Space Weather Highlights **SWO PRF 1307**
11-17 September 2000 **19 September 2000**

Solar activity varied from low to high levels. Activity was low on the first day of the period with isolated C-class subflares. Activity increased to moderate levels on 12 September due to a long-duration M1/2N Hyder flare at 12/1213 UTC. The two-ribbon Hyder flare was associated with a 23-degree filament eruption from the south-central portion of the disk. SOHO/LASCO images showed a halo CME following the eruption. Activity decreased to low levels on 13 September with isolated, optically uncorrelated C-class X-ray flares. Activity returned to moderate levels on 14 September due to an M1 X-ray flare from Region 9166 (S14, L = 124, class/area Eai/340 on 17 September) as it rotated into view. Region 9165 (N13, L = 186, class/area Dkc/400 on 15 September) produced two M-class flares on 15 September - an M2/SF at 15/0532 UTC and an M2/1N flare at 15/1437 UTC associated with a 190 SFU Tenflare. These flares occurred as Region 9165 was in a period of rapid development. Activity became high on 16 September with an M5/2B flare at 16/0426 UTC from Region 9165, which had begun to decay and simplify. This flare was associated with a 1100 SFU Tenflare, Type II and IV radio sweeps, and a halo CME. Region 9165 also produced an M3/2N at 16/1428 UTC in addition to numerous C-class flares during the course of the day. Activity decreased to low levels on the final day of the period due to C-class subflares, the largest of which was a C5/1F at 17/0643 UTC from Region 9167 (N12, L = 092, class/area Dso/170 on 17 September), which had rotated into view as a developing D-type spot group.

Data were available from the Advanced Composition Explorer (ACE) spacecraft for most of the period. There were four disturbances noted in the solar wind flow. The first was a short-lived high speed stream observed during 12 - 13 September with peak velocities near 460 km/sec and a shift to a toward (negative polarity) solar sector. The second was a CME passage at ACE at around 15/0300 UTC associated with a minor velocity increase, an initial northward turning of the Bz component of the IMF followed by a period of mostly southward Bz, and increased densities. The third disturbance occurred with the onset of another high speed stream, which began during the latter half of 16 September, associated with a velocity increase from 350 to 580 km/sec, decreased densities, and variable Bz in the plus to minus 9 nT (GSM) range. The fourth disturbance was due to another CME passage at ACE at around 17/1400 UTC. This passage was accompanied by an initial northward turning of Bz followed by a strong southward turn at around 17/2000 UTC with maximum deflections to minus 34 nT, increased densities, and velocities briefly reaching as high as 860 km/sec. Velocities remained elevated at the close of the period as the high speed stream continued.

A greater than 10 MeV proton event was detected at geosynchronous orbit following the long-duration M1/2N Hyder flare of 12 September. It began at 12/1555 UTC, reached a maximum of 321 PFU at 13/0340 UTC, and ended at 15/2140 UTC. A polar-cap absorption event followed the proton event. It began around 12/1830 UTC, reached a maximum of 4.6 dB (as measured by the Thule Riometer) at 13/0600 UTC, then ended at 14/1532 UTC. The greater than 100 MeV protons also became enhanced following the Hyder flare, but never reached event levels.

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

Geomagnetic field activity was at quiet to unsettled levels until 12/0900 UTC, then increased to active to minor storm levels during 12/0900 - 1500 UTC. Activity decreased to quiet to active levels after 12/1500 UTC. Mostly quiet to unsettled levels persisted through early 15 September. A CME-related sudden impulse occurred at 15/0510 UTC (36 nT, Boulder USGS magnetometer) followed by unsettled to active levels with minor storm levels at high latitudes, which continued through 16 September. Another sudden impulse occurred at 17/0333 UTC (53 nT, Boulder magnetometer) followed by active to minor storm levels. Activity increased to minor to severe storm levels after 17/2100 UTC following a CME-related shock passage at ACE.

Space Weather Outlook
20 September - 16 October 2000

Solar activity is expected to be at low to moderate levels. There will also be a chance early in the period for isolated major flare activity from Region 9165.

A proton event is possible at geosynchronous orbit during the first half of the period.

The greater than 2 MeV electron flux at geosynchronous orbit may reach moderate to high levels during 21 - 23 September. Normal to moderate levels are expected for the rest of the period.

Geomagnetic field activity is expected to be at active to minor storm levels during 20 - 21 September. Quiet to unsettled levels are expected during the rest of the period, barring an Earth-directed CME.

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	4
11 September	135	27	130	B4.1	4	0	0	5	0	0	0	0
12 September	133	38	30	B5.1	2	1	0	1	0	1	0	0
13 September	133	96	80	B3.8	2	0	0	0	0	0	0	0
14 September	151	109	370	B5.5	10	1	0	8	0	0	0	0
15 September	159	113	840	B6.7	14	2	0	15	1	0	0	0
16 September	175	148	800	B7.4	12	2	0	20	1	2	0	0
17 September	182	146	850	C1.3	13	0	0	15	1	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
11 September	3.2E+5	9.7E+3	2.0E+3		1.7E+7	
12 September	2.0E+7	2.5E+6	9.5E+3		5.5E+6	
13 September	1.7E+8	1.4E+7	1.5E+4		2.8E+7	
14 September	1.0E+8	3.1E+6	5.6E+3		9.5E+6	
15 September	8.4E+7	1.3E+6	3.1E+3		1.4E+7	
16 September	2.5E+7	4.5E+5	2.4E+3		6.8E+5	
17 September	6.4E+7	4.3E+5	2.3E+3		2.4E+6	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg A	K-indices	High Latitude College A	K-indices	Estimated Planetary A	K-indices
11 September	3	0-0-0-1-2-2-1-2	2	0-0-0-0-1-2-1-0	5	1-0-1-2-2-2-2-2
12 September	11	2-3-2-3-3-1-2-3	30	2-2-2-6-5-5-4-3	20	2-3-2-5-5-3-4-4
13 September	8	3-4-1-1-1-1-1-1	11	3-4-1-4-2-2-1-0	10	3-4-2-2-2-3-2-2
14 September	3	1-2-2-1-1-1-0-0	*	*-3-*-3-0-1-0-*	6	1-3-2-2-2-2-1-1
15 September	13	1-4-1-1-3-2-3-4	23	4-2-4-4-4-4-3-4	10	1-3-1-1-2-2-3-4
16 September	14	2-2-3-2-2-1-3-5	38	3-1-5-5-5-5-5-5	21	4-2-4-4-3-3-3-5
17 September	32	5-4-2-2-3-4-5-6	59	4-5-2-3-6-4-4-8	40	4-4-2-3-4-4-5-7

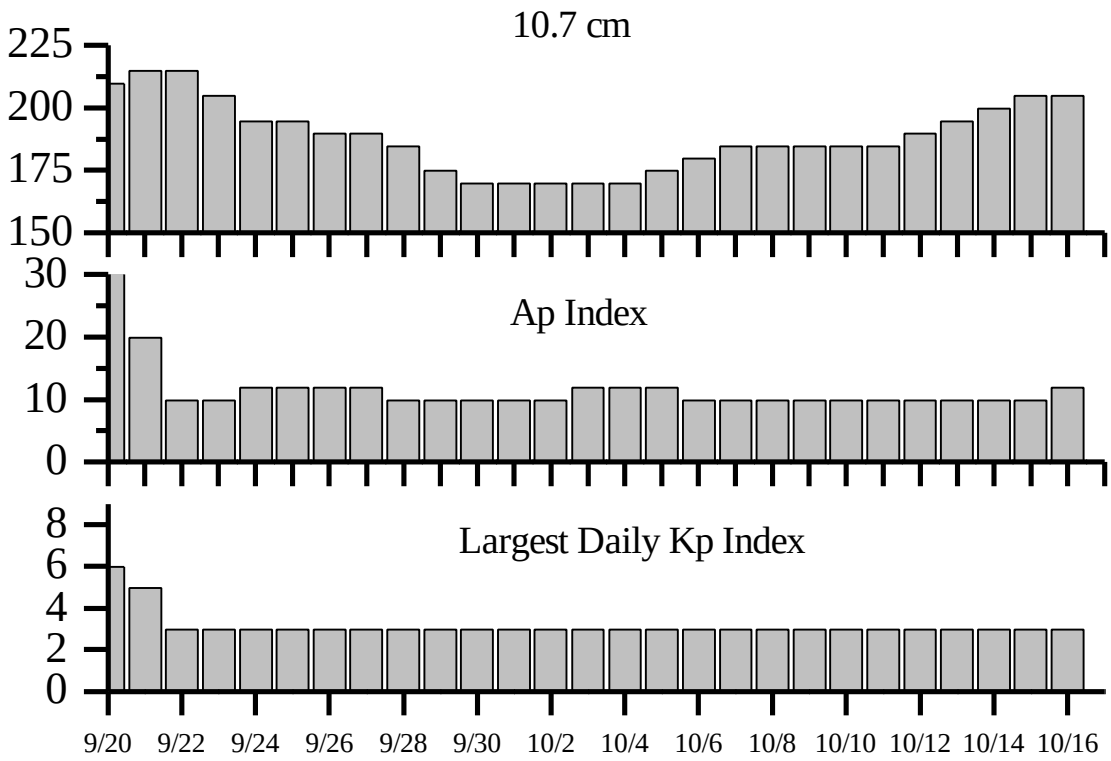
Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UT
12 Sep 0011	1 –245 MHz Radio Burst	11 Sep
12 Sep 1200	K = 4 Observed	12 Sep 09 -12
12 Sep 1202	Type II Radio Emission	12 Sep 1143
12 Sep 1250	Type II Radio Emission	12 Sep 1207
12 Sep 1438	Proton Event >10MeV =10pfu Warning	12 Sep 1437 - 1800
12 Sep 1507	K = 4 Observed	12 Sep 1200 - 1500
12 Sep 1611	Protons Event >10 MeV =10pfu	12 Sep 1555
12 Sep 2245	K = 4 Warning	12/2300 - 13/1500 Sep
12 Sep 2356	A = 30 Watch	14 Sep
12 Sep 2358	A = 30 Watch	15 Sep
13 Sep 0107	CONTINUED Proton Event >10 MeV = 10pfu	12 Sep 1555
13 Sep 0600	K = 4 Observed	13 Sep 03 - 06
14 Sep 0025	2 – 245 MHz Radio Bursts	13 Sep
14 Sep 0057	CONTINUED Proton Event >10 MeV =10pfu	12 Sep 1555
14 Sep 2214	A = 50 Watch	15 Sep
15 Sep 0053	CONTINUED Proton Event >10 MeV = 10pfu	12 Sep 1555
15 Sep 0103	4 – 245 MHz Radio Bursts	14 Sep
15 Sep 0520	Sudden Impulse observed at Boulder	15 Sep 0510
15 Sep 0539	K = 4 Warning	15 Sep 0545 - 1500
15 Sep 0556	K = 4 Observed	15 Sep 03 - 06
15 Sep 1528	10cm Radio Burst 190 F.U.	15 Sep 1431
15 Sep 2144	Type II Radio Emission	15 Sep 1652
15 Sep 2340	ENDED Proton Event >10 MeV =10pfu	12 Sep 1555
15 Sep 0201	15 - 245 MHz Radio Bursts	14 Sep
15 Sep 0201	245 MHz Noise Storm	14 Sep
16 Sep 0302	K = 4 Observed	16 Sep 00 - 03
16 Sep 0501	Type II Radio Emission	16 Sep 0433
16 Sep 0542	10cm Radio Burst 1100 F.U.	16 Sep 0409
16 Sep 0602	X-Ray event M5.9/2B	16 Sep 0406
16 Sep 0708	Type IV Radio Emission	16 Sep 0433
16 Sep 0850	K = 4 Warning	16 Sep 09 - 15
16 Sep 1157	K = 4 Observed	16 Sep 09 - 12
16 Sep 1732	A = 20 Watch	19 Sep
16 Sep 1734	A = 20 Watch	20 Sep
16 Sep 1759	K = 4 Warning	16/1800 - 17/1500 Sep
16 Sep 1800	K = 4 Observed	16 Sep 15 -18
16 Sep 2149	CANCELLED A = 20 Watch	20 Sep
16 Sep 2151	A = 30 Watch	19 Sep
16 Sep 2153	A = 30 Watch	20 Sep
17 Sep 0000	A = 20 Observed	17 Sep
17 Sep 0019	23 - 245 MHz Radio Bursts	16 Sep
17 Sep 0019	245 MHz Noise Storm	16 Sep
17 Sep 0404	Sudden Impulse observed at Boulder	17 Sep 0333
17 Sep 1213	ENDED A = 20 at 17/1200 Sep	17 Sep 0000

Alerts and Warnings Issued – continued.

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UT
17 Sep 1507	A = 20 Observed	17 Sep 1507
17 Sep 1804	K= 4 Observed	17 Sep 15- 18
17 Sep 2119	K= 5 Warning	18 Sep 00 - 15
17 Sep 2120	K= 4 Observed	17 Sep 18 - 21

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
20 Sep	210	40	6	04	170	12	3
21	215	20	5	05	175	12	3
22	215	10	3	06	180	10	3
23	205	10	3	07	185	10	3
24	195	12	3	08	185	10	3
25	195	12	3	09	185	10	3
26	190	12	3	10	185	10	3
27	190	12	3	11	185	10	3
28	185	10	3	12	190	10	3
29	175	10	3	13	195	10	3
30	170	10	3	14	200	10	3
01 Oct	170	10	3	15	205	10	3
02	170	10	3	16	205	12	3
03	170	12	3				

Energetic Events

Date	Time			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
12 Sep	1131	1213	1313	M1.0	.045	2N	S17W09		45	40	1	
14 Sep	0556	0627	0649	M1.1	.028							
15 Sep	0505	0532	0553	M2.1	.040	SF	N13E09	9165		45		
15 Sep	1429	1437	1444	M2.0	.011	1N	N12E07	9165	31000	190		
16 Sep	0406	0426	0448	M5.9	.098	2B	N14W07	9165	10000	1100	2	3
16 Sep	1416	1428	1432	M3.3	.014	2N	N13W07	9165	3000	140		

Flare List

Date	Time			X-ray	Optical		Rgn
	Begin	Max	End	Class.	Imp / Brtns	Location Lat CMD	
11 September	0222	0223	0229	B6.6	SF	S18W77	9154
	0307	0313	0320	C1.2			
	0720	0722	0730	C4.2	SF	S22W87	9154
	0752	0752	0756		SF	N05E62	9161
	0918	0920	0922	C2.0	SF	S19W88	9154
	1303	1307	1310	B6.6			
	1754	1810	1830	C1.3	SF	N30E17	9158
12 September	0045	0055	0116	C1.1			
	0538	0542	0557	B9.8	SF	N24E07	9158
	0855	0921	0940	C4.6			
	B1240	U1240	A1315	M1.0	2N	S17W09	
13 September	0146	0205	0250	B8.9			
	1419	1434	1447	C2.2			
	1803	1848	1856	C1.6			
14 September	0226	0248	0256	C1.1			
	0556	0627	0649	M1.1			
	0600	0600	0607		SF	N11E27	9165
	0700	0701	0708		SF	N11E23	9165
	0848	0853	0856	C2.2			
	1056	1058	1114	C1.6	SF	N12E20	9165
	1349	1356	1401	C2.2			
	1443	1443	1511	C2.1	SF	S15E82	9166
	B1443	U1443	1620	C2.3	SF	N14E17	9165
	1713	1720	1724	C1.0			
	1924	1935	2002	C3.6			
	2033	2037	2051		SF	S13E80	9166
	2111	2111	2114		SF	S13E80	9166
	2234	2237	2242	C1.0	SF	S12E79	9166
	2253	2306	2313	C1.2			
15 September	0005	0009	0014		SF	S14E79	9166
	0027	0048	0101	C2.0			
	0155	0201	0203		SF	N11E15	9165

Flare List – continued.

Date	Begin	Time Max	Time End	Class.	X-ray Brtns	Optical Imp / Lat CMD	Optical Location	Rgn
15 September		0233	0237	0245	C1.2	SF	S15E75	9166
		0504	0604	0626	M2.1	SF	N13E09	9165
		0717	0720	0724	C1.8			
		0822	0826	0849	C2.1	SF	N12E10	9165
		0950	0954	1028	C5.8	SF	N15E07	9165
		1054	1057	1120	C9.5	SF	N13E08	9165
		1214	1245	1302	C1.4			
		1340	1341	1343	C1.7	SF	S12E71	9166
		1431	1438	1506	M2.0	1N	N12E07	9165
		1507	1507	1514		SF	N13E03	9165
		1601	1620	1631	C2.5			
		1610	1712	1746	C8.7	SF	N14E04	9165
		1756	1756	1808		SF	N13E03	9165
		1831	1832	1845	C6.1	SF	S14E71	9166
		2045	2047	2049	C2.4	SF	S33W71	9156
		2053	2056	2130	C7.4	SF	N12E04	9165
		2231	2240	2252	C3.1			
		2355	2355	2358		SF	S12E65	9166
16 September		0027	0031	0041	C1.2			
		0224	0224	0236	C1.3	SF	N15W07	9165
		0331	0345	0406	C7.2	1N	N12W01	9165
		0407	0417	0548	M5.9	2B	N14W07	9165
		0644	0652	0710		SF	N15W06	9165
		0817	0818	0827		SF	N07W06	9161
		0901	0910	0925	C2.6	SF	N12W04	9165
		1022	1034	1031	C2.4			
		1042	1042	1047		SF	N14W08	9165
		1116	1121	1129	C1.8			
		1308	1312	1323	C2.2	SF	N14W08	9165
		1326	1326	1328		SF	N14W10	9165
		1418	1428	1509	M3.3	2N	N13W07	9165
		1641	1645	1657	C1.8	SF	S12E56	9166
		1659	1703	1708		SF	S12E55	9166
		1715	1722	1734		SF	N12W08	9165
		1732	1741	1815		SF	S13E55	9166
		1857	1909	1913	C1.7			
		2015	2018	2038	C2.7	SF	N14W14	9165
		2040	2041	2053		SF	S12E54	9166
		2137	2138	2143		SF	N11W11	9165
		2200	2200	2221		SF	S14E54	9166
		2215	2217	2228	C3.4	SF	N12W09	9165
		2223	2231	2253		SF	S13E41	9166

Flare List – continued.

Date	Begin	Time Max	Time End	Class.	X-ray Brtns	Optical Imp / Lat CMD	Optical Location	Rgn
16 September		1857	1909	1913	C1.7			
		2015	2018	2038	C2.7	SF	N14W14	9165
		2040	2041	2053		SF	S12E54	9166
		2137	2138	2143		SF	N11W11	9165
		2200	2200	2221		SF	S14E54	9166
		2215	2217	2228	C3.4	SF	N12W09	9165
		2223	2231	2253		SF	S13E41	9166
		2253	2253	2304	C1.7	SF	N11W10	9165
		2254	2257	2300		SF	S12E53	9166
		2300	2306	2309		SF	S12E53	9166
17 September		0021	0021	0024		SF	N15E82	9167
		0024	0025	0028		SF	S15W58	9163
		0030	0039	0100		SF	S16E51	9166
		0041	0042	0115	C3.8	SF	N12W12	9165
		0159	0200	0214	C1.5	SF	S13E49	9166
		0257	0300	0304	C1.7			
		0448	0449	0504	C1.6	SF	N13E86	9167
		0515	0518	0520	C2.9	SF	N13W15	9165
		0530	0536	0553	C3.1	SF	N14W18	9165
		0630	0638	0706	C5.4	1F	N13E85	9167
		1022	1025	1028	C2.3			
		1217	1224	1237	C4.7			
		1634	1635	1647	C2.2	SF	N13W25	9165
		1714	1715	1718		SF	S10E40	9166
		1748	1751	1758	C1.6			
		1821	1824	1841	C1.6	SF	N13W26	9165
		2058	2101	2112	C3.4	SF	N16E75	9167
		2116	2117	2141		SF	N13W29	9165
		2119	2129	2152		SF	S10E39	9166
		2304	2304	2312		SF	N12W31	9165

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	X-ray M	X-ray X	Optical S	Optical 1	Optical 2	Optical 3	Optical 4
	Region 9152														
31 Aug	N17E75	310	0020	02	HRX	001	A								
01 Sep	N17E61	311	0040	02	HSX	001	A								
02 Sep	N18E47	312	0040	01	HSX	001	A								
03 Sep	N18E34	312	0040	01	HSX	002	A								
04 Sep	N18E22	310	0020	01	HSX	001	A								
05 Sep	N18E09	310	0020	01	HAX	002	A								
06 Sep	N17W07	313	0010	07	BXO	004	B								
07 Sep	N19W18	311	0010	00	AXX	001	A								
08 Sep	N19W29	309	0010	02	BXO	002	B								
09 Sep	N19W42	308	0010	02	BXO	002	B								
10 Sep	N19W55	308													
11 Sep	N19W68	308													
12 Sep	N19W81	308													
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 313

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 9154														
31 Aug	S22E57	328	0020	01	HRX	001	A								
01 Sep	S21E44	328	0000	00	AXX	002	A								
02 Sep	S21E31	328	0000	00		000									
03 Sep	S21E18	328	0020	07	BXO	009	B	1			1	1			
04 Sep	S19E06	326	0160	08	DAI	027	B	5	1		13	1			
05 Sep	S19W07	326	0390	13	EAI	030	B	4			4				
06 Sep	S18W21	327	0510	14	EKI	030	BG	4			6				
07 Sep	S18W35	328	0530	13	EKI	024	B								
08 Sep	S17W49	329	0570	13	EKI	014	B				1				
09 Sep	S17W62	328	0420	13	EKI	017	B	1			1				
10 Sep	S17W75	328	0210	12	ESO	010	B								
11 Sep	S17W91	331	0120	12	ESO	005	B	2			3				
								17	1	0	29	2	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 326

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 9156												
06 Sep	S27E49	257	0000	01	AXX	001	A								
07 Sep	S28E36	257	0000	00	AXX	001	A								
08 Sep	S28E23	257													
09 Sep	S28E10	257													
10 Sep	S28W03	257													
11 Sep	S28W16	257													
12 Sep	S28W29	257													
13 Sep	S27W40	254	0010	03	BXO	005	B								
14 Sep	S26W53	254	0060	05	DAO	006	B								
15 Sep	S26W67	254	0070	08	CSO	004	B	1			1				
16 Sep	S28W82	256	0030	02	HRX	002	A								
								1	0	0	1	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 257

			Region 9157												
06 Sep	N21E63	243	0010	12	BXO	004	B								
07 Sep	N23E50	243	0030	09	CRO	003	B								
08 Sep	N22E38	242	0010	01	HSX	001	A								
09 Sep	N23E25	241	0020	02	BXO	003	B								
10 Sep	N22E12	241	0010	02	BXO	003	B								
11 Sep	N22W01	241													
12 Sep	N22W14	241													
13 Sep	N22W27	241													
14 Sep	N22W40	241													
15 Sep	N22W53	241													
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 241

			Region 9158												
07 Sep	N30E70	223	0050	02	HSX	001	A								
08 Sep	N30E56	224	0070	02	HSX	001	A								
09 Sep	N29E44	222	0060	03	HSX	004	A	1			1				
10 Sep	N29E32	221	0020	03	HRX	003	A								
11 Sep	N29E19	221						1			1				
12 Sep	N29E06	221									1				
13 Sep	N31W08	222	0000	01	AXX	001	A								
14 Sep	N31W22	223	0000	00	AXX	001	A								
15 Sep	N31W35	223													
								2	0	0	3	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 221

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 9159												
07 Sep	S19E31	262	0010	04	BXO	002	B								
08 Sep	S19E15	265	0010	05	AXX	002	A								
13 Sep	S19W50	265													
14 Sep	S19W63	265													
15 Sep	S19W76	265													
16 Sep	S19W89	265													
								0	0	0	0	0	0	0	0
Crossed West Limb.															
Absolute heliographic longitude:		265													
			Region 9160												
09 Sep	S12E05	261	0010	00	AXX	001	A								
10 Sep	S12W08	261	0000	00	AXX	001	A								
11 Sep	S12W21	261													
12 Sep	S12W34	261													
13 Sep	S12W47	261													
14 Sep	S12W60	261													
15 Sep	S12W73	261													
16 Sep	S12W86	261													
								0	0	0	0	0	0	0	0
Crossed West Limb.															
Absolute heliographic longitude:		261													
			Region 9161												
11 Sep	N05E52	188	0010	01	CRO	002	B				1				
12 Sep	N05E38	189	0000	01	AXX	001	A								
13 Sep	N05E23	191	0000	00	AXX	001	A								
14 Sep	N05E10	191													
15 Sep	N06E00	187	0040	04	CSO	006	B								
16 Sep	N06W15	189	0070	06	DAO	013	B				1				
17 Sep	N06W28	189	0070	06	DAO	009	B								
								0	0	0	2	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		187													

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 9162												
12 Sep	S34W36	263	0020	04	CRO	004	B								
13 Sep	S33W49	263	0040	07	DAO	006	B								
14 Sep	S32W63	264	0080	07	DAO	005	B								
15 Sep	S32W75	262	0040	07	BXO	002	B								
16 Sep	S32W88	262													
								0	0	0	0	0	0	0	0
Crossed West Limb.															
Absolute heliographic longitude:		263													
			Region 9163												
12 Sep	S19W10	237	0010	03	CSO	003	B								
13 Sep	S19W23	237	0010	02	BXO	004	B								
14 Sep	S17W36	237	0010	02	AXX	002	A								
15 Sep	S17W49	237													
16 Sep	S15W62	237													
17 Sep	S15W75	237									1				
								0	0	0	1	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		237													
			Region 9164												
13 Sep	S15W13	227	0010	03	BXO	006	B								
14 Sep	S15W27	228	0010	02	AXX	002	A								
15 Sep	S14W42	229	0020	03	BXO	003	B								
16 Sep	S15W56	230	0040	06	DAO	007	B								
17 Sep	S13W69	230	0030	06	CSO	005	B								
								0	0	0	0	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		227													
			Region 9165												
13 Sep	N12E30	184	0010	04	BXO	003	B								
14 Sep	N13E14	187	0140	06	DAI	020	BG	2			4				
15 Sep	N14E01	186	0400	08	DKC	028	BD	5	2		9	1			
16 Sep	N13W14	188	0310	08	DAC	045	BG	7	2		11	1	2		
17 Sep	N14W26	187	0230	08	DAI	032	BG	5			7				
								19	4	0	31	2	2	0	0
Still on Disk.															
Absolute heliographic longitude:		186													

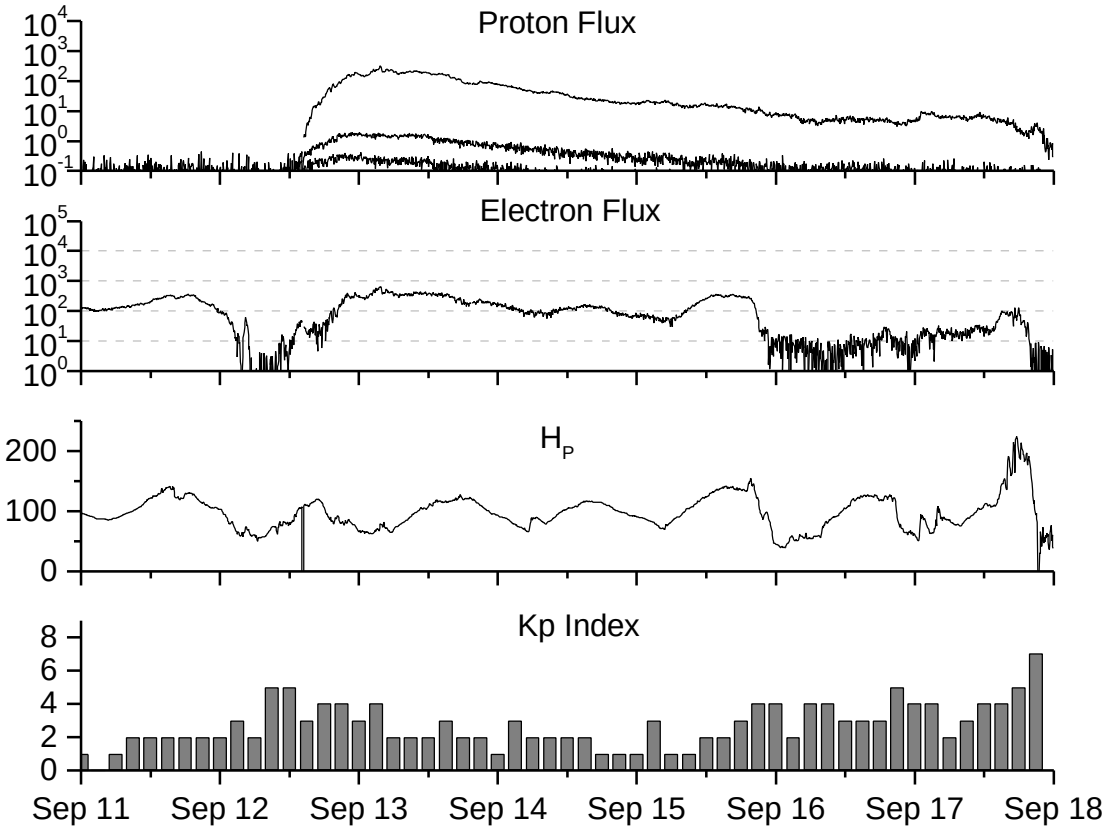
Region Summary – continued.

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 9166												
14 Sep	S13E71	130	0070	04	DSO	003	B	2			4				
15 Sep	S14E60	127	0270	10	DSI	010	B	3			5				
16 Sep	S14E50	124	0290	11	EAI	020	B	1			8				
17 Sep	S14E37	124	0340	11	EAI	032	B	1			4				
								7	0	0	21	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		124													
			Region 9167												
16 Sep	N12E80	094	0060	03	HSX	001	A								
17 Sep	N11E69	092	0170	08	DSO	005	B	3			3	1			
								3	0	0	3	1	0	0	0
Still on Disk.															
Absolute heliographic longitude:		092													
			Region 9168												
17 Sep	N09E06	155	0010	03	CSO	003	B								
								0	0	0	0	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		155													

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
				1998					
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
				1999					
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
				2000					
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	172.1	116.6	173.2	176.3	15	15.3
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	
August	166.6	130.5	0.78			163.1		18	

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 11 September 2000

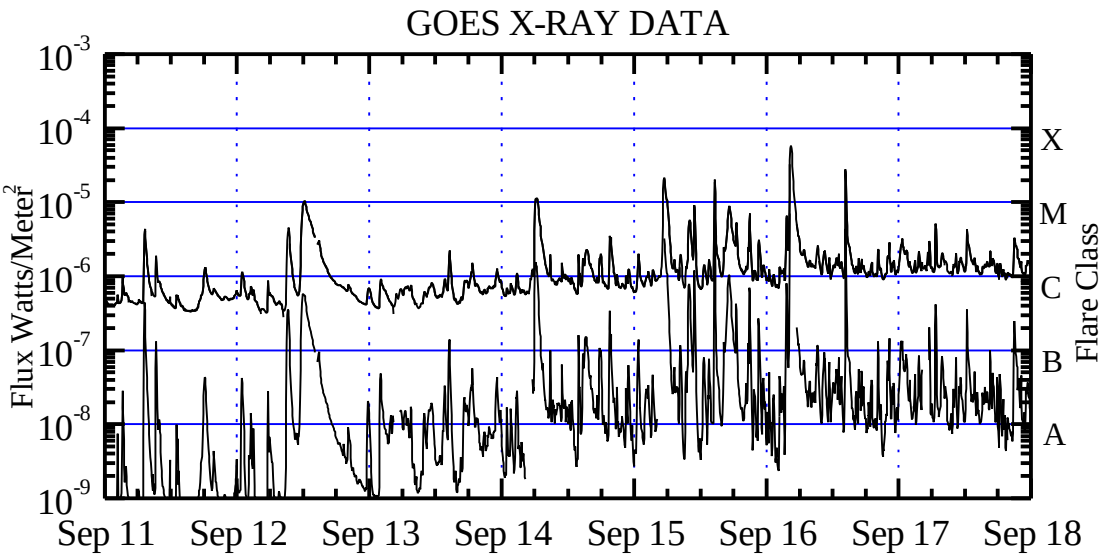
Protons plot contains the five-mine averaged integral proton flux (protons/cm^2 –sec –sr) as measured by GOES-8 (W75) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

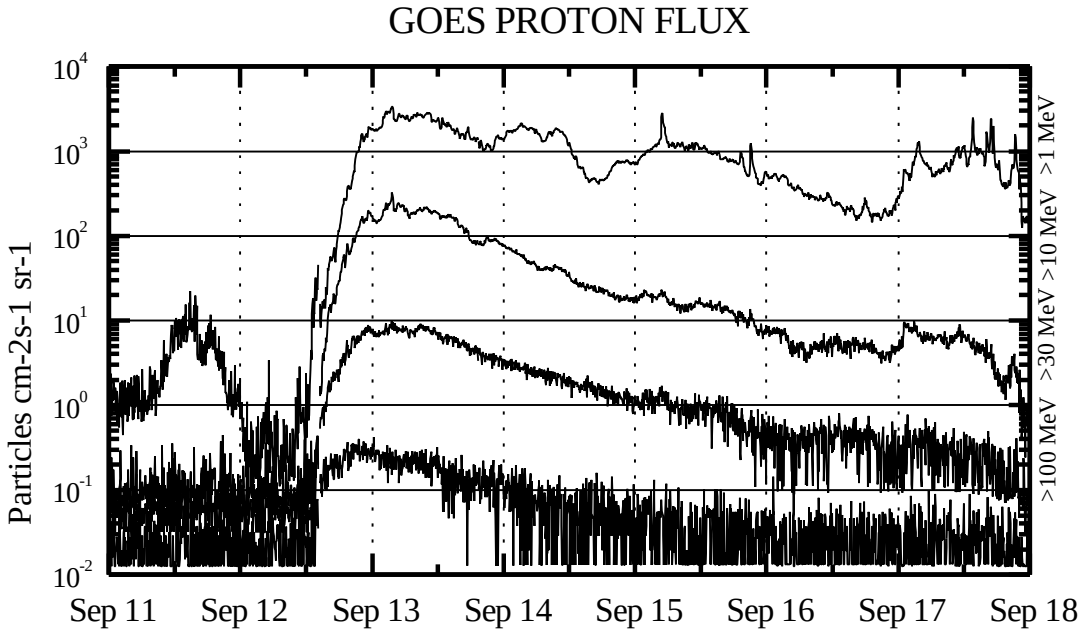
Electrons plot contains the five-mine averaged integral electron flux (electrons/cm^2 –sec –sr) with energies greater than 2 MeV at GOES-8.

Hp plot contains the five mine 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 mine 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 mine averaged integral proton flux (protons/cm^2 –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.