

**Space Weather Highlights**  
**07 - 13 Aug 2000**

**SWO PRF 1302**  
**15 August 2000**

Solar activity was at low to moderate levels. Several sunspot groups produced isolated to occasional C-class subflares during most days. Activity increased to moderate levels on 08 and 12 August by virtue of isolated, optically uncorrelated M1 X-ray flares at 08/1115UT and 12/0956UT.

SOHO/LASCO images showed a halo CME at around 09/1630UT associated with flare activity from Region 9114 (N11, L = 330, class/area Eki/340 on 11 August). This CME was the likely source for severe geomagnetic storm conditions observed on 11 - 12 August (see the discussion below).

Real-time solar wind data were available from the NASA Advanced Composition Explorer (ACE) spacecraft for most of the period. There were two CME passages detected during the period. The first occurred early on 10 August and was associated with a velocity increase from 370 to 510 km/sec, increased densities, and a southward turning of the Bz component of the interplanetary magnetic field (IMF) with maximum deflections to minus 15 nT (GSM). The second passage (which prompted the severe storming of 11 - 12 August) began late on 11 August accompanied by a velocity increase from 400 to 710 km/sec, increased densities and strong southward IMF Bz with deflections to minus 34 nT.

A greater than 10 MeV solar proton event occurred at geosynchronous orbit on 11 August. It began at 11/1650UT, reached a maximum of 17 PFU at 11/1655UT, and ended at 11/1740UT. The associated polar-cap absorption event peaked at 2.0 dB (as measured by the Thule riometer). Proton fluxes returned to background levels late on 11 August. The greater than 10 MeV proton flux became enhanced beginning midday on 12 August and remained so for the balance of the period.

The greater than 2 MeV electron flux at geosynchronous orbit briefly reached high levels on 11 August, but was otherwise at normal to moderate levels.

Geomagnetic field activity was at quiet to unsettled levels during 07 - 09 August. Activity increased to unsettled to minor storm levels on 10 August. August 11 - 12 saw activity increase to unsettled to severe storm levels due to a CME passage at Earth. The severe storm levels occurred during 11/0300 - 0900UT and 12/0300 - 1800UT. Activity decreased to unsettled to minor storm levels during 12/1800UT - 13/0600UT, then declined to quiet to unsettled levels for the rest of the period.

**Space Weather Outlook**  
**16 August - 11 September 2000**

Solar activity is expected to be at low to moderate levels. Isolated M-class flares are expected during the period.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at normal to moderate levels through most of the period with high levels possible during 01 - 03 September.

Geomagnetic field activity is expected to be at quiet to unsettled levels during most of the period, barring an Earth-directed CME. However, active levels will be possible during 31 August - 02 September.



### *Daily Solar Data*

Date	Radio Flux 10.7 cm	Sun spot No.	Sunspot Area (10 <sup>-6</sup> hemi.)	X-ray Background	Flares							
					X-ray Flux			Optical				
					C	M	X	S	1	2	3	4
07 August	167	189	710	B6.0	4	0	0	2	0	0	0	0
08 August	170	188	1000	B7.7	3	1	0	0	0	0	0	0
09 August	182	176	910	B7.9	4	0	0	8	0	0	0	0
10 August	181	141	770	B8.7	2	0	0	5	1	0	0	0
11 August	187	170	840	B8.2	6	0	0	14	0	0	0	0
12 August	189	186	870	C1.4	10	1	0	23	0	0	0	0
13 August	186	196	870	B9.7	6	0	0	18	0	0	0	0

### *Daily Particle Data*

Date	Proton Fluence (protons/cm <sup>2</sup> -day-sr)			Electron Fluence (electrons/cm <sup>2</sup> -day-sr)		
	>1MeV	>10MeV	>100MeV	>.6MeV	>2MeV	>4MeV
07 August	2.1E+5	9.5E+3	2.0E+3		1.2E+7	
08 August	1.4E+5	9.2E+3	2.0E+3		2.1E+7	
09 August	1.1E+5	9.5E+3	2.3E+3		3.0E+7	
10 August	6.9E+5	9.2E+3	1.9E+3		9.7E+6	
11 August	7.7E+6	8.0E+4	1.8E+3		3.1E+7	
12 August	2.6E+6	2.0E+4	1.8E+3		6.3E+6	
13 August	1.5E+7	9.1E+4	2.0E+3		2.8E+6	

### *Daily Geomagnetic Data*

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	07 August	8	1-2-2-2-3-1-2-3	22	3-2-3-6-5-1-1-2	9
08 August	7	1-1-3-2-2-2-2-2	*	2-1-3-2-*-2-1-1	9	2-2-3-2-2-2-3-2
09 August	*	1-2-1-*-*-1-1-3	*	2-2-1-*-*-0-1-2	7	2-2-1-2-2-2-2-3
10 August	16	1-3-4-3-4-2-3-3	29	2-4-5-5-5-4-3-3	23	2-3-4-4-5-3-3-5
11 August	39	5-5-5-4-4-2-4-6	72	5-7-7-6-5-4-5-5	60	6-6-7-6-4-4-4-5
12 August	55	4-6-6-5-6-6-4-3	110	5-7-6-7-7-8-6-3	109	5-7-8-7-7-7-5-4
13 August	16	4-5-3-2-2-1-2-3	14	3-5-3-1-2-1-1-3	16	4-5-3-2-2-3-2-3

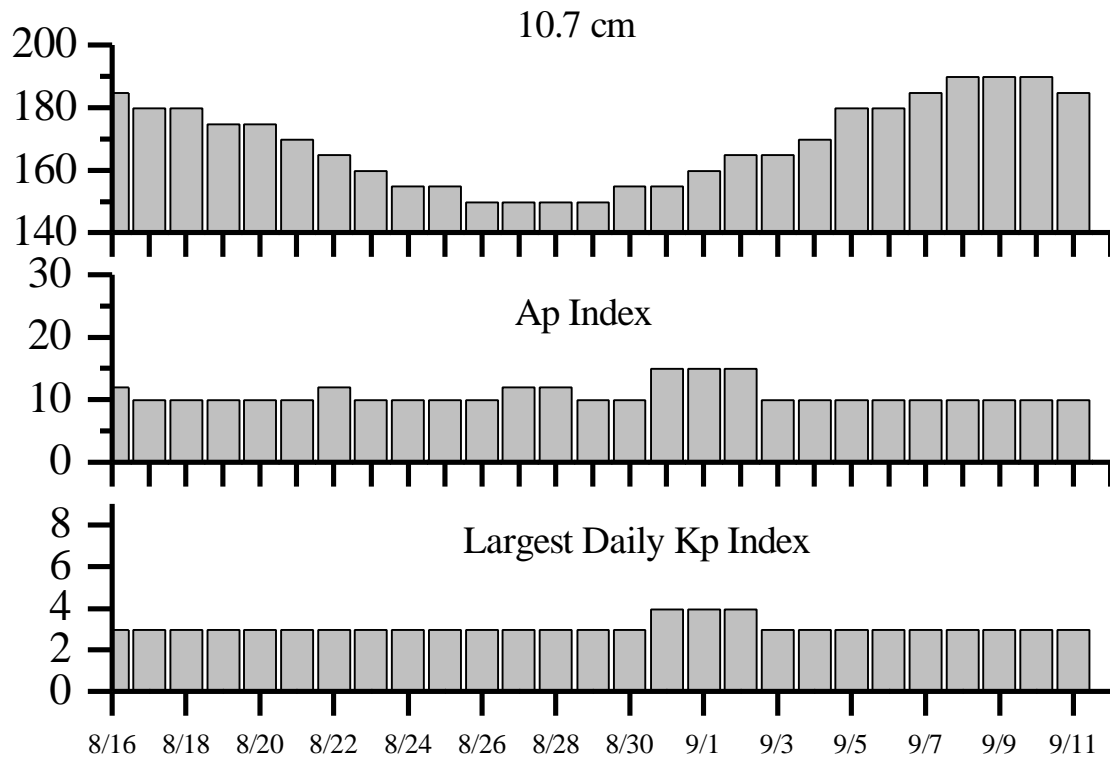


### *Alerts and Warnings Issued*

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UT
07 Aug 0039	9 - 245 MHz Radio Bursts	06 Aug
07 Aug 0039	2 - 245 Radio Noise Storm	06 Aug
09 Aug 0039	3 - 245 MHz Radio Bursts	08 Aug
09 Aug 0039	245 Radio Noise Storm	08 Aug
10 Aug 0124	3 - 245 MHz Radio Bursts	09 Aug
10 Aug 0124	245 Radio Noise Storm	09 Aug
10 Aug 0432	K= 4 Warning	10 Aug 05 - 15
10 Aug 0807	K= 5 Warning	10 Aug 0815 - 1500
10 Aug 0900	K= 5 Observed	10 Aug 06 - 09
10 Aug 1457	EXTENDED K= 5 Warning	10/0815 - 11/1500 Aug
10 Aug 1803	A = 20 Observed	10 Aug 1800
11 Aug 0129	A = 30 Warning	11 Aug 0145 - 1500
11 Aug 0300	A = 30 Observed	11 Aug 0300
11 Aug 0600	K = 7 Observed	11 Aug 03 - 06
11 Aug 0900	K= 6 Observed	11 Aug 06 - 09
11 Aug 0901	A = 50 Observed	11 Aug 0900
11 Aug 0908	K = 6 Warning	11 Aug 0915 to 1500
11 Aug 1020	A = 50 Warning	11/1030 - 12/0000 Aug
11 Aug 1433	K= 5 Warning	11/1445 - 12/1500 Aug
11 Aug 1612	A = 20 Watch	12 Aug
11 Aug 1636	Electron Event >2MeV = 1000pfu	11 Aug 1635
11 Aug 1709	Proton Event >10 MeV = 10pfu	11 Aug 1650
11 Aug 1948	END Proton Event >10 MeV = 10pfu	11 Aug 1740
11 Aug 2222	K = 6 Warning	11/2223 - 12/1500 Aug
11 Aug 2224	EXTENDED A = 50 warning	11/1030 - 12/1500 Aug
12 Aug 0002	K= 6 Observed	11 Aug 21- 00
12 Aug 0114	CONTINUED Electron Event >2MeV = 1000pfu	11 Aug 1635
12 Aug 0600	K = 7 Observed	12 Aug 03 - 06
12 Aug 1457	EXTENDED A = 50 Warning	11/1030 - 13/1500 Aug
12 Aug 1458	EXTENDED K = 6 Warning	11/2223 - 13/1500 Aug
12 Aug 1632	A = 30 Watch	13 Aug
13 Aug 0905	ENDED A = 50 Observed	11 Aug 0900
13 Aug 1210	ENDED A = 30 Observed	11 Aug 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
16 Aug	185	12	3	30 Aug	155	10	3
17	180	10	3	31	155	15	4
18	180	10	3	01 Sep	160	15	4
19	175	10	3	02	165	15	4
20	175	10	3	03	165	10	3
21	170	10	3	04	170	10	3
22	165	12	3	05	180	10	3
23	160	10	3	06	180	10	3
24	155	10	3	07	185	10	3
25	155	10	3	08	190	10	3
26	150	10	3	09	190	10	3
27	150	12	3	10	190	10	3
28	150	12	3	11	185	10	3
29	155	10	3				



### *Energetic Events*

Date	Time		X-ray		Optical Information			Peak		Sweep Freq		
	Begin	Max	½ Max	Class	Integ Flux	Imp/ Brtns	Location Lat CMD	Rgn #	Radio Flux		Intensity	
									245	2695	II	IV
08 Aug	1105	1115	1149	M1.9	.033				28			
12 Aug	0945	0956	1009	M1.1	.011				59	38		

### *Flare List*

Date	Time			X-ray Class.	Imp / Brtns	Optical Location Lat CMD	Rgn
	Begin	Max	End				
07 August	0357	0401	0403	C1.3			
	1516	1516	1521	B7.6	SF	N13E19	9114
	2001	2005	2017	C1.0			
	2207	2211	2213	C1.0			
08 August	2341	2345	0030	C1.6	SF	N23E49	9122
	0210	0217	0227	C1.4			
	0735	0752	0803	C1.5			
	1105	1115	1149	M1.9			
09 August	1538	1554	1620	C1.4			
	0425	0428	0431	C1.1			
	0531	0532	0538	C1.8	SF	N21E31	9122
	1354	1358	1402		SF	N14W64	9111
	1424	1436	1441		SF	N14W65	9111
	1533	1548	1710	C2.3	SF	N11W11	9114
	1618	1618	1623		SF	N14W66	9111
	1735	1736	1748		SF	N15W06	9114
	1804	1806	1814		SF	N11W09	9114
	1817	1822	1838		SF	N12W11	9114
10 August	2205	2209	2215	C1.5			
	0331	0335	0348	C2.6	1F	S19W71	9110
	1222	1225	1232		SF	N10W25	9114
	1427	1428	1432		SF	N20E53	9123
	2010	2011	2013		SF	N10W26	9114
	2130	2130	2133		SF	N08W30	9114
	2138	2139	2142		SF	N08W28	9114
11 August	2309	2315	2325	C1.3			
	0502	0507	0513	C2.6	SF	N05W32	
	0648	0653	0702		SF	S12E64	9124
	0714	0716	0731	C3.2	SF	N26E66	9125
	0924	0930	0936	C2.2			
	1049	1103	1113	C3.0			
	1238	1243	1253		SF	S09E54	9124
	1340	1341	1352	C1.9	SF	N04W37	9114
	1419	1420	1425		SF	N08W38	9114
1454	1459	1505	C1.5	SF	S08E53	9124	



*Flare List – continued.*

Date	Time			X-ray	Optical		Rgn Lat CMD
	Begin	Max	End		Imp / Class.	Location Brtns	
11 August	1534	1604	1618		SF	N12W36	9114
	1610	1610	1614		SF	N05W37	9126
	1712	1714	1722		SF	N05W38	9126
	1716	1718	1725		SF	N14E77	9127
	1717	1717	1720		SF	N27E57	9125
	1727	1728	1737		SF	N05W39	9126
	1759	1759	1803		SF	N23E57	9125
12 August	0005	0006	0025	C2.5	SF	S14E55	9124
	0140	0141	0221	C4.8	SF	N14W43	9114
	0202	0204	0236	C6.5	SF	N21E53	9125
	0342	0351	0359	C3.1			9125
	0425	0429	0433	C2.6	SF	S10E39	
	0523	0525	0529		SF	N20E52	9125
	0618	0621	0635	C3.5	SF	S13E52	9124
	0642	0643	0648		SF	N06W50	9126
	0739	0746	0810		SF	S13W31	9116
	0748	0753	0802	C3.0	SF	N21E50	9125
	0945	0956	1009	M1.1			
	1239	1244	1302	C3.2	SF	N13W50	9114
	1355	1454	1734	C3.2	SF	N13W46	9114
	1407	1410	1414		SF	N23E44	9125
	1427	1431	1445		SF	N23E44	9125
	1430	1431	1434		SF	N21E46	9125
	1455	1457	1507		SF	N23E44	9125
	1552	1552	1555		SF	N22E44	9125
	1630	1630	1634		SF	N23E45	9125
	1718	1718	1731		SF	S11E46	9124
	1742	1742	1750		SF	S14W38	9116
	1815	1815	1836		SF	N21E42	9125
	1844	1845	1856	C2.2	SF	N23E44	9125
2012	2014	2024		SF	S12E45		
2228	2229	2239		SF	S07E34	9124	
13 August	0513	0513	0522	C1.7	SF	S14E39	9124
	0642	0643	0647		SF	N22E39	9125
	0843	0845	0857		SF	N23E37	9125
	0910	0910	0918	C3.5	SF	N06W66	9126
	1041	1041	1058		SF	N25E37	9125
	1104	1106	1110		SF	S12E33	9124
	1140	1140	1145		SF	N23E36	9125
	1326	1328	1331		SF	N05W67	9126



**Flare List – continued.**

Date	Time			X-ray	Imp / Class.	Optical	Rgn Lat CMD
	Begin	Max	End			Location Brtns	
13 August	1341	1343	1404	C4.1	SF	N22E33	9125
	1504	1505	1512		SF	S02E63	9129
	1658	1704	1719		SF	N24E33	9125
	1721	1722	1737		SF	N24E31	9125
	1739	1740	1748		SF	N24E31	9125
	1820	1825	1839	C2.0	SF	N22E30	9125
	2009	2010	2018		SF	N24E32	9125
	2012	2018	2030	C2.3	SF	N13W68	9114
	2132	2138	2148	C1.8	SF	N23E30	9125
	2354	0005	0010		SF	N21E25	9125

**Region Summary**

Date	Location		Sunspot Characteristics					Flares									
	( ° Lat ° CMD)	Helio	Area (10 <sup>6</sup> hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical						
		Lon						C	M	X	S	1	2	3	4		
<i>Region 9104</i>																	
26 Jul	S19E75	067	0090	02	HSX	001	A										
27 Jul	S23E65	064	0080	02	HSX	001	A										
28 Jul	S21E51	064	0100	02	HSX	001	A										
29 Jul	S21E38	064	0120	02	HSX	001	A										
30 Jul	S20E24	065	0100	03	HSX	001	A										
31 Jul	S20E10	066	0100	03	HSX	001	A										
01 Aug	S19W01	064	0110	07	DSO	009	BG										
02 Aug	S19W15	064	0090	04	CSO	007	B										
03 Aug	S19W27	063	0110	07	CSO	005	B										
04 Aug	S18W40	063	0070	04	CSO	003	B										
05 Aug	S18W54	064	0060	01	HSX	001	A										
06 Aug	S19W67	064	0040	02	HSX	001	A										
07 Aug	S19W80	063	0050	01	HSX	001	A										
								0	0	0	0	0	0	0	0	0	

Crossed West Limb

Absolute heliographic longitude: 064



**Region Summary – continued.**

Date	Location		Sunspot Characteristics					Flares															
	( ° Lat ° CMD)	Helio	Area (10 <sup>6</sup> hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical												
		Lon						C	M	X	S	1	2	3	4								
<i>Region 9105</i>																							
27 Jul	N13E81	048	0050	02	HSX	001	A																
28 Jul	N15E66	049	0090	01	HSX	001	A	1					1										
29 Jul	N14E54	048	0080	02	HSX	001	A																
30 Jul	N16E40	049	0080	02	HSX	001	A	1					1										
31 Jul	N15E27	049	0080	03	HSX	001	A																
01 Aug	N16E14	049	0090	05	HSX	005	A							1									
02 Aug	N17E02	047	0080	06	CSO	005	B																
03 Aug	N17W12	048	0080	02	HSX	001	A																
04 Aug	N17W25	048	0070	02	HSX	001	A																
05 Aug	N17W38	048	0070	02	HSX	001	A																
06 Aug	N18W52	049	0050	02	HSX	001	A																
07 Aug	N17W65	048	0060	01	HSX	001	A																
08 Aug	N17W80	049	0060	02	HSX	001	A																
09 Aug	N16W88	044	0060	01	HSX	001	A																
								2	0	0	3	0	0	0	0	0	0	0	0	0	0	0	

Crossed West Limb.

Absolute heliographic longitude: 047

<i>Region 9107</i>																							
29 Jul	S19E69	033	0150	12	ESO	002	B	1					1										
30 Jul	S18E56	033	0110	16	FSO	005	B																
31 Jul	S16E38	038	0070	08	DSO	007	B																
01 Aug	S16E30	033	0080	14	EAO	009	B																
02 Aug	S16E17	032	0080	16	CAO	010	B																
03 Aug	S17E03	033	0050	17	CAO	010	B							1									
04 Aug	S16W13	036	0020	07	CSO	005	B							2									
05 Aug	S16W27	037	0020	08	CAO	004	B																
06 Aug	S16W41	038	0020	03	CAO	003	B	1					1										
07 Aug	S15W56	039	0020	01	HRX	002	A																
08 Aug	S13W75	044	0030	03	CRO	003	B																
09 Aug	S13W88	044	0030	01	HSX	001	A																
								2	0	0	5	0	0	0	0	0	0	0	0	0	0	0	

Crossed West Limb.

Absolute heliographic longitude: 033





**Region Summary – continued.**

Date	Location		Sunspot Characteristics				Flares															
	( ° Lat ° CMD)	Helio	Area (10 <sup>6</sup> hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical											
		Lon						C	M	X	S	1	2	3	4							
<i>Region 9110</i>																						
31 Jul	S19E55	021	0080	11	ESO	004	B															
01 Aug	S19E47	016	0060	08	CAO	005	B												1			
02 Aug	S19E33	016	0050	07	CAO	003	B															
03 Aug	S20E18	018	0040	07	CSO	004	B												1			
04 Aug	S19E06	017	0050	07	CSO	006	B												1			
05 Aug	S19W07	017	0090	08	DAO	006	B	1											1			
06 Aug	S18W19	016	0050	09	DSO	009	B															
07 Aug	S18W33	016	0060	09	DSO	007	B															
08 Aug	S18W47	016	0040	09	DSO	005	B															
09 Aug	S18W59	015	0060	10	CAO	010	B															
10 Aug	S18W73	016	0050	08	CAO	004	B															
11 Aug	S17W91	021	0000	00	AXX	001	A															
												1	0	0	4	0	0	0	0			

Crossed West Limb.

Absolute heliographic longitude: 017

*Region 9111*

01 Aug	N10E28	035	0040	04	CRO	008	B												
02 Aug	N10E14	035	0020	04	CRO	003	A												
03 Aug	N10W03	039	0010	01	HSX	001	A												
04 Aug	N10W16	039	0010	00	AXX	001	A												
05 Aug	N10W29	039						1											1
06 Aug	N10W42	039																	
07 Aug	N10W55	039																	
08 Aug	N10W68	039																	
09 Aug	N10W81	039																	
												1	0	0	1	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 039

*Region 9113*

02 Aug	S25W12	061	0030	05	CSO	006	B	1											2
03 Aug	S26W26	062	0040	08	DAO	007	B												
04 Aug	S26W38	061	0060	09	DAO	008	B												2
05 Aug	S25W52	062	0040	08	CSO	008	B												1
06 Aug	S25W65	062	0010	08	BXO	002	B												
07 Aug	S25W78	062																	
												1	0	0	5	0	0	0	0

Crossed West Limb

Absolute heliographic longitude: 061



**Region Summary – continued.**

Date	Location		Sunspot Characteristics				Flares										
	( ° Lat ° CMD)	Helio	Area (10 <sup>6</sup> hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical						
		Lon						C	M	X	S	1	2	3	4		
<i>Region 9114</i>																	
02 Aug	N10E77	332	0060	02	HSX	001	A	1									
03 Aug	N10E64	332	0080	02	HAX	001	A						1				
04 Aug	N13E54	329	0110	11	CSO	007	B						3				
05 Aug	N12E41	329	0230	11	EAO	013	B										
06 Aug	N12E28	329	0250	12	EAO	014	B	2				7					
07 Aug	N12E14	329	0160	12	EAI	022	BG										
08 Aug	N11W01	330	0290	13	EKI	021	BG										
09 Aug	N11W16	332	0290	14	EKO	026	BG										
10 Aug	N11W29	332	0300	15	EKI	019	BG										
11 Aug	N11W45	335	0340	12	EKI	018	B										
12 Aug	N10W58	335	0310	09	DAI	009	BG										
13 Aug	N12W71	334	0260	09	DAO	07	B										
								3	0	0	11	0	0	0	0	0	

Still on Disk.

Absolute heliographic longitude: 329

<i>Region 9115</i>																	
03 Aug	N16E77	319	0060	03	HSX	001	A	1				1					
04 Aug	N17E68	315	0170	08	CSO	004	B					1	1				
05 Aug	N16E56	314	0230	11	CSO	006	B					1					
06 Aug	N17E43	314	0170	10	DAO	005	B										
07 Aug	N18E27	316	0160	06	CAO	05	B										
08 Aug	N18E14	315	0170	08	CAO	05	B										
09 Aug	N18E02	314	0130	09	CAO	05	B										
10 Aug	N18W12	315	0110	08	CAO	05	B										
11 Aug	N18W26	316	0130	08	CSO	07	B										
12 Aug	N17W38	315	0120	08	CSO	04	B										
13 Aug	N19W53	316	0110	02	HSX	01	A										
								1	0	0	3	1	0	0	0	0	

Still on Disk.

Absolute heliographic longitude: 314



**Region Summary – continued.**

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

*Region 9116*

04 Aug S12E63	320	0050	02	HSX	001	A												
05 Aug S13E49	321	0050	02	HSX	001	A												
06 Aug S13E37	320	0050	02	HSX	002	A												
07 Aug S12E53	318	0010	02	HRX	002	A												
08 Aug S12E14	315	0010	03	AXX	002	A												
09 Aug S12E02	318	0000	00	AXX	001	A												
10 Aug S11W15	318																	
11 Aug S11W28	318																	
12 Aug S11W41	318																	
13 Aug S11W54	318																	

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 320

*Region 9117*

05 Aug S09W07	017	0020	03	CAO	003	B												
06 Aug S10W23	020	0020	01	HAX	001	A												
07 Aug S09W37	020	0010	01	HSX	001	A												
08 Aug S09W51	020	0000	00	AXX	01	A												
09 Aug S10W64	020																	
10 Aug S10W77	020																	

0 0 0 0 0 0 0 0

Crossed West Limb

Absolute heliographic longitude: 017

*Region 9118*

05 Aug N18W02	012	0010	03	BXO	003	B												
06 Aug N18W15	012	0000	00		000													
07 Aug N18W41	012																	
08 Aug N18W54	012																	
09 Aug N18W67	012																	
10 Aug N18W80	012																	

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 012



***Region Summary – continued.***

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

*Region 9119*

05 Aug S13E08	002	0030	04	CRO	005	B											
06 Aug S12W06	003	0040	05	CRO	007	B											
07 Aug S12W20	003	0050	07	DAO	010	B											
08 Aug S13W34	003	0050	07	CAO	007	B											
09 Aug S12W47	003	0030	06	CAO	006	B											
10 Aug S14W60	003	0030	06	CSO	004	B											
11 Aug S12W76	003	0030	04	CRO	003	B											

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 003

*Region 9120*

06 Aug S22E24	333	0020	04	HSX	004	A											
07 Aug S22E11	332	0020	05	CSO	005	B											
08 Aug S22W04	333	0010	03	BXO	003	B											
09 Aug S22W17	333	0010	01	AXX	002	A											
10 Aug S22W30	333																
11 Aug S22W43	333																
12 Aug S22W56	333																
13 Aug S22W69	333																

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 333

*Region 9121*

06 Aug S35E27	330	0070	06	CSO	005	B											
07 Aug S35E13	330	0070	07	DAO	008	B											
08 Aug S35E01	328	0100	09	DAO	003	BG											
09 Aug S35W12	328	0100	09	DSO	002	B											
10 Aug S35W23	326	0060	10	DSO	002	B											
11 Aug S34W36	326	0060	11	ESO	002	B											
12 Aug S33W48	325	0070	10	DSO	002	B											
13 Aug S34W61	324	0040	11	CSO	003	B											

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 330



**Region Summary – continued.**

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

*Region 9122*

07 Aug	N21E47	296	0080	06	DSO	008	B	1		1							
08 Aug	N22E35	294	0160	09	DAO	015	BG										
09 Aug	N21E21	295	0140	07	DAI	011	B	1		1							
10 Aug	N21E08	295	0100	07	DSO	009	B										
11 Aug	N21W04	294	0080	07	CSO	010	B										
12 Aug	N22W18	295	0040	05	CAO	008	B										
13 Aug	N22W33	296	0020	01	HAX	002	A										
								2	0	0	4	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 294

*Region 9123*

08 Aug	N18E72	257	0080	02	HSX	001	A										
09 Aug	N18E60	256	0060	01	HSX	001	A										
10 Aug	N18E47	256	0050	04	DSO	002	B			1							
11 Aug	N18E33	257	0060	03	CAO	004	B										
12 Aug	N20E20	257	0050	03	CAO	006	B										
13 Aug	N20E06	257	0040	03	CSO	004	B										
								0	0	0	1	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 257

*Region 9124*

10 Aug	S13E64	239	0030	07	CRO	003	B										
11 Aug	S14E52	238	0040	08	CRO	003	B	1		3							
12 Aug	S12E37	240	0020	09	CSO	006	B	2		4							
13 Aug	S12E25	238	0000	08	BXO	003	B	1		2							
								4	0	0	9	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 230

*Region 9125*

10 Aug	N26E69	234	0040	04	CRO	003	B										
11 Aug	N25E55	235	0050	07	DAO	004	B	1		3							
12 Aug	N25E42	235	0090	10	DAI	025	B	4		11							
13 Aug	N25E29	234	0130	10	DAI	026	B	3		12							
								8	0	0	26	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 235



***Region Summary – continued.***

Date	Location		Sunspot Characteristics				Flares										
	( ° Lat ° CMD)	Helio	Area (10 <sup>6</sup> hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical						
		Lon						C	M	X	S	1	2	3	4		
<i>Region 9126</i>																	
11 Aug	N06W41	331	0030	04	DSO	005	B					3					
12 Aug	N07W55	332	0050	07	DAO	007	B					1					
13 Aug	N06W70	333	0060	08	CAO	004	B	1				2					
								1	0	0	0	6	0	0	0	0	0
Crossed West Limb.																	
Absolute heliographic longitude: 331																	
<i>Region 9127</i>																	
11 Aug	S40E20	270	0020	06	CRO	003	B					1					
12 Aug	S38E07	270	0020	06	CSO	003	B										
13 Aug	S38W07	270	0000	01	AXX	002	A										
								0	0	0	0	1	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 270																	
<i>Region 9128</i>																	
12 Aug	N11E61	216	0040	04	CSO	004	B										
13 Aug	N11E46	217	0040	06	CSO	005	B										
								0	0	0	0	0	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 219																	
<i>Region 9129</i>																	
12 Aug	S05E72	205	0060	02	HSX	002	A										
13 Aug	S06E60	203	0080	04	CAO	003	B					1					
								0	0	0	0	1	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 203																	

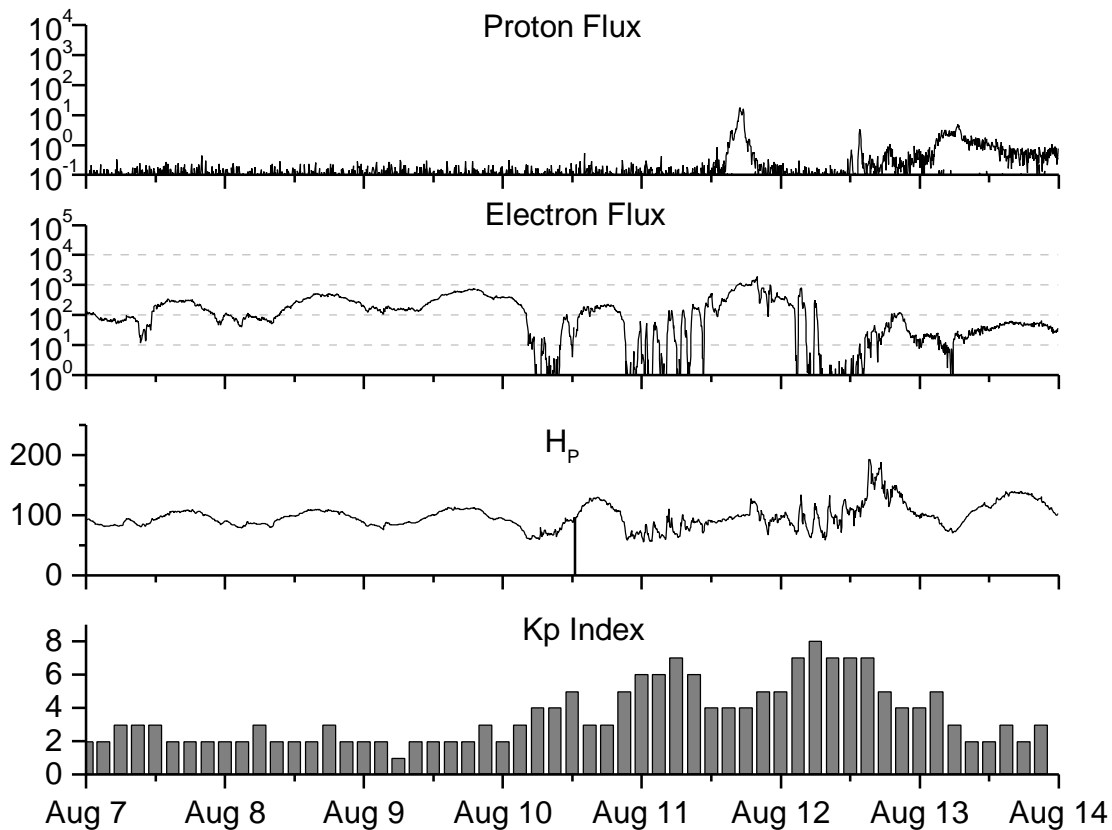


**Recent Solar Indices (preliminary)  
of the observed monthly mean values**

Month	Sunspot Numbers				Radio Flux		Geomagnetic		
	Observed values SWO	RI	Ratio RI/SWO	Smooth values SWO	RI	*Penticton 10.7 cm	Smooth Value	Planetary Ap	Smooth Value
<b>1998</b>									
August	118.6	92.2	0.78	93.7	67.8	136.0	124.1	18	12.4
September	119.0	92.9	0.78	96.1	69.5	138.3	126.8	13	12.6
October	77.0	55.5	0.72	97.7	70.5	117.3	127.9	13	12.8
November	99.5	74.0	0.74	101.3	73.0	140.2	130.0	16	12.4
December	120.8	81.9	0.68	108.8	77.9	150.1	134.3	08	11.9
<b>1999</b>									
January	94.3	62.0	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	11.7
April	92.9	63.7	0.69	123.8	85.5	117.2	145.8	12	12.2
May	140.5	106.4	0.76	131.7	90.5	148.6	149.9	08	12.4
June	208.3	137.7	0.66	136.0	93.1	169.8	152.9	07	12.4
July	169.2	113.5	0.67	138.0	94.4	165.6	154.4	10	12.6
August	136.1	93.7	0.69	142.8	97.5	170.8	156.3	15	12.9
September	107.4	71.5	0.66	150.0	102.3	135.7	161.0	19	12.8
October	167.7	116.7	0.69	158.5	107.7	164.8	167.2	19	12.7
November	199.3	133.2	0.67	164.7	110.9	191.5	171.5	14	13.2
December	123.5	86.4	0.70	165.9	110.9	169.8	173.4	10	13.9
<b>2000</b>									
January	140.8	90.2	0.64	168.0	112.7	158.1	175.2	13	14.7
February	161.9	112.3	0.69			173.2		15	
March	203.6	138.2	0.68			208.2		09	
April	193.4	125.3	0.65			184.2		15	
May	188.8	120.8	0.64			184.5		16	
June	190.3	124.9	0.66			178.8		16	
July	236.7	169.1	0.71			200.0		21	

**NOTE:** All smoothed values after June 1999 and monthly values after December 1999 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 31 July 2000*

*Protons* plot contains the five-minute averaged integral proton flux (protons/cm<sup>2</sup>-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<sup>2</sup>-sec -sr) with energies greater than 2 MeV at GOES-8.

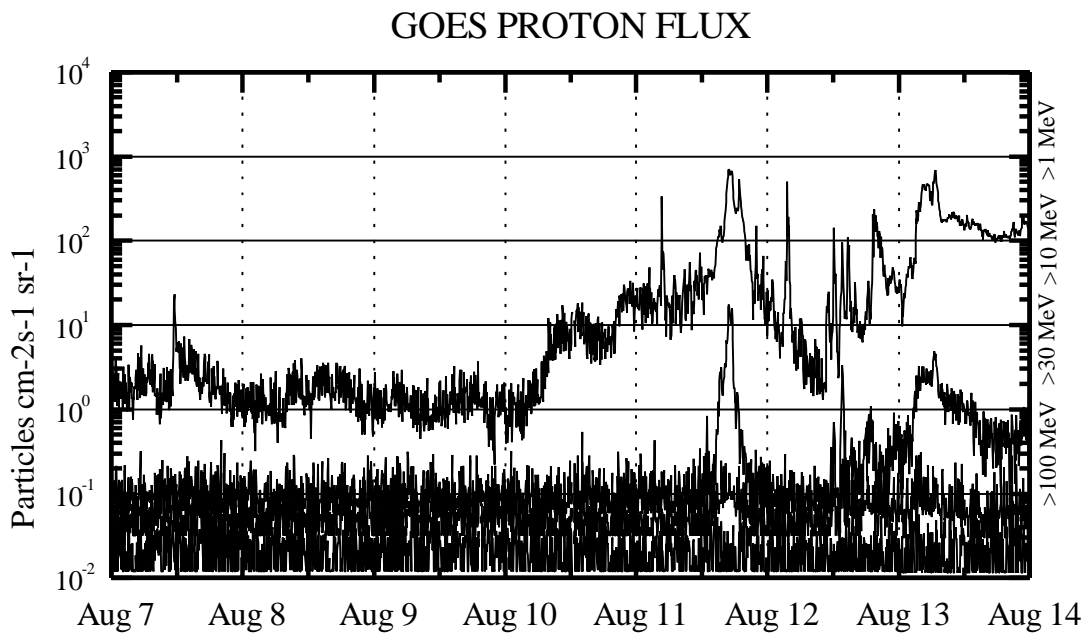
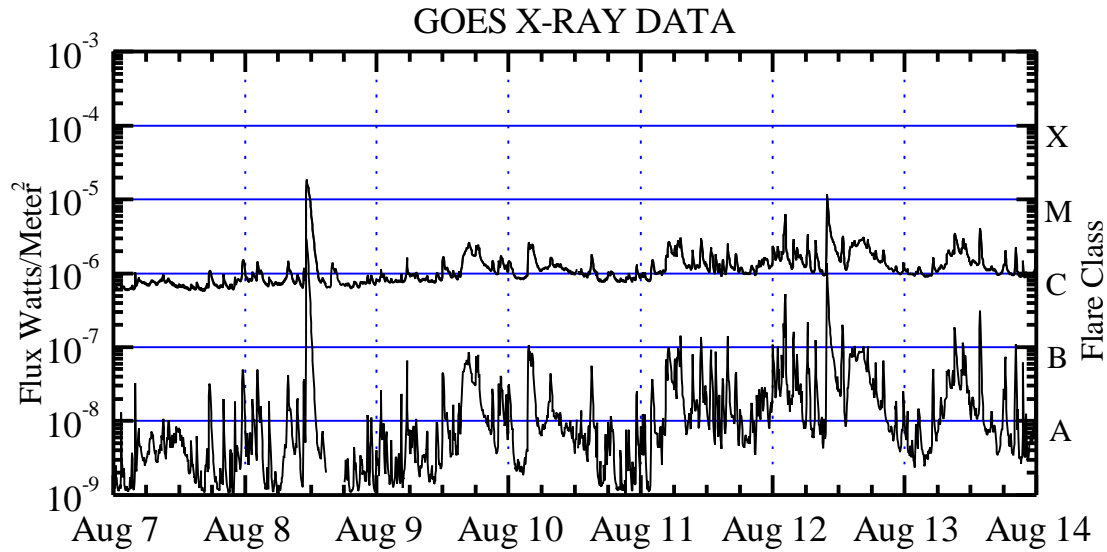
*H<sub>p</sub>* plot contains the five minute averaged magnetic field H - component in nanoteslas (nT) as measured by GOES-8. The H component is parallel to the spin axis of the satellite, which is nearly parallel to the Earth's rotation axis.

*K<sub>p</sub>* plot contains the estimated planetary 3-hour K-index (derived by the USAF 55<sup>th</sup> 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<sub>p</sub> 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<sub>p</sub> are "global" parameters that are applicable to a first order approximation over large areas. H<sub>p</sub> 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*

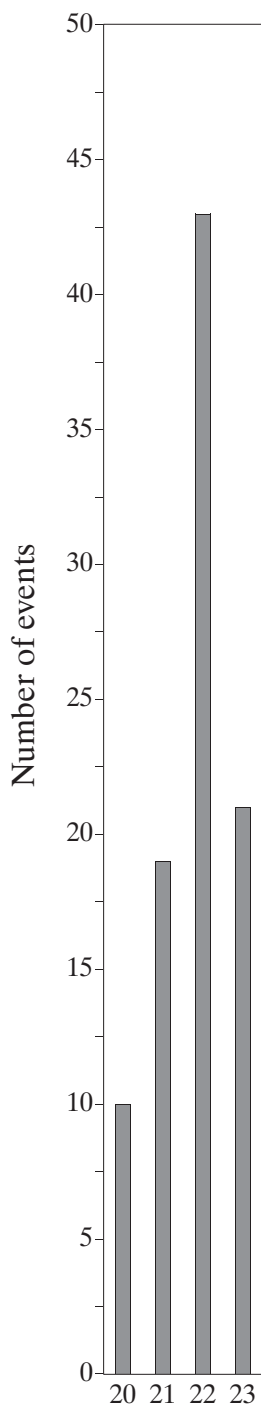
X-ray plot contains five minute averaged x-ray flux (watts/m<sup>2</sup>) as measured by GOES 8 and 10 in two wavelength bands, .05 - .4 and .1 - .8 nm. The letters A, B, C, M and X refer to x-ray event levels for the .1 - .8 nm band.

Proton plot contains the five minute averaged integral proton flux (protons/cm<sup>2</sup>-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<sup>2</sup>-sec-sr) at greater than 10 MeV.



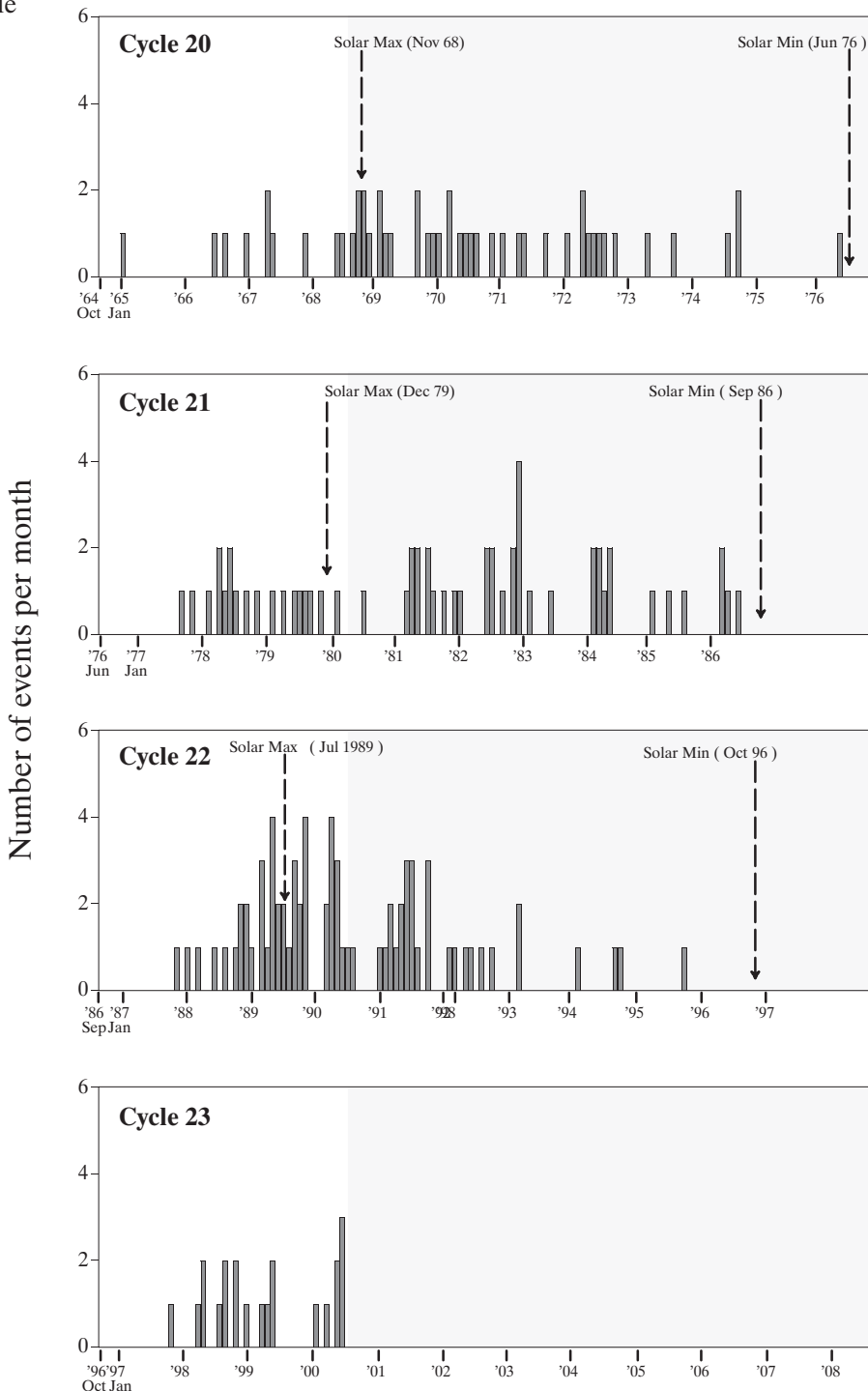
# Proton Events

Comparison of Cycles at current month in cycle



July 2000  
(Month 46)

█ Preliminary data



SESC defines Proton Events as periods (in excess of 15 minutes) when the geosynchronous >10MeV proton flux remains above 10 pfu (particle flux unit = 1p/cm<sup>2</sup>cm<sup>2</sup>s<sup>2</sup>sr). Events continue and are counted as a single event until fluxes remain below 10 pfu regardless of whether enhancements from new sources occur. Using different event criteria may result in different event totals.