Dro	002	B											
23 Jan	S23W25	298	0010	04	Bxo	003	B											
24 Jan	S23W39	299	0030	03	Bxo	004	B											
25 Jan	S24W50	297	0000	00	Axx	001	A											
26 Jan	S25W61	295	0000	00	Axx	001	A	1				1						
27 Jan	S25W74	295																
28 Jan	S25W87	295																
									1	0	0	1	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 299

<i>Region 9321</i>																		
21 Jan	S05E69	231	0100	09	Dao	003	B											
22 Jan	S06E53	234	0100	07	Dao	007	B											
23 Jan	S06E43	230	0160	09	Dao	018	B					1						
24 Jan	S06E31	229	0180	09	Dai	024	B	1				2						
25 Jan	S05E16	231	0160	09	Dao	019	B											
26 Jan	S04E03	231	0250	09	Dao	023	B											
27 Jan	S05W10	231	0250	10	Dai	028	B	1				1						
28 Jan	S04W24	231	0300	10	Dao	020	B	1				2						
								3	0	0	0	6	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 231

<i>Region 9322</i>																		
23 Jan	S23E00	273	0010	04	Bxo	006	B											
24 Jan	S22W16	276	0020	06	Cro	007	B					1						
25 Jan	S22W32	279	0040	03	Hsx	004	A											
26 Jan	S22W44	278	0040	05	Cso	005	B											
27 Jan	S22W56	277	0050	06	Dso	005	B											
28 Jan	S22W68	275	0010	01	Axx	002	A											
								0	0	0	0	1	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 273



**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 9323*

23 Jan	S29E03	270	0000	02	Bxo	002	B											
24 Jan	S28W10	270	0020	05	Dao	004	B											
25 Jan	S29W23	270	0010	05	Cro	003	B											
26 Jan	S29W34	268	0020	06	Cro	004	B					1						
27 Jan	S29W47	268																
28 Jan	S29W60	268																

Still on Disk.

Absolute heliographic longitude: 270

*Region 9324*

23 Jan	N10E42	231	0060	02	Bxo	004	B											
24 Jan	N09E29	231	0030	03	Cso	004	B											
25 Jan	N10E16	231	0010	01	Bxo	003	B											
26 Jan	N10E02	232	0000	00	Bxo	002	B											
27 Jan	N09W11	232																
28 Jan	N09W25	233																

Still on Disk.

Absolute heliographic longitude: 232

*Region 9325*

25 Jan	N10E64	183	0050	03	Cso	004	B											
26 Jan	N10E50	184	0050	01	Hsx	002	A		1				1					
27 Jan	N11E37	184	0060	05	Dso	006	B	1					1					
28 Jan	N10E25	182	0050	05	Cso	006	B						1					
								1	1	0	2	1	0	0	0			

Still on Disk.

Absolute heliographic longitude: 182

*Region 9326*

26 Jan	N27W27	261	0020	04	Cso	001	B											
27 Jan	N27W40	261	0050	06	Dso	005	B	1										
28 Jan	N28W53	260	0040	06	Cso	003	B											
								1	0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 261



### *Region Summary*

Location		Sunspot Characteristics					Flares																
Date	( ° 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 9327</i>																							
27 Jan	N17E47	174	0010	03	Bxo	002	B																
28 Jan	N14E32	175	0000	02	Bxo	002	B																
Still on Disk.																							
Absolute heliographic longitude: 175																							
<i>Region 9328</i>																							
28 Jan	N06W58	265	0040	05	Dao	003	B																
Still on Disk.																							
Absolute heliographic longitude: 265																							

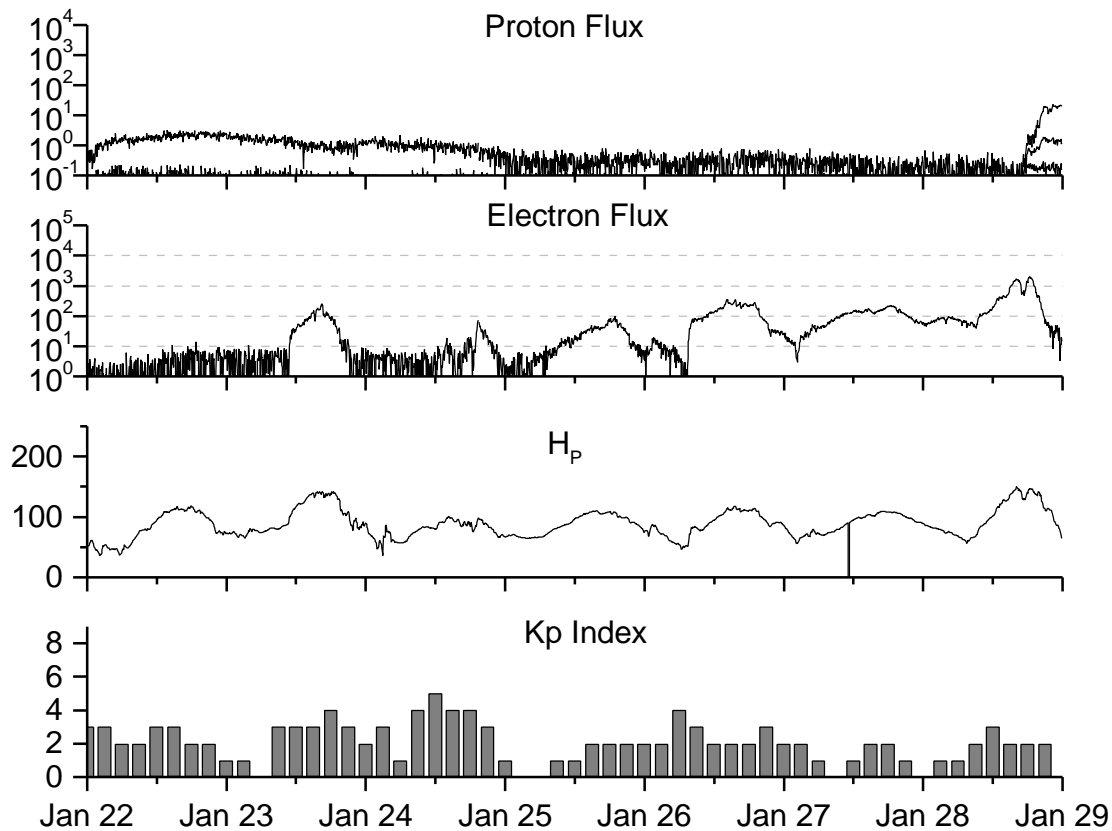


**Recent Solar Indices (preliminary)  
of the observed monthly mean values**

Month	Sunspot Numbers				Radio Flux		Geomagnetic		
	Observed values		Ratio	Smooth values		*Penticton	Smooth	Planetary	Smooth
	SWO	RI	RI/SWO	SWO	RI	10.7 cm	Value	Ap	Value
<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	85.5	117.2	145.8	12	12.2
May	140.5	106.4	0.76	131.7	90.5	148.6	149.9	08	12.4
June	208.3	137.7	0.66	136.0	93.1	169.8	152.9	07	12.4
July	169.2	113.5	0.67	138.0	94.3	165.6	154.4	10	12.6
August	136.1	93.7	0.69	142.8	97.5	170.8	156.3	15	12.9
September	107.4	71.5	0.67	150.0	102.3	135.7	161.0	19	12.8
October	167.7	116.7	0.70	158.5	107.8	164.8	167.2	19	12.7
November	199.3	133.2	0.67	164.7	110.9	191.5	171.5	14	13.1
December	123.5	86.4	0.69	165.9	111.0	169.8	173.4	10	13.8
<b>2000</b>									
January	140.8	90.1	0.64	168.0	112.8	158.1	175.5	13	14.5
February	161.9	112.9	0.70	172.1	116.6	173.2	176.8	15	15.1
March	203.6	138.5	0.68	175.4	119.8	208.2	178.4	09	15.1
April	193.4	125.3	0.65	176.3	120.7	184.2	180.5	15	14.9
May	188.8	120.8	0.64	173.1	118.9	184.5	180.1	15	14.8
June	190.3	124.9	0.66	172.0	118.6	179.8	179.7	15	14.8
July	236.7	169.1	0.71			204.7		21	
August	166.6	130.5	0.78			163.1		18	
September	157.9	109.9	0.70			182.1		16	
October	138.9	100.1	0.72			167.8		16	
November	149.9	106.5	0.71			178.8		16	
December	146.4	104.5	0.71			173.8		07	

**NOTE:** All smoothed values after September 1999 and monthly values after March 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 22 January 2001*

*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.

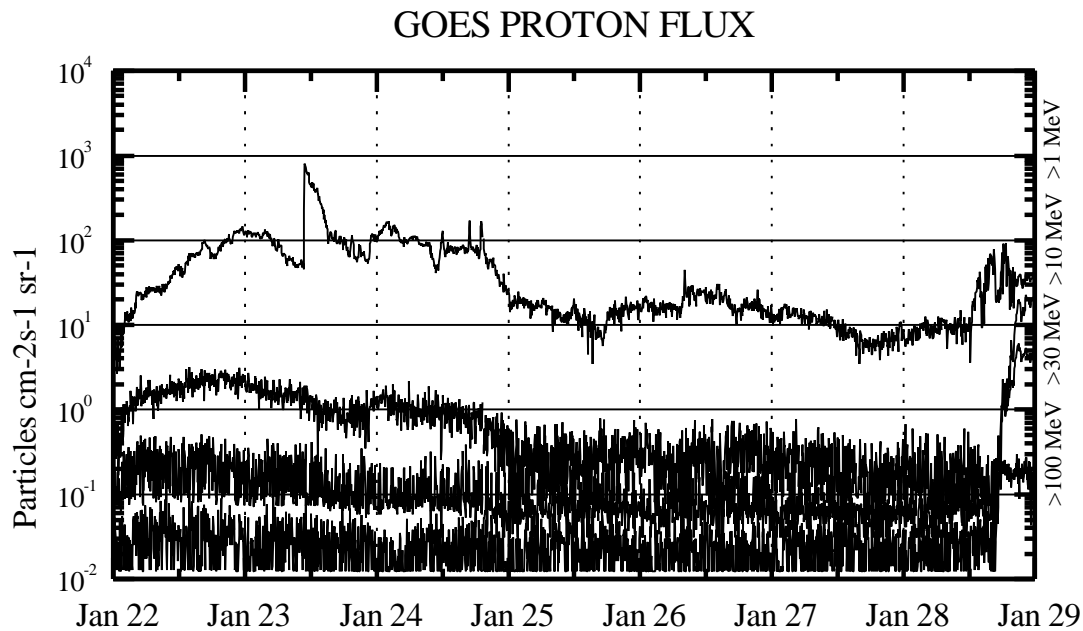
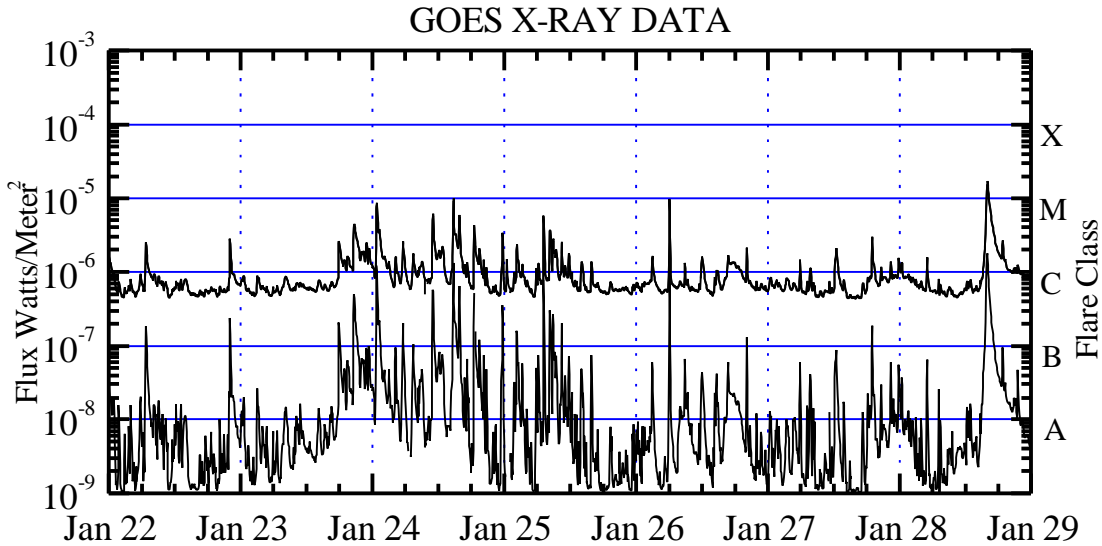
*Electrons* plot contains the five-minute averaged integral electron flux (electrons/cm<sup>2</sup>-sec -sr) with energies greater than 2 MeV at GOES-8.

*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.

