

Space Weather Highlights 18 - 24 October 1999

Solar activity ranged from low to moderate levels. Activity was at low levels through 19 October with isolated C-class subflares. Activity increased to moderate levels on 20 October with an M1/1F flare from Region 8731 (N12, L = 292, class/area Fkc/1220 on 17 October) at 20/0622UT with an associated Type II radio sweep. This large region displayed a mixed polarity structure and was slowly decaying when the M-flare occurred. Activity declined to low levels on 21 October and remained so for the balance of the period. However, Region 8739 (S12, L = 168, class/area Eki/440 on 23 October) grew during the latter half of the period and became moderate in size and magnetic complexity including a magnetic delta configuration near region center.

Real-time solar wind data were available from the Advanced Composition Explorer (ACE) spacecraft for most of the period. A CME was detected during 21 - 24 October beginning with a shock front passage at 21/0138UT. The CME passage caused a major geomagnetic disturbance (see the discussion below). The following effects were noted during the passage: velocities increased to around 720 km/sec early on 22 October, then gradually decreased; densities peaked at 41 p/cc immediately following the shock front passage, then decreased a bit, but remained elevated through 22 October; IMF Bz turned strongly southward late on 21 October into the first half of 22 October with a maximum southward deflection of 31 nT (GSM); and the solar sector shifted from an away (positive polarity) to a toward sector.

No proton events were detected at geosynchronous orbit during the period.

The greater than 2 MeV electron flux dipped to normal to moderate levels on 22 October, but was at moderate to high levels during the rest of the period.

A major geomagnetic storm occurred on 22 October. The disturbance began with a sudden storm commencement (SSC) at 21/0226UT. The SSC was immediately followed by a brief period of active levels which subsided to quiet to unsettled levels until late 21 October. The disturbance intensified late on 21 October and continued through 24 October with the most intense activity observed during 22/0000 - 1200UT. Major to severe storm conditions were detected globally during this interval. The disturbance decreased in intensity after 22/1200UT with active to minor storm levels detected at middle latitudes and active to (brief) severe storm levels at high latitudes. The storm ended late on 24 October.

Space Weather Outlook 27 October - 22 November 1999

Solar activity is expected to be at low to moderate levels. Occasional C-class flares are likely. Isolated M-class flares are also possible throughout the period. Region 8739 also provides a slight chance for a major flare until it departs the disk on 02 November.

No significant proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous altitude is expected to be at moderate to high levels through 31 October and again during 07 - 15 and 20 - 22 October. Normal to moderate fluxes are expected during the intervening periods.

The geomagnetic field is expected to be mildly disturbed through 30 October with unsettled to active levels. Active to minor storm levels are expected during 06 - 13 November due to recurrent coronal hole effects. Unsettled to active levels are expected during 18 - 21 November, also due to recurrent coronal hole effects.



Daily Solar Data

Date	Radio Flux 10.7 cm	Sun spot No. (10^6 hemi.)	Sunspot Area	X-ray Background	Flares							
					X-ray Flux			Optical				
					C	M	X	S	1	2	3	
18 October	173	135	1360	B6.0	8	0	0	15	0	0	0	0
19 October	170	169	1030	B7.9	15	0	0	11	1	0	0	0
20 October	159	193	880	B8.4	4	1	0	5	1	0	0	0
21 October	159	154	900	B8.0	11	0	0	8	0	0	0	0
22 October	160	153	850	C1.1	4	0	0	2	1	0	0	0
23 October	165	114	1190	C1.1	9	0	0	7	0	0	0	0
24 October	159	130	1280	B7.5	5	0	0	5	0	0	0	0

Daily Particle Data

Date	Proton Fluence (protons/cm ² -day-sr)			Electron Fluence (electrons/cm ² -day-sr)		
	>1MeV	>10MeV	>100MeV	>.6MeV	>2MeV	>4MeV
	18 October	2.4E+5	1.2E+4	2.7E+3		1.7E+8
19 October	3.1E+5	1.2E+4	2.8E+3		1.4E+8	
20 October	5.6E+5	1.3E+4	2.8E+3		2.3E+8	
21 October	7.0E+5	1.2E+4	2.9E+3		4.7E+7	
22 October	1.1E+6	1.3E+4	2.8E+3		2.7E+6	
23 October	2.5E+6	1.2E+4	2.9E+3		5.1E+7	
24 October	1.1E+6	1.2E+4	2.9E+3		1.4E+8	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	18 October	6	1-1-0-0-3-3-1-2	9	1-1-0-2-5-2-1-1	6
19 October	5	3-2-3-0-0-0-0-0	10	1-3-4-2-4-0-0-0	7	2-2-4-1-1-2-2-1
20 October	4	1-1-0-1-3-1-1-0	1	0-0-0-0-1-0-1-0	4	0-1-1-1-2-2-2-1
21 October	14	3-4-2-2-2-2-3-4	13	3-3-1-2-2-3-3-4	15	3-4-2-2-2-3-3-4
22 October	45	6-4-7-4-3-4-4-3	*	5-*-6-6-5-5-5-3	87	7-8-8-6-4-4-4-3
23 October	26	3-5-3-2-5-5-3-3	58	2-3-6-4-7-7-4-4	26	3-4-4-3-5-5-4-3
24 October	20	4-3-5-3-2-2-3-4	46	3-4-5-7-6-4-3-3	23	4-4-5-4-4-3-3-4

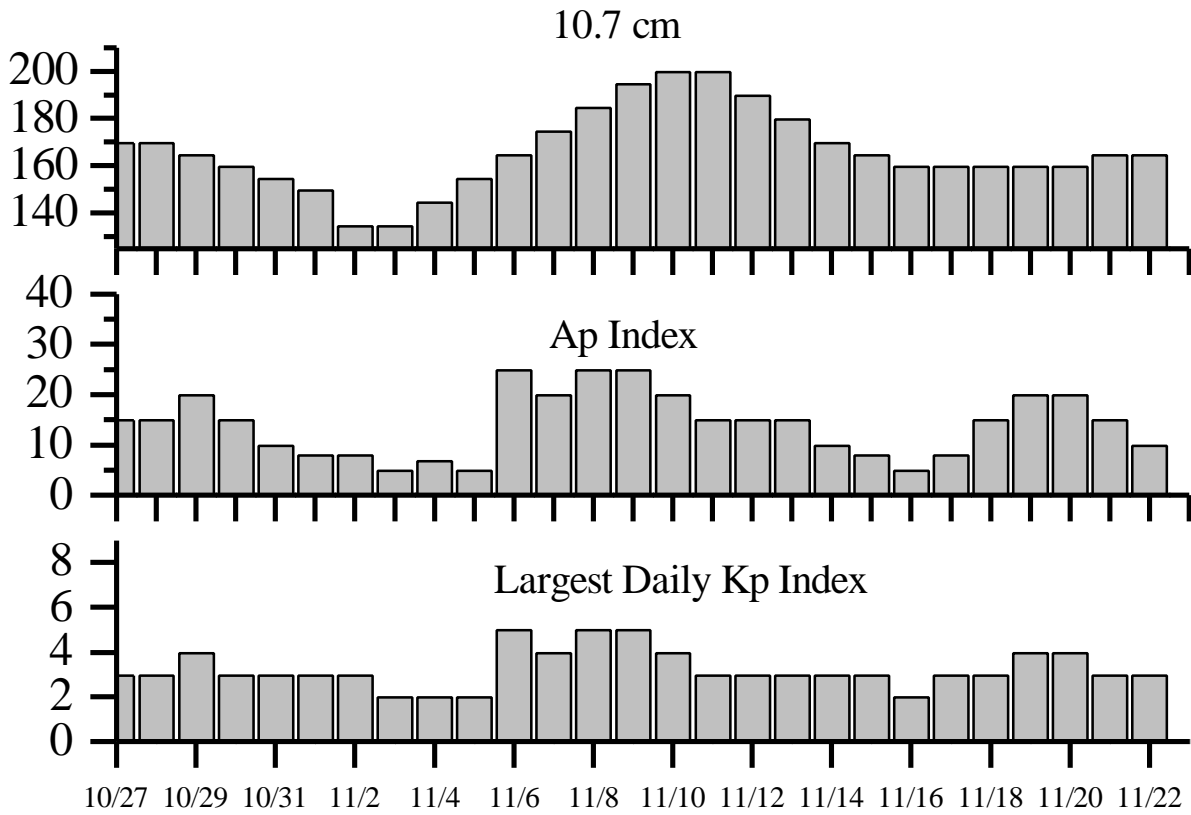


Alerts and Warnings Issued

Date and Time of Issue (UT)	Type of Alert or Warning	Date and Time of Event (UT)
18 Oct 0046	1 – 245 MHz Burst	17 Oct
18 Oct 0054	Type II Radio Emission	17 Oct 2318
18 Oct 1203	CONTINUED >2MeV Electron Event =1000pfu	11 Oct 1625
19 Oct 1205	CONTINUED >2MeV Electron Event =1000pfu	11 Oct 1625
20 Oct 0658	Type II Radio Emission	20 Oct 0610
20 Oct 1200	CONTINUED >2MeV Electron Event =1000pfu	11 Oct 1625
21 Oct 0059	1 - 245 MHz Burst	20 Oct
21 Oct 0240	Sudden Impulse observed at Boulder	21 Oct 0226
21 Oct 0252	K= 4 Warning valid	21 Oct 0255 - 1500
21 Oct 0600	K= 4 Observed	21 Oct 03- 06
21 Oct 1158	CONTINUED >2MeV Electron Event =1000pfu	11 Oct 1625
21 Oct 1845	A = 20 Watch	24 Oct
21 Oct 2342	K= 5 Warning valid	21/2345 – 22/1500 Oct
22 Oct 0011	K= 4 Observed	21 Oct 21- 24
22 Oct 0114	A = 30 Warning valid	22 Oct 0112 -1500
22 Oct 0114	K= 6 Warning	22/0115 - 1200
22 Oct 0311	K= 6 Observed	22 Oct 00- 03
22 Oct 0601	CONTINUED K= 6 Warning	1500 23 Oct
22 Oct 0854	A = 30 Observed	22 Oct 0900
22 Oct 0854	A = 50 Warning	22/1200 – 23/0000 Oct
22 Oct 0854	K = 7 Observed	22 Oct 06- 09
22 Oct 0957	Type II Radio Emission	22 Oct 0853
22 Oct 1202	CONTINUED >2MeV Electron Event =1000pfu	11 Oct 1625
22 Oct 1204	A = 50 Observed	22 Oct 1200
22 Oct 1248	CONTINUED A = 30 Warning	22 Oct 0112 - 1500
22 Oct 1357	Type II Radio Emission	22 Oct 1300
23 Oct 0019	13 – 245 MHz Bursts	22 Oct
23 Oct 0038	A =20 Watch	23 Oct
23 Oct 0039	A = 20 Watch	25 Oct
23 Oct 0458	K= 4 Warning	23 Oct 0457 to 1500
23 Oct 0559	CONTINUED A = 30 Observed	22 Oct 0900
23 Oct 0603	K= 4 Observed	23 Oct 03- 06
23 Oct 0921	Type II Radio Emission	23 Oct 0132
23 Oct 1201	CONTINUED A = 30 Observed	22 Oct 0900
23 Oct 1201	ENDED A = 50	23 Oct 0300
23 Oct 1334	>2MeV Electron Event =1000pfu	23 Oct 1245
23 Oct 1454	CONTINUED K= 4 warning	23 Oct 0457 -1500
24 Oct 0133	K= 4 Warning	24 Oct 03 - 15
24 Oct 0338	A = 20 Observed	24 Oct 0300
24 Oct 0602	K= 4 Observed	24 Oct 03 - 06
24 Oct 0652	K= 5 Warning	24 Oct 09 - 15
24 Oct 0859	K= 5 Observed	24 Oct 06 - 09
24 Oct 1154	CONTINUED >2MeV Electron Event =1000pfu	23 Oct 1245
24 Oct 1155	CONTINUED A = 20 Observed	24 Oct 0300



Twenty-seven Day Outlook



Date	Radio Flux 10.7 cm	Planetary A Index	Largest Kp Index	Date	Radio Flux 10.7 cm	Planetary A Index	Largest Kp Index
27 Oct	170	15	3	10 Nov	200	20	4
28	170	15	3	11	200	15	3
29	165	20	4	12	190	15	3
30	160	15	3	13	180	15	3
31	155	10	3	14	170	10	3
01 Nov	150	8	3	15	165	8	3
02	135	8	3	16	160	5	2
03	135	5	2	17	160	8	3
04	145	7	2	18	160	15	3
05	155	5	2	19	160	20	4
06	165	25	5	20	160	20	4
07	175	20	4	21	165	15	3
08	185	25	5	22	165	10	3
09	195	25	5				



Energetic Events

Date	Time (UT)			X-ray		Optical Information			Peak		Sweep Freq	
	Begin	Max	Max	Class	Flux	Imp/ Brtns	Location Lat CMD	Rgn #	Radio Flux		Intensity	
									245	2695	II	IV
20 Oct	0553	0622	0643	M1.7	.036	1F	N10W48	8731	44			2

Flare List

Date	Time			X-ray Class.	Imp / Brtns	Optical		Rgn #
	Begin	Max	End			Location Lat CMD		
18 October	0001	0004	0007	C1.0				
	0104	0114	0117	C6.6				
	0147	0155	0202	C2.8				
	0224	0232	0247	C1.7				
	0840	0905	0923	C1.5				
	1555	1557	1620		SF	N19W34		8732
	1653	1700	1705		SF	N19W35		8732
	1716	1720	1732		SF	N20W32		8732
	1734	1735	1807	C2.7	SF	N10W25		8731
	1743	1748	1758		SF	N19W35		8732
	1854	1858	1909	C1.5	SF	N22W50		8728
	1923	1923	1928		SF	N20W33		8732
	1952	1953	1959		SF	N22W51		8728
	1958	1958	2001		SF	N19W37		8732
	2020	2021	2024		SF	N19W36		8732
	2032	2032	2043		SF	N19W38		8732
	2045	2045	2049		SF	N19W36		8732
	2153	2154	2205	C1.8	SF	N19W38		8732
2304	2306	2310		SF	N19W39		8732	
2338	2345	0000		SF	S14E29		8736	
19 October	0305	0320	0326	C5.1				
	0515	0532	0544	C2.9				
	B0714	U0715	0720	C3.1	SF	N19W40		8732
	0812	0813	0821	C1.7	SF	N20W40		8732
	0914	U0915	A0923	C3.0	SF	N19W40		8732
	1002	U1008	A1016		SF	N07W33		8731
	1019	1026	1030	C1.3				
	B1027	U1037	A1100	C2.5	SF	N19W41		8732
	1324	1325	1332	C1.3	SF	N19W45		8732
	1414	1417	1421	C2.7	SF	S15E19		8737
	1715	1715	1722	C1.1	SF	S15E19		8731
	1757	1758	1820	C1.0	SF	N12W44		8731
	1911	1916	1920	C1.6				
	1930	1935	1954	C8.7	SF	N17W50		8732
	2022	2024	2033	C3.1	SF	N20W50		8732
2158	2202	2223	C7.3	1F	N18W54		8732	



Flare List-continued

Date	Time			X-ray Class.	Optical		Rgn #
	Begin	Max	End		Imp / Brtns	Location Lat CMD	
20 October	B0647	U0653	0747	M1.7	1F	N10W48	8731
	0926	U0927	A0945	C2.2	SF	S14E78	8739
	1357	1402	1407	C1.3			
	1431	U1432	A1455		SF	N19W63	8732
	1545	1546	1558		SF	N12W69	8729
	2334	2336	2341	C1.3	SF	N07W57	8731
	2349	2350	A0000	C4.2	SF	N20W65	8732
21 October	0356	0417	0433	C3.0			
	0622	0624	0653	C1.9	SF	S15W01	8737
	0847	0901	0905	C2.3	SF	N19W65	8732
	1004	1005	1016	C2.1	SF	S13E63	8739
	1226	1234	1245	C1.8			
	1334	1347	1413	C3.5	SF	N18W70	8732
	1450	1450	1455	C2.3	SF	N20W69	8732
	1540	1549	1557		SF	S13E64	8739
	1906	1910	1920	C4.1			
	1908	1910	1920	C2.3	SF	S11E62	8739
	1921	1926	1936	C3.0			
	1953	1955	1957	C6.1			
	2009	2011	2015		SF	N20W77	8732
	22 October	0915	0915	A0918	C4.8	SF	N19W76
1405		1405	1407	C3.4	SF	N20W76	8732
1825		1829	1836	C2.1			
23 October	1927	1930	1943	C2.7	1F	S11E47	8739
	0048	0107	0158	C2.7			
	0555	0601	0609	C2.8	SF	S27E65	8741
	0705	0710	0720	C2.6			
	0949	0951	1000	C2.4	SF	S26E59	8741
	1244	1245	1254	C2.4	SF	S26E54	8741
	1425	1426	1428		SF	S11E37	8739
	1520	1520	1532		SF	S26E55	8741
	1654	1655	1702	C2.2	SF	S25E54	8741
	1725	1736	1744	C4.1			
	1913	1917	1923	C5.3			
24 October	2148	2153	2159	C2.7			
	2241	2247	2249		SF	S26E50	8741
	0127	0130	0134	C1.7			
	0750	0800	0804	C1.0			
	0940	0957	1003	C1.5			
	1518	1547	1553		SF	S15W51	8737
	1605	1606	1620	C2.1	SF	S26E34	8741
	1857	1904	1917	C1.0			



Flare List-continued

Date	Time			X-ray Class.	Imp / Brtns	Optical	Rgn #
	Begin	Max	End			Location Lat CMD	
24 October	2127	2127	2131		SF	S26E36	8741
	2241	2241	2245		SF	N06E70	8742
	2314	2317	2322		SF	N10E69	8742

Region Summary

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 8728</i>																			
08 Oct	N22E74	321	0030	02	HSX	001	A					1							
09 Oct	N21E62	319	0150	08	CAO	010	B										3		
10 Oct	N22E50	318	0340	10	DHO	013	B	1				1							
11 Oct	N22E38	317	0560	13	EKI	022	BG	1				2							
12 Oct	N22E25	317	0560	12	EKI	019	B												
13 Oct	N23E15	314	0520	16	FKO	026	B					1							
14 Oct	N22E00	315	0330	13	EKO	021	B												
15 Oct	N22W13	315	0310	13	EAO	020	B										2		
16 Oct	N23W26	315	0290	14	EAO	029	B	2				2							
17 Oct	N23W40	316	0220	12	EAO	010	B					1							
18 Oct	N22W59	322	0170	04	CSO	002	B	1				2							
19 Oct	N24W70	320	0130	05	DAO	003	B												
20 Oct	N24W83	319	0110	05	CAO	003	B												
21 Oct	N22W94	317	0080	02	HAX	001	A												
												5	0	0	15	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 315

Region 8729

09 Oct	N11E67	314	0040	10	CRO	008	B												
10 Oct	N12E58	310	0060	19	BXO	014	B												
11 Oct	N12E44	311	0030	14	BXO	014	B												
12 Oct	N12E30	312	0090	16	FAO	016	B												
13 Oct	N11E17	312	0110	16	CRO	030	B	1				2							
14 Oct	N12E03	312	0030	14	CAO	015	B					1							
15 Oct	N12W12	314	0020	10	CAO	008	B												
16 Oct	N13W25	314	0020	09	BXO	009	B												
17 Oct	N14W41	317	0010	06	BXO	003	B												
18 Oct	N16W49	312	0000	00	AXX	001	A												
19 Oct	N16W62	312																	
20 Oct	N16W75	312										1							
21 Oct	N16W89	312																	
												1	0	0	4	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 312



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 8731</i>															
11 Oct	N10E62	293	0120	11	EAO	006	B					1			
12 Oct	N11E51	291	0340	14	EKO	014	B	1				6			
13 Oct	N11E37	292	0620	12	EKO	038	BG	2				6			
14 Oct	N19E24	291	0790	14	EKC	045	BGD	4		1	12	1			
15 Oct	N12E10	292	0850	16	FKC	027	BG	7				11	1		
16 Oct	N12W03	292	1000	17	FKC	062	BGD	1				2			
17 Oct	N13W19	295	1220	19	FKC	054	BGD	1				1			
18 Oct	N13W27	290	0980	17	FKC	035	BG	1				1			
19 Oct	N13W44	294	0640	16	FKC	063	BG	2				3			
20 Oct	N14W55	291	0440	13	EKI	045	BG		1			1	1		
21 Oct	N12W67	290	0320	13	EAI	028	B								
22 Oct	N12W79	289	0160	13	ESI	012	B								
23 Oct	N12W92	289													
								19	1	1	44	3	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 292

Region 8732

12 Oct	N20E43	299	0030	05	BXO	005	B					1			
13 Oct	N19E28	301	0230	08	DSO	010	B	2				6			
14 Oct	N20E16	299	0090	09	DAO	021	B					2			
15 Oct	N20E01	301	0170	12	ESO	012	B								
16 Oct	N20W12	301	0210	13	EAO	019	B								
17 Oct	N21W25	301	0220	15	EAO	023	B					1			
18 Oct	N21W41	304	0180	17	FAO	019	B	1				11			
19 Oct	N21W53	303	0190	16	FAI	029	BG	8				7	1		
20 Oct	N22W64	300	0170	17	FAI	023	B	2				2			
21 Oct	N21W76	299	0160	19	FAI	015	B	3				4			
22 Oct	N20W89	299	0060	09	CRI	007	B	2				2			
								18	0	0	36	1	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 301



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
	<i>Region 8733</i>													
12 Oct	N25E00	342	0010	03	BXO	003	B							
13 Oct	N24W13	342	0010	04	BXO	003	B							
14 Oct	N26W24	339	0000	00	AXX	001	A							
15 Oct	N26W37	339												
16 Oct	N26W50	339												
17 Oct	N26W63	339												
18 Oct	N26W76	339												
19 Oct	N26W89	339												

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 342

	<i>Region 8734</i>													
15 Oct	N17E21	281	0010	05	CRO	002	B							
16 Oct	N17E08	281	0000	01	AXX	001	A							
17 Oct	N17W09	285	0010	02	HSX	002	A							
18 Oct	N17W23	286	0000	00	AXX	001	A							
19 Oct	N17W36	286												
20 Oct	N20W46	282	0010	04	BXO	005	B							
21 Oct	N18W59	282	0020	01	HSX	001	A							
22 Oct	N16W72	282	0000	00	AXX	001	A							
23 Oct	N16W85	282												

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 281

	<i>Region 8735</i>													
16 Oct	N18E40	249	0010	05	BXO	009	B							
17 Oct	N18E22	254	0040	05	DSO	006	B							
18 Oct	N19E09	254	0030	07	CSO	006	B							
19 Oct	N19W06	256	0020	05	CRO	004	B							
20 Oct	N18W19	255	0010	03	BXO	003	B							
21 Oct	N18W32	255												
22 Oct	N18W45	255												
23 Oct	N18W58	255												
24 Oct	N18W71	255												

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 256



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 8736</i>													
17 Oct	S20E35	241	0010	00	HRX	001	A								
18 Oct	S24E20	243	0000	00	AXX	001	A				1				
19 Oct	S21E07	243	0000	06	BXO	002	B								
20 Oct	S25W06	242	0010	01	AXX	002	A								
21 Oct	S25W19	242													
22 Oct	S25W32	242													
23 Oct	S25W45	242													
24 Oct	S25W58	242													
								0	0	0	1	0	0	0	0
Still on Disk.															
Absolute heliographic longitude: 242															
		<i>Region 8737</i>													
19 Oct	S15E14	236	0050	07	CAO	008	B	1			1				
20 Oct	S16E01	235	0070	08	DAO	017	B								
21 Oct	S15W12	235	0170	13	EAI	028	B	1			1				
22 Oct	S15W26	236	0310	11	EAI	022	B								
23 Oct	S14W40	237	0270	11	EKO	017	B								
24 Oct	S13W54	238	0330	12	EKO	013	B				1				
								2	0	0	3	0	0	0	0
Still on Disk.															
Absolute heliographic longitude: 235															
		<i>Region 8738</i>													
20 Oct	N16E28	208	0010	00	AXX	002	A								
21 Oct	N17E13	210	0020	03	CSO	003	B								
22 Oct	N17W01	211	0020	02	CSO	003	B								
23 Oct	N17W13	210	0020	05	CSO	006	B								
24 Oct	N18W27	211	0030	04	CSO	006	B								
								0	0	0	0	0	0	0	0
Still on Disk.															
Absolute heliographic longitude: 211															
		<i>Region 8739</i>													
20 Oct	S14E71	165	0050	09	CAO	003	B	1			1				
21 Oct	S12E58	165	0130	09	DAO	008	B	2			3				
22 Oct	S13E43	167	0220	10	DAI	019	B	1				1			
23 Oct	S12E30	167	0440	13	EKI	023	B				1				
24 Oct	S12E16	168	0420	13	EKI	036	BG								
								4	0	0	5	1	0	0	0
Still on Disk.															
Absolute heliographic longitude: 168															



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 8740</i>																		
22 Oct	N27W83	293	0000	00	AXX	002	A											
23 Oct	N27W96	293																
									0	0	0	0	0	0	0	0	0	0
Crossed West Limb.																		
Absolute heliographic longitude: 293																		
<i>Region 8741</i>																		
22 Oct	S25E64	146	0080	12	CAO	007	B											
23 Oct	S25E50	147	0210	13	EAO	017	B	4			6							
24 Oct	S26E36	148	0220	13	EAO	017	B	1			2							
								5	0	0	8	0	0	0	0	0	0	0
Still on Disk.																		
Absolute heliographic longitude: 148																		
<i>Region 8742</i>																		
23 Oct	N06E82	115	0250	03	HKX	001	A											
24 Oct	N08E68	116	0280	12	EKO	008	B				2							
								0	0	0	2	0	0	0	0	0	0	0
Still on Disk.																		
Absolute heliographic longitude: 116																		

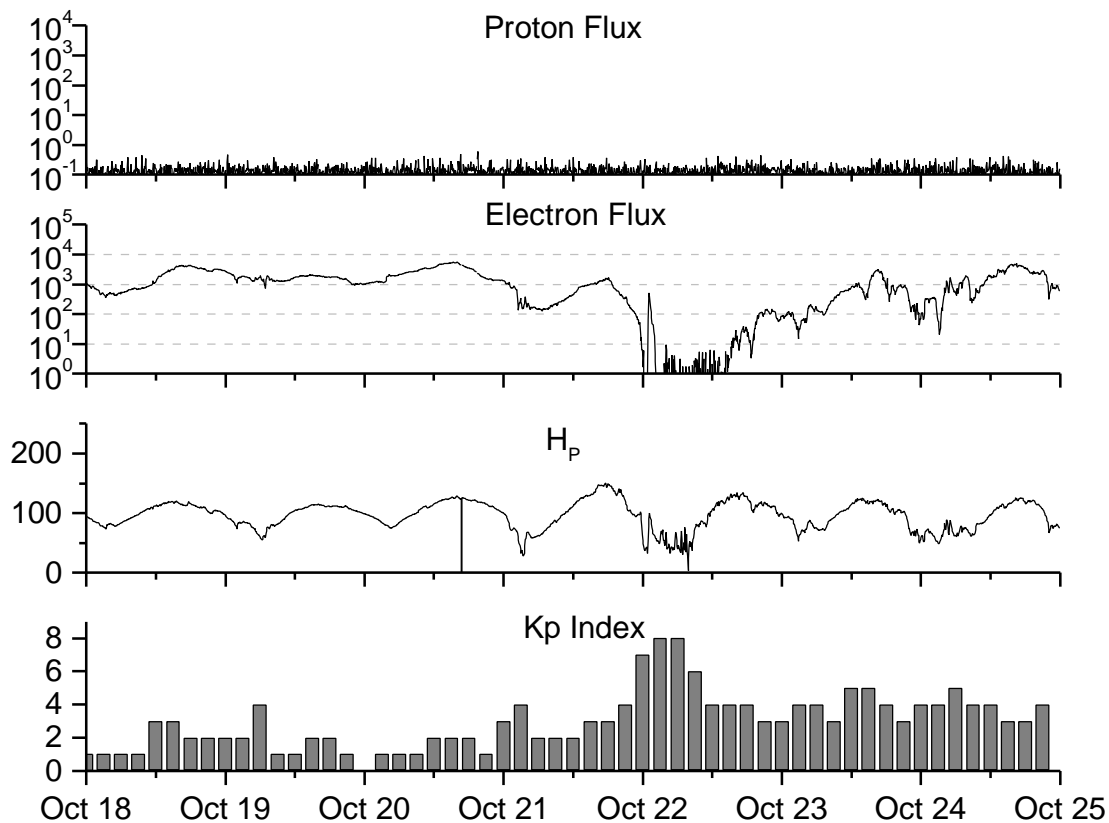


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

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
1997									
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	11.1
April	73.6	53.4	0.73	77.7	56.5	108.3	109.1	10	11.3
May	74.3	56.3	0.76	81.4	59.3	106.7	112.4	18	11.6
June	93.6	70.7	0.76	85.9	62.4	108.4	116.2	10	11.9
July	98.3	66.2	0.67	90.3	65.4	114.0	120.3	11	12.2
August	118.6	91.7	0.77	93.7	67.8	136.0	124.1	18	12.4
September	119.0	92.9	0.78	96.1	69.4	138.4	126.8	13	12.5
October	77.0	55.5	0.72	97.7	70.5	117.3	127.9	13	12.5
November	99.5	74.0	0.74	101.3	73.0	140.2	130.0	16	12.3
December	120.8	81.9	0.69	108.8	77.9	150.1	134.3	08	11.9
1999									
January	94.3	62.4	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	11.6
April	092.9	063.9	0.69			117.2		12	
May	140.5	106.3	0.76			148.6		08	
June	208.3	137.4	0.66			169.8		07	
July	169.2	113.5	0.67			165.6		10	
August	136.1	93.7	0.69			170.8		15	
September	107.4	70.9	0.66			135.7		18	

NOTE: All smoothed values after January 1998 and monthly values after September 1998 are 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. * After June 1991, the 10.7 cm radio flux data source is Penticton, B.C. Canada. Prior to that, it was Ottawa.





Weekly Geosynchronous Satellite Environment Summary
Week Beginning 18 October 1999

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.

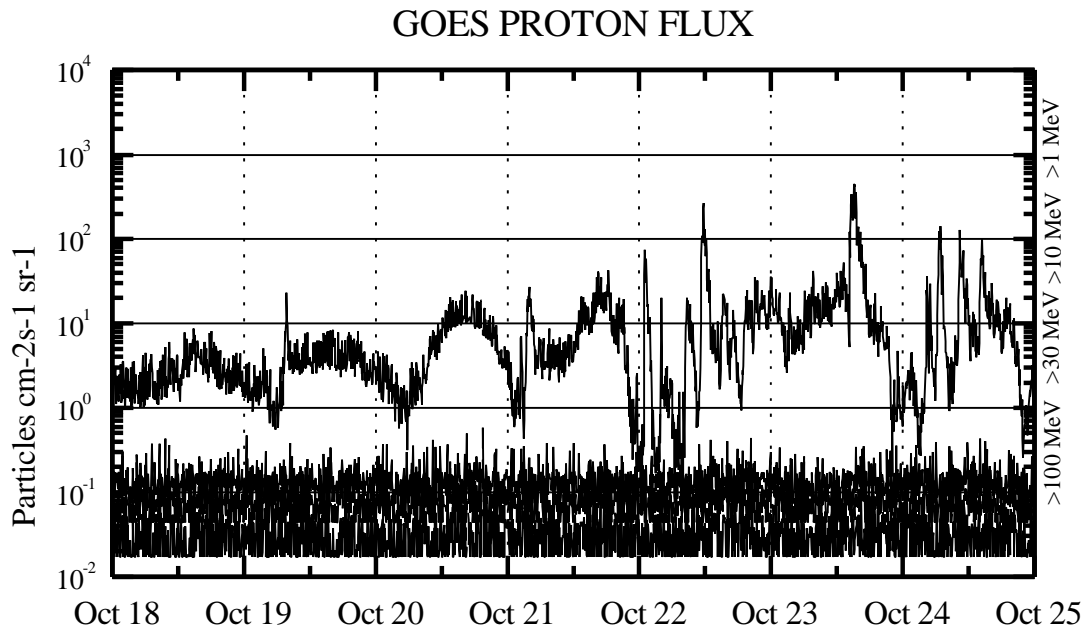
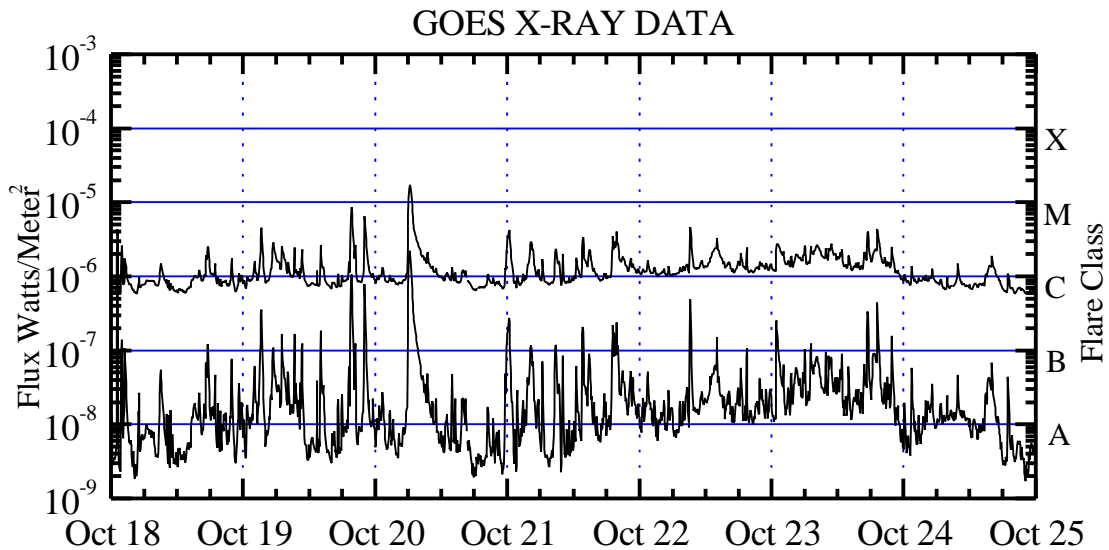
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV at GOES-8.

H_p plot contains the five minute averaged magnetic field H_p - component in nanoteslas (nT) as measured by GOES-8. The H_p 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 Hartland, UK. These data are made available through cooperation from the Geological Survey of Canada (GSC), the British Geological Survey and the US Geological Survey. These may differ from the final K_p values derived from a more extensive network of magnetometers. The official K_p values are available at http://www.gfzpotdam.de/pb2/pb23/niemegk/kp_index/

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.

