Space Weather Highlights
02 - 08 Aug 1999

Solar activity ranged from low to high levels. The week began with activity at high levels due to an X1/1B flare at 02/2128UT from Region 8647 (S18, L=242, class/area Eao/350 on 04 August) with an associated 570 SFU Tenflare and Type II radio sweep. This region was also responsible for the week's second major flare, an M6/1N flare at 04/0557UT accompanied by a 230 SFU Tenflare and a weak Type II radio sweep. Region 8647 was part of a complex of closely-spaced, interacting regions that included Region 8645 (S26, L=242, class/area Fao/620 on 30 July). Region 8645 was of moderate size and magnetic complexity and produced a few low-level M-class flares during its passage. A few low-level M-class flares occurred within the 8645/8647 region complex as it crossed the west limb during 05 - 07 August. Region 8651 (N25, L=204, class/area Fki/1370 on 02 August), which produced a major flare on 29 July (see PRF #1248), remained a large group of moderate magnetic complexity. It produced a few subflares as it gradually decayed through the period before quietly crossing the west limb on 08 August.

Real-time solar wind data were available from the Advanced Composition Explorer (ACE) spacecraft for most of the period. Two weak CME passages were observed during the period. The first occurred early on 04 August and was characterized by a small jump in solar wind velocities, increased proton densities, and a brief period of southward IMF Bz with maximum deflections to minus 12 nT (GSM). The other passage occurred early on 06 August associated with a gradual velocity increase (320 to 500 km/sec), a brief density increase, and a period of sustained southward IMF Bz (maximum deflections to minus 12 nT). Bz remained mostly southward for the rest of the period.

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

The greater than 2 MeV electron flux was at normal to moderate levels.

The geomagnetic field was at quiet to unsettled levels through most of the period. The field was mildly disturbed on 04 and 06 August with brief active periods detected at all latitudes. There were also brief minor storm periods detected at high latitudes on 06 August. This activity appeared to be in response to the weak CME passages described above.

Space Weather Outlook
11 August - 06 September 1999

Solar activity is expected to range from low to moderate levels. An overall increasing trend is expected to commence around 19 August with the returns of old Region 8645, 8647, and 8651. Chances for major flare activity are also expected to increase beginning on 19 August.

There will be an increased chance for a proton event at geo-synchronous orbit beginning on 19 August.

The greater than 2 MeV electron flux at geo-synchronous altitude is expected to be at normal to moderate levels during most of the period.

Geomagnetic field activity is expected to be at quiet to unsettled levels during the period, barring any Earth-directed CMEs.

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
02 August	213	210	2130	C2.5	11	1	1	23	1	0	0
03 August	211	217	2110	C1.6	13	1	0	19	0	0	0
04 August	200	177	1970	C1.1	10	2	0	19	2	0	0
05 August	177	187	1360	C1.2	6	3	0	14	2	0	0
06 August	170	164	1030	C1.5	7	2	0	17	1	0	0
07 August	153	149	930	C1.5	7	2	0	10	0	0	0
08 August	138	154	720	C1.0	9	0	0	9	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
02 August	2.6E+5	1.6E+4	3.6E+3		1.1E+7	
03 August	2.9E+5	1.6E+4	3.3E+3		2.3E+7	
04 August	2.1E+5	1.6E+4	3.9E+3		4.5E+6	
05 August	1.2E+5	1.7E+4	3.8E+3		2.8E+6	
06 August	2.5E+5	1.6E+4	3.6E+3		2.0E+6	
07 August	1.1E+5	1.4E+4	3.6E+3		1.1E+7	
08 August	1.9E+5	1.6E+4	3.3E+3		3.3E+7	

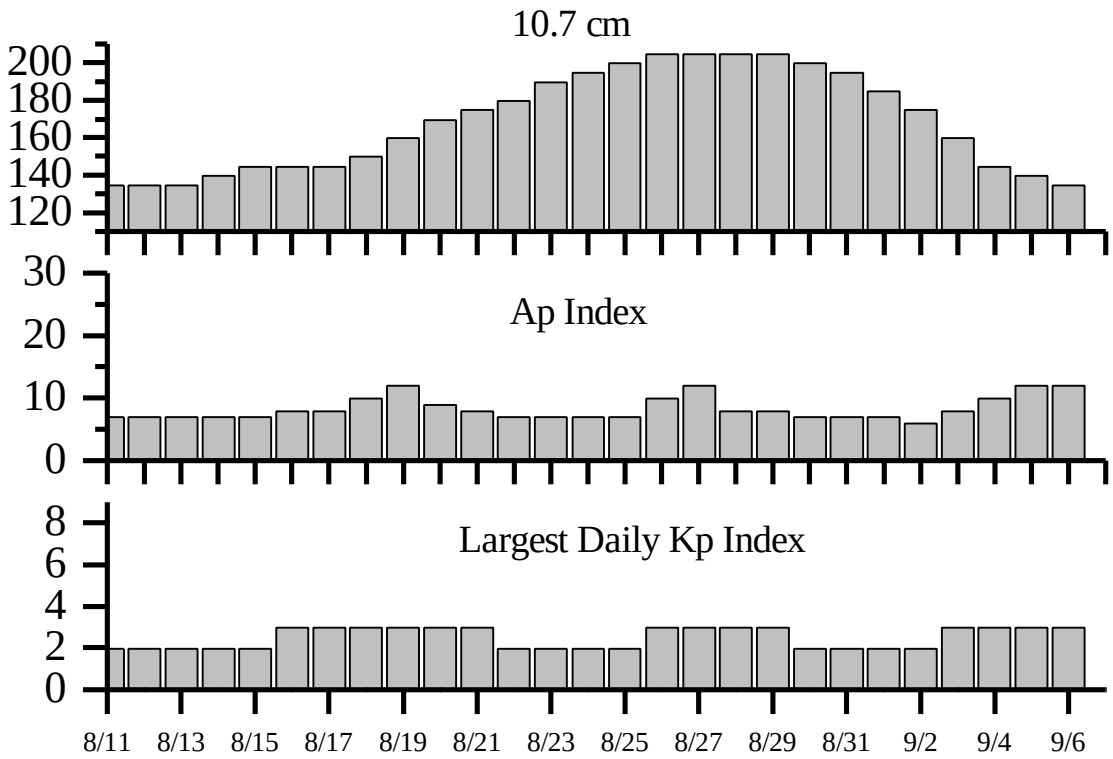
Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg A	K-indices	High Latitude College A	K-indices	Estimated Planetary A	K-indices
02 August	7	0-3-3-2-2-1-2-1	10	0-2-3-2-3-4-2-0	9	2-2-3-2-2-3-3-2
03 August	5	2-1-1-0-1-1-2-3	6	3-2-1-3-0-0-1-2	8	3-1-1-2-1-2-3-3
04 August	9	3-3-3-2-1-1-2-2	11	3-4-4-1-1-2-1-1	11	3-4-3-2-2-3-2-2
05 August	6	2-2-1-1-2-2-1-2	6	3-2-1-1-3-0-0-1	11	3-2-2-1-2-2-2-2
06 August	12	2-2-2-3-3-3-3-3	22	2-2-2-3-4-5-5-3	13	2-2-2-3-3-4-4-3
07 August	11	3-3-2-2-2-1-3-3	*	3-3-2-*-*-2-2-2	11	3-3-3-2-2-2-3-3
08 August	7	2-1-1-2-1-1-3-3	*	*-*-*-*-*-*-*-*	7	2-1-1-2-2-2-3-3

Alerts and Warnings Issued

Date and Time of Issue (UT)	Type of Alert or Warning	Date and Time of Event (UT)
02 Aug 0036	20 - 245 MHz Bursts	01 Aug
02 Aug 0036	1 - 245 MHz Noise Storms	01 Aug
02 Aug 0054	Type II Radio Emission	02 Aug 0033
02 Aug 0604	Type II Radio Emission	02 Aug 0540
02 Aug 1101	Type II Radio Emission	02 Aug 0959
02 Aug 2126	Rapid Alert: X-Ray event exceeded >M5	02 Aug 2118
02 Aug 2146	X-Ray event X1.4	02 Aug 2118
02 Aug 2252	10cm Radio Burst 570 F.U.	02 Aug 2251
02 Aug 2201	Type II Radio Emission	02 Aug 2141
03 Aug 0124	19 -245 MHz Bursts	02 Aug
04 Aug 0028	11-245 MHz Bursts	03 Aug
04 Aug 0236	Sudden Impulse 25 nT observed Boulder	04 Aug 0225
04 Aug 0602	K= 4 Observed	04 Aug 03 - 06
04 Aug 0602	K = 4 Warning valid	04 Aug 06 - 12
04 Aug 0602	Rapid Alert: X-Ray event exceeded >M5	04 Aug 0553
04 Aug 0616	Type II Radio Emission	04 Aug 0555
04 Aug 0620	X-Ray event M6.0/1N/S18W66	04 Aug 0545
04 Aug 0628	10cm Radio Burst 230 F.U.	04 Aug 0548
05 Aug 0031	4 - 245 MHz Bursts	04 Aug
05 Aug 0031	1-245 MHz Noise Storms	04 Aug
06 Aug 0010	2 - 245 MHz Bursts	05 Aug
06 Aug 1418	K= 4 Warning valid	06 Aug 15- 21
06 Aug 1803	K = 4 Observed	06 Aug 15- 18
06 Aug 1848	Type II Radio Emission	06 Aug 16:41
08 Aug 0230	2 - 245 MHz Bursts	07 Aug

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
11 Aug	135	7	2	25 Aug	200	7	2
12	135	7	2	26	205	10	3
13	135	7	2	27	205	12	3
14	140	7	2	28	205	8	3
15	145	7	2	29	205	8	3
16	145	8	3	30	200	7	2
17	145	8	3	31	195	7	2
18	150	10	3	01 Sep	185	7	2
19	160	12	3	02	175	6	2
20	170	9	3	03	160	8	3
21	175	8	3	04	145	10	3
22	180	7	2	05	140	12	3
23	190	7	2	06	135	12	3
24	195	7	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
02 Aug	0023	0027	0030	M1.8	.005				360	150		
02 Aug	2118	2125	2138	X1.4	.110	1B	S18W46	8647	71	570	2	
03 Aug	1943	1955	1959	M1.3	.006				72			
04 Aug	0545	0557	0614	M6.0	.070	1N	S16W64	8647	300	230	2	
04 Aug	1549	1607	1625	M1.2	.019	SF	S17W63	8647				
05 Aug	1555	1623	1633	M1.9	.026	SF	S31W69	8645		23		
05 Aug	2212	2224	2232	M1.1	.008							
05 Aug	2234	2239	2244	M1.5	.008					27		
06 Aug	1628	1636	1645	M1.8	.014	SF	S30W85	8645	190	45	2	
07 Aug	1852	1925	2015	M1.2	.047							
07 Aug	2043	2105	2118	M1.7	.027							

Flare List

Date	Time			X-ray	Optical		
	Begin	Max	End	Class.	Imp / Brtns	Location Lat CMD	Rgn #
02 August	0009	0013	0015	C5.4			
	0023	0027	0030	M1.8			
	0229	0232	0240		SF	N17E12	8650
	0231	U0232	A0257		SF	S18W36	8647
	0402	0402	0415		SF	S25W32	8645
	0443	0446	A0503	C3.9	SF	S21W35	8645
	0446	0446	0453		SF	S20W37	8647
	0455	U0506	A0521		SF	N25E06	8651
	0522	U0530	A0624		SF	N23E07	8651
	B0532	U0532	A0627	C5.8	SF	S28W28	8645
	0617	0619	0624		SF	S21W38	8647
	0625	0628	0630	C3.3			
	0904	0916	0922	C3.0			
	0941	0948	1006		SF	S29W27	8645
	B0946	U0946	0958	C6.4	SN	N26W01	8651
	B1147	U1156	1159	C6.3	SF	S30W29	8645
	1259	1300	1305		SF	S17W44	8647
	1310	1311	1317		SF	N19E04	8650
	1408	1416	1436		SF	S18W43	8647
	1413	1422	1435	C5.0	SF	N17E25	8656
	1423	1423	1429		SF	N23E03	8651
	1424	1534	1623		SF	S18W43	8647
	1441	1450	1504	C6.9	SF	S27W40	8645
	1533	1534	1555	C6.2	SF	S19W43	8647
	1549	1551	1559		SF	N18E24	8656
	1551	1551	1611		SF	N18E24	8656
	1628	1629	1634		SF	S18W45	8647
	1823	1830	1836	C2.8			
	B2127	U2128	A2215	X1.4	1B	S18W46	8647

Flare List-continued

Date	Time Begin	Time Max	Time End	X-ray Class.	Optical Imp / Brtns	Optical Location Lat CMD	Rgn #
03 August	0058	0058	0103		SF	S17W47	8647
	0253	0259	0312	C2.5	SF	S17W48	8647
	0340	0342	0346	C2.4	SF	N23W03	8651
	0438	0441	0448	C4.0	SF	N23W04	8651
	0453	0453	0511		SF	N25W03	8651
	0500	0501	0515	C5.7	SF	S18W48	8647
	0512	0543	0605		SF	N25W03	8651
	0720	0720	0745	C3.5	SF	N21W04	8650
	0808	0809	0812		SF	S18W52	8647
	0840	0844	0847	C1.9	SF	S18W54	8647
	1134	1145	1203	C4.6	SF	S28W42	8645
	1144	1147	1154		SF	N23W09	8651
	1203	1205	1216		SF	N19E12	8656
	1224	1225	1237	C3.1	SN	N19E12	8656
	1253	1255	1256		SF	N18E11	8656
	1333	1337	1344		SF	N19W11	8650
	1530	1532	1556	C2.5	SF	N17E12	8656
	1606	1607	1609		SF	S18W57	8647
	1740	1745	1752	C4.7			
	1851	1858	1913	C2.7			
	1943	1955	1959	M1.3			
	2040	2058	2114	C4.3			
	2253	2257	2302		SF	N17E08	8656
	2325	2328	2333	C2.2			
04 August	0008	0011	0016	C2.0			
	0119	0122	0127	C1.9			8649
	0336	0338	0340		SF	S32E58	8657
	0351	0352	0358	C2.4	SF	N28W18	8651
	0413	0413	0419	C4.4	SF	S17W62	8647
	0503	0509	0513	C2.6			
	0549	0555	0659	M6.0	1N	S16W64	8647
	0618	0621	0631		SF	S28W62	8645
	0739	0739	0741		SF	S17W58	8647
	0856	0857	0901	C3.9	SF	S18W69	8647
	0912	0913	0926		SF	N17E03	8656
	B1041	U1042	A1110		SF	S27E46	8657
	1146	1152	1210		SF	N17E01	8656
	1158	1200	A1233	C4.2	1F	S30W67	8645
	1219	1225	1235	C2.2	SF	S26W64	8645
	1357	1359	1414		SF	S29W58	8645
	1404	1406	1412		SF	N21W18	8651

Flare List-continued

Date	Time Begin	Time Max	Time End	X-ray Class.	Optical Imp / Brtns	Optical Location Lat CMD	Rgn #
04 August	1515	1515	1527		SF	S27W60	8645
	1517	1517	1536		SF	N25W2	8651
	1518	1605	1637		SF	S16W94	8649
	1545	1556	1610		SF	S24W66	8645
	1554	1604	1627	M1.2	SF	S17W63	8647
	1744	1745	1755		SF	N27W27	8651
	1808	1834	1905	C7.0			
	1935	1936	1943		SF	N26W28	8651
	2332	2336	2338	C5.4			
05 August	0038	0053	0057	C4.9			
	0340	0343	0346	C4.9	SF	S15W74	8647
	0501	0515	0526		SF	S24W79	8645
	0523	0527	0533		SF	N25W33	8651
	0632	0633	0635		SF	S25W91	8644
	0759	0803	0807	C1.7			
	1128	1132	1137		SF	N20W14	8656
	1231	1245	1315		SF	S21W81	8647
	1350	1353	1400		SF	S17W74	8647
	1440	1443	1449		SF	S31W69	8645
	1509	1514	1527		SF	S17W81	8647
	1517	1517	1534		SF	N27W37	8651
	1520	1520	1525		SF	S30W67	8645
	1529	1529	1537		SF	S31W71	8645
	1543	1551	1612		1F	S25W77	8645
	1615	1620	1633	M1.9	SF	S31W69	8645
	1837	1851	1901	C3.4	1N	S27W80	8645
	1941	1946	1956	C2.2	SF	N26W41	8651
	2212	2224	2232	M1.1			
	2234	2239	2244	M1.5			
	2327	2331	2335	C8.6			
06 August	0003	0008	0012	C3.9			
	0138	U0138	0145	C2.7	SF	N19W21	8656
	0139	0143	0150		1F	S29W73	8645
	0243	0254	0257	C4.2	SF	S29W73	8645
	0341	0419	0505	C7.1			
	0421	0423	0426		SF	S27W78	8645
	0429	0435	0438		SF	S29W75	8645
	0712	0722	0751	C6.9			
	0925	1007	1017	C7.1			
	B1054	U1055	A1104		SF	S29W82	8645

Flare List-continued

Date	Time Begin	Time Max	Time End	X-ray Class.	Optical Imp / Brtns	Optical Location Lat CMD	Rgn #
06 August	B1147	U1147	A1152		SF	S14E69	
	1235	1239	1245	C3.6			
	B1425	U1425	1429	M1	SF	N17W27	8656
	1434	1435	1445		SF	N22W68	8648
	1434	1440	1457		SF	N17W27	8656
	1529	1529	1532		SF	S30W86	8645
	1627	1628	1640		SF	S14E66	8662
	1634	1636	1638	M1.8	SF	S30W85	8645
	1646	1648	1652		SF	S30W86	8645
	1707	1707	1720		SF	N27W50	8651
	1740	1741	1747		SF	S27W93	8645
	1838	1839	1851		SF	S14E65	8662
	2324	2324	2335		SF	N19W34	8656
07 August	0012	0013	0017		SF	S14E622	8662
	0048	0053	0101	C7.1	SF	N19W35	8656
	0154	0158	0202	C2.6			
	0440	0443	0447	C1.6			
	0734	0752	0805	C1.9			
	1040	1057	1111	C2.9			
	1546	1613	1630	C3.5	SF	N17W41	8656
	1727	1728	1735		SF	N18W40	8656
	1847	1849	1854		SF	S15W24	8661
	1852	1925	2015	M1.2			
	1940	1941	1948		SF	N17W41	8656
	2043	2105	2118	M1.7			
	2244	2245	2247		SF	S14E47	8662
	2254	2254	2300		SF	S14E46	8662
	2304	2307	0012	C3.9	SF	S28E03	8657
	2346	2351	2358		SF	S13E42	8662
08 August	0014	0018	0024		SF	S28E02	8657
	0017	0018	0021		SF	S13E40	8662
	0025	0025	0034		SF	S13E41	8662
	0231	0231	0238	C4.2	SF	S17E46	8662
	0301	0307	0313	C2.3			
	0327	0327	0334	C1.5	SF	S16E43	8662
	0520	0521	0532		SF	S13E40	8662
	0643	0704	0739	C2.3			
	0749	0753	0757	C2.3			
	1038	1038	1120	C1.3	SF	S16E39	8662
	1400	1409	1431	C1.4	SF	S14E39	8662
	1424	1424	1432	C1.2	SF	S28E00	8657
	2110	2123	2147	C2.2			

Region Summary

Date	Location (° Lat ° CMD)	Helio Lon	Sunspot Characteristics: Area (10^{-6} hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	Flares: X-ray C	M	X	Optical S	1	2	3	4
	Region 8640														
20 Jul	N17E76	295	0040	01	HSX	001	A								
21 Jul	N17E63	295	0080	02	HSX	001	A								
22 Jul	N17E49	296	0090	02	HSX	001	A								
23 Jul	N17E37	295	0110	03	HSX	001	A								
24 Jul	N17E24	295	0120	02	HAX	001	A								
25 Jul	N17E10	295	0090	02	HSX	001	A								
26 Jul	N17W03	295	0090	02	HSX	001	A								
27 Jul	N17W16	295	0090	02	HSX	001	A								
28 Jul	N17W28	294	0070	02	HSX	002	A								
29 Jul	N16W42	295	0110	06	CSO	007	B								
30 Jul	N16W55	294	0100	07	CSO	004	B								
31 Jul	N17W69	295	0090	08	CSO	003	B								
01 Aug	N18W82	295	0060	02	HSX	001	A								
02 Aug	N17W94	294	0010	01	HSX	001	A								
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 295

Date	Location (° Lat ° CMD)	Helio Lon	Sunspot Characteristics: Area (10^{-6} hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	Flares: X-ray C	M	X	Optical S	1	2	3	4
	Region 8644														
23 Jul	S24E68	264	0030	02	HAX	001	A		2		1				
24 Jul	S25E54	265	0040	05	CAO	002	B								
25 Jul	S25E42	263	0040	02	HSX	001	A								
26 Jul	S25E28	264	0040	02	HSX	001	A								
27 Jul	S25E16	263	0030	01	HSX	001	A								
28 Jul	S26E02	264	0040	02	HSX	001	A								
29 Jul	S26W08	261	0030	06	CSO	003	B								
30 Jul	S25W23	262	0020	01	CRO	002	B								
31 Jul	S25W36	262	0010	01	AXX	002	A								
01 Aug	S25W49	262													
02 Aug	S25W62	262													
03 Aug	S25W75	262													
04 Aug	S25W88	262													
								0	2	0	1	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 264

Region Summary-continued

Date	Location (° Lat ° CMD)	Helio Lon	Area (10^{-6} hemi)	Extent (helio)	Sunspot Characteristics Spot Class	Spot Count	Mag Class	Flares X-ray C	M	X	Optical S	1	2	3	4
	Region 8645														
24 Jul	S26E68	251	0190	09	DKO	005	B	1	2		2	1			
25 Jul	S27E59	246	0320	17	FAO	015	B	1	1		4	1			
26 Jul	S27E46	246	0410	16	FKO	015	B	1			2				
27 Jul	S27E35	244	0530	17	FKO	013	B	1			1				
28 Jul	S26E22	244	0490	18	FKO	024	B	1			6	1			
29 Jul	S24E10	243	0590	19	FKI	034	BG		1		5		1		
30 Jul	S25W03	242	0620	19	FAO	037	BG				7				
31 Jul	S25W16	242	0600	18	FAO	033	BG	2			7	1			
01 Aug	S25W29	242	0540	20	FKI	043	BG	5			14				
02 Aug	S25W44	244	0490	21	FKI	027	BG	4		1	6				
03 Aug	S25W55	242	0570	22	FKI	036	BG	1			1				
04 Aug	S26W66	240	0360	21	FAO	018	B	2			5	1			
05 Aug	S28W78	238	0230	10	DAO	009	B	1	1		5	2			
06 Aug	S28W92	239	0110	08	HSX	003	A	1	1		8	1			
								21	6	1	73	8	1	0	0

Crossed West Limb.
Absolute heliographic longitude: 242

	Region 8647														
25 Jul	S18E63	242	0110	09	CAO	006	B				2				
26 Jul	S18E51	241	0220	09	DSO	010	B								
27 Jul	S18E37	242	0150	10	DAO	010	B								
28 Jul	S18E24	242	0090	11	EAO	012	B				2				
29 Jul	S18E11	242	0050	11	ESO	017	B				2				
30 Jul	S17W03	242	0040	11	CSO	011	B								
31 Jul	S18W18	244	0040	09	CSO	008	B								
01 Aug	S18W34	247	0040	08	CSO	015	B				3				
02 Aug	S18W49	249	0140	08	DAO	017	B	1		1	8	1			
03 Aug	S18W63	250	0270	10	DAO	022	B	3			6				
04 Aug	S19W76	250	0350	11	EAO	012	B	2	2		4	1			
05 Aug	S19W87	247	0120	14	EAO	007	B	1			4				
								7	2	1	31	2	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 242

Region Summary-continued

Date	Location (° Lat ° CMD)	Helio Lon	Sunspot Characteristics: Area (10^{-6} hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	Flares: X-ray C	M	X	Optical S	1	2	3	4
			Region 8648												
25 Jul	N24E84	221	0000	01	AXX	001	A								
26 Jul	N24E67	225	0030	01	HAX	001	A								
27 Jul	N23E55	224	0040	06	DSO	004	B								
28 Jul	N22E42	224	0030	05	BXO	004	B								
29 Jul	N22E29	224	0010	03	CSO	003	B								
30 Jul	N23E16	223	0010	04	BXO	004	B								
31 Jul	N23E04	222	0010	06	BXO	002	B								
01 Aug	N24W12	225	0010	03	BXO	005	B								
02 Aug	N24W25	225													
03 Aug	N24W38	225													
04 Aug	N25W51	225													
05 Aug	N25W58	219													
06 Aug	N25W71	219									1				
								0	0	0	1	0	0	0	0
Still on Disk.															
Absolute heliographic longitude: 222															
			Region 8649												
27 Jul	S15E09	270	0030	03	DAO	006	B								
28 Jul	S15W05	271	0100	06	DAO	017	B		2		8	1			
29 Jul	S15W16	269	0100	08	DAO	021	B	3			11				
30 Jul	S15W30	269	0170	10	DAO	025	B	1	1		3	1			
31 Jul	S15W44	270	0110	11	CAO	021	B								
01 Aug	S15W54	267	0050	05	CAO	008	B								
02 Aug	S15W66	266	0010	02	AXX	002	A								
03 Aug	S16W80	267	0010	00	AXX	001	A								
04 Aug	S16W93	267						1			1				
								5	3	0	23	2	0	0	0
Crossed West Limb.															
Absolute heliographic longitude: 271															

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 8650												
27 Jul	N17E75	204	0040	02	HAX	001	A								
28 Jul	N16E64	202	0070	02	HSX	001	A								
29 Jul	N17E50	203	0050	04	CSO	004	B								
30 Jul	N16E36	203	0050	02	HSX	001	A								
31 Jul	N18E23	203	0090	04	DSO	007	B				2				
01 Aug	N18E10	203	0050	07	CSO	012	B								
02 Aug	N18W04	204	0040	06	CSO	006	B				2				
03 Aug	N18W18	205	0040	05	CSO	005	B	1			2				
04 Aug	N18W30	204	0030	01	HSX	001	A								
05 Aug	N17W43	203	0040	01	HSX	001	A								
06 Aug	N17W56	203	0030	01	HSX	001	A								
07 Aug	N17W69	203	0030	01	HSX	001	A								
08 Aug	N17W83	203	0040	01	HSX	001	A								
								1	0	0	6	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 204

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 8651												
27 Jul	N24E73	206	0000	00	AXX	001	A								
28 Jul	N24E65	201	0100	09	CAO	007	B	1			8				
29 Jul	N24E49	204	0210	10	DAI	025	B	3	1		6	5			
30 Jul	N24E36	203	0510	10	DAI	026	BG	11			20	2			
31 Jul	N25E23	203	0730	12	EKI	037	B	5			12				
01 Aug	N24E09	204	0870	14	EKC	058	BG	1			5				
02 Aug	N25W04	204	1370	16	FKI	043	BG	1			4				
03 Aug	N26W18	205	1080	17	FKC	049	BG	2			5				
04 Aug	N25W31	205	0950	18	FKC	041	BG	1			5				
05 Aug	N26W44	204	0780	19	FKI	039	BG	1			3				
06 Aug	N26W57	204	0720	19	FAI	032	B				1				
07 Aug	N26W70	204	0600	18	FAI	025	B								
08 Aug	N26W82	202	0370	18	FAI	020	B								
								26	1	0	69	7	0	0	0

Still on Disk.
Absolute heliographic longitude: 204

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 8654												
31 Jul	N19W18	244	0020	04	BXO	004	B								
01 Aug	N19W31	244	0030	07	CSO	006	B								
02 Aug	N20W46	246	0010	06	BXO	004	B								
03 Aug	N20W59	246													
04 Aug	N20W72	246													
05 Aug	N20W85	246													
								0	0	0	0	0	0	0	0
Crossed West Limb.															
Absolute heliographic longitude: 244															
			Region 8655												
01 Aug	N25E38	175	0010	01	HSX	001	A								
02 Aug	N25E23	177	0000	00	AXX	001	A								
03 Aug	N25E10	177	0000	00		000									
04 Aug	N26E03	171	0000	00		000									
05 Aug	N23W11	171	0010	06	BXO	005	B								
06 Aug	N22W23	170	0010	03	AXX	002	A								
07 Aug	N22W36	170	0010	03	AXX	003	A								
08 Aug	N22W48	168	0010	01	AXX	002	A								
								0	0	0	0	0	0	0	0
Still on Disk.															
Absolute heliographic longitude: 171															
			Region 8656												
01 Aug	N18E34	179	0010	05	BXO	004	B								
02 Aug	N17E20	180	0020	07	BXO	008	B	1			3				
03 Aug	N19E06	181	0060	07	DAO	010	B	2			5				
04 Aug	N19W08	182	0130	07	DAO	015	B				2				
05 Aug	N19W20	180	0080	11	ESO	019	B				1				
06 Aug	N18W33	180	0030	11	CRO	014	B	1	1		4				
07 Aug	N18W46	180	0030	13	ERO	011	B	2	1		4				
08 Aug	N17W60	180	0040	08	CSO	007	B								
								6	2	0	19	0	0	0	0
Still on Disk.															
Absolute heliographic longitude: 181															

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 8657												
02 Aug	S32E71	129	0040	02	HSX	001	A								
03 Aug	S31E56	131	0060	02	HAX	001	A								
04 Aug	S30E43	131	0140	08	CSO	006	B				2				
05 Aug	S30E28	132	0090	08	CSO	011	B								
06 Aug	S30E16	131	0100	08	DSO	011	B								
07 Aug	S30E04	130	0130	08	DSO	011	B	1			1				
08 Aug	S31W09	129	0090	09	DSO	007	B	1			2				
								2	0	0	5	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		130													
			Region 8658												
03 Aug	S25W13	200	0010	01	AXX	002	A								
04 Aug	S25W26	200													
05 Aug	S24W34	200													
06 Aug	S24W47	194													
07 Aug	S24W60	194													
								0	0	0	0	0	0	0	0
Still on Disk.															
Absolute heliographic longitude: 200															
			Region 8659												
03 Aug	S23E22	165	0010	01	AXX	001	A								
04 Aug	S22E07	167	0000	00	AXX	001	A								
05 Aug	S22W06	167													
06 Aug	S22W19	167													
								0	0	0	0	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		167													
			Region 8660												
04 Aug	S34W25	199	0010	03	BXO	003	B								
05 Aug	S34W38	198	0010	04	BXO	004	B								
06 Aug	S34W53	200	0000	01	AXX	002	A								
07 Aug	S34W66	200													
								0	0	0	0	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		199													

Region Summary-continued

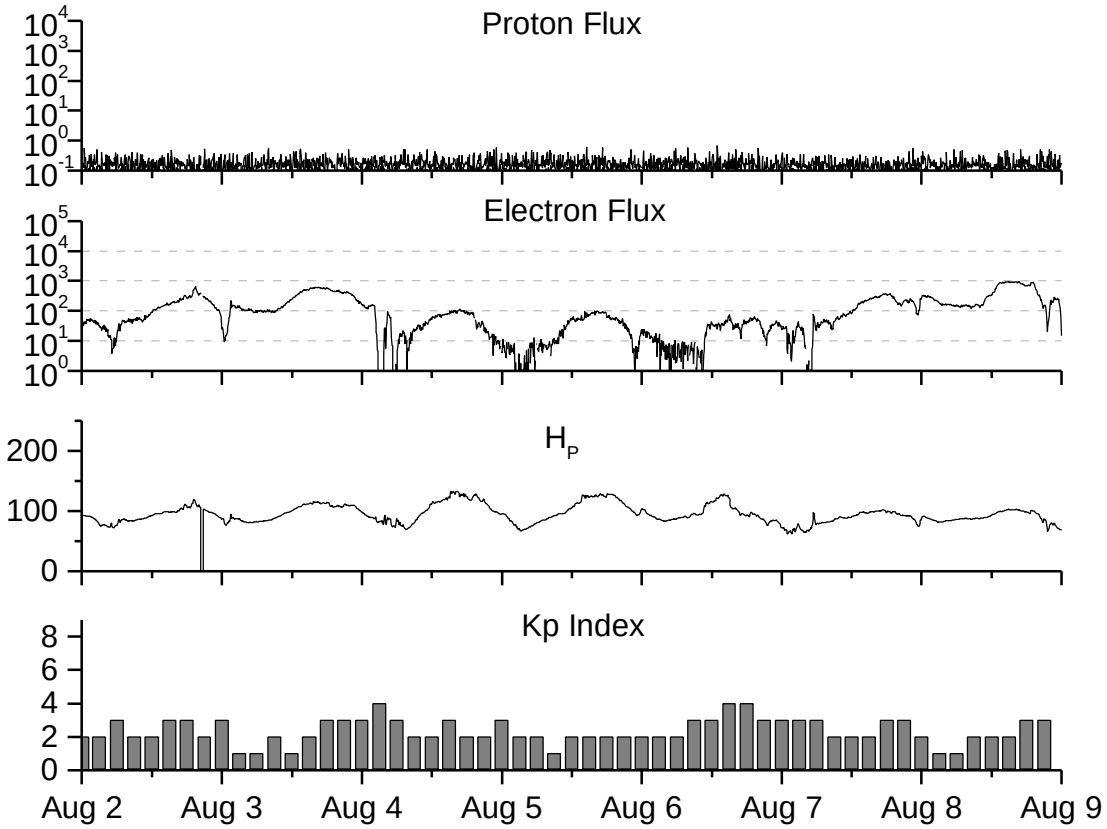
Date	Location (° Lat ° CMD)	Helio Lon	Sunspot Characteristics Area (10^{-6} hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	Flares X-ray C	M	X	Optical S	1	2	3	4
			Region 8661												
05 Aug	S14E01	159	0000	03	BXO	002	B								
06 Aug	S14W12	159	0010	03	BXO	003	B								
07 Aug	S14W26	160	0010	04	BXO	004	B				1				
08 Aug	S15W40	160	0020	04	CRO	003	B								
								0	0	0	1	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		159													
			Region 8662												
06 Aug	S16E60	087	0020	08	CRO	006	B				2				
07 Aug	S16E50	084	0100	10	DAO	010	B				4				
08 Aug	S16E35	085	0130	11	ESO	019	B	4			7				
								4	0	0	13	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		85													
Region	*8663*														
07 Aug	N19E16	118	0020	03	BXO	004	B								
08 Aug	N19E03	117	0010	02	BXO	003	B								
								0	0	0	0	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		117													
			Region 8664												
08 Aug	N23E15	105	0010	03	BXO	002	B								
								0	0	0	0	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		105													

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
				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 02 August 1999

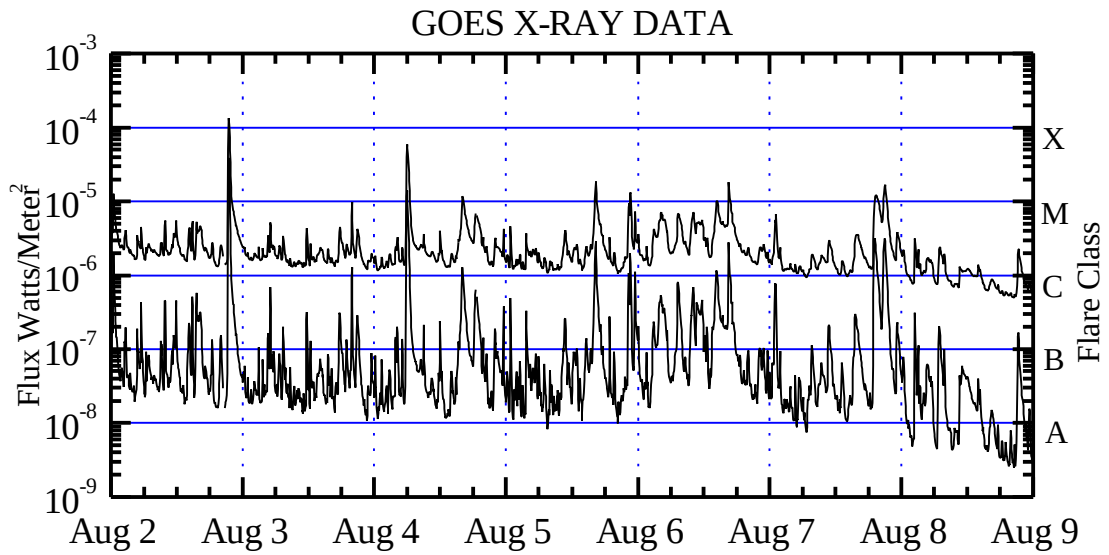
Protons plot contains the five-minute averaged integral proton flux (protons/cm^2–sec –sr) as measured by GOES-8 (W75) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

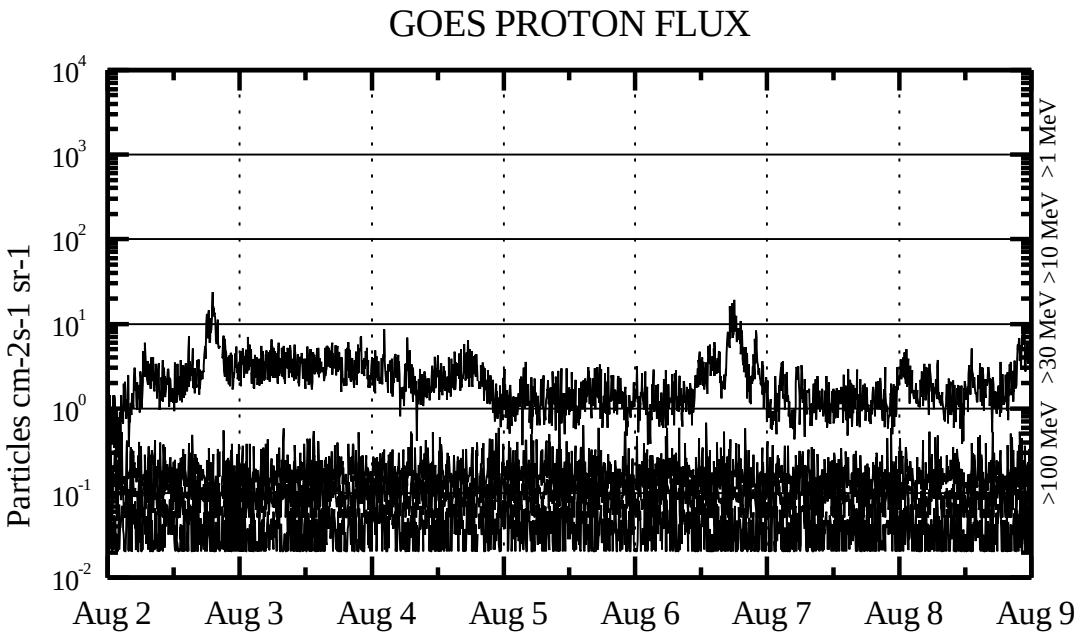
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm^2 –sec –sr) with energies greater than 2 MeV at GOES-8.

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 more localized phenomena and the measurements generally are applicable to within a few degrees of longitude of the measuring satellite.

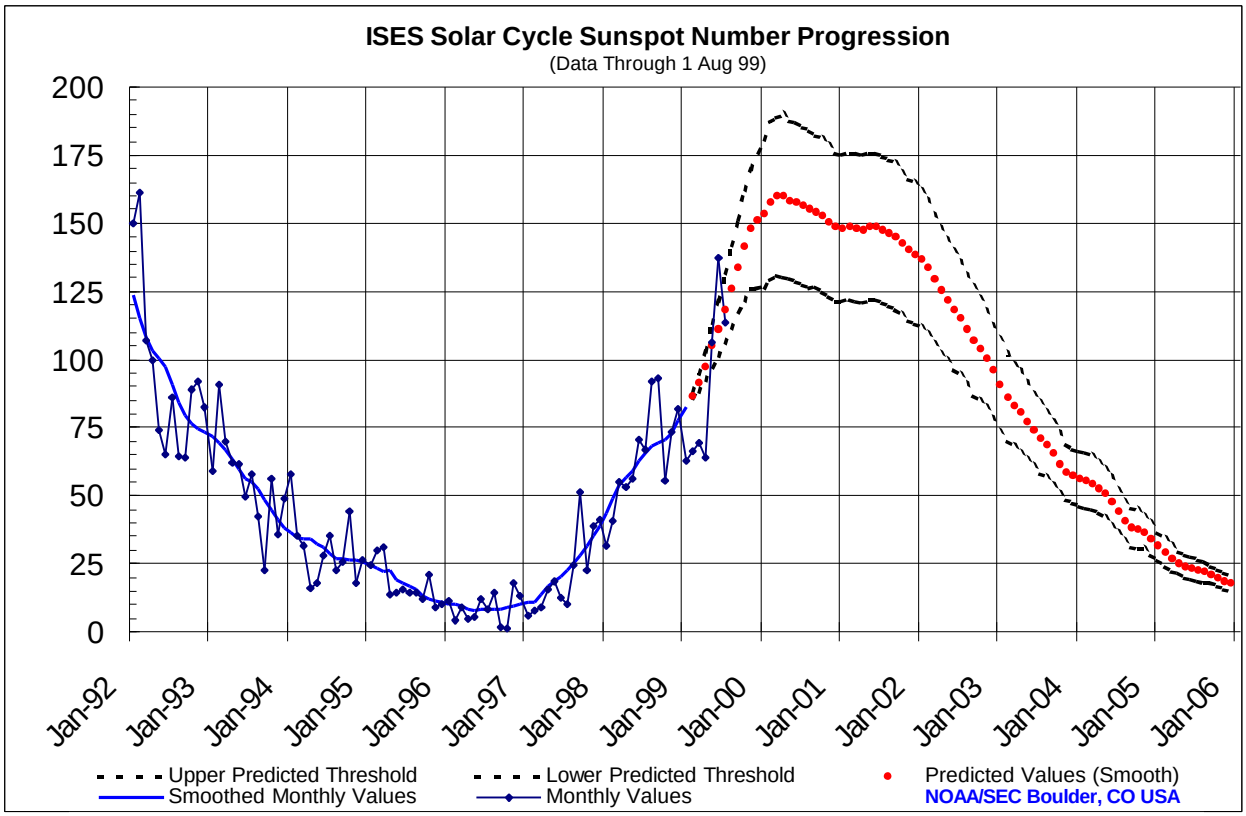


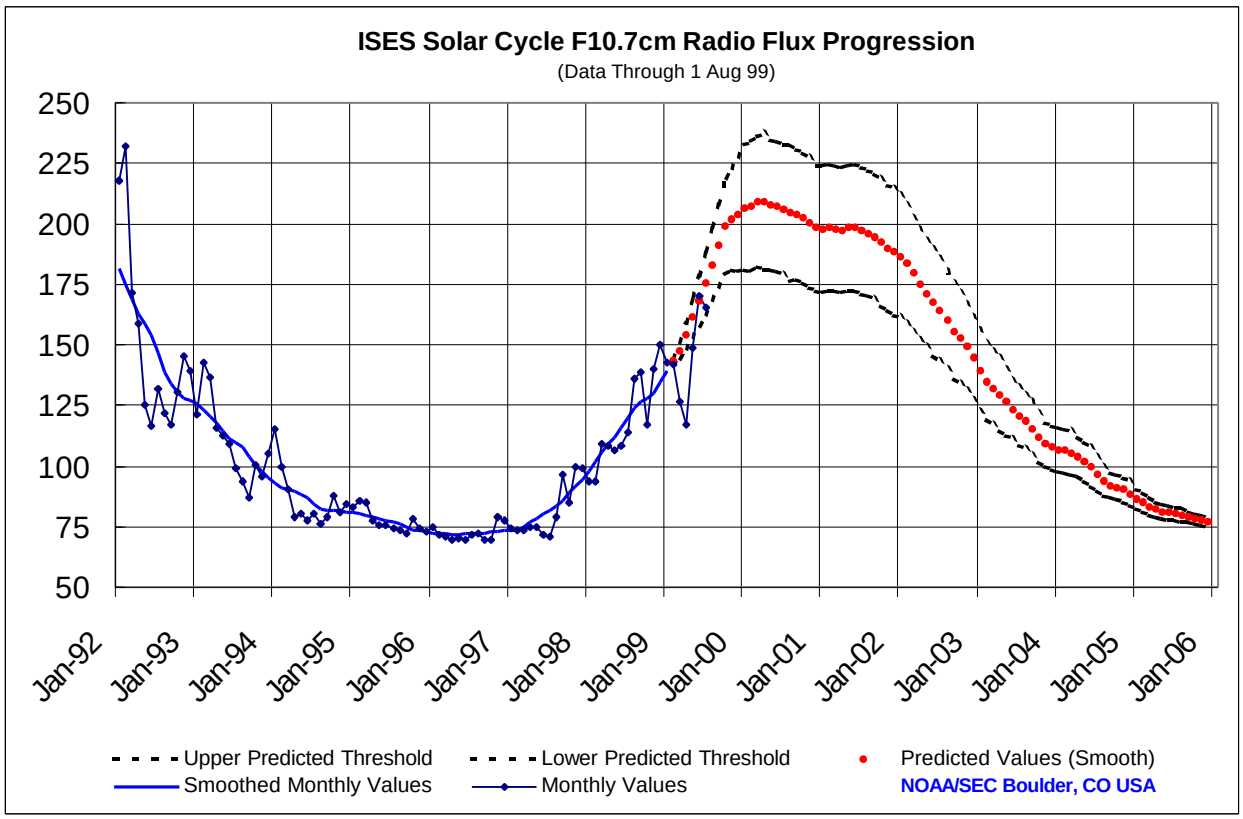


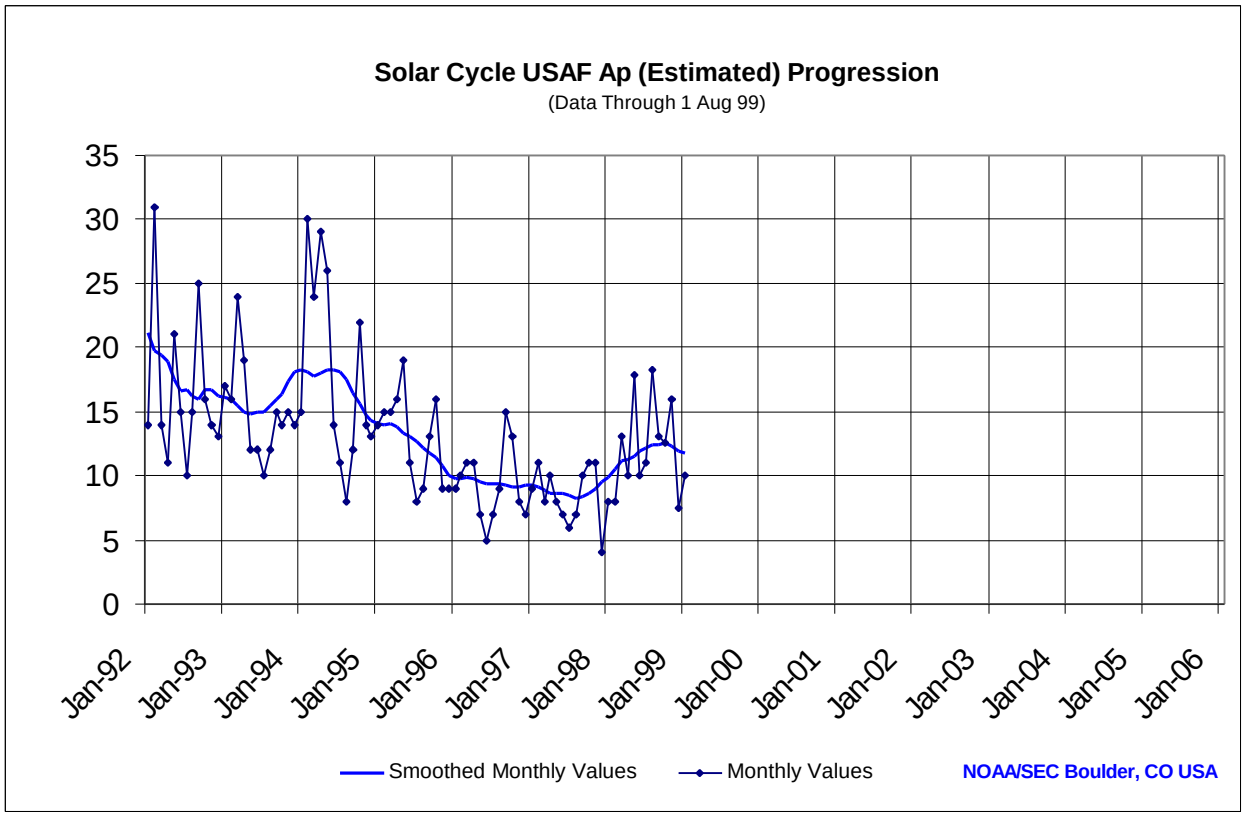
W*eekly GOES Satellite X-ray and Proton Plots*

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/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/cm^2-sec-sr) at greater than 10 MeV.


ISES Solar Cycle Sunspot Number Progression
(Data Through 1 Aug 99)
200
175
150
125
100
75
50
25
0
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Upper Predicted Threshold
Lower Predicted Threshold
Predicted Values (Smooth)
Smoothed Monthly Values
Monthly Values
NOAA/SEC Boulder, CO USA


ISES Solar Cycle F10.7cm Radio Flux Progression
(Data Through 1 Aug 99)
250
225
200
175
150
125
100
75
50
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Upper Predicted Threshold
Lower Predicted Threshold
Predicted Values (Smooth)
Smoothed Monthly Values
Monthly Values
NOAA/SEC Boulder, CO USA


Solar Cycle USAF Ap (Estimated) Progression
(Data Through 1 Aug 99)
35
30
25
20
15
10
5
0
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Smoothed Monthly Values
Monthly Values
NOAA/SEC Boulder, CO USA