

**Space Weather Highlights
23 - 29 Aug 1999**

Solar activity ranged from low to high levels. Region 8674 (S24, L=246, class/area Fkc/770 on 27 August) produced two major flares and isolated M-class flares. Significant development occurred within the intermediate and trailer portions of the group during 26 - 28 August, which included the formation of two delta magnetic configurations. The first major flare was an M5/2N at 27/1307UT with relatively modest discrete radio emission. The second was an X1/2N at 28/1805UT associated with a 1000 SFU Tenflare and a Type II radio sweep with an estimated shock velocity of 600 km/sec. Activity dropped to low levels on the last day of the period as Region 8674 entered a period of slow decay. Region 8681 (N21, L=207, class/area Dai/220 on 29 August) emerged rapidly on 28 August, then continued to grow through the rest of the period while producing occasional subflares.

Real-time solar wind data were available from the Advanced Composition Explorer (ACE) spacecraft for most of the period. IMF Bz was mostly southward during 23 - 24 August with maximum deflections to minus 14 nT (GSM), which prompted the geomagnetic disturbance discussed below. Densities were enhanced during 23 - 24 August as well, with a peak of 17 p/cc noted on 23 August. A coronal hole signature was observed during 25 - 29 August with increased velocities (peak around 800 km/sec early on 27 August) and low particle densities (01 to 02 p/cc). The source of the high-speed stream appeared to be an isolated, negative-polarity coronal hole located on the southern hemisphere.

No proton events were detected at geo-synchronous orbit during the period.

The greater than 2 MeV electron flux reached high levels on 23 and 28 - 29 August.

The geomagnetic field was disturbed during 23 - 24 August with active to minor storm periods detected at all latitudes and brief major storm periods detected at high latitudes. Activity declined to quiet to unsettled levels for the rest of the summary period with brief active intervals recorded at some high latitude stations.

**Space Weather Outlook
01 September - 27 September 1999**

Solar activity is expected to range from low to moderate levels. There will be a chance for more major flare activity from Region 8674 before it departs the visible disk around 02 September. Region 8681 may also produce isolated M-class flares before it departs the disk around 05 September. Chances for moderate to high activity are also expected to increase beginning 16 September with the return of (old) Region 8674 to the visible disk.

There will be a slight chance for a proton event at geo-synchronous orbit.

The greater than 2 MeV electron flux at geo-synchronous altitude is expected to vary from normal to high levels during the second half of the outlook period. Otherwise, normal to moderate fluxes are expected.

Geomagnetic field activity is expected increase to unsettled to active levels around 12 - 16 September due to recurrent coronal hole effects. Otherwise, quiet to unsettled conditions are expected, barring any Earth-directed coronal mass ejections.



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	
23 August	188	110	1240	C1.2	6	0	0	1	0	0	0	0
24 August	202	103	1030	B9.6	4	0	0	6	2	0	0	0
25 August	208	127	980	C1.1	7	1	0	6	1	0	0	0
26 August	222	176	1130	C1.1	6	0	0	12	0	0	0	0
27 August	223	194	1450	C1.7	4	3	0	15	1	2	0	0
28 August	248	225	1400	C1.2	4	1	1	10	1	1	0	0
29 August	218	229	1570	C1.8	5	0	0	18	1	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
23 August	2.2E+6	1.1E+4	2.3E+3		1.9E+7	
24 August	2.5E+5	1.2E+4	2.3E+3		6.5E+6	
25 August	1.1E+5	1.3E+4	2.3E+3		1.2E+7	
26 August	2.0E+5	1.2E+4	2.4E+3		1.2E+7	
27 August	2.7E+5	1.3E+4	2.7E+3		3.5E+7	
28 August	1.6E+5	1.3E+4	2.8E+3		1.0E+8	
29 August	2.3E+5	1.5E+4	3.7E+3		2.0E+8	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	23 August	22	5-5-3-2-3-3-3-3	67	4-5-5-6-7-7-5-2	33
24 August	18	3-4-3-3-4-3-3-3	45	2-4-4-5-7-5-5-3	29	3-4-4-5-5-4-3-3
25 August	8	2-1-1-1-2-1-2-4	*	3-1-1-1-*-1-1-3	8	2-2-1-1-2-2-2-4
26 August	10	2-3-0-2-3-2-3-3	48	2-5-5-5-5-7-4-3	13	2-3-1-2-4-4-3-3
27 August	9	2-2-3-1-2-2-3-2	15	4-2-4-1-4-3-2-2	13	3-3-4-2-3-3-3-2
28 August	11	2-2-2-3-3-3-3-2	26	3-2-5-4-6-3-2-2	14	3-2-3-3-3-3-3-3
29 August	6	2-2-2-2-1-2-2-1	27	2-3-5-6-5-2-2-2	10	2-2-2-3-2-3-3-3

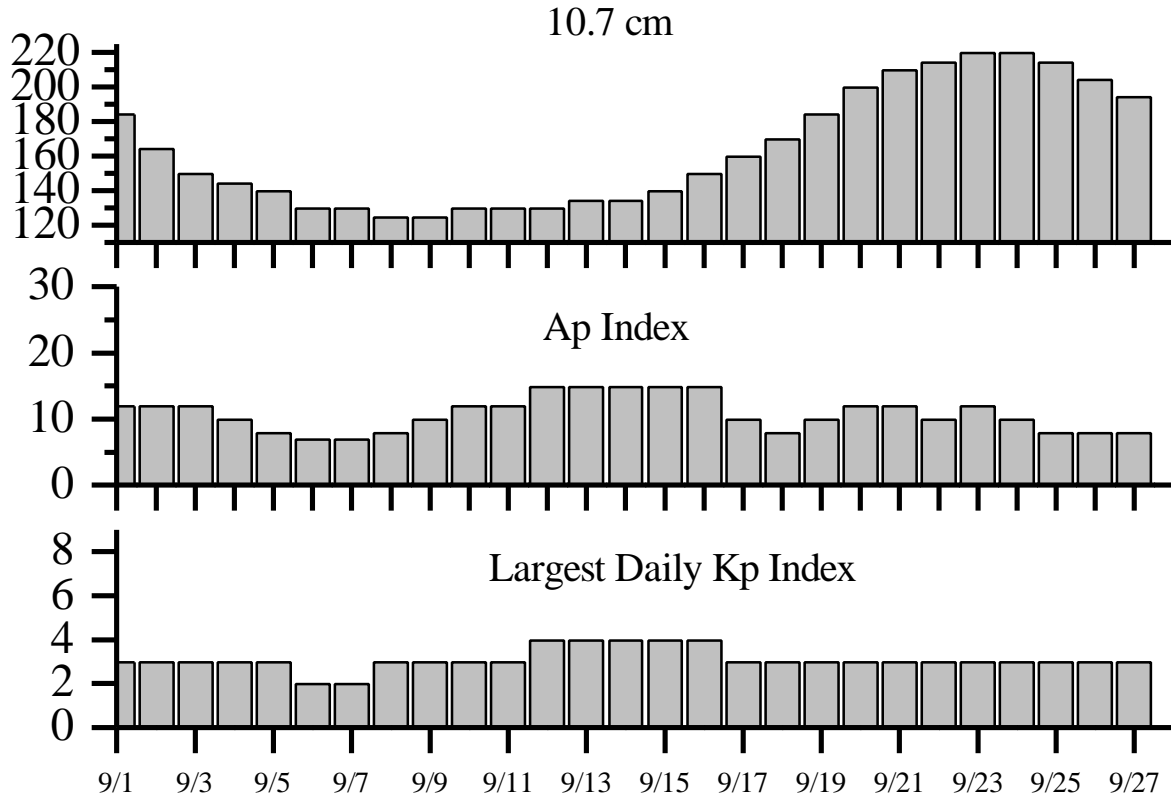


Alerts and Warnings Issued

Date and Time of Issue (UT)	Type of Alert or Warning	Date and Time of Event (UT)
23 Aug 0016	2-245 MHz Bursts	22 Aug
23 Aug 0300	K= 4 Observed	23 Aug 00 - 03
23 Aug 0455	K= 4 Warning	23 Aug 0455 - 1500
23 Aug 0603	K= 5 Observed	23 Aug 03 - 06
23 Aug 1202	CONTINUED >2MeV Electron Event =1000pfu	17 Aug 1540
23 Aug 1316	A =20 Observed	23 Aug 1200
23 Aug 1425	CONTINUED K= 4 Warning valid	23 Aug 1423 - 2100
24 Aug 0010	1-245 MHz Bursts	23 Aug
24 Aug 0600	K= 4 Observed	24 Aug 03-06
24 Aug 0600	K= 4 Warning valid	24 Aug 06 - 15
24 Aug 1200	CONTINUED >2MeV Electron Event =1000pfu	17 Aug 1540
24 Aug 1416	CONTINUED K= 4 Warning	24 Aug 06 - 15
24 Aug 1500	K= 5 Observed	24 Aug 12 - 15
25 Aug 0015	3 - 245 MHz Bursts	24 Aug
25 Aug 0200	Type II Radio Emission	25 Aug 0040
25 Aug 0204	10cm Radio Burst 310 sfu	25 Aug 0134
25 Aug 1212	CANCELLED Type II Radio Emission	25 Aug 0040
25 Aug 1215	Type II Radio Emission	25 Aug 0140
26 Aug 0035	3 - 245 MHz Bursts	25 Aug
27 Aug 0007	2 - 245 MHz Bursts	26 Aug
27 Aug 1326	X-Ray event M5/1N/S23W09	27 Aug 1250
28 Aug 0127	10cm Radio Burst 250 sfu	28 Aug 0055
28 Aug 0240	4 - 245 MHz Bursts	27 Aug
28 Aug 1213	>2MeV Electron Event =1000pfu	28 Aug 1200
28 Aug 1451	K= 4 Warning valid	28/1500 – 29/1200 Aug
28 Aug 1511	K= 4 Observed	28 Aug 12-15
28 Aug 1830	10cm Radio Burst 1000 ssfu	28 Aug 1753
28 Aug 1830	X-Ray event X1.1	28 Aug 1752
28 Aug 1853	Type II Radio Emission	28 Aug 1807
29 Aug 0058	2 - 245 MHz Bursts	28 Aug
29 Aug 1208	CONTINUED >2 MeV Electron Event =1000pfu	28 Aug 1200



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
01 Sep	185	12	3	15 Sep	140	15	4
02	165	12	3	16	150	10	3
03	150	12	3	17	160	8	3
04	145	10	3	18	170	10	3
05	140	8	3	19	185	12	3
06	130	7	2	20	200	12	3
07	130	7	2	21	210	10	3
08	125	8	3	22	215	12	3
09	125	10	3	23	220	10	3
10	130	12	3	24	220	8	3
11	130	12	3	25	215	8	3
12	130	15	4	26	205	8	3
13	135	15	4	27	195	8	3
14	135	15	4				



Energetic Events

Date	Time (UT)			X-ray		Optical Information			Peak		Sweep Freq	
	Begin	Max	½	Class	Flux	Imp/ Brtns	Location		Radio Flux		Intensity	
			Max				Rgn	Lat	CMD	245	2695	II
25 Aug	0132	0136	0140	M3.6	.009	1N	S28E21	8674	1600	310	1	
27 Aug	0122	0137	0151	M3.0	.035					32		
27 Aug	1250	1307	1322	M5.5	.069	2N	S23W09	8674		150		
27 Aug	1623	1636	1707	M3.0	.059	2N	S31E04	8674		110		
28 Aug	0050	0102	0116	M2.8	.028	1F	S26W16	8674		290		
28 Aug	1752	1805	1818	X1.1	.110	2N	S26W14	8674	660	1000	3	

Flare List

Date	Time			X-ray Class.	Optical Imp / Brtns	Location Lat CMD	Rgn #
	Begin	Max	End				
23 August	0803	0807	0811	C1.3			
	1127	U1127	A1134		SF	S22E37	8673
	1616	1647	1743	C4.5			
	1801	1809	1812	C5.7			
	2024	2029	2034	C4.5			
	2105	2114	2129	C2.1			
	2305	2320	2335	C4.7			
24 August	0123	0141	0204	C3.5			
	0607	0612	0640	C5.3	1F	S27E30	8674
	1116	1118	1139		SF	N22W56	8668
	1449	1450	1454		SF	N26E73	8675
	1552	1555	1628	C3.1	SF	S24E30	8674
	1702	1720	1750	C4.4	1F	S26E25	8674
	1751	1755	1758		SF	S28E25	8674
	2238	2239	2243		SF	S18E23	8673
	2252	2309	A2358		SF	S17E22	8673
25 August	B0135	0136	0156	M3.6	1N	S28E21	8674
	0214	0218	0222	C3.1			
	0718	0728	0734	C2.4			
	1153	1327	1416	C4.0			
	1446	1457	1520	C6.5	SF	S23E17	8674
	1623	1624	1631		SF	S28E05	8674
	1802	1802	1812		SF	S17E05	8673
	1826	1828	1830		SF	N26E64	8676
	1829	1829	1838		SF	S19E09	8673
	2017	2021	2027	C3.0			
	2123	2125	2245	C3.3	SF	S20E08	8673
	2333	2336	2340	C1.9			
	26 August	0702	0704	0709	C7.1	SF	S28E05
0936		0938	0956		SF	S22E01	8673
0936		1108	1131	C4.4	SN	S31E08	8674



Flare List – continued.

Date	Time			X-ray	Optical		Rgn Lat CMD	#
	Begin	Max	End		Imp / Class.	Location Brtns		
26 August	1011	1018	1052	C4.8	SF	S22E08	8673	
	1250	1253	1312		SF	S22E04	8674	
	1335	1337	1339		SF	S22E05	8674	
	1455	1459	1513	C3.7	SF	S23E06	8674	
	B1634	1636	1638		SF	S23E07	8674	
	1650	1653	1657		SF	S20W02	8673	
	1706	1713	1732	C4.7	SF	S21E03	8674	
	1708	1711	1740		SF	S19W08	8673	
	1733	1733	1737		SF	S22E02	8674	
	2118	2122	2143	C5.5				
27 August	0122	0137	0151	M3.0				
	B0527	U0530	A0549	C7.1	SF	S21W10	8673	
	0631	0633	0640		SF	S28W16	8674	
	0856	0907	0917	C4.2				
	B0928	U0930	0936	C4.2	SF	S21W12	8673	
	0959	1013	A1029		SF	S21W11	8673	
	B1255	U1325	1443	M5.5	2N	S23W09	8674	
	B1330	U1330	1407		SF	N19E49	8675	
	1456	1456	1502		SF	N18E44	8675	
	1458	1500	1503		SF	S29W01	8674	
	1523	1523	1528		SF	N19E45	8675	
	1532	1543	1555		SF	N21E46	8675	
	1547	1549	1552		SF	S20W24	8673	
	1556	1600	1638		SF	N20E46	8675	
	1608	1609	1732		1F	S19W21	8673	
	1620	1635	1754	M3.0	2N	S31E04	8674	
	1759	1805	1811		SF	N19E48	8675	
	1840	1841	1854		SF	S20W16	8673	
	1959	2005	2018		SF	S21W14	8673	
	2330	2331	0001		SF	S20W18	8673	
28 August	0055	0057	0112	M2.8	1F	S26W16	8674	
	0821	0824	0826	C4.7	SF	N20E31	8675	
	1116	1123	1212	C5.1	SF	N29E27	8676	
	1144	1215	1233		SF	N20E32	8675	
	1214	1215	1227		SF	S24W25	8674	
	1333	1417	1458		SF	N19E35	8675	
	1353	1401	1425		SF	S26W12	8674	
	1437	1459	1531	C7.3	SF	S28W23	8674	



Flare List – continued.

Date	Time			X-ray	Optical		Rgn Lat CMD #
	Begin	Max	End		Imp / Class.	Location Brtns	
28 August	1442	1446	1449		SF	N16E33	8675
	1534	1551	1623		SF	S25W23	8674
	1619	1619	1629		SF	N17E35	8675
	1749	1757	A2325	X1.1	2N	S26W14	8674
	2211	2216	2222	C5.7			
29 August	0349	0354	0402	C2.7			
	0606	0618	0628		SF	N21E06	8681
	0633	0635	0639		SF	N30E17	8676
	0634	0637	0647		SF	N19E04	8681
	0636	0636	0638	C7.4	SF	N18E22	8675
	0855	0859	0910		SF	S21W29	8673
	0859	0859	0906		SF	N22E05	8681
	0907	0910	A0927		SF	N20E03	8681
	0914	0915	A0922		SF	N17E25	8675
	1112	1123	1141		SF	S29W34	8674
	1204	1208	1305		SF	N21E18	8675
	1225	1228	1251	C4.4	SF	S21W41	8674
	1306	1306	1312		SF	S24W39	8674
	1307	1308	1319		SF	N20E02	8681
	1333	1339	1347		SF	N27E13	8676
	1354	1358	1403		SF	N21E03	8681
	1404	1405	1409		SF	N22E03	8681
	1632	1634	1635		SF	S19W47	8673
	1725	1730	1800	C9.6	1N	N20W03	8681
	1928	1929	A2002	C3.2	SF	N22E12	8675



Region Summary

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

Region 8667

12 Aug N23E69	358	0030	03	CRO	003	B												
13 Aug N22E55	359	0010	03	BXO	002	B												
14 Aug N23E42	359	0010	03	BXO	003	B												
15 Aug N23E28	000	0010	03	BXO	004	B												
16 Aug N24E16	358	0010	03	BXO	003	B												
17 Aug N24E06	355	0010	03	BXO	003	B												
18 Aug N16W04	352	0040	06	DAO	012	B												
19 Aug N24W20	355																	
20 Aug N24W33	355																	
21 Aug N24W46	355																	
22 Aug N24W59	355																	
23 Aug N22W69	351	0000	00	AXX	002	A												
24 Aug N22W82	351																	
										0	0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 352

Region 8668

13 Aug N21E75	339	0180	03	HAX	001	A													1
14 Aug N22E67	334	0350	06	CKO	005	B	1						1	1					
15 Aug N22E54	334	0380	07	CKO	008	B								4					
16 Aug N23E40	334	0410	08	CKO	008	B	2							5					
17 Aug N21E28	333	0380	06	CKO	008	B	2							3	1				
18 Aug N22E15	333	0420	08	CKO	008	B													
19 Aug N22E01	334	0350	07	DKO	014	B								1					
20 Aug N22W11	333	0290	08	CKO	012	B								1					
21 Aug N22W25	333	0230	07	CHO	011	B								1					
22 Aug N23W36	331	0240	10	DHO	017	B								1					
23 Aug N22W50	332	0230	11	ESO	013	B													
24 Aug N22W63	332	0170	10	CAO	007	B													1
25 Aug N23W75	331	0120	10	DAO	008	B													
26 Aug N20W91	334	0060	02	HSX	001	A													
										5	0	0	19	2	0	0	0	0	

Crossed West Limb.

Absolute heliographic longitude: 334



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 8672

18 Aug	N12E01	347	0010	04	BXO	006	B						3					
19 Aug	N15W17	352	0040	06	CRO	012	B	1						1				
20 Aug	N16W31	353	0020	06	CRO	006	B						1					
21 Aug	N16W49	357	0010	01	AXX	002	A											
22 Aug	N16W62	357																
23 Aug	N16W75	357																
24 Aug	N16W88	357																
								0	1	0	4	1	0	0	0	0		

Crossed West Limb.

Absolute heliographic longitude: 347

Region 8673

19 Aug	S17E81	254	0100	03	HSX	001	A											
20 Aug	S19E66	256	0280	05	HHX	002	A						1					
21 Aug	S19E55	253	0400	16	FHO	016	B											
22 Aug	S20E43	252	0490	10	DKO	013	B											
23 Aug	S19E32	250	0540	16	FKI	028	B						1					
24 Aug	S20E18	251	0430	12	CKO	014	B						2					
25 Aug	S21E08	248	0410	19	FKO	018	B	1					3					
26 Aug	S19W08	251	0410	16	FKO	013	B	1					4					
27 Aug	S19W24	253	0440	11	CHO	014	BG	2					7	1				
28 Aug	S23W38	254	0370	05	CHO	003	B											
29 Aug	S19W51	254	0290	04	HHX	002	A						2					
								4	0	0	20	1	0	0	0	0		

Still on Disk.

Absolute heliographic longitude: 248

Region 8674

20 Aug	S24E66	256	0180	11	EKO	005	B	1	3				6	1				
21 Aug	S25E60	248	0400	22	FAO	010	B	1	2				2	2				
22 Aug	S25E48	247	0440	22	FAI	018	B	5					7					
23 Aug	S25E35	247	0470	22	FAI	027	B											
24 Aug	S25E23	246	0390	22	FAI	029	BG	3					2	2				
25 Aug	S24E11	245	0340	22	FAI	023	BG	1	1				2	1				
26 Aug	S25W03	246	0440	23	FAI	053	BG	4					8					
27 Aug	S24W16	245	0770	25	FKC	072	BGD	1	2				2	1	2			
28 Aug	S24W28	244	0730	23	FKC	087	BGD	1	1	1			4	1	1			
29 Aug	S23W39	242	0700	23	FAC	069	BGD	1					3					
								18	9	1	36	8	3	0	0			

Still on Disk.

Absolute heliographic longitude: 246



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 8675

24 Aug	N21E75	194	0040	02	HSX	001	A					1					
25 Aug	N18E66	190	0040	02	HSX	002	A										
26 Aug	N18E53	190	0060	05	CAO	005	B										
27 Aug	N19E40	189	0080	07	DAO	010	B					6					
28 Aug	N20E27	189	0130	07	DSO	018	B	2				5					
29 Aug	N20E14	189	0210	09	DSI	028	B	2				4					
								4	0	0	0	16	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 189

Region 8676

24 Aug	N26E72	197	0000	06	BXO	002	B										
25 Aug	N26E61	195	0010	06	BXO	004	B					1					
26 Aug	N25E43	200	0020	10	BXO	004	B										
27 Aug	N25E34	195	0010	06	BXO	007	B										
28 Aug	N26E20	196	0010	04	BXO	004	B	1				1					
29 Aug	N26E08	195	0020	04	BXO	006	B					2					
								1	0	0	0	4	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 195

Region 8677

25 Aug	N07E71	185	0060	02	HSX	001	A										
26 Aug	N07E60	183	0080	06	CAO	006	B										
27 Aug	N07E46	183	0090	06	CSO	006	B										
28 Aug	N08E33	183	0070	03	CSO	005	B										
29 Aug	N08E20	183	0070	04	CSO	005	B										
								0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 183

Region 8678

25 Aug	N16W40	296	0000	00	AXX	001	A										
26 Aug	N16W53	296	0010	01	HSX	001	A										
27 Aug	N16W67	296	0010	03	BXO	002	B										
28 Aug	N15W81	297	0000	00	AXX	001	A										
								0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 296



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 8679</i>																	
26 Aug	S34E58	185	0050	06	CSO	002	B										
27 Aug	S31E44	185	0050	04	CAO	002	B										
28 Aug	S34E31	185	0040	05	CAO	004	B										
29 Aug	S34E22	181	0020	08	BXO	009	B										
										0	0	0	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 181																	
<i>Region 8680</i>																	
26 Aug	N20W76	319	0000	00	AXX	001	A										
27 Aug	N22W87	316	0000	00	AXX	001	A										
										0	0	0	0	0	0	0	0
Crossed West Limb.																	
Absolute heliographic longitude: 319																	
<i>Region 8681</i>																	
28 Aug	N21E08	208	0050	08	DSO	023	B			1	1						
29 Aug	N21W04	207	0220	10	DAI	029	B	1			7	1					
								1	0	1	8	1	0	0	0	0	
Still on Disk.																	
Absolute heliographic longitude: 207																	
<i>Region 8682</i>																	
29 Aug	N18E65	138	0040	02	HSX	001	A										
										0	0	0	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 138																	



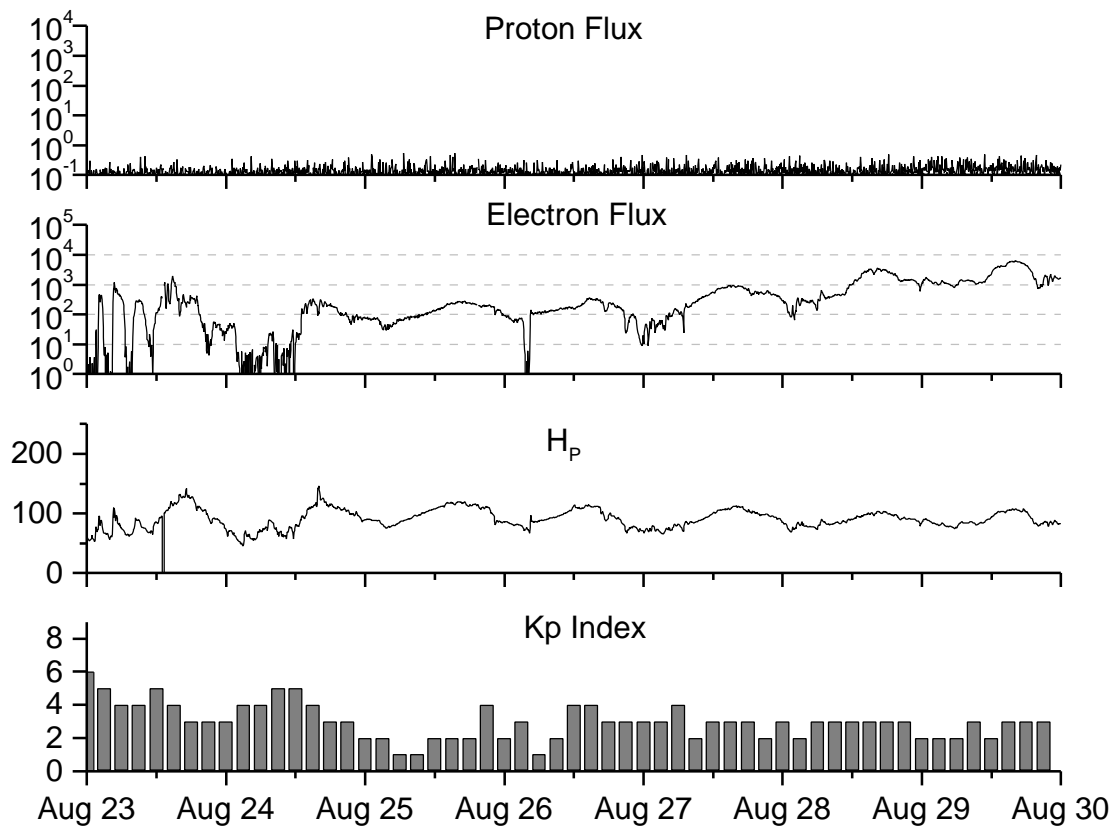
**Recent Solar Indices (preliminary)
of the observed monthly mean values**

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
1997									
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	11.1
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	82.5	142.6	139.0	10	11.8
February	93.4	66.1	0.70			142.0		11	
March	100.5	69.1	0.69			126.3		13	
April	92.9	63.9	0.69			117.3		12	
May	140.5	106.3	0.76			148.6		10	
June	208.3	137.4	0.66			170.0		08	
July	169.2	113.5	0.67			165.6		10	

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 23 August 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.

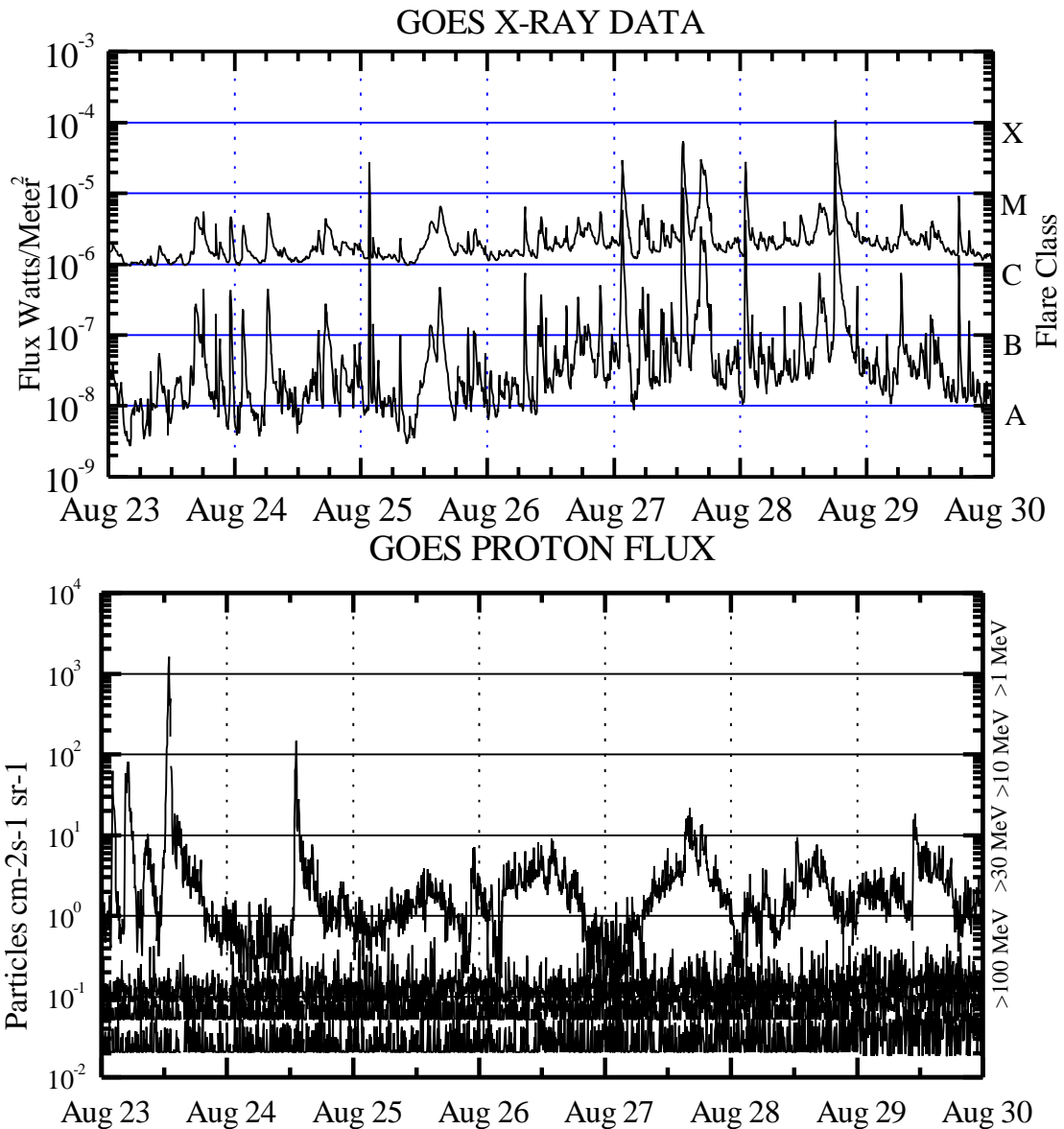
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm² -sec -sr) with energies greater than 2 MeV at GOES-8.

H_p plot contains the five minute averaged magnetic field H - component in nanoteslas (nT) as measured by GOES-8. The H component is parallel to the spin axis of the satellite, which is nearly parallel to the Earth's rotation axis.

K_p plot contains the estimated planetary 3-hour K-index (derived by the USAF 55th Space Weather Squadron) in real time from magnetometers at Meanook, Canada; Sitka, AK; Glenlea, Canada; St. Johns, Canada; Ottawa, Canada; Newport, WA; Fredericksburg, VA; Boulder, CO; Fresno, CA and Heartland, UK. These data are made available through cooperation from the Geological Survey of Canada (GSC) and the US Geological Survey. These may differ from the final K_p values derived from a more extensive network of magnetometers.

The data included here are those now available in real time at the SWO and are incomplete in that they do not include the full set of parameters and energy ranges known to cause satellite operating anomalies. The proton and electron fluxes and K_p are “ global ” parameters that are applicable to a first order approximation over large areas. H_pparallel 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.

