

Space Weather Highlights
11 – 17 December 2000

SWO PRF 1320
19 December 2000

Solar activity was low during most of the period, but rose to moderate levels on 12 December. Region 9267 (N08, L = 083, class/area Dai/210 on 15 December) produced the only M-class flare of the period, an M1/1f at 12/1507 UTC. This region exhibited minor growth prior to the M-flare. Occasional C-class flares occurred during the rest of the period from a variety of regions that were mostly unremarkable. One notable exception was Region 9276 (S15, L = 114, class/area Dao/120 on 17 December), which emerged on 16 December, then grew at a moderate pace as it produced numerous C-class subflares. Region 9276 crossed the west limb on 18 December. Note: Region 9269 (N15, L = 032, class/area Dao/260 on 17 December) produced a C7/Sf flare at 18/1111 UTC associated with a halo CME (see the geomagnetic forecast below).

Data were available from the Advanced Composition Explorer (ACE) spacecraft for most of the period. Waning coronal hole effects occurred during the first half of the period with velocities gradually decreasing from highs near 620 km/sec at the beginning of the period to lows near 310 km/sec by early 16 December. A sector shift from negative (toward) to positive (away) polarity occurred around midday on 16 December. The shift was accompanied by a minor increase in velocities; increased densities, which briefly peaked at 22 p/cc; and a period of sustained southward IMF Bz with deflections to minus 8 nT (GSM).

There were no proton events detected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at moderate to high levels during 11 - 16 December, then dropped to normal to moderate levels on the last day of the period. The geomagnetic field was at mostly quiet levels through 16 December. Activity increased to quiet to active levels during 17 December with a minor storm interval at high latitudes due to a period of sustained southward IMF Bz.

Space Weather Outlook
20 December - 15 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 to minor storm levels will be possible during 21 - 22 December due to an expected CME passage. Active periods will be possible around 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
11 December	144	101	310	B4.7	5	0	0	1	0	0	0	0
12 December	150	95	320	B6.4	4	1	0	1	1	0	0	0
13 December	165	173	520	B5.2	7	0	0	3	1	0	0	0
14 December	182	157	520	B6.2	9	0	0	7	0	0	0	0
15 December	188	181	990	B5.6	5	0	0	9	0	0	0	0
16 December	191	217	830	B7.2	5	0	0	6	0	0	0	0
17 December	197	229	1100	C1.2	12	0	0	22	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
	11 December	2.6E+5	9.4E+3	2.7E+3		6.9E+7
12 December	1.4E+5	1.0E+4	2.7E+3		8.9E+7	
13 December	2.0E+5	9.8E+3	2.8E+3		1.1E+8	
14 December	5.2E+5	1.0E+4	2.7E+3		1.1E+8	
15 December	5.1E+5	1.1E+4	2.9E+3		7.8E+7	
16 December	1.2E+6	1.0E+4	3.0E+3		8.3E+7	
17 December	3.6E+5	1.1E+4	2.9E+3		8.9E+6	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	11 December	7	3-2-2-2-2-1-2-2	*	*_*_*_*_*_*-1-1	7
12 December	3	1-0-0-1-1-1-2-1	7	0-1-0-4-3-1-1-1	5	1-1-1-2-2-2-2-1
13 December	4	3-1-1-1-1-1-0-1		1-1-0-1-4-*0-1	4	2-1-0-1-2-2-2-1
14 December	2	0-0-0-1-2-1-1-1	6	3-0-0-2-4-0-0-0	4	1-0-0-1-2-2-2-2
15 December	3	1-1-1-1-1-0-0-2	2	1-0-0-2-1-0-0-0	3	0-0-0-1-2-2-1-1
16 December	4	0-1-1-1-2-2-0-2	1	0-0-0-0-1-0-1-1	4	0-0-0-1-2-3-1-2
17 December	6	1-1-1-1-3-2-2-1	15	0-2-2-3-5-4-3-1	8	1-2-1-2-3-3-3-1

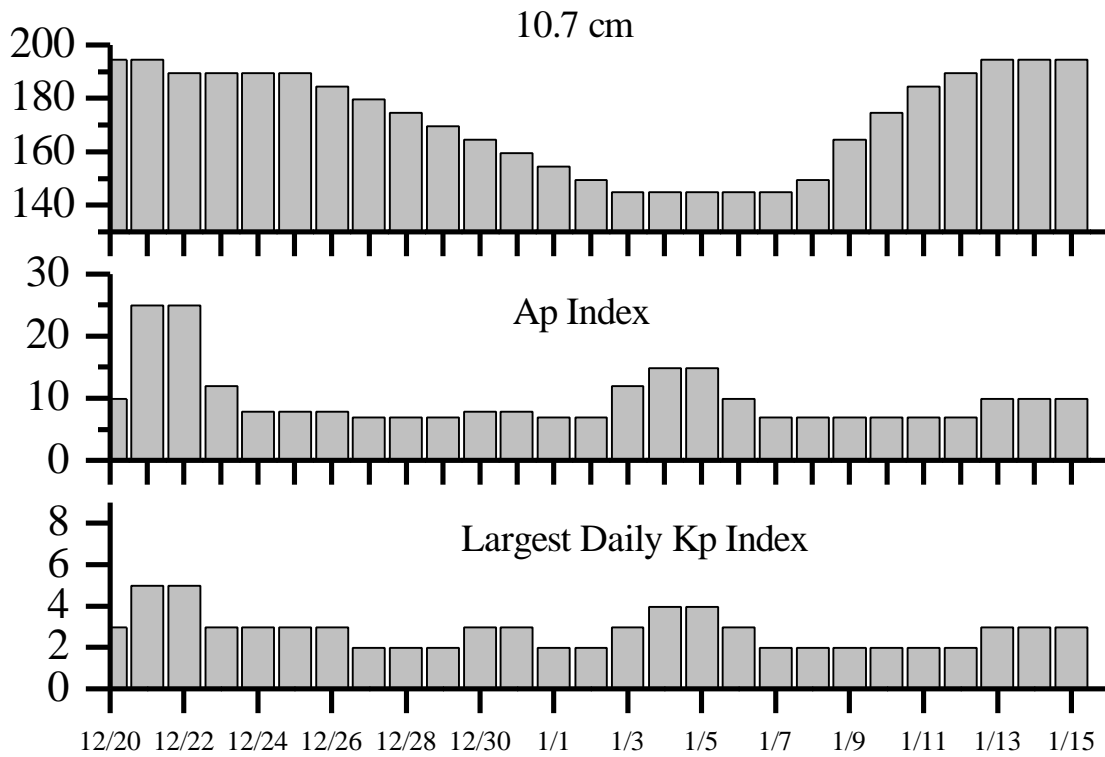


Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UT
11 Dec 1141	Electron Event >2MeV >=1000pfu	11 Dec 1055
11 Dec 1207	Stratwarm Alert Exists Monday	
12 Dec 0044	1 – 245 MHz Burst	11 Dec
12 Dec 0100	CONTINUED Electron Event >2MeV >=1000pfu	11 Dec 1055
12 Dec 1331	Stratwarm Alert Exists Tuesday	
13 Dec 0100	CONTINUED Electron Event >2MeV >=1000pfu	11 Dec 1055
13 Dec 1333	Stratwarm Alert Exists Wednesday	
14 Dec 0100	CONTINUED Electron Event >2MeV >=1000pfu	11 Dec 1055
14 Dec 0101	2 - 245 MHz Burst	13 Dec
14 Dec 1300	Stratwarm Alert Exists Thursday	
15 Dec 0035	1 – 245 MHz Burst	14 Dec
15 Dec 0100	CONTINUED Electron Event >2MeV >=1000pfu	11 Dec 1055
15 Dec 0141	CONTINUED Electron Event >2MeV >=1000pfu	11 Dec 1055
15 Dec 1351	Stratwarm Alert Exists Friday	
16 Dec 0100	CONTINUED Electron Event >2MeV >=1000pfu	11 Dec 1055
16 Dec 1410	Stratwarm Alert Exists Saturday	
17 Dec 0100	CONTINUED Electron Event >2MeV >=1000pfu	11 Dec 1055
17 Dec 1408	Stratwarm Alert Exists Sunday	
17 Dec 1815	K= 4 Observed	17 Dec 15 - 18



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
20 Dec	195	10	3	03 Jan	145	12	3
21	195	25	5	04	145	15	4
22	190	25	5	05	145	15	4
23	190	8	3	06	145	10	3
24	190	8	3	07	145	7	2
25	185	8	3	08	150	7	2
26	180	7	2	09	165	7	2
27	175	7	2	10	175	7	2
28	175	7	2	11	185	7	2
29	170	7	2	12	190	7	2
30	165	8	3	13	195	10	3
31	160	8	3	14	195	10	3
01 Jan	155	7	2	15	195	10	3
02	150	7	2				



Energetic Events

Date	Time		X-ray		Optical Information			Peak		Sweep Freq		
	Begin	Max	½	Integ	Imp/ Brtns	Location		Rgn #	Radio Flux		Intensity	
			Max	Class		Flux	Lat		CMD	245	2695	II
12 Dec	1437	1507	1523	M1.3	.026	1f	N08E25		9267	78		

Flare List

Date	Time			X-ray Class.	Optical Imp / Brtns	Location Lat CMD	Rgn
	Begin	Max	End				
11 December	0028	0050	0058	B9.0			
	0634	0718	0730	C1.0			
	0820	0823	0825	C1.1			
	0954	0958	1000	C1.3			
	1504	1513	1541	C1.9	Sf	N07E42	9267
	1638	1641	1643	B9.0			
12 December	1855	1936	2054	C1.6			
	0152	0202	0219	C2.1			
	0453	0458	0511	C2.6	Sf	N07E32	9267
	0849	0911	0918	C1.6			
	1228	1245	1255	C1.8			
	1444	1444	1543	M1.3	1f	N08E25	9267
13 December	2318	2324	2332	B9.8			
	0213	0223	0228	C3.8			
	0552	0556	0609	B6.9			
	0741	0745	0749	B8.2			
	0803	0808	0816	B9.4			9267
	0819	0820	0837	C4.6	Sf	N08E17	9267
	1012	1016	1022	C1.2			
	1119	1125	1142	C2.7	Sf	S25E32	9264
	1658	1701	1703	C1.1			
	2158	2201	2227	C5.8	1f	N10E07	9267
14 December	2240	2242	2250		Sf	N16E61	9267
	2351	2359	0014	C3.2			
	B0502	U0503	A0516	B7.7	Sf	N19W67	9255
	0652	0655	0707	B9.9			
	0915	0917	0930	C2.7	Sf	N04E03	9267
	0930	0958	A1012	C3.4	Sf	S24E22	9264
	0934	0935	0944		Sf	N04E02	9267
	1101	1108	1117	C5.7			
	1246	1247	1257	C1.8	Sf	N07E00	9267
	1319	1319	1322	C2.4	Sf	N13W06	9262
1520	1523	1532	C6.4	Sf	N08E02	9267	
1824	1828	1832	C1.4				
2045	2051	2056	C4.5				



Flare List – continued.

Date	Time			X-ray Class.	Optical		Rgn
	Begin	Max	End		Imp / Brtns	Location Lat CMD	
14 December	2347	2350	2356	C1.1			
15 December	0639	0640	0647	C1.1	Sf	N20W55	9266
	0926	0927	0929		Sf	N24W54	9266
	0930	0933	0941		Sf	N11W22	9262
	1115	1116	1127	C2.7	Sf	N10W12	9267
	B1855	U1856	1909	C1.3	Sf	N14E40	9269
	1942	1959	2015	C5.3	Sf	N19W16	9262
	1946	1952	2024		Sf	N18W16	9263
	2126	2128	2137	C2.5	Sf	S26E13	9264
	2328	2337	2351		Sf	N15E34	9269
16 December	0011	0013	0028	C2.5	Sf	N20W19	
	0507	0510	0512	C1.4	Sf	N23W66	9266
	0552	0557	0604	C1.2			
	0912	0914	0921		Sf	N21W67	9266
	1919	1927	1951	C2.3	Sf	S20W54	9271
	2252	2255	2304	C1.7	Sf	S14W62	9276
	2318	2322	2326		Sf	S13W59	9276
17 December	0003	0005	0016	C1.8	Sf	S13W61	9276
	0059	0104	0115	C2.1	Sf	S19W57	9271
	0126	0127	0137	C2.4	Sf	S13W59	9276
	0149	0150	0155	C4.4	Sf	S13W62	9276
	0246	0248	0303	C2.6	Sf	S13W60	9276
	0345	0346	0357		Sf	S13W63	9276
	0451	0452	0459		Sf	N08E81	
	0522	0526	0533	C3.7	Sf	N25W78	9266
	0700	0701	0707		Sf	N07W39	9267
	0735	0735	0741		Sf	N17E15	9269
	0757	0759	0802		Sf	S13W64	9276
	0837	0844	0851		Sf	S14W64	9276
	0857	0902	0918	C2.1	Sf	S13W64	9276
	0916	0921	0941		Sf	N08W37	9267
	1017	1046	1052	C4.0			
	B1203	U1203	1224	C4.0	Sf	S14W66	9276
	1451	1452	1456		Sf	N18W37	9275
	1622	1625	1631	C3.7	Sf	S15W71	9276
	1656	1659	1704		Sf	S15W71	9276
	1706	1710	1722		Sf	S14W70	9276
	1746	1747	1751	C3.1	Sf	S14W72	9276
	1839	1839	1848	C5.8	Sf	S14W72	9276
17 December	2009	2010	2017		Sf	S14W73	9276



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 9254</i>																					
03 Dec	N10E59	167	0010	01	Hsx	001	A														
04 Dec	N09E48	165	0010	04	Bxo	003	B														
05 Dec	N10E36	163	0070	05	Dao	010	B														
06 Dec	N10E23	163	0150	06	Dao	010	B														
07 Dec	N10E10	163	0160	06	Dao	010	B														
08 Dec	N11W04	164	0120	05	Dao	010	B														
09 Dec	N10W19	166	0080	05	Dao	014	B											1			
10 Dec	N10W32	166																			
11 Dec	N10W45	165	0030	03	Cao	003	B														
12 Dec	N09W58	165	0020	01	Hsx	002	A														
13 Dec	N11W71	165	0000	00	Axx	001	A														
14 Dec	N11W84	165																			
													0	0	0	1	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 164

<i>Region 9255</i>																					
03 Dec	N21E64	162	0010	01	Hsx	001	A														
04 Dec	N22E54	159	0020	01	Hrx	001	A														
05 Dec	N22E40	159	0010	01	Axx	001	A														
06 Dec	N23E26	160	0010	01	Hrx	001	A														
07 Dec	N23E14	159	0000	00	Axx	001	A														
08 Dec	N23E01	159																			
09 Dec	N23W12	159																			
10 Dec	N23W25	159																			
11 Dec	N23W38	159																			
12 Dec	N23W51	159																			
13 Dec	N23W64	159																			
14 Dec	N23W77	159																			
																1					
													0	0	0	1	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 159



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 9256

04 Dec S16E65	148	0010	01	Axx	003	A												
05 Dec S17E51	148	0010	01	Axx	002	A												
06 Dec S17E37	149	0010	01	Hsx	002	A												
07 Dec S16E24	149																	
08 Dec S16E11	149																	
09 Dec S16W02	149																	
10 Dec S16W15	149																	
11 Dec S16W28	149																	

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 149

Region 9257

06 Dec N19E38	148	0010	02	Hrx	004	A												
07 Dec N19E24	149	0010	03	Bxo	004	B												
08 Dec N20E09	151	0000	00	Axx	001	A												
09 Dec N19W03	150	0020	03	Cro	003	B												
10 Dec N19W16	150																	
11 Dec N19W29	150																	
12 Dec N19W42	150																	
13 Dec N18W57	151	0030	04	Cso	004	B												
14 Dec N18W72	153	0010	00	Bxo	002	B												
15 Dec N18W85	153																	

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 150

Region 9258

07 Dec N14E48	125	0010	02	Bxo	002	B												
08 Dec N14E35	125																	
09 Dec N14E22	125																	
10 Dec N14E09	125																	
11 Dec N14W04	124	0000	02	Bxo	002	B												
12 Dec N14W17	124																	
13 Dec N14W30	124																	
14 Dec N14W43	124																	
15 Dec N14W56	124																	
16 Dec N14W69	124																	
17 Dec N14W82	124																	

0 0 0 0 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 9259

07 Dec	S10W24	197	0010	03	Bxo	004	B												
08 Dec	S09W35	195	0020	06	Bxo	003	B												
09 Dec	S09W48	195																	
10 Dec	S09W61	195																	
11 Dec	S09W74	195																	
12 Dec	S09W87	195																	
								0	0	0	0	0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 197

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												
								3	0	0	0	5	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 090

Region 9263

09 Dec	N18E67	080	0010	01	Hrx	001	A												
10 Dec	N16E51	082	0000	00	Axx	001	A												
11 Dec	N16E38	082																	
12 Dec	N16E25	082																	
13 Dec	N16E12	082																	
14 Dec	N16W01	082																	
15 Dec	N16W14	082																	
													1						
								0	0	0	0	1	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 082



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 9264</i>																		
10 Dec	S21E65	068	0060	03	Hsx	001	A											
11 Dec	S23E54	066	0070	05	Cso	003	B											
12 Dec	S24E42	065	0060	04	Dso	005	B											
13 Dec	S24E30	064	0090	07	Dao	010	B	1				1						
14 Dec	S24E16	065	0100	08	Dao	010	B	1				1						
15 Dec	S24E04	064	0250	11	Eai	018	B	1				1						
16 Dec	S25W09	063	0230	12	Eai	023	Bg											
17 Dec	S24W22	063	0200	12	Eai	020	Bg											
								3	0	0	3	0	0	0	0	0	0	

Still on Disk.

Absolute heliographic longitude: 064

<i>Region 9265</i>																		
10 Dec	N19E70	063	0030	02	Hsx	001	A											
11 Dec	N18E56	064	0020	01	Hsx	001	A											
12 Dec	N20E43	064	0020	01	Hrx	001	A											
13 Dec	N17E30	064	0020	04	Cso	004	B											
14 Dec	N16E16	065	0020	05	Cso	003	B											
15 Dec	N16E04	064	0010	08	Bxo	009	B											
16 Dec	N18W08	062	0010	08	Bxo	005	B											
17 Dec	N15W19	060	0010	01	Axx	002	A											
								0	0	0	0	0	0	0	0	0	0	

Still on Disk.

Absolute heliographic longitude: 064

<i>Region 9266</i>																		
11 Dec	N24W11	131	0020	04	Cao	004	B											
12 Dec	N23W24	131	0020	04	Cso	002	B											
13 Dec	N23W39	133	0010	04	Bxo	003	B											
14 Dec	N19W53	134	0030	05	Cao	003	B											
15 Dec	N23W62	130	0070	08	Dro	005	B	1				2						
16 Dec	N23W75	129	0090	08	Cao	005	B	1				2						
17 Dec	N25W90	131	0060	01	Axx	001	A	1				1						
								3	0	0	5	0	0	0	0	0	0	

Still on Disk.

Absolute heliographic longitude: 131



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			
								7	1	0	11	2	0	0	0	0	

Still on Disk.

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										
								0	0	0	0	0	0	0	0	0	

Still on Disk.

Absolute heliographic longitude: 018

Region 9269

13 Dec	N14E61	033	0040	05	Cso	003	B										
14 Dec	N18E48	033	0040	03	Cso	003	B										
15 Dec	N15E36	032	0120	11	Cao	009	B	1				2					
16 Dec	N16E23	031	0070	06	Dao	013	B										
17 Dec	N14E09	032	0260	10	Dao	017	B					1					
								1	0	0	3	0	0	0	0	0	

Still on Disk.

Absolute heliographic longitude: 032

Region 9270

13 Dec	S10E10	084	0010	03	Bxo	005	B										
14 Dec	S10W03	084															
15 Dec	S10W16	084															
16 Dec	S10W29	084															
17 Dec	S10W42	084															
								0	0	0	0	0	0	0	0	0	

Still on Disk.

Absolute heliographic longitude: 084



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 9271</i>																		
14 Dec	S20W28	109	0010	04	Bxo	002	B											
15 Dec	S19W41	109	0030	06	Bxo	005	B											
16 Dec	S20W54	108	0030	08	Bxo	005	B	1			1							
17 Dec	S20W67	108	0010	00	Axx	001	A	1			1							
								2	0	0	2	0	0	0	0	0	0	0
Still on Disk.																		
Absolute heliographic longitude: 109																		
<i>Region 9272</i>																		
14 Dec	N12E19	062	0020	04	Cao	003	B											
15 Dec	N14E05	063	0030	06	Bxo	005	B											
16 Dec	N12W04	058	0010	08	Bxo	010	B											
17 Dec	N12W21	062	0010	04	Bxo	003	B											
								0	0	0	0	0	0	0	0	0	0	0
Still on Disk.																		
Absolute heliographic longitude: 058																		
<i>Region 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											
								0	0	0	0	0	0	0	0	0	0	0
Still on Disk.																		
Absolute heliographic longitude: 358																		
<i>Region 9274</i>																		
16 Dec	N16W19	073																
								0	0	0	0	0	0	0	0	0	0	0
Still on Disk.																		
Absolute heliographic longitude: 073																		
<i>Region 9275</i>																		
16 Dec	N20W32	086	0030	04	Cao	005	B											
17 Dec	N21W45	086	0020	05	Bxo	007	B				1							
								0	0	0	1	0	0	0	0	0	0	0
Still on Disk.																		
Absolute heliographic longitude: 086																		
<i>Region 9276</i>																		
16 Dec	S15W60	114	0030	04	Bxo	004	B	1			2							
17 Dec	S14W72	113	0120	08	Dao	007	B	6			15							
								7	0	0	17	0	0	0	0	0	0	0
Still on Disk.																		
Absolute heliographic longitude: 114																		



Region Summary- continued.

Location		Sunspot Characteristics					Flares							
Date	(° 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 9277</i>														
17 Dec	N16W63	104	0010	01	Hsx	001	A							
								0	0	0	0	0	0	0
Still on Disk.														
Absolute heliographic longitude: 104														
<i>Region 9278</i>														
17 Dec	N09E67	334	0040	01	Hrx	002	A							
								0	0	0	0	0	0	0
Still on Disk.														
Absolute heliographic longitude: 334														

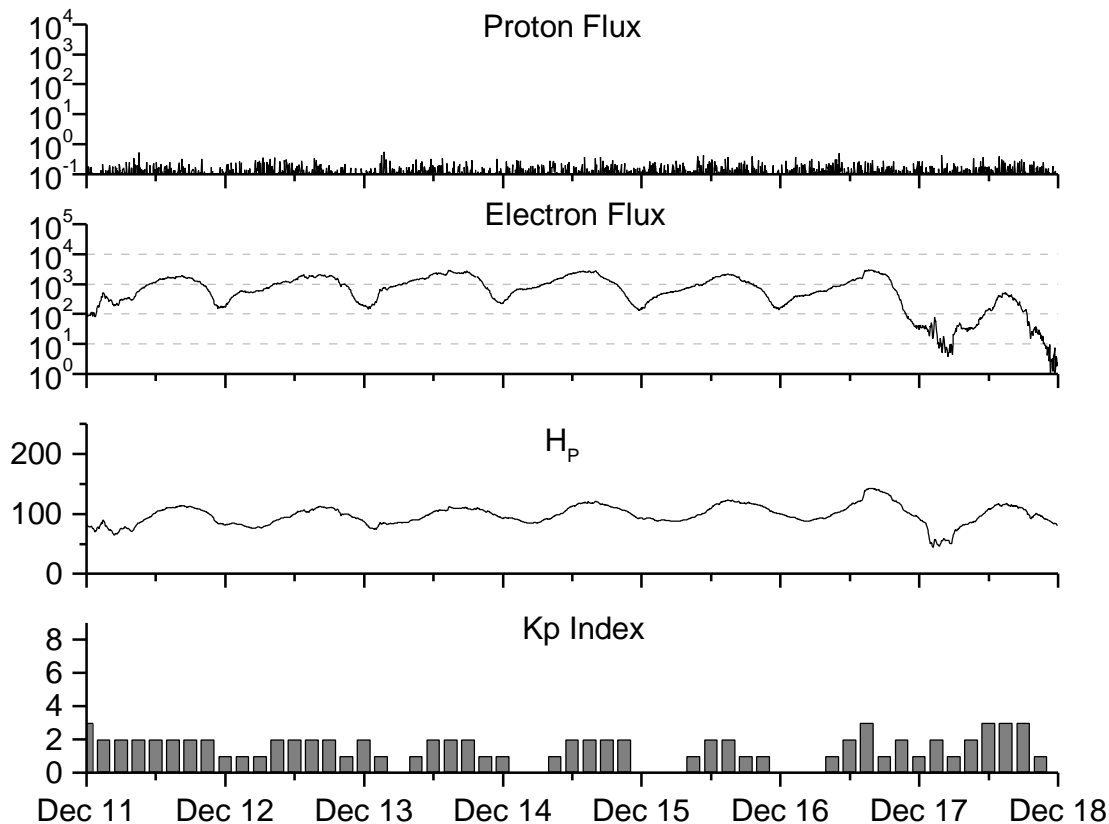


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

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
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 11 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.

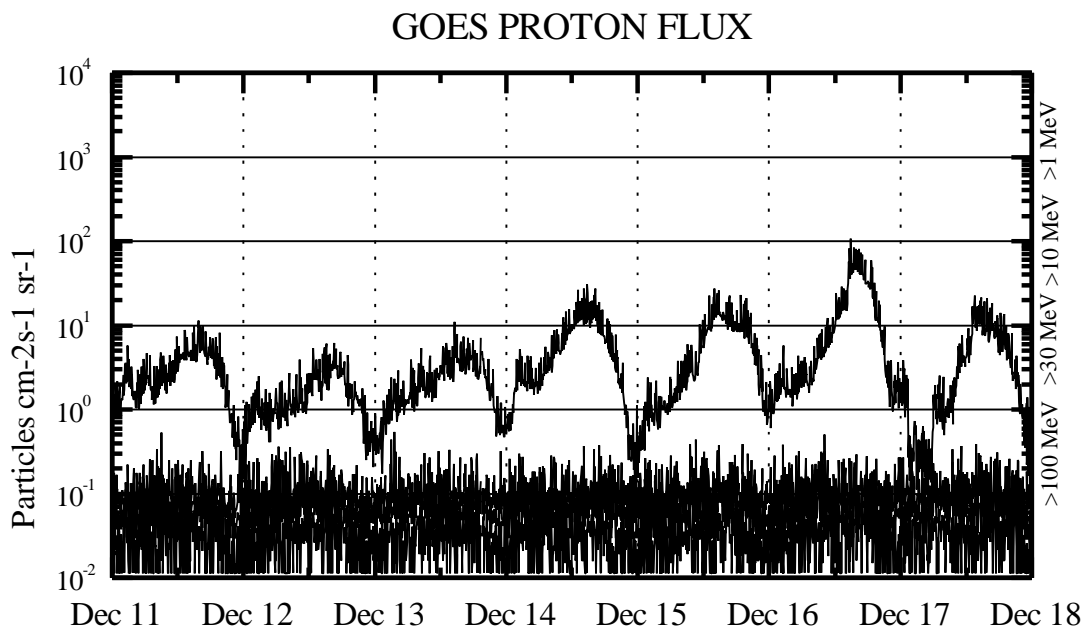
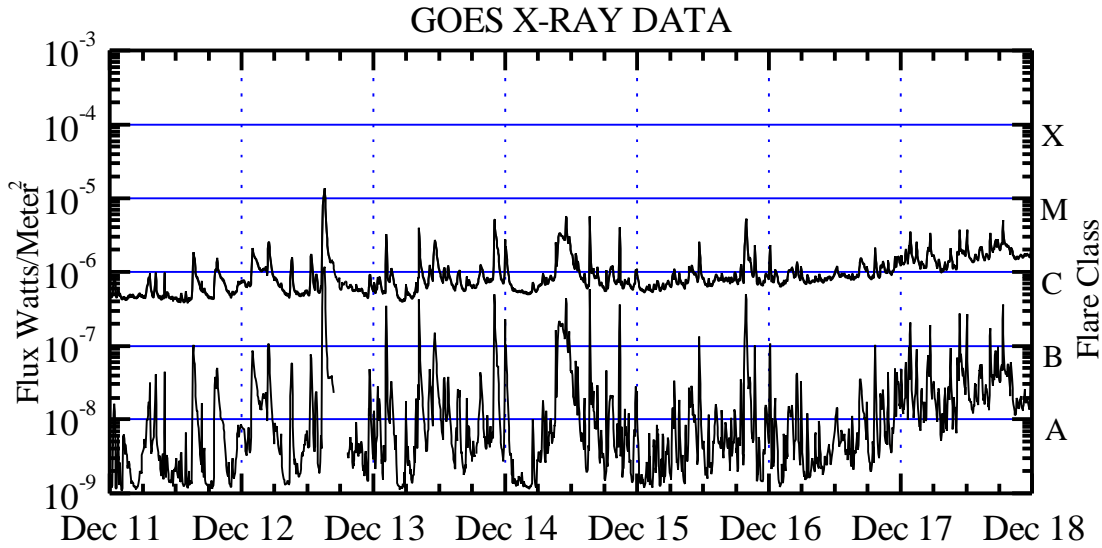
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm² -sec -sr) with energies greater than 2 MeV at GOES-8.

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.

