Space Weather Highlights **SWO PRF 1371**
03 - 09 December 2001 **11 December 2001**

Solar activity alternated between low and moderate levels. Isolated low-level M-class flares occurred during the period (please refer to the Energetic Events or Optical Flares lists for flare times). Sunspot groups of note during the period included Regions 9715, 9718, 9727, and 9733. Region 9715 (N05, L = 137, class/area Ekc/990 on 30 November), which spawned a major flare on 29 November, produced isolated C-class subflares and gradually decayed before it rotated out of view on 06 December. Region 9718 (S07, L = 085, class/area Eki/720 on 06 December), a large, moderately complex sunspot group, was in a gradual growth phase through 05 December as it produced isolated C- and M-class flares. It began to slowly decay on 06 December. Region 9727 (S21, L = 020, class/area Dkc/430 on 07 December) produced isolated C-class and a single M-class flare during the period. It increased in size and magnetic complexity as the period progressed with delta magnetic configurations observed within the northern and eastern portions of the region. Region 9733 (N14, L = 311, class/area Eai/290 on 09 December) produced an M-class flare as it rotated into view on 08 December. It was moderate-sized with a slight degree of magnetic complexity as the period ended. Note: activity increased to high levels on the day of this report due to major flare activity in Region 9733. Details will be provided in next week's issue.

Solar wind data were available from the NASA Advanced Composition Explorer (ACE) spacecraft for most of the period. Solar wind velocities and proton temperatures were elevated during 03 – 07 December suggesting a weak high-speed stream associated with a negative-polarity coronal hole. Solar wind velocities occasionally exceeded 500 km/sec during this time. There were no significant disturbances during the remainder of the period.

There were no proton events detected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at normal levels through 05 December, then increased to normal to moderate levels for the remainder of the period.

Geomagnetic field activity was at quiet to unsettled levels.

Space Weather Outlook
12 December - 07 January 2002

Solar activity is expected to range from low to high levels with isolated low-level M-class flares possible throughout the period. Isolated major flare activity will also be possible during the period. Region 9727 may produce a major flare before it departs the visible disk on 15 December. Region 9733 may produce a major flare before it departs on 21 December. Active longitudes due to return to the visible disk during the latter half of the forecast period will also provide a chance for isolated major flare activity.

There will be a chance for a proton event during the period.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at normal to moderate levels during the majority of the period.

The geomagnetic field is expected to be at quiet to unsettled levels during most of the period.

Daily Solar Data

Date	Radio Flux 10.7 cm	Sun spot No.	Sunspot Area (10^{-6} hemi.)	X-ray Background	Flares: X-ray Flux C	M	X	Flares: Optical S	1	2	3	4
03 December	235	230	2150	C3.6	6	0	0	15	1	0	0	0
04 December	233	214	2140	C1.5	5	2	0	12	0	0	0	0
05 December	237	260	2320	C1.2	8	0	0	10	2	0	0	0
06 December	247	226	2000	C1.0	3	1	0	5	1	1	0	0
07 December	226	200	1700	C1.4	4	0	0	5	1	1	0	0
08 December	221	218	1640	C1.3	5	1	0	4	1	0	0	0
09 December	224	225	1430	C1.5	10	0	0	5	1	0	0	0

Daily Particle Data

Date	Proton Fluence (protons/cm^2-day-sr) >1MeV	>10MeV	>100MeV	Electron Fluence (electrons/cm^2-day-sr) >.6MeV	>2MeV	>4MeV
03 December	1.4E+6	1.9E+4	3.1E+3		1.3E+5	
04 December	1.8E+5	1.4E+4	2.8E+3		9.9E+4	
05 December	1.5E+5	1.3E+4	2.8E+3		1.2E+5	
06 December	1.7E+5	1.2E+4	2.6E+3		4.4E+5	
07 December	1.3E+5	1.1E+4	2.5E+3		7.6E+5	
08 December	9.7E+4	1.0E+4	2.4E+3		2.3E+6	
09 December	5.4E+4	1.1E+4	2.6E+3		2.1E+6	

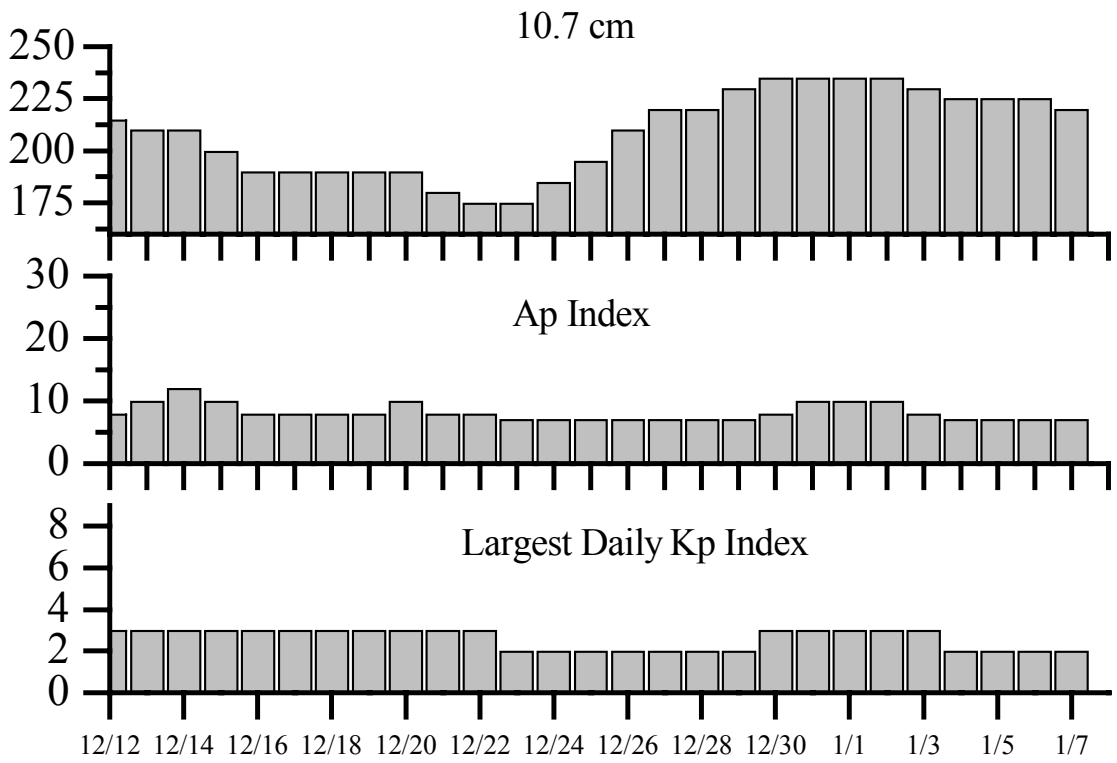
Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg A	K-indices	High Latitude College A	K-indices	Estimated Planetary A	K-indices
03 December	6	0-1-0-1-2-1-3-3	4	0-0-0-0-1-2-3-2	7	1-1-0-1-2-2-3-3
04 December	6	3-1-1-1-2-1-2-2	10	2-1-1-4-4-2-1-1	6	3-2-1-2-2-2-2-2
05 December	7	3-2-1-2-1-2-2-2	11	2-2-3-4-1-3-2-1	8	3-2-2-3-2-2-3-2
06 December	10	2-1-1-3-3-2-3-3	*	*-*-*-*-*-*-*-*	8	2-1-1-3-2-3-3-3
07 December	7	2-1-1-1-3-2-3-2	*	*-*-*-*-*-*-*-*	5	2-1-0-1-2-2-2-2
08 December	7	2-1-2-2-2-2-2-2	7	1-0-2-3-4-1-0-0	5	2-0-2-2-2-2-2-1
09 December	1	0-0-0-1-0-0-0-1	3	0-0-2-1-3-0-0-0	4	1-1-2-1-2-2-1-1

Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UT
03 Dec 0016	1 - 245 MHz Burst	02 Dec
04 Dec 0007	1 - 245 MHz Burst	03 Dec
06 Dec 0006	1 - 245 MHz Burst	05 Dec
08 Dec 0048	7 - 245 MHz Bursts	07 Dec
09 Dec 0045	2 - 245 MHz Bursts	08 Dec
09 Dec 1235	Type II Radio Emission	09 Dec 0443

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
12 Dec	215	8	3	26 Dec	210	7	2
13	210	10	3	27	220	7	2
14	210	12	3	28	220	7	2
15	200	10	3	29	230	7	2
16	190	8	3	30	235	8	3
17	190	8	3	31	235	10	3
18	190	8	3	01 Jan	235	10	3
19	190	8	3	02	235	10	3
20	190	10	3	03	230	8	3
21	180	8	3	04	225	7	2
22	175	8	3	05	225	7	2
23	175	7	2	06	225	7	2
24	185	7	2	07	220	7	2
25	195	7	2				

Energetic Events

Date	Time			X-ray		Optical Information			Peak Radio Flux		Sweep Freq Intensity	
	Begin	Max	½ Max	Class	Integ Flux	Imp/Location Brtns	Lat CMD	Rgn #	245	2695	II	IV
04 Dec	0037	0045	0053	M1.0	.007	SF	S05E03	9718				
04 Dec	0537	0546	0558	M1.3	.012			9718		16		
06 Dec	0813	0826	0839	M1.0	.012	2F	S19E34	9727				
08 Dec	0602	0634	0655	M3.4	.088							

Flare List

Date	Time			X-ray	Optical		Rgn
	Begin	Max	End	Class.	Imp / Brtns	Location Lat CMD	
03 December	0012	0013	0022		SF	N07W36	9715
	0016	0016	0020		SF	S06W21	9716
	0246	0248	0302		SF	S07W22	9716
	0556	0557	0600		SF	S01W42	9715
	0608	0609	0611		SF	S07W25	9716
	B0709	0711	0722	C7.0	1F	S02W40	9715
	0915	0920	0936		SF	S07E12	9718
	0958	1005	1022		SF	N04W41	9715
	1052	1055	1102	C3.4	SF	N01W43	9715
	1221	1225	1228		SF	S04W28	9716
	1453	1453	1509		SF	S05W29	9716
	1619	1623	1639	C3.7	SF	S06E09	9718
	1703	1706	1734	C4.6	SF	S06E08	9718
	1823	1824	1826		SF	S11W53	9725
	1830	1832	1931	C6.9	SF	S06E07	9718
	1848	1849	1855	C6.1	SF	N06W44	9715
04 December	B0042	U0043	0112	M1.0	SF	S05E03	9718
	0131	0132	0138	C3.8	SF	S09W60	9725
	0203	0207	0221		SF	S02W38	9716
	0255	0300	0307		SF	S10W61	9725
	0312	0313	0314		SF	S09W62	9725
	0438	0443	0449	C3.4			9718
	0537	0546	0558	M1.3			9718
	B0618	U0619	0624		SF	S05W04	9718
	0728	0730	0752	C3.3	SF	S06W02	9718
	0741	0744	0750		SF	N04W13	9717
	B0859	U0859	0912	C4.3	SF	S05W02	9718
	1145	1148	1216		SF	S07W04	9718
	1923	1924	1934		SF	S05W41	9716
	2157	2158	2204	C1.9	SF	S07W07	9718
05 December	0311	0311	0318		SF	S06W47	9716
	0352	0355	0406	C2.5	SF	S06W50	9716
	0656	0656	0701	C2.3	SF	S07W48	9716
	0804	0810	0818	C2.6			9715
	1144	1144	1149	C2.1	SF	N04W71	9715

Flare List - continued.

Date	Time Begin	Time Max	Time End	X-ray	Optical Imp / Class.	Optical Location Brtns	Rgn Lat CMD
05 December	1511	1511	1513		SF	N02W74	9715
	1726	1730	1741	C2.6	1F	S06W54	9716
	1847	1848	1920		SF	S22E47	9727
	1904	1905	1908		SF	S20E47	9727
	2037	2037	2042	C1.7	SF	S05W23	9718
	B2207	U2208	A2215	C2.6	SF	S21E41	9727
	2216	2216	A2240		1F	S22E44	9727
	2323	2323	2332	C1.9	SF	S19E40	9727
06 December	0051	0051	0055		SF	N35W22	9728
	0430	0437	0443	C4.2			
	0807	0823	0918	M1.0	2F	S19E34	9727
	1353	1353	1400		SF	S03W72	9716
	1510	1511	1520		SF	S21E36	9727
	1558	1558	1602		SF	N36W30	9728
	1850	1908	1936	C7.6	1F	S23W25	9720
	1903	1909	1912		SF	N09E12	9724
	2052	2058	2101	C3.5			9727
07 December	0233	0307	0347		SF	N24W15	9729
	0435	0439	0442	C2.5			
	0502	0503	0507		SF	S06W77	9716
	0514	0525	0613	C3.9	1F	N02W49	9717
	0806	0809	0904	C8.2	2F	S18E22	9727
	1157	1159	1202		SF	N11E00	9724
	1642	1705	1733	C4.1			
	1743	1743	1818		SF	S16E24	9730
	1859	1901	1905		SF	N03E64	9732
08 December	0156	0224	0256	C5.3			9733
	0431	0431	0439	C2.9	SF	S06W55	9718
	0602	0634	0655	M3.4			
	1051	1114	1132	C4.5			9733
	1534	1537	1542		SF	S21W57	9720
	2138	2140	2211	C4.2	1F	S21W01	9727
	2212	2215	2222		SF	N15E65	9733
	2216	2220	2236	C5.3	SF	S24E01	9727
09 December	0417	0421	0424	C2.0			9734
	0425	0458	0514	C2.6			9734
	0448	0450	0452		SF	N26E08	9731
	0636	0639	0647		SF	S07W69	9718
	1232	1236	1241	C2.3			9718

Flare List - continued.

Date	Time Begin	Time Max	Time End	X-ray	Optical Imp / Class.	Optical Location Brtns	Rgn Lat CMD
09 December	1341	1342	1346	C2.2	SF	N10E66	9733
	1426	1428	1518		SF	S20W08	9727
	1526	1538	1626	C6.8	1F	S22W12	9727
	1632	1636	1646	C3.2			9733
	1726	1802	1829	C6.3			9733
	2030	2030	2101	C4.5	SF	S21W09	9727
	2305	2309	2313	C2.6			9732
	2328	2331	2337	C2.3			9733

Region Summary

Date	Location Helio (° Lat ° CMD)	Lon	Area (10^{-6}	Extent hemi)	Spot (helio)	Spot Class	Mag Count	Flares X-ray Class	X-ray C	Optical M	Optical X	Optical S	Optical 1	Optical 2	Optical 3	Optical 4
	Region 9712															
21 Nov	N13E71	176	0050	06	CSO	004	B									
22 Nov	N12E58	175	0090	05	DSO	007	B									
23 Nov	N11E43	177	0080	05	DAO	011	B									
24 Nov	N11E30	177	0090	07	DAO	015	B									
25 Nov	N12E16	178	0080	08	DAO	018	B									
26 Nov	N12E03	178	0080	07	DSO	020	B									
27 Nov	N11W10	178	0100	07	DAO	020	B									
28 Nov	N12W24	178	0140	07	DAO	019	B									
29 Nov	N12W37	178	0070	05	DAO	012	B			2						
30 Nov	N12W53	181	0030	05	CSO	003	B			1						
01 Dec	N12W65	180	0020	04	CSO	003	B									
02 Dec	N12W78	180	0000	01	AXX	001	A									
03 Dec	N12W91	180														
								0	0	0	3	0	0	0	0	

Crossed West Limb.
Absolute heliographic longitude: 178

Region Summary - continued.

Date	Location (° Lat ° CMD)	Helio Lon	Sunspot Characteristics Area (10^{-6} hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	Flares X-ray C	M	X	Optical S	1	2	3	4
	Region 9715														
23 Nov	N07E80	140	0040	03	HSX	001	A								
24 Nov	N06E69	138	0100	08	CSO	004	B				2				
25 Nov	N06E58	136	0250	11	EAO	008	B				4				
26 Nov	N06E44	137	0460	12	EKI	027	BG	2			3				
27 Nov	N05E30	138	0500	12	EKI	029	BG	1	1		2	1			
28 Nov	N05E17	137	0600	12	EKC	043	BGD	5	1		4	3			
29 Nov	N05E04	137	0910	15	EKC	053	BGD	9	2		9	2			
30 Nov	N05W11	139	0990	16	EKC	025	BGD	3			5				
01 Dec	N05W23	138	0890	11	EKC	031	BGD	2			2				
02 Dec	N04W37	139	0800	10	DKC	045	BGD	1			6				
03 Dec	N04W49	137	0690	10	DKI	027	BG	3			5	1			
04 Dec	N05W63	138	0550	10	DKO	016	BG								
05 Dec	N04W76	138	0520	09	DKO	011	BG	2			2				
06 Dec	N03W91	140	0160	04	HSX	002	A								
								28	4	0	44	7	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 137

Date	Location (° Lat ° CMD)	Helio Lon	Sunspot Characteristics Area (10^{-6} hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	Flares X-ray C	M	X	Optical S	1	2	3	4
	Region 9716														
25 Nov	S04E73	121	0040	01	HAX	001	A								
26 Nov	S05E57	124	0040	06	CSO	004	B	1			1				
27 Nov	S05E42	126	0060	04	CSO	004	B								
28 Nov	S05E28	126	0070	05	CSO	005	B								
29 Nov	S06E16	125	0060	05	CAO	008	B								
30 Nov	S05E01	127	0050	04	CAO	003	B								
01 Dec	S04W10	125	0030	07	CSO	004	B								
02 Dec	S04W23	125	0040	09	DAO	008	B				1				
03 Dec	S05W36	124	0080	09	DAO	019	B				5				
04 Dec	S06W49	124	0080	09	DAO	011	BG				2				
05 Dec	S06W61	123	0070	08	DAO	010	B	3			3	1			
06 Dec	S05W72	121	0010	01	AXX	002	A				1				
07 Dec	S05W86	122	0010	00	AXX	001	A				1				
								4	0	0	14	1	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 127

Region Summary - continued.

Date	Location (° Lat ° CMD)	Helio Lon	Sunspot Characteristics Area (10^{-6} hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	Flares X-ray C	M	X	Optical S	1	2	3	4
	Region 9717														
27 Nov	N06E78	090	0160	03	HAX	001	A								
28 Nov	N04E65	089	0230	08	CAO	002	B								
29 Nov	N04E53	088	0280	14	EKO	004	B	1							
30 Nov	N05E40	088	0320	13	EKO	003	B								
01 Dec	N04E27	088	0270	14	EAO	003	B				2				
02 Dec	N05E13	089	0230	14	EAO	006	B	1			3	1			
03 Dec	N04E00	088	0210	16	FAI	011	BG								
04 Dec	N04W13	088	0170	12	EAO	006	B				1				
05 Dec	N05W31	093	0150	10	CSO	004	B								
06 Dec	N05W44	093	0130	12	CSO	004	B								
07 Dec	N05W61	097	0110	02	HSX	001	A	1				1			
08 Dec	N05W74	097	0100	02	HSX	001	A								
09 Dec	N05W88	097	0070	03	HSX	001	A								
								3	0	0	6	2	0	0	0

Still on Disk.
Absolute heliographic longitude: 088

Date	Location (° Lat ° CMD)	Helio Lon	Sunspot Characteristics Area (10^{-6} hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	Flares X-ray C	M	X	Optical S	1	2	3	4
	Region 9718														
27 Nov	S06E84	084	0060	02	HAX	006	A	3			7	1			
28 Nov	S07E70	084	0410	10	DAI	005	B	1			10				
29 Nov	S07E58	083	0440	11	EKI	013	B	1			1				
30 Nov	S07E42	086	0500	12	EKO	012	B	3	1		3	1			
01 Dec	S07E30	085	0540	12	EKI	016	BG		2		2	1	1		
02 Dec	S06E17	085	0600	12	EKI	030	BG	1			2				
03 Dec	S07E03	085	0650	12	EKI	030	BG	3			4				
04 Dec	S06W09	085	0660	11	EKI	027	BG	4	2		6				
05 Dec	S07W24	086	0660	11	EAI	034	BG	1			1				
06 Dec	S07W38	087	0720	11	EKI	023	BG								
07 Dec	S06W51	087	0540	10	DKI	017	BG								
08 Dec	S06W63	086	0470	10	DKI	015	B	1			1				
09 Dec	S06W76	085	0280	09	DAO	010	B	1			1				
								19	5	0	38	3	1	0	0

Still on Disk.
Absolute heliographic longitude: 085

Region Summary - continued.

Date	Location (° Lat ° CMD)	Helio Lon	Sunspot Characteristics: Area (10^{-6} hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	Flares: X-ray C	X-ray M	X-ray X	Optical S	Optical 1	Optical 2	Optical 3	Optical 4
	Region 9719														
28 Nov	N03E03	151	0020	01	HSX	001	A								
29 Nov	N03W10	151	0030	06	CAO	007	B								
30 Nov	N04W24	152	0060	06	DSO	006	B								
01 Dec	N03W38	153	0040	05	DSO	004	B								
02 Dec	N04W51	153	0040	07	DSO	006	B								
03 Dec	N04W64	153													
04 Dec	N04W77	153													
05 Dec	N04W90	153													
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 151

Date	Location (° Lat ° CMD)	Helio Lon	Sunspot Characteristics: Area (10^{-6} hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	Flares: X-ray C	X-ray M	X-ray X	Optical S	Optical 1	Optical 2	Optical 3	Optical 4
	Region 9720														
28 Nov	S18E72	082	0150	09	DAO	004	B								
29 Nov	S18E54	087	0120	10	DAO	009	B				3				
30 Nov	S18E46	082	0150	12	EAO	009	B		1						
01 Dec	S18E33	082	0070	11	EAO	010	B								
02 Dec	S18E20	082	0040	09	CAO	012	B								
03 Dec	S18E05	083	0040	08	DAO	011	B								
04 Dec	S20W08	083	0040	11	ESO	006	B								
05 Dec	S22W16	078	0060	12	ESO	011	B								
06 Dec	S23W29	078	0040	09	DSO	009	B	1				1			
07 Dec	S26W41	077	0070	09	DSO	009	B								
08 Dec	S27W52	075	0050	10	DAO	010	B				1				
09 Dec	S28W63	072	0040	10	DSO	009	B								
								1	1	0	4	1	0	0	0

Still on Disk.
Absolute heliographic longitude: 083

Region Summary - continued.

Date	Location (° Lat ° CMD)	Helio Lon	Sunspot Characteristics Area (10^{-6} hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	Flares X-ray C	M	X	Optical S	1	2	3	4
	Region 9721														
28 Nov	N10E78	076	0120	01	HAX	001	A								
29 Nov	N12E70	071	0130	08	CAO	003	B								
30 Nov	N13E57	071	0140	10	DSO	003	B								
01 Dec	N13E43	072	0160	09	DAO	004	B								
02 Dec	N13E30	072	0170	16	CAO	007	B								
03 Dec	N13E16	072	0190	12	CAO	006	B								
04 Dec	N12E02	073	0200	06	CSO	003	B								
05 Dec	N11W11	073	0210	02	HSX	001	A								
06 Dec	N11W25	074	0220	03	HSX	003	A								
07 Dec	N12W37	073	0130	08	CAO	004	B								
08 Dec	N11W52	075	0100	03	DAO	004	B								
09 Dec	N11W64	073	0110	05	DAO	003	B								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 073

Date	Location (° Lat ° CMD)	Helio Lon	Sunspot Characteristics Area (10^{-6} hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	Flares X-ray C	M	X	Optical S	1	2	3	4
	Region 9722														
01 Dec	S16W19	134	0030	04	DSO	004	B								
02 Dec	S15W34	136	0040	05	DSO	004	B								
03 Dec	S15W47	136													
04 Dec	S15W60	136													
05 Dec	S15W73	136													
06 Dec	S15W86	136													
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 134

Date	Location (° Lat ° CMD)	Helio Lon	Sunspot Characteristics Area (10^{-6} hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	Flares X-ray C	M	X	Optical S	1	2	3	4
	Region 9723														
01 Dec	S09E45	070	0020	01	HSX	001	A								
02 Dec	S06E31	071	0020	04	CSO	003	B								
03 Dec	S04E16	072	0010	02	AXX	002	A								
04 Dec	S05E03	072	0040	04	DSO	005	B								
05 Dec	S04W11	073	0040	06	DAO	007	B								
06 Dec	S04W25	074	0040	06	DSO	007	B								
07 Dec	S04W38	074	0040	05	DRO	005	B								
08 Dec	S04W54	077	0040	05	DSO	003	B								
09 Dec	S05W68	077	0040	05	CSO	003	B								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 072

Region Summary - continued.

Date	Location (° Lat ° CMD)	Helio Lon	Sunspot Characteristics Area (10^{-6} hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	Flares X-ray C	M	X	Optical S	1	2	3	4
			Region 9724												
01 Dec	N09E74	041	0070	03	HSX	001	A		1		1				
02 Dec	N09E59	043	0050	02	HSX	001	A								
03 Dec	N10E47	041	0060	03	CSO	003	B								
04 Dec	N10E33	042	0050	03	CSO	003	B								
05 Dec	N10E19	043	0060	03	DSO	003	B								
06 Dec	N10E06	043	0040	03	DSO	003	B				1				
07 Dec	N10W07	043	0060	03	DSO	006	B				1				
08 Dec	N10W20	043	0040	04	CSO	005	B								
09 Dec	N10W33	042	0030	02	HSX	001	A								
								0	1	0	3	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 043

			Region 9725												
02 Dec	S11W45	147	0030	03	DSO	003	B								
03 Dec	S10W59	147	0030	06	DSO	006	B				1				
04 Dec	S10W72	147	0050	08	DSO	006	B	1			3				
05 Dec	S10W86	148	0050	09	DSO	003	B								
								1	0	0	4	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 147

			Region 9726												
02 Dec	S15E69	033	0070	03	DSO	002	B								
03 Dec	S16E55	033	0070	03	CSO	002	B								
04 Dec	S16E42	033	0060	04	CSO	004	B								
05 Dec	S16E29	033	0060	05	DSO	005	B								
06 Dec	S17E16	033	0070	03	CSO	003	B								
07 Dec	S16E03	033	0080	05	DSO	007	B								
08 Dec	S17W09	032	0060	06	DSO	008	B								
09 Dec	S16W22	031	0040	05	DSO	008	B								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 033

Region Summary - continued.

Date	Location (° Lat ° CMD)	Helio Lon	Sunspot Characteristics Area (10^{-6} hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	Flares X-ray C	M	X	Optical S	1	2	3	4
	Region 9727														
03 Dec	S22E68	020	0120	04	CSO	003	B								
04 Dec	S22E57	018	0220	07	CKO	004	B								
05 Dec	S21E42	020	0320	08	DKO	014	BGD	2			4	1			
06 Dec	S21E29	020	0400	08	DKO	012	BGD	1	1		1		1		
07 Dec	S22E16	020	0430	05	DKC	008	BGD	1				1	1		
08 Dec	S22E03	020	0370	07	DKI	021	BGD	2			1	1			
09 Dec	S20W10	019	0360	09	DAI	023	BGD	2			2	1			
								8	1	0	8	4	2	0	0

Still on Disk.
Absolute heliographic longitude: 020

	Region 9728														
04 Dec	N36W07	082	0020	03	DSO	003	B								
05 Dec	N36W20	082	0060	07	DSO	009	B								
06 Dec	N35W34	083	0100	09	DAO	009	B				2				
07 Dec	N36W47	083	0110	12	EAO	005	B								
08 Dec	N36W60	083	0070	12	ESO	004	B								
09 Dec	N35W71	080	0050	12	ESO	005	B								
								0	0	0	2	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 082

	Region 9729														
05 Dec	N24E04	058	0040	04	CAO	006	B								
06 Dec	N24W11	060	0020	05	DRO	003	B								
07 Dec	N23W22	058	0020	00	HRX	001	A				1				
08 Dec	N23W35	058													
09 Dec	N23W48	058													
								0	0	0	1	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 058

	Region 9730														
05 Dec	S13E49	013	0020	01	HRX	002	A								
06 Dec	S12E34	015	0010	03	CRO	002	B								
07 Dec	S12E21	015									1				
08 Dec	S12E08	015													
09 Dec	S12W05	015													
								0	0	0	1	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 015

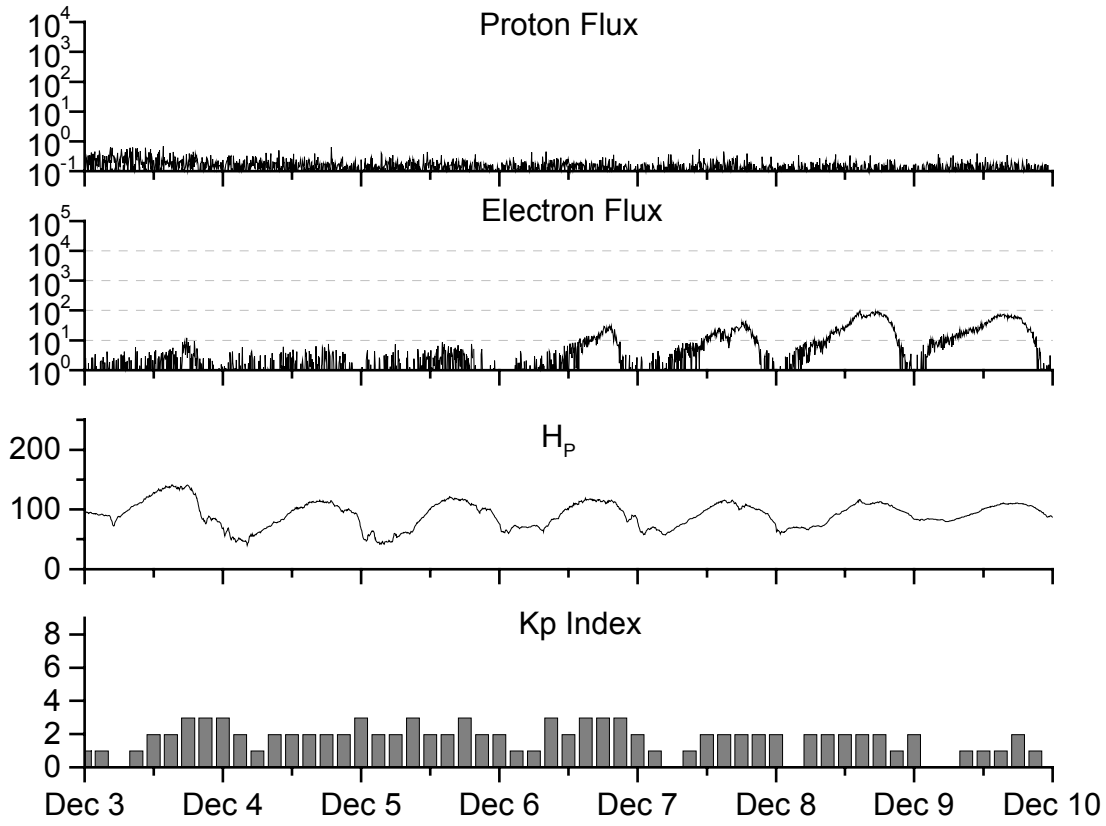
Region Summary - continued.

Date	Location (° Lat ° CMD)	Helio Lon	Area (10^{-6} hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	Flares X-ray C	M	X	Optical S	1	2	3	4
	Region 9731														
06 Dec	N24E36	013	0040	03	DSO	004	B								
07 Dec	N24E23	013	0030	05	DSO	003	B								
08 Dec	N24E09	014	0020	05	CRO	003	B								
09 Dec	N25W04	013	0010	06	BXO	005	B				1				
								0	0	0	1	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		013													
	Region 9732														
07 Dec	N03E64	332	0070	08	DSO	003	B				1				
08 Dec	N04E52	331	0080	09	DSO	005	B								
09 Dec	N04E36	333	0060	08	CSO	004	B	1							
								1	0	0	1	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		333													
	Region 9733														
08 Dec	N14E67	316	0240	12	EAO	019	B	2			1				
09 Dec	N14E58	311	0290	15	EAI	021	B	4			1				
								6	0	0	2	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		311													
	Region 9734														
09 Dec	S12E81	288	0050	10	CAO	002	B	2							
								2	0	0	0	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		288													

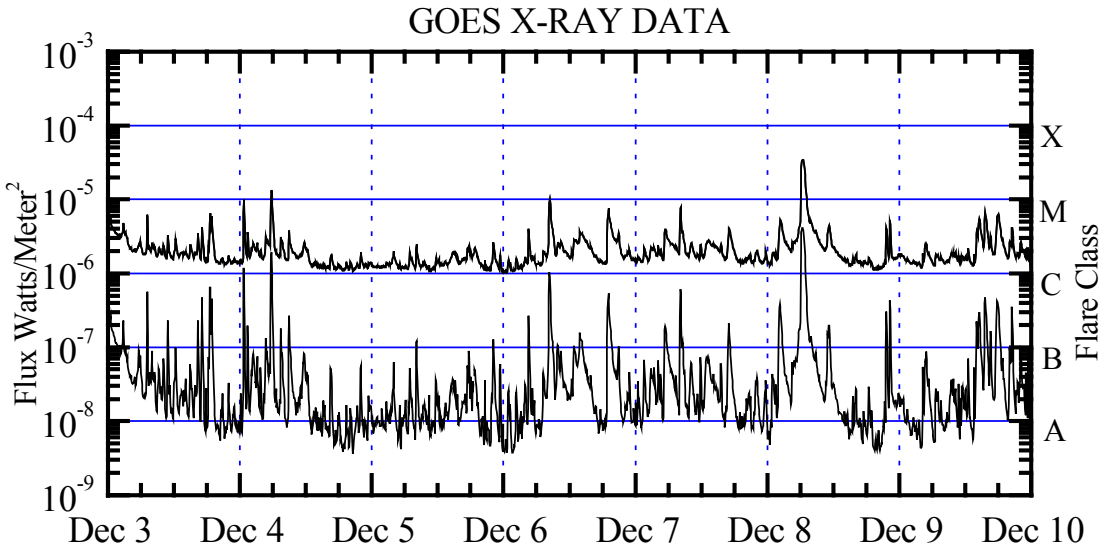
Recent Solar Indices (preliminary)
of the observed monthly mean values

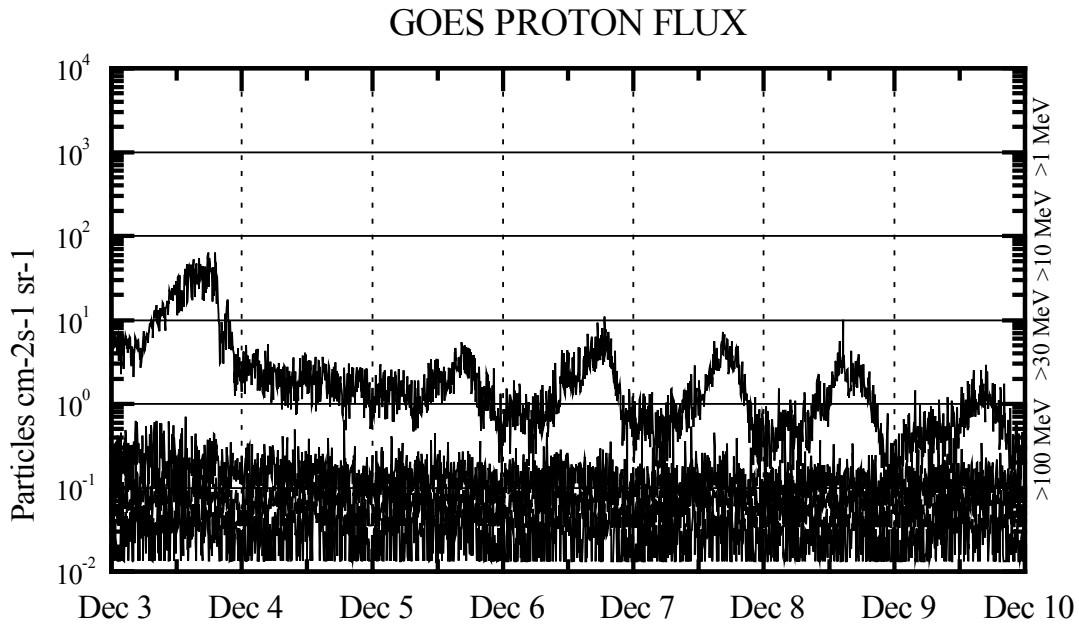
	Sunspot Numbers					Radio Flux		Geomagnetic	
	Observed values		Ratio	Smooth values		*Penticton	Smooth	Planetary	Smooth
Month	SWO	RI	RI/SWO	SWO	RI	10.7 cm	Value	Ap	Value
					1999				
December	123.5	86.4	0.69	165.9	111.1	169.8	173.4	10	13.8
					2000				
January	140.8	90.1	0.64	168.0	112.9	158.1	175.5	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			173.7		12	
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	

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 03 December 2001
Protons plot contains the five-minute averaged integral proton flux (protons/cm^2 –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^2 –sec –sr) with energies greater than 2 MeV at GOES-8.
Hp 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.
Kp 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 Kp 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 Kp are " global " parameters that are applicable to a first order approximation over large areas. Hparallel is subject to more localized phenomena and the measurements generally are applicable to within a few degrees of longitude of the measuring satellite.





W*eekly GOES Satellite X-ray and Proton Plots*

X-ray plot contains five-minute averaged x-ray flux (watts/m$^{2)}$ 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^2 –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^2-sec-sr) at greater than 10 MeV.