

Space Weather Highlights 18 – 24 December 2000

**SWO PRF 1321
19 December 2000**

Solar activity was low during most of the period, but rose to moderate levels on 24 December. Activity was low through 23 December with occasional C-class subflares from a variety of sunspot regions. A few of these regions were of moderate size and complexity including Regions 9269 (N14, L = 034, class/area Dao/260 on 17 December), 9280 (N09, L = 299, class/area Eki/560 on 24 December), and 9283 (S14, L = 256, class/area Dai/200 on 24 December). Region 9269 produced one of the more interesting events of the period: a C7/Sf flare at 18/1111 UTC associated with a Type II radio sweep and a halo CME. Activity increased to moderate levels on 24 December due to an impulsive M1/Sf flare at 24/1115 UTC from Region 9283.

Data were available from the Advanced Composition Explorer (ACE) spacecraft for most of the period. A CME passed the spacecraft at approximately 22/1800 UTC. This passage was probably associated with the halo CME observed on 18 December. The passage was accompanied by a velocity increase from 280 to 340 km/sec, increased densities, which briefly peaked at 31 p/cc; and a southward turning of the Bz component of the interplanetary magnetic field (IMF) with deflections to minus 15 nT (GSM). IMF Bz remained southward until the latter half of 23 December.

There were no proton events detected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at normal to moderate levels though the period.

The geomagnetic field was at quiet to unsettled levels during 18 - 21 December. Activity increased to unsettled to minor storm levels beginning late on 22 December due to a CME passage associated with a halo CME observed on 18 December. The minor storm levels occurred during 23/0300 - 0600 UTC. Activity decreased to quiet to unsettled levels after 23/1500 UTC.

Space Weather Outlook 27 December 2000 - 22 January 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 may reach moderate to high levels during 05 - 11 January. Otherwise, normal to moderate fluxes are expected.

Active levels will be possible during 04 - 05 January due to recurrent coronal hole effects. Quiet to unsettled levels are expected during the rest of the period, barring an Earth-directed CME.



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
18 December	198	174	690	C1.4	16	0	0	16	1	0	0	0
19 December	199	163	900	C1.3	9	0	0	13	0	0	0	0
20 December	201	183	1100	C1.1	11	0	0	6	1	0	0	0
21 December	195	161	850	C1.3	8	0	0	10	0	0	0	0
22 December	190	164	1020	B8.8	10	0	0	8	0	0	0	0
23 December	191	130	990	C1.6	14	0	0	21	1	0	0	0
24 December	193	155	1080	C1.1	9	1	0	11	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
	18 December	2.0E+5	1.0E+4	2.8E+3		4.3E+6
19 December	5.4E+4	1.1E+4	2.8E+3		1.0E+6	
20 December	3.2E+4	1.0E+4	2.7E+3		1.2E+6	
21 December	6.0E+4	1.0E+4	2.1E+3		2.1E+6	
22 December	1.1E+5	9.4E+3	2.1E+3		1.3E+6	
23 December	2.4E+5	9.3E+3	2.1E+3		3.5E+5	
24 December	3.8E+4	9.7E+3	2.1E+3		2.8E+5	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	18 December	7	1-3-2-2-2-2-1-2	13	1-2-2-5-3-3-2-1	10
19 December	2	2-1-0-1-1-1-0-0	8	4-0-1-4-2-0-1-0	5	2-1-1-2-2-3-3-1
20 December	2	0-0-1-1-1-1-1-1	*	0-*-*-*-*-*-*	4	1-0-1-2-2-2-2-1
21 December	5	0-1-0-3-2-2-1-2	3	0-0-0-2-2-2-0-0	5	0-0-0-3-2-2-2-1
22 December	6	0-1-1-1-1-0-2-4	5	0-0-2-1-2-2-1-3	7	1-1-1-2-1-3-2-3
23 December	12	3-5-2-2-2-1-1-2	22	3-5-4-5-3-3-2-1	20	4-5-4-4-4-3-2-2
24 December	4	2-2-0-0-2-1-2-1	2	0-2-0-0-0-1-2-0	5	1-2-1-1-2-2-2-2

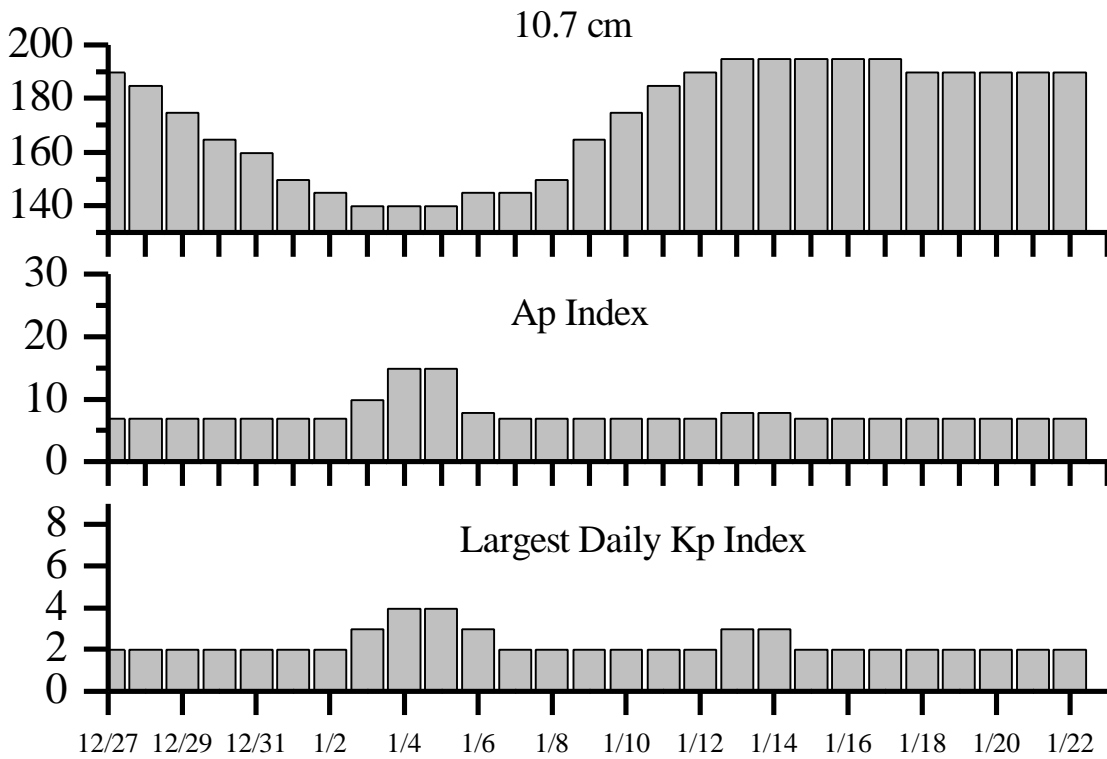


Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UT
18 Dec 0317	1 – 245 MHz Burst	17 Dec
18 Dec 1147	Type II Radio Emission	18 Dec 1111
18 Dec 1348	Stratwarm Alert Exists Monday	
18 Dec 2032	A \geq 20 Watch	21 Dec
19 Dec 1315	Stratwarm Alert Exists Tuesday	
19 Dec 2034	A \geq 20 Watch	22 Dec
20 Dec 0113	2 – 245 MHz Burst	19 Dec
20 Dec 1210	Stratwarm Alert Exists Wednesday	
21 Dec 1254	Stratwarm Alert Exists Thursday	
21 Dec 1614	CANCELLED A \geq 20 Watch	22 Dec
22 Dec 1209	Stratwarm Alert Exists Friday	
22 Dec 2254	K= 4 Warning	22/2300 – 23/1500 Dec
23 Dec 0008	2 – 245 MHz Burst	22 Dec
23 Dec 0259	K= 4 Observed	23 Dec 0000 - 0300
23 Dec 0446	K= 5 Warning	23 Dec 0500 - 1500
23 Dec 0457	Sudden Impulse observed at Boulder	23 Dec 0446
23 Dec 0503	A \geq 20 Watch	23 Dec
23 Dec 0600	K= 5 Observed	23 Dec 0300 - 0600
23 Dec 1122	Stratwarm Alert Exists Saturday	
24 Dec 0110	2 – 245 MHz Bursts	23 Dec
24 Dec 1617	Stratwarm Alert Ends Sunday	



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
27 Dec	190	7	2	10 Jan	175	7	2
28	185	7	2	11	185	7	2
29	175	7	2	12	190	7	2
30	165	7	2	13	195	8	3
31	160	7	2	14	195	8	3
01 Jan	150	7	2	15	195	7	2
02	145	7	2	16	195	7	2
03	140	10	3	17	195	7	2
04	140	15	4	18	190	7	2
05	140	15	4	19	190	7	2
06	145	8	3	20	190	7	2
07	145	7	2	21	190	7	2
08	150	7	2	22	190	7	2
09	165	7	2				



Energetic Events

Date	Time			X-ray		Optical Information			Peak		Sweep Freq		
	Begin	Max	½	Class	Integ Flux	Imp/ Brtns	Location		Rgn #	Radio Flux		Intensity	
			Max				Lat	CMD		245	2695	II	IV
24 Dec	1103	1115	1122	M1.1	.008	Sf	S16E63		9283	110	24		

Flare List

Date	Time			X-ray Class.	Imp / Brtns	Optical		Rgn
	Begin	Max	End			Location	Lat CMD	
18 December	0045	0046	0052		Sf	N04W48		9267
	0118	0121	0133	C3.2	Sf	N17W61		9277
	0240	0249	0303	C5.7	Sf	N08E65		9278
	0512	0516	0541	C2.2				
	0643	0648	0652	C4.4				
	0856	0903	0907	C5.2	Sf	S14W76		9276
	0926	0927	0930		Sf	N04W52		9267
	B1119	U1119	A1213	C7.0	Sf	N15E01		9269
	1238	1241	1246		Sf	N07W50		9267
	1318	1321	1323	C3.0				
	1331	1331	1333	C3.2	Sf	S15W90		9276
	1340	1347	1353	C3.8				
	1555	1559	1603		Sf	N08E58		9278
	1618	1622	1625	C2.6				
	1722	1725	1728	C3.3				
	1809	1810	1816	C2.9	Sf	N17W71		9277
	1905	1909	1914		Sf	N09E55		9278
	1957	1959	2005		Sf	N08E50		9278
	2010	2014	2018	C2.7				
	2041	2045	2050	C3.1				
2204	2205	2209	C2.4	Sf	N05E51		9278	
2304	2307	2316	C3.5	1f	S13E73		9279	
2314	2315	2318		Sf	S12W90		9276	
2326	2330	2338		Sf	S13E68		9279	
2359	0001	0003		Sf	S18W83		9276	
19 December	0025	0027	0029	C2.1	Sf	N04W59		9267
	0158	0158	0204	C4.0	Sf	S18W84		9276
	0304	0307	0313	C2.5				
	0325	0328	0332		Sf	N17W73		9277
	0348	0351	0357		Sf	S12E61		
	0456	0458	0508	C2.2	Sf	N04W63		9267
	0611	0614	0616		Sf	N17W76		9277
	0739	0740	0742		Sf	N09E46		9278
	0804	0805	0809		Sf	S10E60		9279



Flare List – continued.

Date	Time			X-ray Class.	Optical		Rgn
	Begin	Max	End		Imp / Brtns	Location Lat CMD	
19 December	1023	1024	1032	C9.5	Sf	N07E41	9278
	1414	1414	1424	C3.0	Sf	N15W12	9269
	1622	1624	1630		Sf	N07E38	9278
	1810	1819	1835		C3.3		
	1858	1859	1907	C4.1	Sf	N06E38	9278
	2138	2148	2151	C2.1	Sf	N07E38	9278
20 December	0053	0056	0100	C1.7			
	0207	0207	0215	C1.8	Sf	N07E34	9278
	0512	0515	0522	C3.3	1f	N07E33	9278
	0601	0606	0627	C4.7			
	1138	1202	1223	C2.4			
	1335	1343	1358	C2.3			
	1548	1548	1603	C2.7	Sf	S13E48	9279
	1935	1936	1943	C2.6	Sf	N14W60	9272
	2038	2045	2057	C3.5	Sf	S10E48	9279
	2302	2303	2309	C2.2	Sf	N09E64	9280
21 December	2337	2340	2348	C2.5	Sf	N06E61	9280
	0058	0059	0104		Sf	N10E63	9280
	0113	0113	0117	C2.1	Sf	N09E62	9280
	0148	0149	0207	C2.7	Sf	N12E61	9280
	0213	0216	0228	C1.9	Sf	N06E62	9280
	0242	0245	0251	C1.6	Sf	N06E61	9280
	0258	0311	0410		Sf	N16W29	9269
	0428	0435	0444		Sf	N06E63	9280
	0526	0533	0545	C1.8	Sf	N09E60	9280
	0628	0644	0710	C1.9			
	0730	0730	0738	C2.8	Sf	N09E59	9280
	0938	0946	0953	C1.6			
	1833	1837	1843		Sf	S13E34	9279
	22 December	0247	0249	0253	C1.4	Sf	N15W47
0302		0302	0305		Sf	N07E50	9280
0314		0315	0318	C1.8	Sf	N07E50	9280
0351		0358	0409	C2.3			
0606		0606	0609		Sf	S12E19	9279
1007		1010	1014	C1.7			
1321		1326	1331	C1.5			
1403		1409	1414	C2.4			
1933		1934	1941	C2.6	Sf	N08E36	9280
1942		1944	1952		Sf	N07E36	9280
2011		2014	2016	C1.8			



Flare List – continued.

Date	Time			X-ray Class.	Optical		Rgn
	Begin	Max	End		Imp / Brtns	Location Lat CMD	
22 December	2056	2111	2123	C2.0			9283
	2319	2321	2323		Sf	S15E80	9283
	2342	0023	0029	C3.7	Sf	S14E80	9283
23 December	0200	0201	0218	C2.7	Sf	N12E35	9280
	0217	0222	0225		Sf	S12E78	9283
	0226	0227	0242		Sf	S12E78	9283
	0253	0253	0302		Sf	S13E78	9283
	0336	0344	0348	C2.5	Sf	S12E77	9283
	0451	0455	0505	C3.4	Sf	S12E76	9283
	0523	0529	0532		Sf	S12E76	9283
	0608	0611	0620	C1.9			
	0804	0823	0856	C3.7	ln	S13E75	9283
	0831	0834	0836	C3.4			
	1114	1117	1118	C3.0	Sf	S09E74	9283
	1442	1443	1446		Sf	S12E69	9283
	1520	1520	1525		Sf	S14E72	9283
	1647	1651	1657	C4.0	Sf	S12E69	9283
	1722	1723	1727	C2.8	Sf	S13E69	9283
	1735	1739	1745	C2.4			
	1952	2000	2005	C2.6			
	2013	2016	2019	C2.7			
	2130	2131	2135		Sf	S13E67	9283
	2137	2144	2147		Sf	S13E67	9283
2206	2208	2209		Sf	S13E67	9283	
2218	2220	2223		Sf	N05E73		
2226	2231	2233		Sf	S13E66	9283	
2234	2236	2252		Sf	S13E66	9283	
2248	2252	2302	C1.9	Sf	N06E75	9283	
2259	2259	2304		Sf	S15E65	9283	
2354	2357	0002	C2.4	Sf	S12E65	9283	
24 December	0009	0011	0016	C2.0	Sf	S13E66	9283
	0032	0032	0036		Sf	N05E72	9285
	0042	0044	0046		Sf	S13E66	9283
	0105	0107	0117	C7.0	Sf	S15E66	9283
	0230	0232	0239		Sf	S15E65	9283
	0249	0249	0255		Sf	N06E70	9285
	0454	0457	0501	C1.4			



Flare List – continued.

Date	Time			X-ray Class.	Imp / Brtns	Optical	Rgn
	Begin	Max	End			Location Lat CMD	
24 December	0519	0520	0529	C2.0	Sf	N06E69	9285
	0645	0649	0709	C6.6	Sf	S13E64	9283
	0713	0726	0742		Sf	N05E69	9285
	1111	1115	1126	M1.1	Sf	S16E63	9283
	1335	1336	1350	C9.4	Sf	S14E60	9283
	1716	1720	1722	C3.8			
	2007	2013	2019	C2.6			
	2054	2101	2103	C5.4			

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

Region 9262

08 Dec	N13E70	090	0010	06	Bxo	002	B										
09 Dec	N14E58	089	0110	07	Dao	004	B										1
10 Dec	N13E43	090	0080	08	Dao	004	B	1									1
11 Dec	N14E31	089	0100	10	Dao	011	B										
12 Dec	N14E18	089	0100	09	Dao	015	B										
13 Dec	N14E04	090	0050	06	Dao	019	B										
14 Dec	N13W10	091	0040	05	Cao	010	B	1									1
15 Dec	N16W20	088	0050	11	Cso	012	B	1									2
16 Dec	N14W35	089	0030	04	Bxo	007	B										
17 Dec	N16W44	085	0070	07	Dao	011	B										
18 Dec	N16W58	086	0010	06	Bxo	002	B										
19 Dec	N16W74	089	0000	01	Axx	001	A										
20 Dec	N16W87	089															
								3	0	0	5	0	0	0	0	0	

Crossed West Limb.

Absolute heliographic longitude: 090



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 9267

11 Dec N08E39	081	0070	06	Dai	007	B	1			1								
12 Dec N08E25	082	0100	08	Dao	010	B	1	1		1	1							
13 Dec N08E11	083	0200	09	Dai	023	B	2			2	1							
14 Dec N07W02	083	0190	10	Dai	020	B	2			4								
15 Dec N07W17	085	0210	09	Dai	014	B	1			1								
16 Dec N07W31	085	0130	09	Cso	014	B												
17 Dec N08W43	084	0150	08	Cao	014	B				2								
18 Dec N08W57	085	0130	08	Dao	008	B				3								
19 Dec N07W72	087	0110	07	Cso	003	B	2			2								
20 Dec N07W88	090	0110	03	Hsx	001	A												
							9	1	0	16	2	0	0	0	0			

Crossed West Limb.

Absolute heliographic longitude: 083

Region 9268

13 Dec S16E75	019	0070	02	Hsx	001	A												
14 Dec S15E60	021	0060	01	Hsx	001	A												
15 Dec S18E49	019	0100	02	Hsx	001	A												
16 Dec S18E36	018	0110	02	Hsx	001	A												
17 Dec S18E23	018	0110	02	Hsx	001	A												
18 Dec S18E09	019	0080	02	Hsx	001	A												
19 Dec S18W04	019	0090	02	Hsx	001	A												
20 Dec S18W16	018	0090	02	Hsx	001	A												
21 Dec S18W29	017	0070	03	Hsx	002	A												
22 Dec S18W43	018	0080	04	Cso	004	B												
23 Dec S18W56	018	0080	02	Hsx	001	A												
24 Dec S18W70	019	0080	02	Hsx	001	A												
							0	0	0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 19



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	
	<i>Region</i>	<i>9273</i>													
15 Dec	N20E68	000	0120	05	Dao	003	B								
16 Dec	N19E56	358	0060	04	Cao	005	B								
17 Dec	N19E43	358	0030	01	Hsx	002	A								
18 Dec	N20E31	357	0010	04	Bxo	004	B								
19 Dec	N20E20	355	0010	01	Bxo	005	B								
20 Dec	N20E07	355	0010	04	Bxo	006	B								
21 Dec	N20W05	353	0010	04	Bxo	005	B								
22 Dec	N20W20	355	0000	02	Axx	002	A								
23 Dec	N20W33	355													
24 Dec	N20W46	355													
											0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 353

Region 9275

16 Dec	N20W32	086	0030	04	Cao	005	B								
17 Dec	N21W45	086	0020	05	Bxo	007	B				1				
18 Dec	N22W56	084	0010	01	Axx	002	A								
19 Dec	N22W69	084													
20 Dec	N22W82	084													
											0	0	0	1	0

Crossed West Limb.

Absolute heliographic longitude: 086

Region 9276

16 Dec	S15W60	114	0030	04	Bxo	004	B	1		2					
17 Dec	S14W72	113	0120	08	Dao	007	B	6		15					
18 Dec	S12W85	113	0100	09	Dao	005	B	2		4					
								9	0	0	21	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 114

Region 9277

17 Dec	N16W63	104	0010	01	Hsx	001	A								
18 Dec	N16W76	104	0010	01	Axx	001	A	2		2					
19 Dec	N16W89	104	0000	00	Axx	001	A			2					
								2	0	0	4	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 104



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 9278</i>																		
17 Dec	N09E67	334	0040	01	Hrx	002	A											
18 Dec	N09E51	337	0090	09	Dao	008	B	2				5						
19 Dec	N09E37	338	0090	10	Dai	017	B	3				5						
20 Dec	N09E23	339	0090	09	Dai	022	B	2				1	1					
21 Dec	N09E09	339	0080	11	Eao	015	B											
22 Dec	N09W05	340	0070	09	Dao	012	B											
23 Dec	N09W19	341	0050	08	Dao	008	B											
24 Dec	N10W31	340	0040	10	Cso	005	B											
								7	0	0	0	11	1	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 340

<i>Region 9279</i>																		
18 Dec	S11E62	326	0060	02	Hax	002	A	1				1	1					
19 Dec	S11E54	321	0190	10	Dso	010	B					1						
20 Dec	S13E41	321	0170	16	Fso	008	B	2				2						
21 Dec	S13E28	320	0130	16	Cso	006	B					1						
22 Dec	S13E11	324	0110	13	Eso	009	B					1						
23 Dec	S12W03	325	0110	12	Cso	008	B											
24 Dec	S10W21	330	0060	03	Hsx	002	A											
								3	0	0	0	6	1	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 325

<i>Region 9280</i>																		
19 Dec	N10E72	303	0260	10	Dao	005	B											
20 Dec	N08E61	301	0510	10	Dko	014	B	2				2						
21 Dec	N08E48	300	0450	15	Eko	015	B	6				8						
22 Dec	N09E35	300	0540	14	Eki	025	Bg	2				4						
23 Dec	N08E22	300	0540	13	Eki	021	B	1				1						
24 Dec	N09E10	299	0560	12	Eki	029	Bg											
								11	0	0	0	15	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 299



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 9281</i>																	
20 Dec	N07E39	323	0020	09	Cro	003	B										
21 Dec	N06E20	328	0000	03	Bxo	004	B										
22 Dec	N06E06	329	0020	05	Cso	005	B										
23 Dec	N07W01	323	0010	02	Cao	002	B										
24 Dec	N07W14	323	0000	00		000											
								0	0	0	0	0	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 323																	
<i>Region 9282</i>																	
21 Dec	N19E68	280	0050	02	Hax	001	A										
22 Dec	N19E54	281	0040	01	Hsx	001	A										
23 Dec	N20E43	279	0040	01	Hsx	001	A										
24 Dec	N20E30	279	0040	02	Hsx	001	A										
								0	0	0	0	0	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 279																	
<i>Region 9283</i>																	
22 Dec	S15E79	256	0120	02	Hax	001	A	2			2						
23 Dec	S14E65	257	0140	05	Cao	004	B	8			19	1					
24 Dec	S12E53	256	0200	07	Dai	008	Gd	4	1		7						
								14	1	0	28	1	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 256																	
<i>Region 9284</i>																	
23 Dec	N05W07	329	0020	04	Cso	005	B										
24 Dec	N06W20	329	0020	03	Cso	004	B										
								0	0	0	0	0	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 329																	
<i>Region 9285</i>																	
24 Dec	N06E59	250	0050	06	Cro	002	B	1			4						
								1	0	0	4	0	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 250																	
<i>Region 9286</i>																	
24 Dec	N30W47	356	0030	04	Cro	002	B										
								0	0	0	0	0	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 356																	

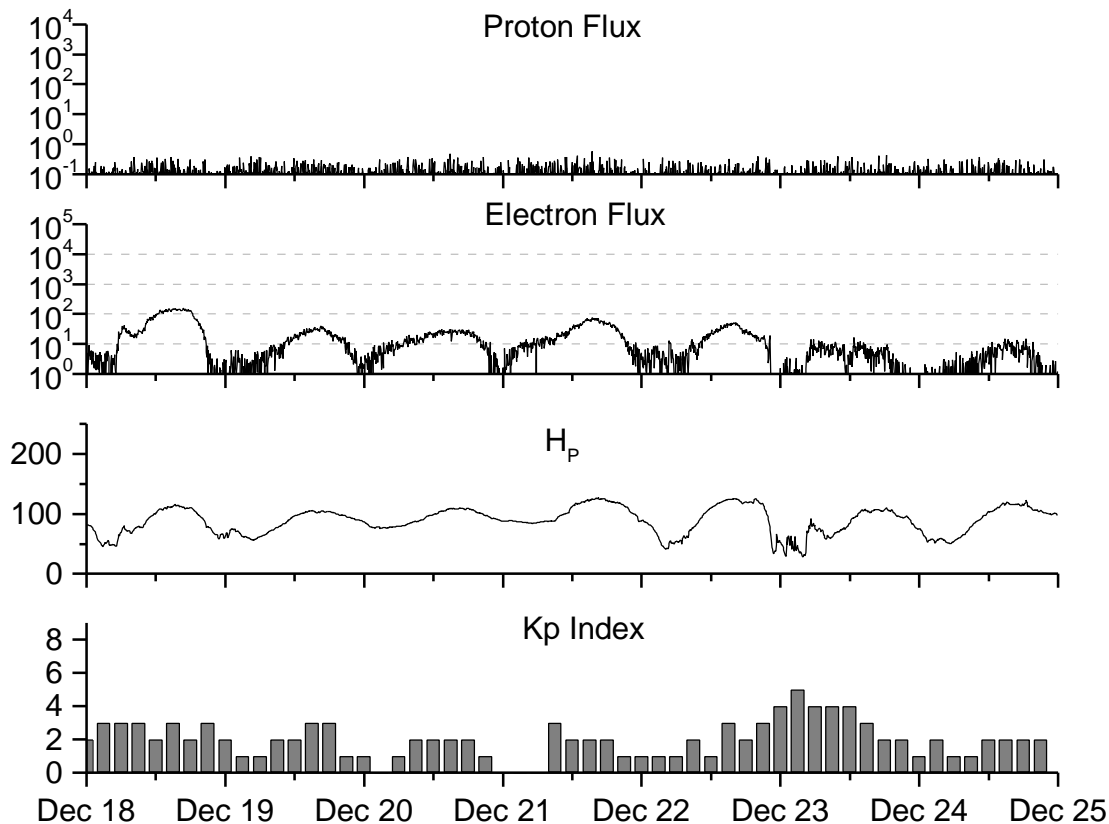


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

Month	Sunspot Numbers				Radio Flux		Geomagnetic		
	Observed values SWO	RI	Ratio RI/SWO	Smooth values SWO	RI	*Penticton 10.7 cm	Smooth Value	Planetary Ap	Smooth Value
1998									
December	120.8	81.9	0.68	108.8	77.9	150.1	134.3	08	11.9
1999									
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
2000									
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			179.8		15	
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	

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 18 December 2000

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.

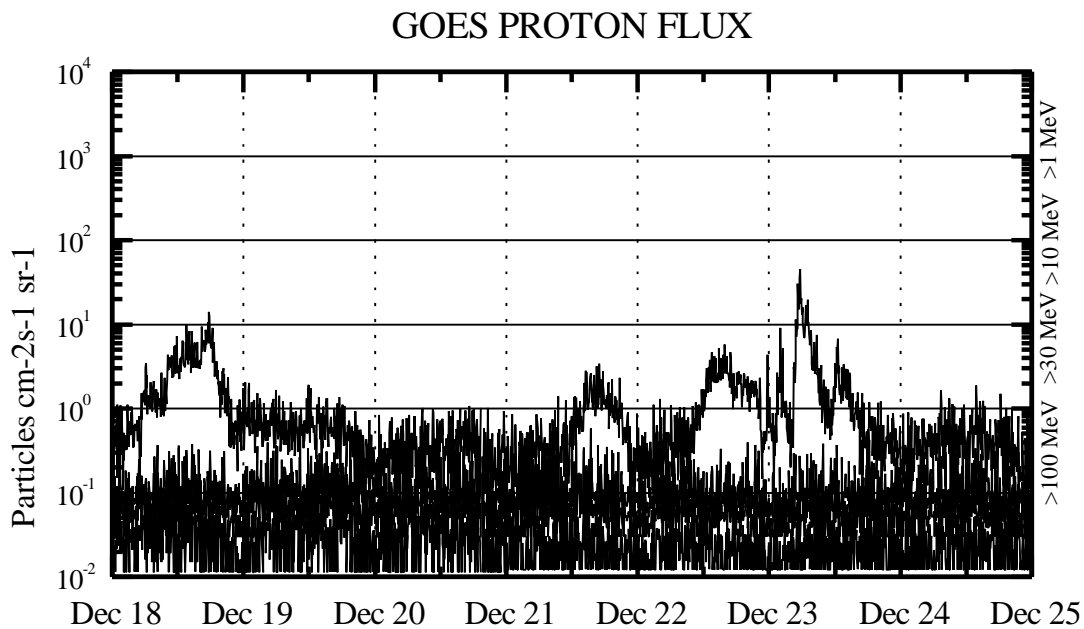
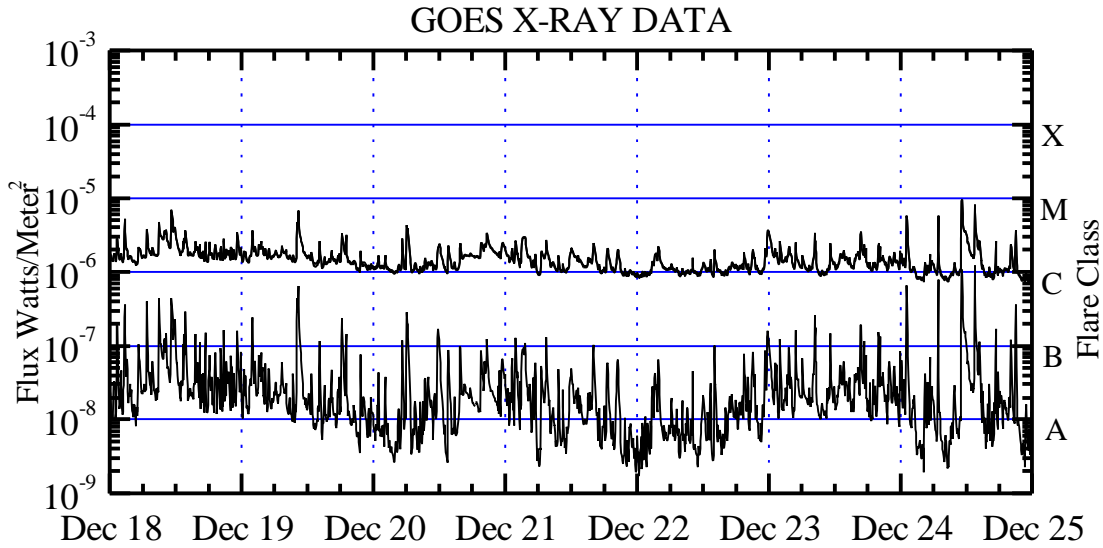
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV at GOES-8.

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 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.

