Space Weather Highlights
09-15 November 1998

Solar activity ranged from low to moderate. Region 8375 (N18, L = 183, class/area Eki/720 on 08 November), producer of last week's major flare, remained moderately large in size and magnetic complexity until it crossed the west limb on 11 November. It produced a few M-class flares as it crossed, including an M1/SF at 10/1544UT with an associated loop prominence system. Region 8375 was also responsible for a C-class flare observed about two days beyond the west limb at 14/0508UT with an associated major Type IV radio sweep and a solar proton event (see the discussion below). Region 8385 (N20, L = 114, class/area Eso/110 on 13 November) showed minor growth during the period and produced an isolated M1/1N at 12/0528UT and occasional C-class flares, all with weak radio emission. A prominence erupted from the northwest limb late on 09 November and was associated with a partial-halo CME.

Real-time solar wind data were available from the Advanced Composition Explorer (ACE) spacecraft during most of the period. CME effects were evident during 09 November with southward Bz during most of the day (maximum southerly deflections to minus 15 nT (GSM)), elevated wind velocities and enhanced densities. CME effects were also apparent on 13 - 14 November with mostly southward Bz (maximum deflections to 19 nT early on 14 November), mildly increased velocities, and significantly increased particle densities.

A greater than 10 MeV proton event followed the C1 limb flare of 14/0508UT. It began at 14/0810UT, reached a maximum of 310 PFU at 14/1240UT, and ended at 16/0955UT. A greater than 100 MeV proton event also followed the flare. It began at 14/0755UT, reached a maximum of 6.1 PFU at 14/0950UT, and ended at 14/1645UT.

The greater than 2 MeV electron flux at geosynchronous altitude reached high levels briefly on 11 November and again during 12 November. Otherwise, fluxes were at normal to moderate levels.

The geomagnetic field was at active to severe storm levels on 09 November as a CME-related storm continued. The storm abated on 10 November and the field became mostly quiet through 12 November. Field activity increased to storm levels during 13 - 14 November as the 09 November CME intersected the Earth. Active to major storm levels occurred during this disturbance with brief severe storm periods detected at high latitudes. The storm ended on 15 November as field activity declined to quiet to unsettled levels.

Space Weather Forecast
18 November -14 December 1998

Solar activity is expected to be low during most of the period with a fair chance for isolated M-class flares. M-class flare probabilities may increase during 25 November - 08 December with the return of old Region 8375. Proton flare probabilities may increase with the return of old Region 8375.

The greater than 2 MeV electron flux at geosynchronous altitude is expected to be at normal to moderate levels during most of the period. However, moderate to high fluxes are expected around 19 - 23 November.

The geomagnetic field is expected to range from unsettled to minor storm levels through 20 November due to coronal hole effects with major storm periods possible at high latitudes. Quiet to unsettled conditions are expected during the rest 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
09 November	162	107	1310	C1.5	7	0	0	10	0	0	0	0
10 November	154	81	1260	C1.2	10	1	0	16	1	0	0	0
11 November	147	82	930	C1.3	11	2	0	7	0	0	0	0
12 November	142	85	800	C1.3	7	1	0	5	1	0	0	0
13 November	127	97	850	B7.1	2	0	0	3	0	0	0	0
14 November	127	129	1050	B7.0	5	0	0	9	0	0	0	0
15 November	126	110	770	B4.5	2	0	0	1	0	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
09 November	1.0E+7	1.9E+4	2.7E+3		8.0E+6	
10 November	4.9E+5	1.5E+4	2.7E+3		1.9E+7	
11 November	7.4E+5	1.4E+4	3.1E+3		4.5E+7	
12 November	1.5E+6	1.6E+4	4.4E+3		1.2E+8	
13 November	1.1E+6	1.5E+4	4.0E+3		1.5E+7	
14 November	2.1E+7	7.1E+6	1.4E+5		1.2E+7	
15 November	1.1E+7	3.1E+6	1.4E+4		2.2E+7	

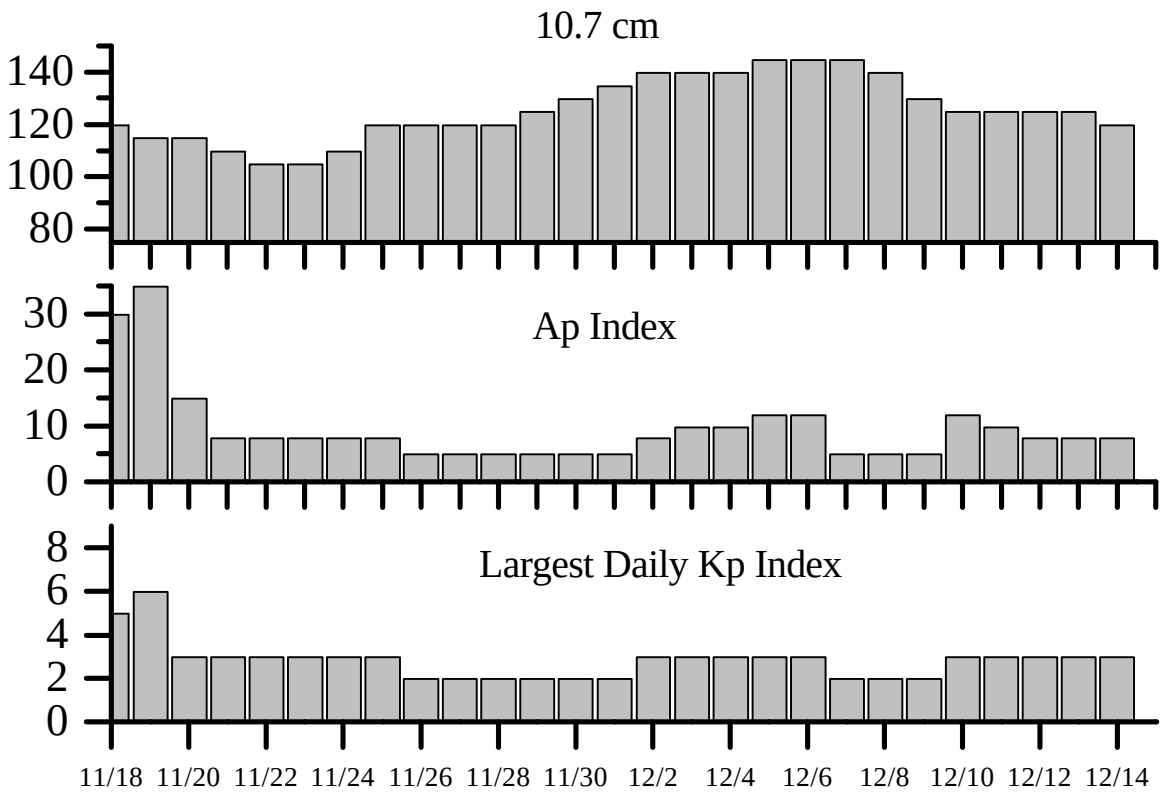
Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg A	K-indices	High Latitude College A	K-indices	Estimated Planetary A	K-indices
09 November	30	4-4-5-5-5-3-3-3	130	4-4-7-9-7-7-7-4	78	4-5-7-7-6-6-5-4
10 November	5	3-1-1-2-1-1-1-1	8	3-2-1-4-1-1-1-0	6	3-1-1-3-1-1-1-1
11 November	2	0-0-0-1-1-1-1-1	*	0-*-*-0-0-0-1-0	4	0-0-1-1-1-1-2-2
12 November	3	0-0-2-0-1-0-2-2	*	0-0-*-0-0-0-1-0	4	0-0-1-1-1-1-1-2
13 November	36	6-4-4-5-4-4-4-4	92	5-6-6-7-7-7-6-4	60	5-5-6-6-5-5-5-5
14 November	21	4-4-3-5-4-2-3-1	46	3-6-5-7-5-3-3-2	38	5-6-5-6-5-4-3-2
15 November	5	1-1-1-1-2-2-2-2	*	1-1-2-*-*-3-3-3	10	1-1-1-3-3-2-3-3

Alerts and Warnings Issued

Date and Time of Issue (UT)	Type of Alert or Warning	Date and Time of Event (UT)
09 Nov 0009	8-245 MHz Bursts	08 Nov
09 Nov 0901	K ≥ 6 Observed	09 Nov 06 - 09
09 Nov 1038	A ≥ 30 Watch	09 Nov
09 Nov 1201	A≥30 Observed CONTINUED	08 Nov 0600
10 Nov 0111	2-245 MHz Bursts	09 Nov
10 Nov 1200	ENDED A ≥ 30 Observed	08 Nov 0600
10 Nov 1200	ENDED A ≥ 50 Observed	08 Nov 1200
11 Nov 0057	2-245 MHz Bursts	10 Nov
11 Nov 1653	>2MeV @ ≥1000pfu Electron Event	11 Nov 1640
12 Nov 0141	245 MHz Radio Noise Storm	11 Nov
12 Nov 1156	>2MeV @ ≥1000pfu Electron Event CONTINUED	11 Nov 1640
13 Nov 0011	2-245 MHz Bursts	12 Nov
13 Nov 0300	K= 5 Observed	13 Nov 00 - 03
13 Nov 0900	K≥6 Observed	13 Nov 06 - 09
13 Nov 0907	A≥20 Observed	13 Nov 0900
13 Nov 1201	>2MeV @ ≥1000pfu Electron Event CONTINUED	11 Nov 1640
13 Nov 1450	A≥30 Observed	13 Nov 1500
13 Nov 1800	K= 5 Observed	13 Nov 15 - 18
14 Nov 0604	K= 5 Observed	14 Nov 03 - 06
14 Nov 0721	Type IV Radio Emission	14 Nov 0501
14 Nov 0814	Proton Event >1pfu @ ≥100MeV	14 Nov 0755
14 Nov 0823	Proton Event >10pfu @ ≥10MeV	14 Nov 0810
14 Nov 1209	Proton Event >10pfu @ ≥10MeV CONTINUED	14 Nov 0810
14 Nov 1209	Proton Event >1pfu @ ≥100MeV CONTINUED	14 Nov 0755
14 Nov 1800	K= 4 Observed	14 Nov 15 - 18
15 Nov 0049	2-245 MHz Bursts	13 Nov
15 Nov 0035	A≥30 Observed ENDED	13 Nov 1500
15 Nov 0623	Proton Event >1pfu @ ≥100MeV ENDED	14 Nov 0755
15 Nov 1206	Proton Event >10pfu @ ≥10MeV CONTINUED	14 Nov 0810

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
18 Nov	120	30	5	02 Dec	140	8	3
19	115	35	6	03	140	10	3
20	115	15	3	04	140	10	3
21	110	8	3	05	145	12	3
22	105	8	3	06	145	12	3
23	105	8	3	07	145	5	2
24	110	8	3	08	140	5	2
25	120	8	3	09	130	5	2
26	120	5	2	10	125	12	3
27	120	5	2	11	125	10	3
28	120	5	2	12	125	8	3
29	125	5	2	13	125	8	3
30	130	5	2	14	120	8	3
01 Dec	135	5	2				

Energetic Events

Date	Time (UT)			X-ray		Optical Information			Peak Radio Flux		Sweep Freq Intensity	
	Begin	Max	½ Max	Class	Integ Flux	Imp Brtns	Location Lat CMD	Rgn #	245	2695	II	IV
10 Nov	1540	1544	1550	M1.8	.008	SF	N23W77	8375				
11 Nov	0402	0407	0412	M1.0	.004							
11 Nov	1010	1016	1024	M1.1	.006							
12 Nov	0523	0528	0530	M1.0	.002	1N	N21W34	8385		51		

Flare List

Date	Time			X-ray	Optical		
	Begin	Max	End	Class.	Imp / Brtns	Location Lat CMD	Rgn #
09 November	0002	0003	0019		SF	N22W61	8375
	0022	0029	0056	C5.3	SF	N19W62	8375
	0122	0129	0151		SF	N17W61	8375
	0143	0153	0204	C3.9			8384
	0258	0310	0332		SF	N19W63	8375
	0527	0528	0530		SF	N19W65	8375
	1326	1330	1334	C2.2			
	1441	1443	1448		SF	N23W68	8375
	1453	1455	1506	C3.1	SF	N23W69	8375
	1506	1509	1517		SF	N19W70	8375
	1939	2014	2040	C3.4			
	2111	2114	2120	C4.9			
	2219	2223	2226	C3.3	SF	N19W74	8375
	2326	2327	2332		SF	N24W71	8375
10 November	0003	0006	0009		SF	N24W71	8375
	0013	0015	0020	C7.9	1N	N21W75	8375
	0157	0157	0201		SF	N21W61	8375
	0225	0225	0228		SF	S16E58	8383
	0539	0541	0546		SF	N21W63	8375
	0652	0653	0657	C3.3	SF	N21W64	8375
	0917	0920	0926	C2.0			
	1137	1202	1236	C4.0			
	1328	1332	1337	C3.5	SF	N20W81	8375
	1429	1429	1435		SF	N19W83	8375
	1442	1444	1447		SF	N22W76	8375
	1452	1453	1459		SF	N23W77	8375
	1523	1532	1536	C6.7	SF	N23W77	8375
	1540	1545	1609	M1.8	SF	N23W77	8375
	1635	1635	1655		SF	N23W22	8377
	1724	1728	1731	C3.5			
	1751	1754	1758	C3.3			
	1814	1815	1824	C3.7	SF	N23W81	8375
	1830	1831	1838		SF	N23W80	8375

Flare List-continued

Date	Time			X-ray	Optical		Rgn
	Begin	Max	End	Class.	Imp / Brtns	Location Lat CMD	#
10 November	1935	1935	1939		SF	N23W79	8375
	2047	2051	2058	C8.1	SN	N23W84	8375
11 November	0103	0107	0118	C3.2			
	0135	0136	0138		SF	N25W85	8375
	0159	0201	0211	C3.0	SF	N24W84	8375
	0212	0215	0218	C3.2	SF	N25W86	8375
	0309	0316	0319	C3.6			
	0402	0407	0412	M1.0			
	0450	0456	0500	C2.6			
	0639	0645	0654	C3.8			
	0707	0708	0716	C2.5	SF	N22W71	8375
	0733	0738	0743	C3.5			
	0954	0956	0959	C4.2	SF	N24W81	8375
	1010	1016	1024	M1.1			
	B1133	U1134	1144		SF	S15E50	8383
	1203	1207	1211	C1.9			
	1309	1312	1323	C1.5			
	1423	1424	1431		SF	N23W86	8375
12 November	0526	0528	0546	M1.0	1N	N21W34	8385
	0535	0537	0541		SF	S16E36	8383
	0620	0624	0630	C1.6			
	0708	0708	0715	C1.9	SF	S16E39	8383
	0816	0820	0828	C1.4			
	0950	1135	1300	C3.0			
	1514	1520	1528	C2.1			
	1841	1858	1917	C1.1			
	2155	2200	2210		SF	N19W44	8385
	2301	2307	2311		SF	N22W55	8385
	2352	2354	0005	C3.8	SF	N19W44	8385
13 November	0312	0312	0319	C1.9	SF	S16E27	8383
	0812	0819	0826		SF	N20W51	8385
	2058	2059	2128	C5.1	SF	N19W59	8385
14 November	0203	0210	0216	C2.5			
	0500	0508	0515	C1.3			8385
	0518	0519	0522		SF	N24W69	8377
	0518	0519	0529	C1.7	SF	N20W60	8385
	0545	0546	0553		SF	S15E13	8383
	0641	0642	0653		SF	N20W62	8385
	0847	0850	0900	C1.7	SF	N20W63	8385
	1011	1011	1014		SF	N22E50	
	1440	1440	1448	C1.6	SF	S15E06	8383

Flare List-continued

Date	Time Begin	Time Max	Time End	X-ray Class.	Optical Imp / Brtns	Optical Location Lat CMD	Rgn #
14 November	1955	1957	1959		SF	N19W71	8377
	2334	2335	2339		SF	S30E17	8384
15 November	0114	0119	0124	C1.2			
	0455	0456	0459		SF	N20W69	8385
	1258	1311	1323	C1.2			
	1858	1901	1904	B5.2			
	2046	2049	2052	B6.9			

Region Summary

Date	Location (° Lat ° CMD)	Location Helio Lon	Sunspot Characteristics Area (10^{-6} hemi)	Sunspot Characteristics Extent (helio)	Sunspot Characteristics Spot Class	Sunspot Characteristics Spot Count	Sunspot Characteristics Mag Class	Flares X-ray C	Flares X-ray M	Flares X-ray X	Flares Optical S	Flares Optical 1	Flares Optical 2	Flares Optical 3	Flares Optical 4
					Region 8373										
29 Oct	S24E57	198	0000	01	AXX	002	A								
30 Oct	S24E43	199	0010	02	BXO	002	B								
31 Oct	S24E29	200	0010	06	BXO	003	B								
01 Nov	S26E20	195	0010	04	BXO	004	B				1				
02 Nov	S24E06	196	0010	04	BXO	002	B								
03 Nov	S25W05	194	0020	04	BXO	003	B								
04 Nov	S22W20	196	0050	05	DSO	011	B								
05 Nov	S22W31	194	0040	05	CSO	007	B								
06 Nov	S22W45	195	0010	05	BXO	007	B								
07 Nov	S22W58	195													
08 Nov	S22W71	195						1				1			
								1	0	0	1	1	0	0	0

Died on Disk.
Absolute heliographic longitude: 194

					Region 8374										
29 Oct	S18E67	188	0060	02	HAX	001	A								
30 Oct	S18E51	191	0040	02	HSX	002	A								
31 Oct	S18E39	190	0010	03	BXO	003	B								
01 Nov	S18E25	190	0010	02	AXX	003	A								
02 Nov	S20E12	190													
03 Nov	S20W01	190													
04 Nov	S20W14	190													
05 Nov	S20W27	190													
06 Nov	S20W40	190													
07 Nov	S20W53	190													
08 Nov	S20W66	190													
								0	0	0	0	0	0	0	0

Died on Disk.
Absolute heliographic longitude: 190

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	X-ray M	X-ray X	Optical S	Optical 1	Optical 2	Optical 3	Optical 4
			Region 8375												
29 Oct	N18E71	184	0190	05	CSO	003	B								
30 Oct	N17E58	184	0250	09	CHO	005	B								
31 Oct	N17E45	184	0250	08	CKO	006	B								
01 Nov	N17E32	183	0280	08	CHO	006	B				2				
02 Nov	N19E20	182	0280	09	CSO	018	BG				1				
03 Nov	N18E07	182	0300	10	CHO	022	BG		1		6		1		
04 Nov	N18W07	183	0330	10	DSI	028	BG	8			10	2			
05 Nov	N18W21	184	0410	11	EKC	041	BGD	8	2		17	1	1		
06 Nov	N18W35	185	0370	12	EKI	039	BGD	15			26	2			
07 Nov	N18W49	185	0320	11	EAI	040	BGD	2			11	1			
08 Nov	N19W62	185	0720	12	EKI	034	BG	5	2		12	4	1		
09 Nov	N21W75	185	0720	14	EKI	025	BG	3			10				
10 Nov	N21W85	182	0610	11	EKI	012	BG	6	1		14	1			
11 Nov	N21W98	182						4			6				
								51	6	0	115	11	3	0	0

Crossed West Limb.
Absolute heliographic longitude: 182

Region 8376

02 Nov	S27E41	161													
03 Nov	S27E28	161													
04 Nov	S27E15	161									1				
05 Nov	S27E02	161									1				
06 Nov	S27W11	161													
07 Nov	S27W24	161													
08 Nov	S27W37	161									1				
09 Nov	S27W50	161													
10 Nov	S27W63	161													
11 Nov	S27W76	161													
								0	0	0	3	0	0	0	0

Died on Disk.
Absolute heliographic longitude: 161

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 8377														
02 Nov	N22E75	127	0040	02	AXX	002	A								
03 Nov	N22E63	126	0120	04	CAO	004	B								
04 Nov	N22E49	127	0090	04	CAO	006	B								
05 Nov	N22E36	127	0100	02	CAO	003	B								
06 Nov	N22E24	126	0150	05	CAO	007	B				3				
07 Nov	N22E10	126	0150	04	CAO	006	B								
08 Nov	N23E00	123	0160	08	CSO	013	B								
09 Nov	N23W14	124	0150	08	CAO	013	B								
10 Nov	N22W29	126	0100	05	CSO	009	B				1				
11 Nov	N22W42	126	0110	04	CSO	005	B								
12 Nov	N22W54	124	0110	04	CSO	005	B								
13 Nov	N22W68	125	0050	02	HAX	001	A								
14 Nov	N22W81	125	0110	08	DSO	003	B				2				
15 Nov	N22W92	123	0000	00	AXX	001	A								
								0	0	0	6	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 123

	Region 8378														
03 Nov	N17E76	113	0090	03	HAX	001	A								
04 Nov	N14E63	113	0120	02	HAX	002	A				2				
05 Nov	N14E50	113	0070	02	HSX	001	A				1				
06 Nov	N13E36	114	0130	02	HSX	001	A								
07 Nov	N14E23	113	0130	03	HSX	002	A								
08 Nov	N17E11	112	0140	04	HSX	005	A				1				
09 Nov	N14W03	113	0170	03	HHX	001	A								
10 Nov	N14W16	113	0130	02	HSX	001	A								
11 Nov	N14W29	113	0130	02	HSX	003	A								
12 Nov	N14W42	112	0120	03	HSX	001	A								
13 Nov	N15W56	113	0120	02	HSX	001	A								
14 Nov	N15W69	113	0120	02	HSX	001	A								
15 Nov	N15W80	111	0050	02	HSX	001	A								
								0	0	0	4	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 113

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 8379												
04 Nov	S18W28	204	0030	03	CSO	005	B				2				
05 Nov	S18W42	205	0050	06	CSO	009	B				2				
06 Nov	S18W55	205	0060	09	CAI	013	B				4				
07 Nov	S18W70	206	0090	11	CAO	008	B	1			1				
08 Nov	S19W79	202	0130	08	CAO	005	B								
09 Nov	S18W93	203	0030	02	HAX	002	A								
								1	0	0	9	0	0	0	0
Crossed West Limb.															
Absolute heliographic longitude:		204													
			Region 8380												
04 Nov	S20E65	111	0000	00	AXX	001	A								
05 Nov	S20E51	112	0000	00	AXX	001	A				2				
06 Nov	S22E38	112	0000	00	AXX	001	A								
07 Nov	S22E30	106	0010	03	BXO	007	B								
08 Nov	S22E17	106													
09 Nov	S22E04	106													
10 Nov	S22W09	106													
11 Nov	S22W22	106													
12 Nov	S22W35	106													
13 Nov	S22W48	106													
14 Nov	S22W61	106													
15 Nov	S22W74	106													
								0	0	0	2	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		106													
			Region 8381												
05 Nov	N22E16	147	0010	04	BXO	005	B								
06 Nov	N21E02	148	0010	03	BXO	004	B								
07 Nov	N22W11	147	0010	04	BXO	005	B								
08 Nov	N22W23	146	0010	04	BXO	003	B								
09 Nov	N22W36	146													
10 Nov	N22W49	146													
								0	0	0	0	0	0	0	0
Died on Disk.															
Absolute heliographic longitude:		148													
			Region 8382												
07 Nov	N18W32	168	0010	05	BXO	006	B								
08 Nov	N18W45	168	0020	07	BXO	005	B								
								0	0	0	0	0	0	0	0
Died on Disk.															
Absolute heliographic longitude:		168													

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 8383														
08 Nov	S14E76	047	0040	05	BXO	002	B								
09 Nov	S15E62	048	0090	04	CSO	005	B								
10 Nov	S15E52	045	0070	10	CSO	007	B				1				
11 Nov	S15E40	044	0070	11	CSO	014	B				1				
12 Nov	S16E27	043	0090	11	EAO	016	B	1			2				
13 Nov	S16E14	043	0090	12	ESO	010	B	1			1				
14 Nov	S15E02	042	0110	12	ESO	014	B	1			2				
15 Nov	S15W11	042	0080	13	ESO	010	B								
								3	0	0	7	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		042													
	Region 8384														
09 Nov	S27E77	033	0150	03	HHX	001	A	1							
10 Nov	S27E64	033	0350	04	HKX	002	A								
11 Nov	S27E53	031	0610	06	DKC	004	BD								
12 Nov	S28E39	031	0470	07	CKO	005	B								
13 Nov	S27E27	030	0470	08	CHO	008	B								
14 Nov	S28E14	030	0520	08	DHO	012	B				1				
15 Nov	S28E02	029	0480	09	DHO	008	B								
								1	0	0	1	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		029													
	Region 8385														
11 Nov	N19W30	114	0010	05	BXO	006	B								
12 Nov	N19W44	114	0010	07	BXO	008	B	1	1		3	1			
13 Nov	N20W58	115	0110	11	ESO	014	B	1			2				
14 Nov	N21W69	113	0110	09	DAO	006	B	3			3				
15 Nov	N21W81	112	0090	12	ESO	003	B				1				
								5	1	0	9	1	0	0	0
Still on Disk.															
Absolute heliographic longitude:		114													
	Region 8386														
13 Nov	S20E57	000	0010	02	AXX	003	A								
14 Nov	S20E43	001	0040	03	BXO	004	B								
15 Nov	S21E31	000	0020	01	HSX	002	B								
								0	0	0	0	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		000													

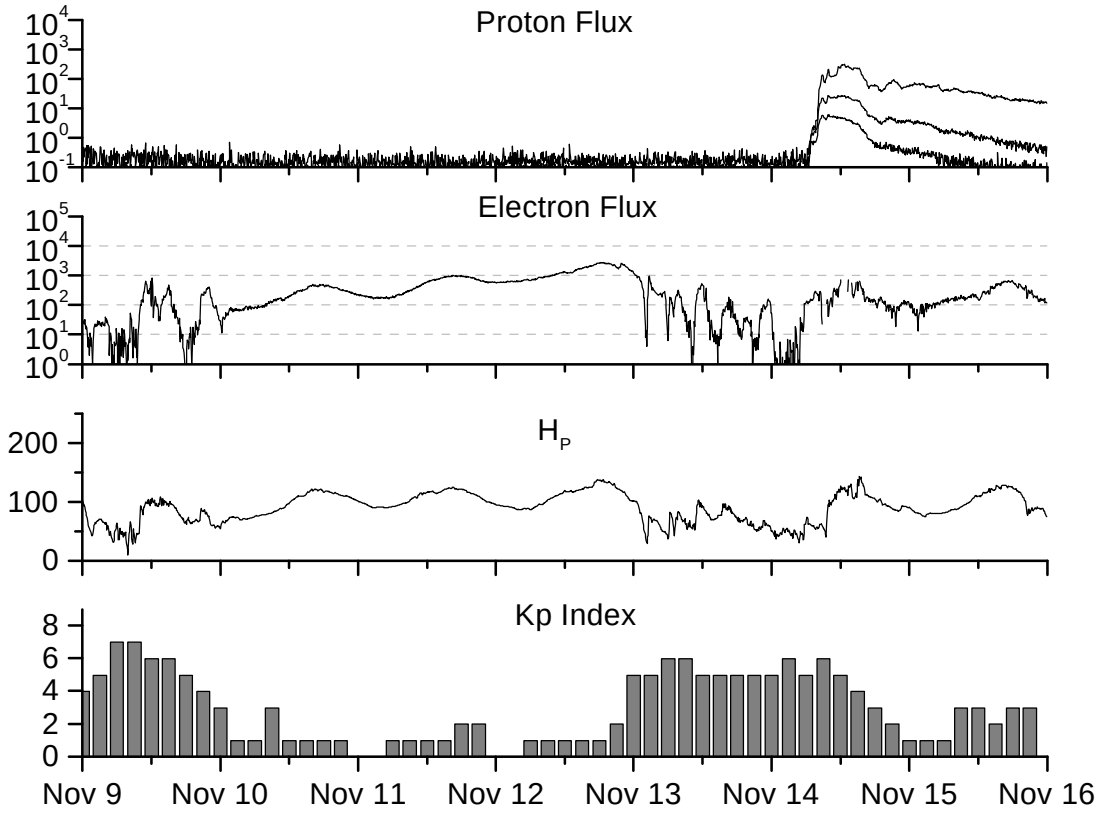
Region Summary-continued

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 8387												
14 Nov	N22E46	358	0020	04	BXO	005	B								
15 Nov	N21E30	001	0030	06	CSO	004	B								
								0	0	0	0	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		001													
			Region 8388												
14 Nov	N23E55	354	0020	04	BXO	004	B								
15 Nov	N22E43	348	0020	01	HSX	001	A								
								0	0	0	0	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		348													
			Region 8389												
15 Nov	S19W44	075													
								0	0	0	0	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		075													

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
					1996				
November	26.7	17.9	0.67	15.4	09.8	78.7	73.0	08	09.1
December	21.1	13.3	0.63	16.2	10.4	77.8	73.3	07	09.3
					1997				
January	09.0	05.7	0.63	16.5	10.5	74.0	73.4	09	09.3
February	11.3	07.6	0.67	17.4	11.0	73.8	73.7	11	09.2
March	14.4	08.7	0.60	20.4	13.5	73.5	75.1	08	08.9
April	24.5	15.5	0.63	24.0	16.5	74.5	76.8	10	08.6
May	28.6	18.5	0.65	26.4	18.3	74.6	78.4	08	08.6
June	22.1	12.7	0.57	29.0	20.3	71.7	80.1	07	08.6
July	17.0	10.4	0.61	32.4	22.6	71.1	81.8	06	08.5
August	36.7	24.4	0.66	35.9	25.0	79.0	83.4	07	08.3
September	52.8	51.3	0.88	40.5	28.3	96.2	85.7	10	08.4
October	33.6	22.8	0.68	45.4	31.8	84.9	88.6	11	08.6
November	53.5	39.0	0.73	49.3	35.0	99.5	91.3	11	09.0
December	57.9	41.2	0.71	54.2	39.0*	98.8	94.2*	05	09.5
					1998				
January	51.8	31.9	0.62	60.6	43.7*	93.4	97.5*	08	09.9*
February	54.4	40.3	0.74	67.4	48.8*	93.4	101.7*	08	10.5*
March	81.8	54.8	0.67	73.3	53.4*	109.1	105.8*	13	11.2*
April	73.6	53.4	0.73	77.7	56.5*	108.3	109.1*	10	11.4*
May	74.3	56.3	0.76			106.7		18	
June	93.6	70.7*	0.76*			108.4*		10	
July	98.3	66.2*	0.67*			114.0*		11*	
August	118.6	91.7*	0.77*			136.0*		18*	
September	119.0	92.9*	0.78*			138.4*		14*	
October	77.0	55.6*	0.72*			121.9*		13*	

*Preliminary estimates.
The lowest smoothed sunspot indices 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.
** From June 1991 onward, 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 09 November 1998

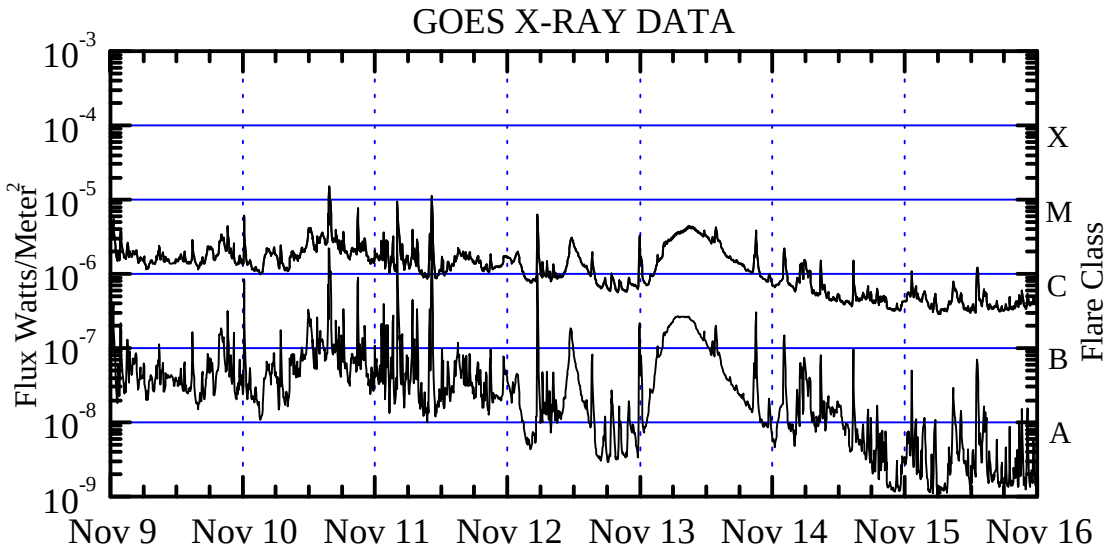
Protons plot contains the five-minute averaged integral proton flux (protons/ cm^2-sec-sr) as measured by GOES-8 (W75) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

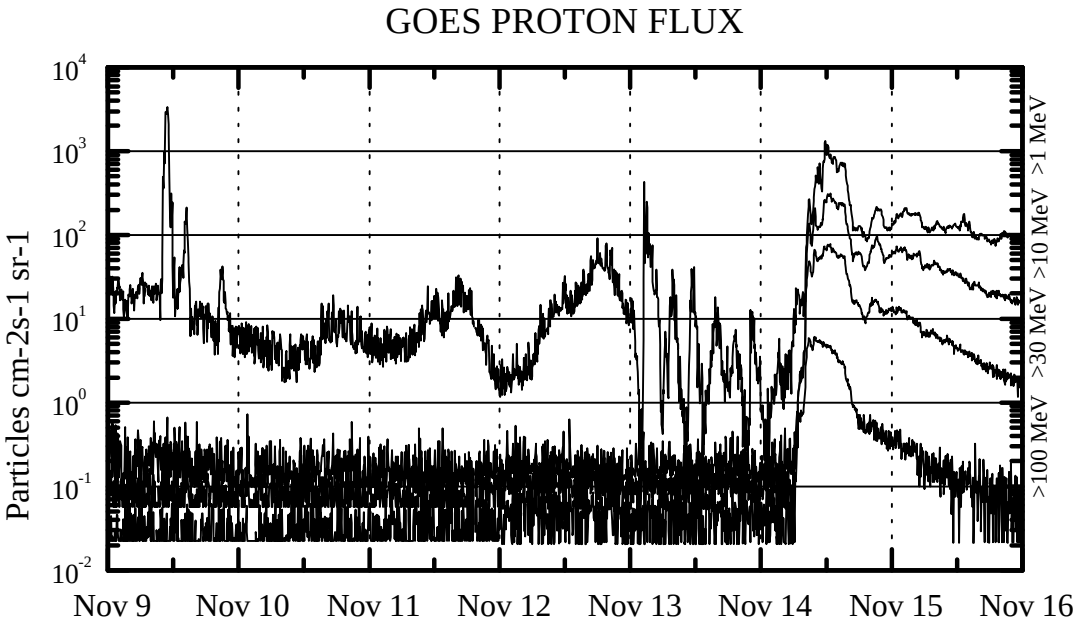
Electrons plot contains the five-minute averaged integral electron flux (electrons/ cm^2 -sec-sr) with energies greater than 2 MeV at GOES-8.

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 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 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 a 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.