

Solar activity ranged from low to high levels. Region 9672 (S18, L=268, class/area Dki/590 on 26 October) produced four major flares during 22 - 23 and 25 October: an M6/2n at 22/1508 UTC, an X1/2b at 22/1759 UTC, an M6/1b at 23/0223 UTC, and an X1/2b at 25/1502 UTC. All but the M6 at 23/0223 UTC were associated with Earth-directed coronal mass ejections (CME). Region 9672 was large and magnetically complex. It showed gradual development through 24 October to include the formation of a strong magnetic delta configuration in its leader spot. It ceased to grow on 25 October, but remained large and magnetically complex and produced isolated C-class and low-level M-class flares until it began to cross the west limb as the period ended. Region 9678 (N08, L = 221, class/area Ekc/680 on 26 October) produced isolated C-class flares and a low-level M-class flare during 24 - 26 October as it underwent a rapid growth phase (for flare times and magnitudes, please refer to the Energetic Events and Optical Flares lists). This large, moderately complex region began to gradually decay on 27 October. Region 9682 (N11, l = 170, class/area Eki/990 on 27 October) produced occasional C-class and isolated M-class flares during the latter half of the period as it grew in spot count, area, and magnetic complexity. At the close of the period it was large and magnetically complex with a magnetic delta configuration within its large leading spot mass. Other regions of interest included 9658 (S14, L = 024, class/area Fao/230 on 19 October) and 9661 (N15, L = 357, class/area Ekc/800 on 16 October). Each region had a history of isolated major flare production. Both were gradually decaying as they rotated out of view early in the period.

Solar Wind data were available from the NASA Advanced Composition Explorer (ACE) spacecraft for most of the period. A CME passage was in progress as the period began. The likely source for this CME was an X1/2b flare at 19/0105 UTC from Region 9661. Peak velocities during the passage were in the 700 to 730 km/sec range. IMF Bz turned southward around 22/1900 UTC and remained so until early on 23 October with peak deflections to minus 15 nT (GSM). CME effects subsided by midday on 23 October. Another CME passage occurred during 25 - 26 October associated with major flare activity from Region 9672 on 22 October. The CME shock front passed the spacecraft at around 25/0802 UTC and was the source of the sudden impulse mentioned above. There were moderate increases in velocity and density associated with this passage. Its most interesting characteristic was its lack of southward IMF Bz component. IMF Bz turned northward (peaks to plus 10 nT) shortly after passage began and remained so for the rest of the passage. A third CME passage began around 28/0242 UTC. The likely source for the CME was an X1/2b flare at 25/1502 UTC from Region 9672. Abrupt increases in velocity (peaks to 530 km/sec), total IMF field intensity, and temperature accompanied the passage. IMF Bz, which was southward prior to passage, turned more strongly southward following the passage, with peak deflections to minus 20 nT.

A greater than 10 MeV proton flux event occurred at geosynchronous orbit on 22 October in the wake of major flare activity from Region 9672. The event began at 22/1910 UTC, reached a maximum flux of 24.2 PFU at 22/2130 UTC, and ended at 23/0115 UTC.

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

A major geomagnetic storm was in progress as the period began. Active to severe storm levels occurred during this disturbance (which began late on 21 October), but the severe storm levels were limited to high latitudes. Quiet to unsettled levels prevailed during 24 - 27 October, despite a sudden impulse at 25/0850 UTC (22 nT, as measured by the Boulder USGS magnetometer). Another geomagnetic storm began early on 28 October due to a CME passage. Active to major storm levels occurred during this disturbance.



Space Weather Outlook

31 October - 26 November 2001

Solar activity is expected to range from low to moderate levels throughout the period.

Isolated, low-level M-class flares are expected throughout the period. There will be a chance for isolated major flare activity during the period as well as Region 9682 could produce an isolated major flare until it rotates out of view around 07 November.

There will be a slight chance for a proton event during the period. Region 9682 provides a slight chance for a proton flare until it rotates out of view around 07 November.

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

Active geomagnetic field conditions may occur on 01 November due to a possible CME passage. Otherwise, quiet to unsettled conditions are expected throughout 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			Optical				
					C	M	X	S	1	2	3	4
22 October	233	207	1770	C1.3	6	2	1	11	1	2	0	0
23 October	226	231	1440	C2.0	8	2	0	19	2	0	0	0
24 October	239	230	1340	C1.0	10	0	0	18	0	0	0	0
25 October	239	225	1830	C1.4	16	0	1	15	0	1	0	0
26 October	237	239	2510	C1.3	7	2	0	12	0	0	0	0
27 October	247	225	2610	C1.3	11	0	0	17	0	0	0	0
28 October	227	229	2650	C2.2	7	3	0	8	3	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
	22 October	7.1E+6	3.1E+5	1.4E+4		3.1E+5
23 October	7.0E+6	5.2E+5	3.3E+4		3.5E+5	
24 October	9.2E+5	2.3E+5	7.4E+3		5.2E+5	
25 October	1.3E+7	1.3E+5	3.7E+3		2.9E+6	
26 October	9.3E+6	8.1E+4	2.9E+3		4.7E+5	
27 October	2.0E+7	5.3E+4	2.9E+3		1.0E+6	
28 October	2.0E+7	5.5E+4	2.3E+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
	22 October	33	5-4-3-4-4-5-5-4	93	5-4-6-7-6-8-6-5	66
23 October	10	4-4-2-1-2-1-1-0	26	7-4-3-1-3-2-1-0	15	4-5-3-2-2-2-2-1
24 October	4	2-1-1-1-2-2-1-1	0	0-0-0-1-0-0-0-0	3	1-0-0-1-1-2-1-1
25 October	5	0-0-3-1-2-2-1-1	2	0-0-1-1-0-1-2-1	7	0-0-2-2-2-3-3-2
26 October	*	0-0-1-1-1-*-2-2	4	1-0-2-3-0-0-1-1	5	1-0-2-2-1-2-2-2
27 October	6	1-2-1-1-3-2-1-2	*	1-3-1-3-4-*-**	6	1-2-1-2-3-2-2-2
28 October	34	1-6-5-5-4-3-3-3	*	*-*-*-**-*-**	41	2-6-6-6-5-4-4-3



Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UT
22 Oct 0016	6 - 245 MHz Bursts	21 Oct
22 Oct 0000	A \geq 30 Observed	22 Oct 0000
22 Oct 1129	A \geq 50 Warning	22 Oct 1130 - 2359
22 Oct 1156	A \geq 50 Observed	22 Oct 1200
22 Oct 1159	K= 6 Observed	22 Oct 0900 - 1200
22 Oct 1457	EXTENDED K \geq 6 Warning	21 Oct 1700 - 22 Oct 2400
22 Oct 1525	Type IV Radio Emission	22 Oct 1504
22 Oct 1527	Type II Radio Emission	22 Oct 1453
22 Oct 1545	X-Ray event M6.7/3N	22 Oct 1508
22 Oct 1722	Proton Event $>10\text{MeV} \geq 10\text{pfu}$ Warning	22 Oct 1800 - 23 Oct 0600
22 Oct 1823	X-Ray event X1.2/2B	22 Oct 1759
22 Oct 1852	Type II Radio Emission	22 Oct 1759
22 Oct 1938	Protons Event $>10 \text{ MeV} \geq 10\text{pfu}$	22 Oct 1910
22 Oct 2050	A \geq 20 Watch	25 Oct
22 Oct 2248	CONTINUED Proton Event $>10\text{MeV} \geq 10\text{pfu}$ Warning	22/1800 - 23/1500 Oct
22 Oct 2306	EXTENDED A \geq 50 Warning	22/1130 -23/1500
22 Oct 2312	K= 5 Warning	22 Oct 2315 - 23 Oct 1500
23 Oct 0019	8 - 245 MHz Bursts	22 Oct
23 Oct 0100	CONTINUED Protons Event $>10 \text{ MeV} \geq 10\text{pfu}$	22 Oct 1910
23 Oct 0237	X-Ray event M6.6/1B	23 Oct 0223
23 Oct 0300	ENDED A \geq 50 Observed	23 Oct 0300
23 Oct 1834	ENDED A \geq 30 Observed	23 Oct 1800
23 Oct 2104	ENDED A \geq 20 Observed	23 Oct 2100
23 Oct 2139	ENDED Protons Event $>10 \text{ MeV} \geq 10\text{pfu}$	23 Oct 0115
23 Oct 2207	A \geq 30 Watch	24 Oct
24 Oct 2219	A \geq 30 Watch	25 Oct
25 Oct 0031	2 - 245 MHz Bursts	24 Oct
25 Oct 0820	K= 4 Warning	25 Oct 0820 - 1500
25 Oct 0904	Sudden Impulse observed at Boulder	25 Oct 0850
25 Oct 1514	10cm Radio Burst 540 F.U.	25 Oct 1451
25 Oct 1530	Type II Radio Emission	25 Oct 1456
25 Oct 1536	X-Ray event X1.3/3B/S17W20	25 Oct 1502
25 Oct 1547	Type IV Radio Emission	25 Oct 1505
25 Oct 2206	A \geq 20 Watch	28 Oct
26 Oct 0010	13 - 245 MHz Bursts	25 Oct
27 Oct 0018	13 - 245 MHz Bursts	26 Oct
27 Oct 0018	2 - 245 MHz Noise Storms	26 Oct
27 Oct 0042	A \geq 20 Watch	27 Oct
27 Oct 0043	A \geq 30 Watch	28 Oct
27 Oct 0403	Type II Radio Emission	27 Oct 0347
28 Oct 0032	8 - 245 MHz Bursts	27 Oct
28 Oct 0032	2 - 245 MHz Radio Noise Storms	27 Oct
28 Oct 0330	Sudden Impulse observed at Boulder	28 Oct 0318

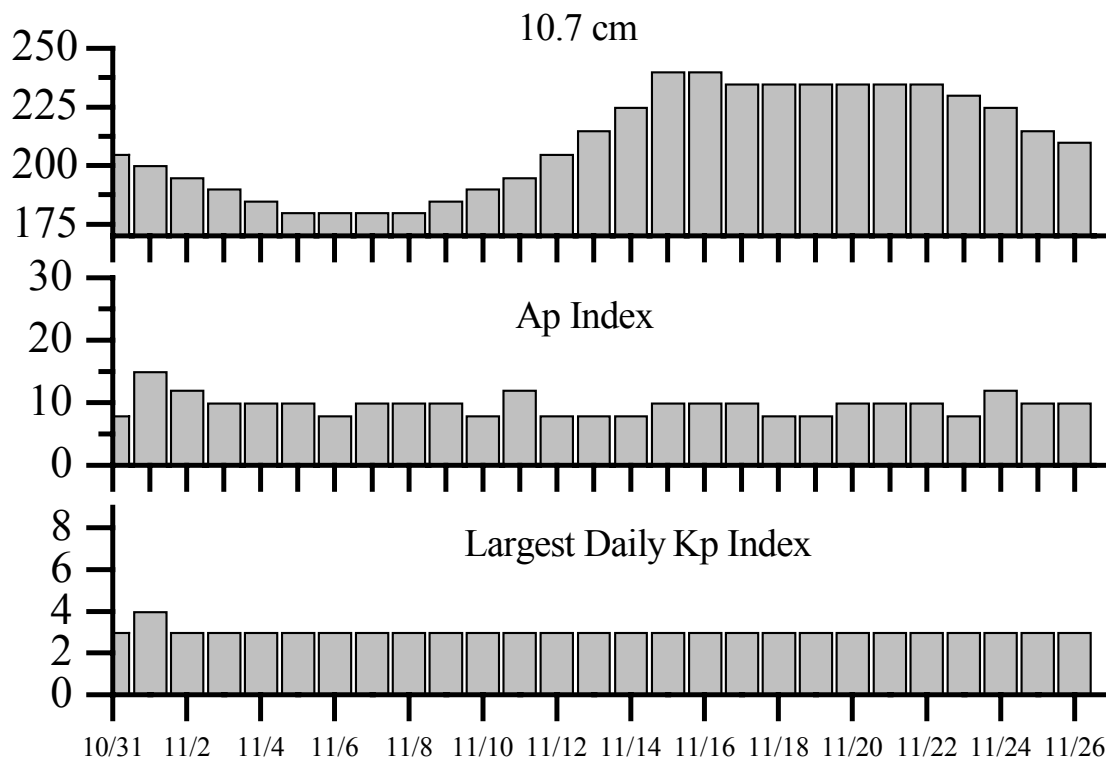


Alerts and Warnings Issued - continued.

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UT
28 Oct 0356	K= 4 Warning	28 Oct 0357 - 1500
28 Oct 0411	K= 5 Warning	28 Oct 0412 - 1500
28 Oct 0535	K ≥ 6 Warning	28 Oct 0536 -1500
28 Oct 0558	K= 5 Observed	28 Oct 0300 - 0600
28 Oct 0858	A ≥ 20 Observed	28 Oct 0900
28 Oct 0902	K= 6 Observed	28 Oct 0600 - 0900
28 Oct 1134	A ≥ 30 Warning	28 Oct 1135 - 2359
28 Oct 1200	K= 6 Observed	28 Oct 0900 - 1200
28 Oct 1201	A ≥ 30 Observed	28 Oct 1200
28 Oct 1445	EXTENDED K= 4 Warning	28/0357 - 29/0300 Oct
28 Oct 2252	EXTENDED A ≥ 30 Warning	28/1135 -29/1500 Oct



Twenty-seven Day Outlook



Date	Radio Flux 10.7 cm	Planetary A Index	Largest Kp Index	Date	Radio Flux 10.7 cm	Planetary A Index	Largest Kp Index
31 Oct	205	8	3	14 Nov	225	8	3
01 Nov	200	15	4	15	240	10	3
02	195	12	3	16	240	10	3
03	190	10	3	17	235	10	3
04	185	10	3	18	235	8	3
05	180	10	3	19	235	8	3
06	180	8	3	20	235	10	3
07	180	10	3	21	235	10	3
08	180	10	3	22	235	10	3
09	185	10	3	23	230	8	3
10	190	8	3	24	225	12	3
11	195	12	3	25	215	10	3
12	205	8	3	26	210	10	3
13	215	8	3				



Energetic Events

Date	Time		X-ray		Optical Information			Peak		Sweep Freq		
	Begin	Max	½	Integ	Imp/Location		Rgn	Radio Flux		Intensity		
			Max		Class	Flux		Brtns	Lat	CMD	245	2695
22 Oct	0022	0040	0048	M1.0	.008	SF	N17W57	9661	58			
22 Oct	1427	1508	1531	M6.7	.150	2N	S21E18	9672	230	380	2	1
22 Oct	1744	1759	1814	X1.2	.120	2B	S18E16	9672	1600	790	1	
23 Oct	0013	0023	0035	M1.3	.013	SN	S18E11	9672		94		
23 Oct	0211	0223	0234	M6.5	.055	1B	S18E11	9672		66		
25 Oct	1442	1502	1528	X1.3	.230	2B	S16W21	9672	11000	540	1	2
26 Oct	0952	1004	1013	M1.6	.013			9672	560			
26 Oct	1428	1435	1437	M2.0	.004	SN	N07E16	9678	9600	130		
28 Oct	0436	0450	0458	M1.3	.013	1F	N12E40	9682				
28 Oct	0950	1000	1005	M1.5	.007			9682				
28 Oct	1645	1651	1653	M1.4	.004	1N	N13E31	9682	55			

Flare List

Date	Time			X-ray	Optical		Rgn	
	Begin	Max	End		Imp /	Location		
				Class.	Brtns	Lat	CMD	
22 October	0024	0025	0040	M1.0	SF	N17W57	9661	
	0346	0350	0434	C6.8	1F	N14W12	9669	
	0505	0508	0510	C4.3				
	0537	0546	0600		SF	N11W15	9669	
	0555	0559	0604		SF	N17W61	9661	
	B0654	U0654	A0657		SF	S19E23	9672	
	0953	0956	1000	C4.3				
	1140	1140	1148	C5.6	SF	S18E19	9672	
	B1228	U1228	1256	C7.5	SF	N11W19	9669	
	1337	1337	1348		SF	N15W69	9661	
	1338	1338	1347		SF	S15E18	9672	
	B1425	1512	1602	M6.7	2N	S21E18	9672	
	1450	1456	1513		SF	N16W67	9661	
	1508	1508	1513		SF	N17W66	9661	
	1606	1613	1625		SF	S17E17	9672	
	1744	1758	1911	X1.2	2B	S18E16	9672	
	2057	2106	2114	C7.9				
	23 October	0004	0005	0007		SF	N12W25	9669
		0015	0018	0052	M1.3	SN	S18E11	9672
0026		0033	0049		SF	N13W25	9669	
0057		0057	0100		SF	N07E60	9678	
0138		0138	0144		SF	N16E47	9676	
0145		0145	0149		SF	S21E13	9672	
0145		0149	0153		SF	N16E37	9676	
0214		0220	0313	M6.5	1B	S18E11	9672	
0449		0542	0605	C2.5	SF	N08E57	9678	
0553		0553	0603	C2.3	SF	N09E57	9678	
0606		0634	0659		SF	N08E58	9678	



Flare List - continued.

Date	Time			X-ray Class.	Optical		Rgn
	Begin	Max	End		Imp / Brtns	Location Lat CMD	
23 October	0759	0801	0814	C7.7	1F	N16E42	9676
	0803	0805	0810		SF	N20E41	9677
	0832	0842	0916	C2.6	SF	N10E54	9678
	1203	1204	1219		SF	N14W29	9669
	1205	1208	1218	C4.4	SF	S19E06	9672
	1228	1228	1239	C6.7	SF	S19E06	9672
	1250	1258	1315		SF	S17E04	9672
	1415	1418	1423	C2.0	SF	S18E05	9672
	1510	1511	1532	C2.3	SF	S18E04	9672
	1526	1526	1530		SF	S19E06	9672
24 October	0017	0021	0025	C1.7			
	0235	0238	0245	C1.9			
	0254	0254	0303		SF	S18W06	9672
	0420	0424	0430	C2.0			
	0541	0622	0659	C2.6			
	0602	0603	0610		SF	S13E27	9675
	0609	0610	0614		SF	N07E43	9678
	0814	0856	0927	C4.0			
	B0846	U0846	0855		SF	N17W41	9669
	1052	1054	1119	C2.8	SF	S18W08	9672
	1410	1417	1432	C3.8	SF	N12W46	9669
	1442	1447	1459		SF	N09E41	9678
	1519	1527	1544		SF	N07E39	9678
	1639	1643	1648		SF	N07E39	9678
	1708	1709	1721	C2.0	SF	S18W09	9672
	1756	1758	1815	C6.3	SF	N09E36	9678
	1833	1854	1904		SF	N09E38	9678
	1907	1909	1913		SF	N08E38	9678
	1923	1924	1937		SF	N03W04	9673
	1931	1932	1938		SF	N07E36	9678
	2218	2224	2303		SF	N07E34	9678
	2232	2232	2254	C3.4	SF	N21E49	9680
	2307	2312	2344		SF	N06E33	9678
25 October	0001	0001	0010	C5.3	SF	S18W15	9672
	0325	0330	0337	C4.8	SF	N09E34	9678
	0338	0344	0348		SF	N09E33	9678
	0431	0431	0445		SF	S18W17	9672
	0447	0447	0455		SF	N07E31	9678
	0518	0519	0534	C5.2	SF	S19W16	9672
	0627	0627	0635	C5.4	SF	S18W18	9672
	0631	0634	0639		SF	N24E19	9677
	0646	0647	0657		SF	S11E15	9675



Flare List - continued.

Date	Time			X-ray Class.	Optical		Rgn
	Begin	Max	End		Imp / Brtns	Location Lat CMD	
25 October	0717	0719	0722		SF	N06E30	9678
	0746	0746	0757	C5.7	SF	N07E29	9678
	1039	1047	1100	C6.3			
	1222	1228	1253	C4.3	SF	N14W58	9669
	1350	1354	1358	C2.2			
	1442	1454	1906	X1.3	2B	S16W21	9672
	1456	1456	1519		SF	N09E26	9678
	1921	1923	1935	C7.5	SF	N07E20	9678
	2047	2048	2054	C4.4	SF	N08E21	9678
	2122	2125	2130	C6.6	SF	N08E25	9678
	2134	2137	2142	C5.9			9672
	2144	2147	2150	C8.9			9672
	2206	2210	2213	C5.3			9672
	2250	2254	2258	C6.1			9678
	2345	2346	2355	C3.8	SF	N08E18	9678
26 October	0143	0145	0159	C4.5	SF	N08E19	9678
	0419	0421	0443	C7.8	SF	N09E17	9678
	0546	0554	0558	C4.3			
	0716	0721	0725	C4.5			9672
	0915	0921	0931	C7.4			9678
	0952	1004	1013	M1.6			9672
	1311	1316	1413	C3.4	SF	N10E66	9682
	1430	1436	1445	M2.0	SN	N07E16	9678
	1609	1610	1614		SF	N07E15	9678
	1806	1812	1817		SF	N09E14	9678
	1839	1839	1844		SF	N13E59	9682
	1930	1951	2208		SF	N14E59	9682
	2024	2024	2050		SF	N11E60	9682
	2109	2109	2129	C2.8	SF	N09E08	9678
	2152	2153	2156		SF	N07E13	9678
2222	2228	2246		SF	N13E56	9682	
27 October	0034	0039	0045	C3.5			9678
	0048	0049	0058		SF	N12E58	9682
	0416	0416	0420		SF	N11E50	9682
	0805	0821	0858	C6.3			9678
	0808	0817	0836		SN	N07W04	9678
	0808	0809	0912		SF	N10W07	9676
	0928	0931	0935	C4.3			
	1225	1225	1233	C3.6	SF	S21W48	9672
	1245	1246	1252		SF	N06W02	9678



Flare List - continued.

Date	Time			X-ray Class.	Optical		Rgn
	Begin	Max	End		Imp / Brtns	Location Lat CMD	
27 October	1306	1311	1319	C5.4			
	1521	1540	1600		SF	S15W50	9672
	1524	1529	1542	C7.2	SF	N14E50	9682
	1529	1529	1535		SF	S18W63	9670
	1646	1647	1655	C3.8	SF	N06W06	9678
	1714	1714	1717		SF	S16W74	9670
	1844	1845	1853	C4.2	SF	S20W50	9672
	1930	1945	2000	C3.5			
	2042	2042	2045	C3.5	SF	N09E00	9678
	2106	2107	2145		SF	N11W12	9676
	2145	2151	2210	C9.1	SF	N14E46	9682
	2155	2156	2159		SF	N08E00	9678
28 October	0010	0014	0019	C3.4			
	0230	0244	0246	C5.9			
	0443	0448	0531	M1.3	1F	N12E40	9682
	0649	U0658	A0723	C6.8	1F	N12E40	9682
	B0842	U0842	0905	C6.5	SF	N12E41	9682
	0901	0901	0905		SF	N06W06	9678
	0917	0921	0925	C4.8			9682
	0950	1000	1005	M1.5			9682
	1058	1103	1107	C6.3			9682
	1336	1337	1340		SF	N12E33	9682
	1408	1414	1453		SF	N11E36	9682
	1500	1500	1505		SF	N12E35	9682
	1510	1510	1513		SF	N12E37	9682
	1642	1651	1702	M1.4	1N	N13E31	9682
	1706	1706	1710	C3.7	SF	N12E35	9682
	2102	2103	2106		SF	N03E71	9684



Region Summary

Date	Location		Sunspot Characteristics				Flares											
	Helio		Area (10 ⁻⁶ hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical							
	(° Lat ° CMD)	Lon						C	M	X	S	1	2	3	4			
<i>Region 9661</i>																		
10 Oct	N12E76	004	0060	01	HAX	001	A											
11 Oct	N16E69	358	0480	13	EKO	005	BD	1				1						
12 Oct	N14E55	359	0760	12	EKO	008	BD	3				4						
13 Oct	N15E42	359	0720	11	EKI	016	BD	1				1						
14 Oct	N15E30	358	0670	10	DKO	018	BD	3				3						
15 Oct	N15E17	357	0720	11	EKI	016	BD	1				3						
16 Oct	N16E04	357	0800	13	EKC	034	BGD	2				2						
17 Oct	N16W08	356	0800	16	FKI	028	BGD	2				2						
18 Oct	N16W23	358	0660	11	EKI	024	BGD	2				9						
19 Oct	N16W35	357	0620	12	EKI	021	BGD	1			2	5	2	2				
20 Oct	N15W48	357	0410	11	ESO	015	BG					1						
21 Oct	N14W64	359	0360	11	EKO	010	BGD		1			1		1				
22 Oct	N14W76	357	0390	11	EAO	006	B					5						
23 Oct	N14W90	358	0190	10	CKO	002	B											
								16	1	2	37	2	3	0	0			

Crossed West Limb.

Absolute heliographic longitude: 357

Region 9667

14 Oct	N24E73	315	0030	01	HSX	001	A											
15 Oct	N23E60	314	0060	07	CAO	004	B					2						
16 Oct	N24E47	314	0070	09	DSO	008	B											
17 Oct	N25E35	313	0070	09	DAO	005	B											
18 Oct	N26E18	317	0040	05	HAX	002	A											
19 Oct	N26E06	316	0040	06	CSO	005	B											
20 Oct	N26W10	319	0010	01	HRX	001	A											
21 Oct	N26W23	318	0010	01	HRX	002	A											
22 Oct	N25W36	317	0010	01	HRX	001	A											
23 Oct	N26W50	318	0000	00	AXX	001	A											
24 Oct	N27W61	316	0000	00	AXX	000	A											
25 Oct	N27W74	316																
26 Oct	N27W87	316																
								0	0	0	2	0	0	0	0			

Crossed West Limb.

Absolute heliographic longitude: 316



Region Summary - continued.

Date	Location		Sunspot Characteristics				Flares										
	Helio		Area (10 ⁻⁶ hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical						
	(° Lat ° CMD)	Lon						C	M	X	S	1	2	3	4		
<i>Region 9669</i>																	
15 Oct	N13E70	304	0070	07	CSO	004	B					1					
16 Oct	N13E57	304	0150	13	EAO	011	B										
17 Oct	N13E42	306	0140	14	EAO	014	BG										
18 Oct	N13E28	307	0140	12	EAI	020	B										
19 Oct	N13E14	308	0170	13	EAI	027	B										
20 Oct	N14E01	308	0150	14	EAI	032	B										
21 Oct	N14W12	307	0110	13	EAI	035	B										
22 Oct	N14W24	305	0120	11	EAI	024	B	2			2	1					
23 Oct	N13W39	307	0070	10	CAO	010	B				3						
24 Oct	N14W51	306	0050	09	DAO	007	B	1			2						
25 Oct	N14W68	310	0040	04	CSO	003	B	1			1						
26 Oct	N13W84	312	0030	01	HSX	001	A										
								4	0	0	9	1	0	0	0		

Crossed West Limb.

Absolute heliographic longitude: 308

<i>Region 9670</i>																	
16 Oct	S16E67	294	0130	04	HSX	002	A										
17 Oct	S18E59	289	0340	16	FAO	004	B										
18 Oct	S18E45	290	0370	18	FKO	012	BG				1						
19 Oct	S18E32	290	0530	19	FKO	020	BG										
20 Oct	S19E19	290	0470	18	FAO	017	B	2			2						
21 Oct	S18E06	289	0390	18	FAO	027	B	2			2						
22 Oct	S18W07	288	0470	19	FKO	020	BG										
23 Oct	S18W20	288	0450	18	FKI	022	BG										
24 Oct	S18W34	289	0370	19	FAI	028	BG										
25 Oct	S19W47	289	0280	19	FAI	021	BG										
26 Oct	S18W60	288	0180	20	FAO	010	B										
27 Oct	S17W74	289	0190	17	FAO	006	B				2						
28 Oct	S18W80	282	0100	05	CAO	005	B										
								4	0	0	7	0	0	0	0		

Still on Disk.

Absolute heliographic longitude: 289



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 9671</i>																		
17 Oct	N15E32	316	0020	04	BXO	005	B											
18 Oct	N15E18	317	0030	06	DSO	008	B											
19 Oct	N16E04	318	0100	07	DAO	014	B	1	1			5	1					
20 Oct	N15W09	318	0080	08	DSO	015	B											
21 Oct	N15W22	317	0050	08	DSO	010	B											
22 Oct	N13W39	320	0050	03	CAO	006	B											
23 Oct	N14W52	320	0010	01	AXX	003	A											
24 Oct	N16W62	317	0010	05	BXO	003	B											
25 Oct	N16W75	317																
26 Oct	N16W88	317																
								1	1	0	5	1	0	0	0	0		

Crossed West Limb.

Absolute heliographic longitude: 318

<i>Region 9672</i>																		
18 Oct	S21E69	266	0100	02	HAX	003	A	1				1						
19 Oct	S20E53	269	0160	03	HAX	004	A	1				1						
20 Oct	S20E40	269	0150	05	DAO	008	B											
21 Oct	S19E26	269	0330	07	DKO	014	B	1				4						
22 Oct	S18E13	268	0440	08	DKI	017	BGD	1	1	1	4		2					
23 Oct	S18E00	268	0420	09	DKO	020	BGD	4	2		8	1						
24 Oct	S19W13	268	0490	11	DKI	026	BGD	3			3							
25 Oct	S18W27	269	0540	10	DKI	023	BGD	2		1	4		1	1				
26 Oct	S18W41	269	0590	07	DKI	015	BGD	1	1									
27 Oct	S18W53	268	0450	06	DKI	011	BGD	2			3							
28 Oct	S18W67	269	0390	07	DKI	010	BGD											
								16	4	2	28	1	3	1	0			

Still on Disk.

Absolute heliographic longitude: 268



Region Summary - continued.

Date	Location		Sunspot Characteristics				Flares							
	Helio		Area (10 ⁻⁶ hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical			
	(° Lat ° CMD)	Lon						C	M	X	S	1	2	3

Region 9673

18 Oct	N03E73	262	0110	02	HSX	001	A										
19 Oct	N04E58	264	0130	02	HAX	001	A										
20 Oct	N03E46	263	0070	04	CAO	004	B										
21 Oct	N03E32	263	0140	04	CSO	006	B										
22 Oct	N02E18	263	0140	07	CSO	009	B										
23 Oct	N02E05	263	0110	07	CAO	008	B										
24 Oct	N02W09	264	0130	04	CAO	004	B										1
25 Oct	N04W22	264	0100	03	CSO	005	B										
26 Oct	N04W35	263	0100	02	CSO	003	B										
27 Oct	N04W49	264	0090	02	HSX	001	A										
28 Oct	N05W63	265	0080	02	HAX	001	A										
																	0 0 0 1 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 263

Region 9674

19 Oct	S08E34	288	0060	03	BXO	004	B										1
20 Oct	S08E20	289	0050	06	DSO	007	B	2									2
21 Oct	S09E07	288	0080	06	DSO	007	B										
22 Oct	S09W08	289	0020	05	BXO	006	B										
23 Oct	S08W21	289	0010	01	AXX	001	A										
24 Oct	S08W32	287	0010	01	AXX	001	A										
25 Oct	S08W45	287															
26 Oct	S08W58	287															
27 Oct	S08W71	287															
28 Oct	S08W84	287															
																	2 0 0 3 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 288

Region 9675

20 Oct	S14E69	240	0030	01	HSX	001	A										
21 Oct	S13E56	239	0030	01	HSX	001	A										
22 Oct	S15E44	237	0040	06	CSO	004	B										
23 Oct	S12E28	240	0020	01	HSX	001	A										
24 Oct	S13E15	240	0020	03	CSO	002	B										1
25 Oct	S12E02	240	0020	04	CSO	003	B										1
26 Oct	S12W12	240	0010	01	AXX	001	A										
27 Oct	S12W25	240															
28 Oct	S12W38	240															
																	0 0 0 2 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 240



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 9676</i>																		
20 Oct	N13E70	239	0070	02	CAO	001	B											
21 Oct	N13E58	237	0090	07	DSO	005	B											
22 Oct	N15E45	236	0060	03	CSO	002	B											
23 Oct	N14E30	238	0050	02	HSX	001	A	1			2	1						
24 Oct	N16E18	237	0050	02	HSX	002	A											
25 Oct	N15E04	238	0040	02	HSX	002	A											
26 Oct	N15W08	236	0040	02	HSX	001	A											
27 Oct	N16W21	236	0030	01	HSX	001	A				2							
28 Oct	N15W35	237	0030	01	HSX	001	A											
								1	0	0	4	1	0	0	0	0		

Still on Disk.

Absolute heliographic longitude: 238

<i>Region 9677</i>																		
22 Oct	N20E48	233	0030	03	CSO	002	B											
23 Oct	N21E33	235	0040	06	CSO	008	B				1							
24 Oct	N19E19	236	0040	07	DAO	011	B											
25 Oct	N21E07	235	0030	07	DAO	006	B				1							
26 Oct	N21W07	235	0030	07	DSO	007	B											
27 Oct	N23W19	234	0010	06	BXO	004	B											
28 Oct	N24W36	238	0000	01	AXX	003	A											
								0	0	0	2	0	0	0	0	0		

Still on Disk.

Absolute heliographic longitude: 235

<i>Region 9678</i>																		
23 Oct	N07E48	220	0050	07	CAO	010	B	3			5							
24 Oct	N07E34	221	0140	09	DAO	022	BG	1			10							
25 Oct	N08E20	222	0300	11	EAI	035	BGD	6			10							
26 Oct	N11E07	221	0680	14	EKC	048	BGD	4	1		7							
27 Oct	N07W07	222	0630	15	EKC	043	BG	4			6							
28 Oct	N07W21	223	0620	13	EKI	034	BGD				1							
								18	1	0	39	0	0	0	0	0		

Still on Disk.

Absolute heliographic longitude: 221



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 9679

23 Oct	S10E58	210	0010	03	BXO	003	B											
24 Oct	S11E46	209	0030	05	CRO	004	B											
25 Oct	S11E35	207	0040	05	DSO	007	B											
26 Oct	S10E07	221	0040	07	DSO	008	B											
27 Oct	S10E07	208	0030	06	DSO	010	B											
28 Oct	S09W07	209	0040	07	DAO	008	B											

0 0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 221

Region 9680

23 Oct	N22E61	207	0010	02	AXX	001	A											
24 Oct	N22E48	207		1		1												
25 Oct	N22E37	205																
26 Oct	N22E24	205																
27 Oct	N22E11	205																
28 Oct	N22W07	209	0010	08	BXO	002	B											

1 0 0 1 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 209

Region 9681

25 Oct	S25E05	237	0040	03	DSO	006	B											
26 Oct	S24W07	235	0070	06	DAO	008	B											
27 Oct	S23W22	237	0040	06	DAO	005	B											
28 Oct	S24W37	239	0030	01	HSX	001	A											

0 0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 237

Region 9682

25 Oct	N09E70	172	0400	07	DKO	004	B											
26 Oct	N11E59	169	0710	09	DKI	011	B	1				5						
27 Oct	N12E45	170	0990	11	EKI	028	BGD	2				4						
28 Oct	N12E32	170	0830	17	FKC	032	BG	5	3			6	3					

8 3 0 15 3 0 0 0

Still on Disk.

Absolute heliographic longitude: 170



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 9683</i>																							
26 Oct	N28E30	198	0030	07	DSO	006	B																
27 Oct	N28E14	201	0010	04	CSO	005	B																
28 Oct	N28E01	201	0010	07	BXO	002	B																
																						0 0 0 0 0 0 0 0	
Still on Disk.																							
Absolute heliographic longitude: 201																							
<i>Region 9684</i>																							
27 Oct	N05E78	137	0140	03	HHX	001	A																
28 Oct	N06E69	133	0510	09	DKI	010	B																
																							0 0 0 1 0 0 0 0
Still on Disk.																							
Absolute heliographic longitude: 133																							

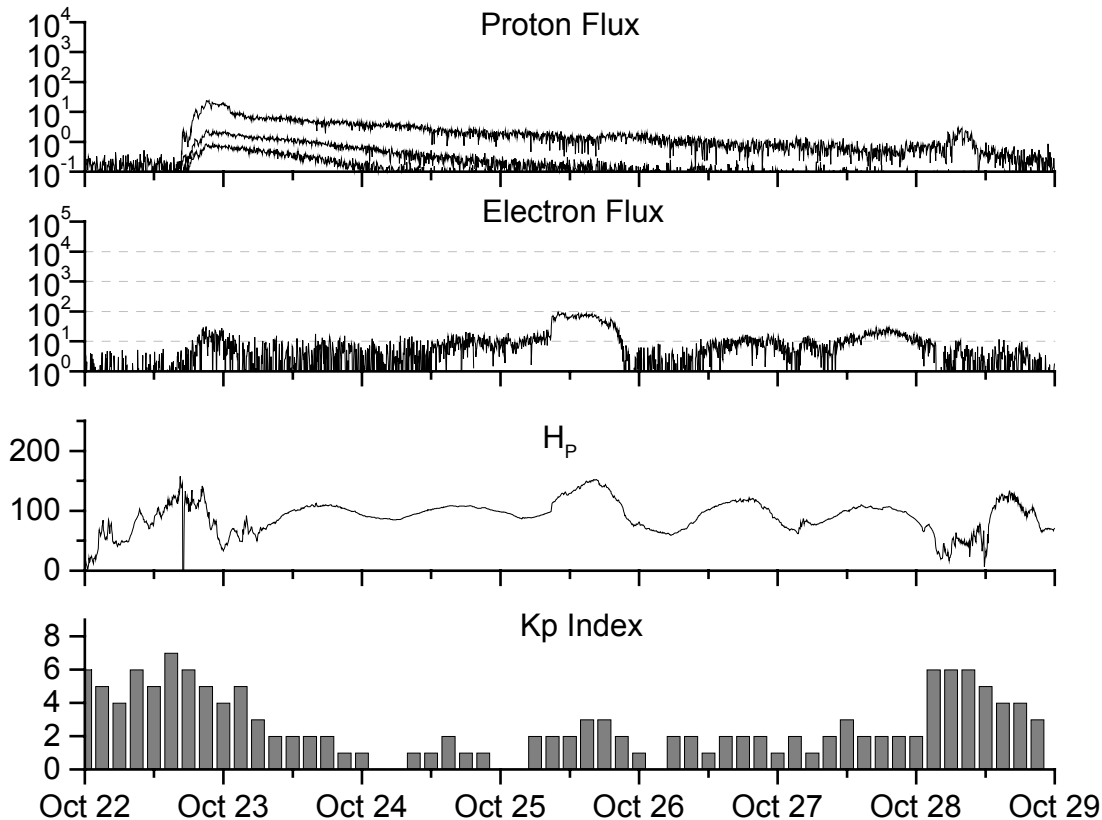


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

Month	Sunspot Numbers			Radio Flux		Geomagnetic			
	Observed values SWO	Ratio RI	Ratio RI/SWO	Smooth values SWO	Smooth values RI	*Penticton 10.7 cm	Smooth Value	Planetary Ap	Smooth Value
1999									
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	110.0	191.5	171.5	14	13.1
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			178.3		18	
May	135.1	97.3	0.72			148.7		12	
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	

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 22 October 2001

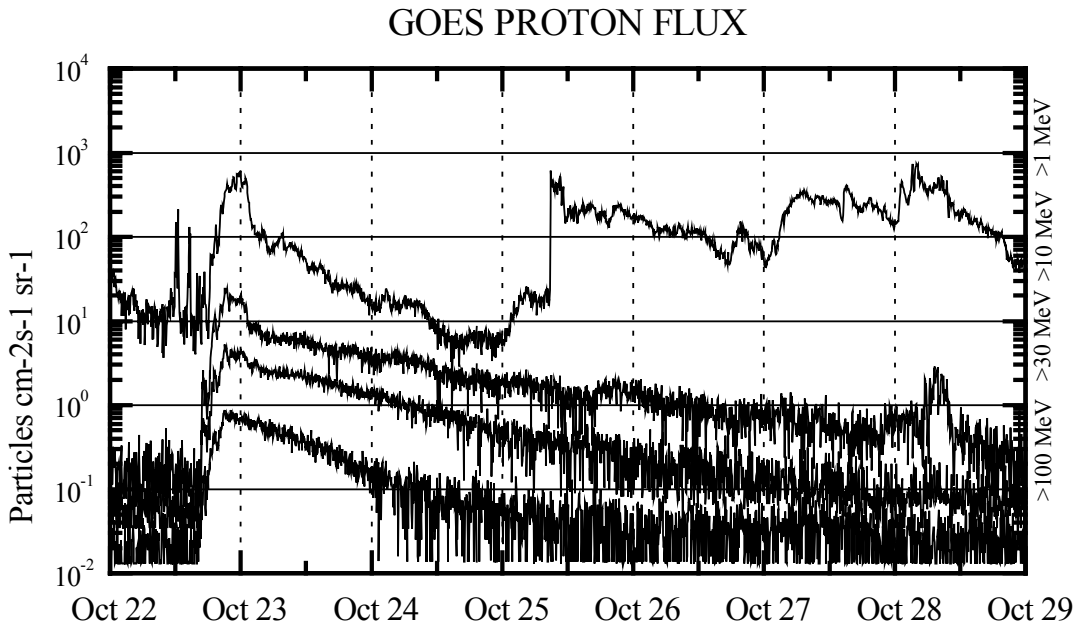
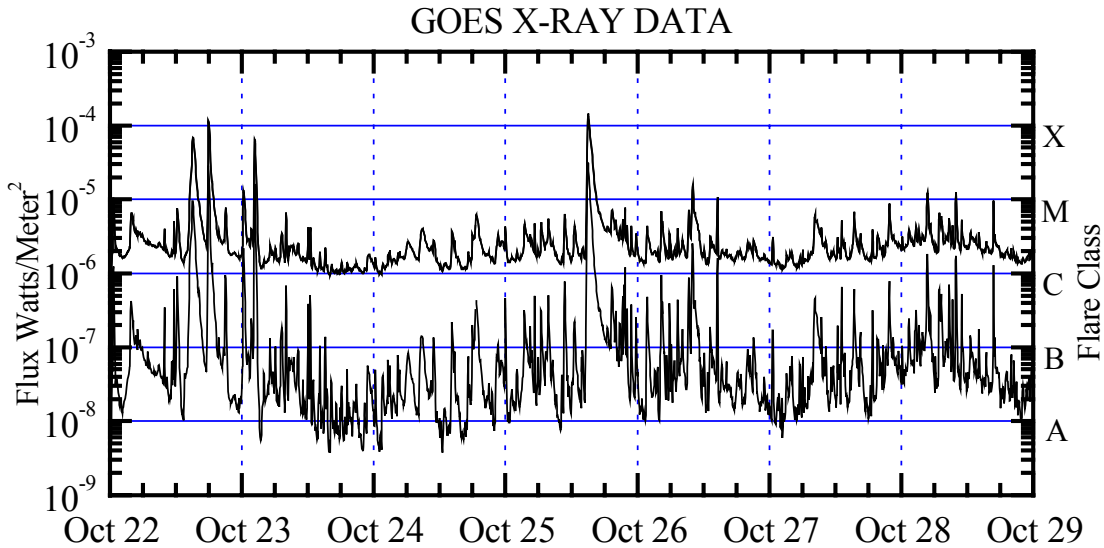
Protons plot contains the five-minute averaged integral proton flux (protons/cm²-sec-sr) as measured by GOES-8 (W75) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

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 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 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.

