Space Weather Highlights **SWO PRF 1347**
18 - 24 June 2001 **26 June 2001**

Solar activity ranged from low to high levels. Activity was at moderate levels on the first day of the period due to an M2/2n parallel-ribbon flare from Region 9506 (N18, L = 111, class/area Fki/720 on 16 June). Region 9506, which possessed a minor degree of magnetic complexity, also produced C-class subflares during most days. It appeared to enter a decay phase on the last day of the period. Activity dropped to low levels during 19 - 21 June with isolated to occasional C-class flares. Activity increased to high levels on 22 June as Region 9503 (N15, L = 139 class/area Fai/550 on 19 June) produced an impulsive M6/1n flare at 22/2222 UTC with minor radio emission. Region 9503 showed gradual development prior to the major flare with a magnetic delta configuration observed within its trailer spots on 21 June. It began to gradually decay following the M6 flare and was approaching the west limb at the close of the period. Activity remained high on 23 June due to two major flares from Region 9511 (N10, L = 067, class/area Dao/110 on 23 June). The first was an M5/1n at 23/0015 UTC and the second an X1/1b at 23/0408 UTC. Both flares were impulsive with minor radio emission. Region 9511 exhibited very rapid growth following its emergence on 22 June and had developed a magnetic delta configuration prior to the major flares. Activity dropped to low levels on the last day of the period with isolated C-class flares mostly from Region 9511, which entered a decay phase.

Data were available from the Advanced Composition Explorer (ACE) spacecraft for most of the period. A recurrent high-speed stream (associated with a positive polarity coronal hole) was observed during 19 - 21 June. Velocities reached as high as 850 km/sec during this stream. No disturbances were observed during the rest of the period.

There were no proton events during the period. However, proton flux enhancements at greater than 10 MeV and greater than 100 MeV were detected on 19 June, possibly associated with activity from beyond the west limb.

The greater than 2 MeV electron flux at geosynchronous orbit was at normal to moderate levels during 18 - 20 June, then increased to moderate to high levels for the rest of the

Geomagnetic field activity was at unsettled to minor storm levels on 18 June. Intermittent active periods occurred during 19 - 21 June due to coronal hole effects. Quiet to unsettled conditions occurred during the rest of the period.

Space Weather Outlook
27 June - 23 July 2001

Solar activity is expected to range from low to moderate levels. Isolated M-class flares are expected during the period. There will be an increased chance for isolated major flare activity during the latter half of the forecast period.

No proton events are expected during the period. However, there will be an increased chance for a proton event during the latter half of the forecast period.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at normal to moderate levels during most of the period. However, there will be a chance for high levels around 30 June - 01 July and 07 - 08 July.

The geomagnetic field 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 28 - 29 June, 06 - 07 July, and 16 - 17 July due to coronal hole effects.

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
18 June	221	220	1540	B8.1	6	1	0	9	1	2	0	0
19 June	195	222	1550	C1.3	2	0	0	2	0	0	0	0
20 June	199	232	1390	C1.4	4	0	0	1	1	0	0	0
21 June	200	212	1260	C1.2	11	0	0	5	0	0	0	0
22 June	204	203	1390	C1.3	5	3	0	9	3	0	0	0
23 June	206	228	1590	C1.5	7	2	1	24	4	0	0	0
24 June	195	212	1570	C1.5	7	0	0	5	0	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
18 June	1.9E+6	3.7E+4	2.6E+3		9.5E+4	
19 June	2.3E+5	1.9E+4	3.3E+3		1.3E+5	
20 June	3.5E+5	1.3E+4	2.5E+3		1.3E+7	
21 June	1.7E+5	1.3E+4	2.4E+3		4.5E+7	
22 June	1.3E+5	1.3E+4	2.5E+3		7.2E+7	
23 June	1.4E+5	1.2E+4	2.5E+3		1.0E+8	
24 June	8.1E+4	1.2E+4	2.6E+3		8.4E+7	

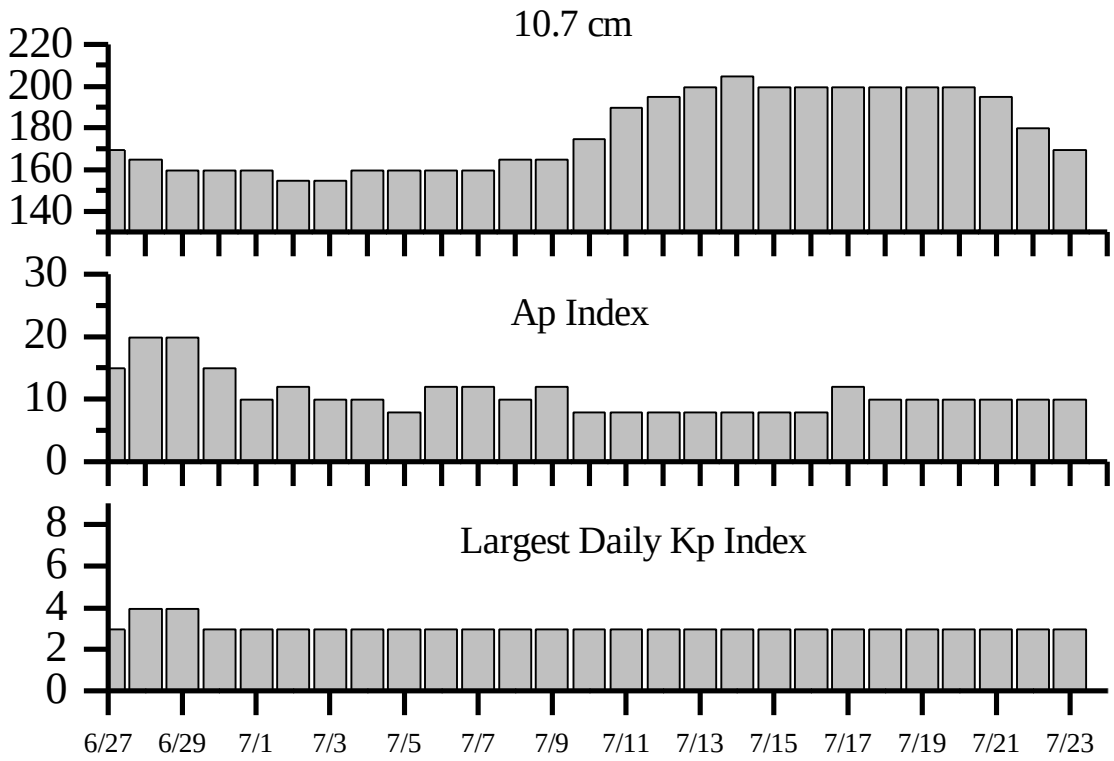
Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg A	K-indices	High Latitude College A	K-indices	Estimated Planetary A	K-indices
18 June	25	1-5-4-3-4-2-4-5	46	2-5-4-7-6-4-3-4	34	2-5-5-6-5-3-4-4
19 June	12	4-2-1-1-1-2-4-3	13	4-2-1-2-1-3-3-4	14	4-3-2-2-3-4-3-3
20 June	10	2-3-3-2-3-2-1-2	26	3-4-5-6-4-2-1-1	15	3-3-4-4-3-3-2-3
21 June	11	1-2-3-3-2-3-3-2	24	2-3-4-5-5-4-3-2	13	2-3-3-3-3-3-3-3
22 June	3	1-1-0-1-1-1-1-2	5	2-1-1-1-2-2-1-2	7	2-2-1-2-3-2-2-3
23 June	5	2-1-1-1-1-2-1-2	9	4-1-1-0-4-1-1-1	8	2-1-1-2-3-3-3-2
24 June	11	2-2-2-3-3-3-3-2	*	*-*-*-*-*-*-*-*	10	3-2-2-3-3-3-3-3

Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UT
18 Jun 0307	K= 4 Warning	18 Jun 0310 - 1500
18 Jun 0559	K= 5 Observed	18 Jun 0300 - 0600
18 Jun 0710	K= 5 Warning valid	18 Jun 0710 - 1500
18 Jun 0904	K= 5 Observed	18 Jun 0600 - 0900
18 Jun 0905	A >= 20 Observed	18 Jun 0900
18 Jun 1447	EXTENDED K= 4 Warning	18 Jun 0310 - 1800
18 Jun 2223	A >= 30 Warning	18/2230 -19/0900 Jun
18 Jun 2227	K= 4 Warning	18/2230 -19/0900 Jun
18 Jun 2329	K= 5 Warning	18/2335 -19/0900 Jun
19 Jun 0000	A >= 30 Observed	19 Jun 0000
19 Jun 0001	K= 4 Observed	18 Jun 2100 - 2400
19 Jun 0357	Type II Radio Emission	19 Jun 0335
19 Jun 0601	ENDED A >= 30 Observed	19 Jun 0000
19 Jun 0843	EXTENDED K= 4 Warning	18/2230 -19/1500 Jun
19 Jun 0844	EXTENDED K= 5 Warning	18/2335 -19/1500 Jun
19 Jun 1206	CANCELLED K= 5 Warning	18/2335 -19/0900 Jun
19 Jun 1814	K= 4 Warning	19/1815 - 20/0000 Jun
20 Jun 0054	CANCELLED K= 4 Warning	19/1815 - 20/0000 Jun
20 Jun 0411	K= 4 Warning	20 Jun 0430 - 1500
20 Jun 0604	K= 4 Observed	20 Jun 0300 - 0600
21 Jun 1327	Electron Event >2MeV >=1000pfu	21 Jun 1310
22 Jun 0100	CONTINUED Electron Event >2MeV >=1000pfu	21 Jun 1310
22 Jun 0114	6 - 245 MHz Bursts	21 Jun
22 Jun 2234	X-Ray event M6.2/1N	22 Jun 2222
23 Jun 0100	CONTINUED Electron Event >2MeV >=1000pfu	21 Jun 1310
23 Jun 0023	X-Ray event M5.6/1N	23 Jun 0015
23 Jun 0155	2 – 245 MHz Radio Bursts	22 Jun
23 Jun 0418	X-Ray event X1.2/1B	23 Jun 0408
24 Jun 0100	CONTINUED Electron Event >2MeV >=1000pfu	21 Jun 1310
24 Jun 0108	1 - 245 MHz Bursts	23 Jun

Twenty-seven Day Outlook



Date	Radio Flux 10.7 cm	Planetary A Index	Largest Kp Index	Date	Radio Flux 10.7 cm	Planetary A Index	Largest Kp Index
27 June	170	15	3	11 July	190	8	3
28	165	20	4	12	195	8	3
29	160	20	4	13	200	8	3
30	160	15	3	14	205	8	3
01 July	160	10	3	15	200	8	3
02	155	12	3	16	200	8	3
03	155	10	3	17	200	12	3
04	160	10	3	18	200	10	3
05	160	8	3	19	200	10	3
06	160	12	3	20	200	10	3
07	160	12	3	21	195	10	3
08	165	10	3	22	180	10	3
09	165	12	3	23	170	10	3
10	175	8	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
18 Jun 01	1959	2021	2050	M2.0	.040	2N	N18E34	9506		72		
22 Jun 01	2117	2122	2129	M1.7	.009	1N	N10E27	9511				
22 Jun 01	2214	2222	2231	M6.2	.039	1N	N14W47	9503		110		
22 Jun 01	2357	0001	0006	M1.1	.004	SF	N09E25	9511				
23 Jun 01	0010	0015	0020	M5.6	.021	1N	N09E24	9511				
23 Jun 01	0402	0408	0411	X1.2	.026	1B	N10E23	9511		45		
23 Jun 01	0620	0626	0634	M1.3	.006	1N	N10E21	9511				

Flare List

Date	Time			X-ray	Optical		Rgn
	Begin	Max	End	Class.	Imp / Brtns	Location Lat CMD	
18 June	0200	0201	0207	C1.6	SF	N19E46	9506
	0614	0618	0704	C2.8	1F	N09W15	9500
	1120	1125	1135	C1.8			
	1257	1305	1318	C2.3	SF	N20E38	9506
	1454	1455	1514	C4.2	SF	N19E19	9503
	1516	1520	1525		SF	N19E18	9503
	1606	1606	1612		SF	N19E18	9503
	1616	1634	1644		SF	N19E18	9503
	1705	1710	1717		SF	N19E17	9503
	1826	1828	1836		SF	N19E16	9503
	2003	2006	2052	M2.0	2N	N18E34	9506
	2006	2006	2010		SF	N19E16	9503
	2054	2055	2101		2F	N20E37	9506
	2150	2301	2324	C4.7			
19 June	1821	1822	1829	C2.0	SF	N11W01	9504
	B2337	U2343	0030	C4.2	SF	S10W37	9501
20 June	1903	1905	1914	C2.3	SF	N08W17	9504
	2041	2043	A2332	C4.4	1F	N15W19	9503
	2244	2248	2251	C2.1			
	2251	2309	2324	C5.7			
21 June	0112	0135	0143	C2.5	SF	N16E09	9506
	0130	0133	0137	C2.4	SF	N06W15	9504
	0259	0303	0312	C1.8			
	0318	0318	0323	C1.8	SF	N06W22	9504
	0437	0440	0450	C2.5	SF	N09W22	9504
	0501	0537	0609	C3.1			
	0848	0917	0939	C2.5			
	1102	1110	1122	C3.5			
	1358	1401	1404	C1.4			
	1601	1601	1607	C2.3	SF	N13W24	9503

Flare List – continued.

Date	Time Begin	Time Max	Time End	X-ray Class.	Optical Imp / Brtns	Optical Location Lat CMD	Rgn
21 June	2129	2135	2144	C2.4			
22 June	0501	0501	0504		SF	N07W36	9504
	0633	0634	0640		SF	N19W32	9503
	0853	0854	0902		SF	N14W40	9503
	0922	0925	0941	C4.2	SF	N21W35	9503
	1425	1429	1444	C4.5	1F	S07W40	9509
	1719	1728	1739	C2.6	SF	S07W42	9509
	B1728	1731	1745		SF	S10W40	9509
	1816	1829	1843	C6.0	SN	N10E29	9511
	2022	2026	2052	C5.5	SF	N09E28	9511
	2114	2125	2142	M1.7	1N	N10E27	9511
	2217	U2218	2319	M6.2	1N	N14W47	9503
	2319	2319	2323		SF	N10E26	9511
23 June	0001	0001	0006	M1.1	SF	N09E25	9511
	0010	0014	0032	M5.6	1N	N09E24	9511
	0208	0213	0217	C8.0	SF	N08E24	9511
	0302	0320	0325		SF	N10E23	9511
	0343	0345	0356		SF	N10E24	9511
	0401	0408	0459	X1.2	1B	N10E23	9511
	0456	0501	0510		SF	N14W55	9503
	0504	0508	0522	C6.2	SF	N11E23	9511
	0620	0626	0718	M1.3	1N	N10E21	9511
	0737	0743	0750		SF	N11E24	9511
	0800	0834	0921	C6.8	1F	N10E20	9511
	0813	0814	0819		SF	N11E20	9511
	0847	0850	0900		SF	N20W48	9503
	1247	1248	1307	C4.0	SF	N09E18	9511
	1311	1315	1323		SF	N09E18	9511
	1326	1326	1332		SF	N09E18	9511
	1340	1343	1347		SF	S08W54	9509
	1415	1417	1420		SF	N10E17	9511
	1428	1434	1450	C7.0	SF	N09E17	9511
	1455	1456	1458		SF	S05E48	9515
	1456	1456	1502		SF	N19W51	9503
	1532	1533	1538		SF	N18W33	9505
	1639	1639	1645		SF	N11E19	9511
	1653	1655	1710		SF	N10E15	9511
	1658	1700	1710		SF	N21W51	9503
	1712	1728	1748	C3.6	SF	N10E15	9511

Flare List – continued.

Date	Time Begin	Time Max	Time End	X-ray Class.	Optical Imp / Brtns	Optical Location Lat CMD	Rgn
23 June	1801	1802	1806		SF	N16W61	9503
	1957	2001	2012	C2.2	SF	N11E13	9511
24 June	0313	0314	0319	C2.9	SF	N10E13	9511
	0446	0455	0501	C6.1			
	0634	0635	0640	C3.9	SF	N10E11	9511
	0723	0724	0733	C3.1	SF	N18W35	9506
	1211	1211	1216		SF	N17W71	9507
	1429	1432	1434	C2.0			
	1528	1528	1538	C2.3	SF	N13W64	9503
	2237	2242	2302	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	X-ray M	X-ray X	Optical S	Optical 1	Optical 2	Optical 3	Optical 4
			Region 9491												
05 Jun	N22E75	244	0090	02	HSX	001	A								
06 Jun	N23E63	243	0100	02	HSX	001	A								
07 Jun	N24E50	242	0140	02	HSX	001	A								
08 Jun	N24E37	242	0140	02	HSX	001	A								
09 Jun	N25E23	242	0170	03	HAX	002	A								
10 Jun	N25E10	242	0130	03	HAX	001	A								
11 Jun	N25W03	242	0110	02	HSX	001	A								
12 Jun	N26W14	240	0100	04	CSO	003	B								
13 Jun	N27W27	239	0100	04	CSO	004	B								
14 Jun	N28W40	239	0090	04	CSO	003	B								
15 Jun	N24W53	239	0070	03	HSX	002	A								
16 Jun	N28W66	239	0110	02	HSX	001	A								
17 Jun	N27W79	239	0100	02	HAX	002	A								
18 Jun	N27W91	237	0070	02	HAX	002	A								
								0	0	0	0	0	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	X-ray M	X-ray X	Optical S	Optical 1	Optical 2	Optical 3	Optical 4
	Region 9493														
06 Jun	N05E73	233	0080	04	HSX	001	A								
07 Jun	N06E64	228	0130	11	ESO	005	B								
08 Jun	N05E51	228	0130	15	EAO	006	B	1			1				
09 Jun	N06E37	228	0150	17	FAO	008	BG	1			4				
10 Jun	N06E25	227	0130	16	FAO	006	B				1				
11 Jun	N06E12	227	0110	16	FAO	006	B								
12 Jun	N07E00	226	0090	17	FSO	003	B								
13 Jun	N07W15	227	0100	16	FAO	003	B								
14 Jun	N07W28	227	0080	16	FSO	003	B								
15 Jun	N06W41	227	0080	15	ESO	003	B								
16 Jun	N07W64	237	0080	02	HSX	001	A								
17 Jun	N07W77	237	0080	02	HSX	001	A								
18 Jun	N07W89	235	0060	03	HSX	001	A								
								2	0	0	6	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 226

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 9497														
10 Jun	S10E27	225	0040	04	DSO	010	B	1			2				
11 Jun	S09E14	225	0030	05	CAO	009	B								
12 Jun	S09E02	224	0020	05	CRO	005	B								
13 Jun	S10W12	224	0020	04	CRO	004	B								
14 Jun	S09W23	222	0030	03	DSO	005	B								
15 Jun	S10W35	221	0020	01	AXX	001	A				1				
16 Jun	S10W49	223	0020	03	BXO	002	B								
17 Jun	S09W67	227	0000	00	AXX	001	A								
18 Jun	S09W80	227													
								1	0	0	3	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 224

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 9498														
10 Jun	N22E58	194	0030	01	HSX	001	A								
11 Jun	N24E46	193	0070	05	CAI	007	B								
12 Jun	N23E31	195	0030	04	CSO	002	B								
13 Jun	N23E18	194	0060	05	DSO	004	B								
14 Jun	N24E05	194	0060	06	DSO	010	B								
15 Jun	N24W08	194	0070	07	DAO	009	B								
16 Jun	N24W22	195	0040	05	CSO	004	B								
17 Jun	N23W37	197	0030	01	HSX	002	A								
18 Jun	N23W50	196	0020	01	HRX	001	A								
19 Jun	N22W64	197	0010	02	AXX	003	A								
20 Jun	N23W78	198	0000	01	AXX	002	A								
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 194

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 9499														
11 Jun	N18E17	222	0050	06	CAO	006	B								
12 Jun	N18E03	223	0040	08	DSO	006	B								
13 Jun	N19W12	224	0060	07	DSO	004	B								
14 Jun	N20W26	225	0060	08	CSO	004	B								
15 Jun	N19W41	227	0060	02	HSX	001	A								
16 Jun	N20W58	231	0060	02	HSX	001	A								
17 Jun	N20W71	231	0030	01	HAX	001	A								
18 Jun	N20W83	229	0030	01	HSX	001	A								
19 Jun	N20W96	229													
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 223

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 9500														
11 Jun	N10E71	168	0090	06	DAO	003	B								
12 Jun	N10E57	169	0070	03	HAX	003	A								
13 Jun	N09E43	169	0060	04	CAO	006	B								
14 Jun	N10E31	168	0080	03	DAO	007	B								
15 Jun	N09E18	168	0080	04	DAO	007	B								
16 Jun	N10E04	169	0040	04	CAO	007	B								
17 Jun	N10W09	169	0050	05	DSO	009	B								
18 Jun	N11W22	168	0040	05	CAO	005	B	1				1			
19 Jun	N11W37	170	0010	03	BXO	003	B								
20 Jun	N12W49	169	0020	02	BXO	003	B								
21 Jun	N12W62	169													
22 Jun	N12W75	169													
23 Jun	N12W88	169													
								1	0	0	0	1	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 169

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 9501														
11 Jun	S14E69	170	0050	02	HSX	001	A								
12 Jun	S15E55	171	0060	01	CSO	001	B								
13 Jun	S15E42	170	0090	03	CAO	002	B								
14 Jun	S13E28	171	0070	04	CSO	004	B								
15 Jun	S13E15	171	0080	04	DSO	005	B	1			1				
16 Jun	S13E02	171	0090	04	CAO	007	B								
17 Jun	S13W11	171	0090	04	DAO	016	B								
18 Jun	S14W24	170	0080	05	CAO	010	B								
19 Jun	S13W38	171	0150	04	CAO	009	B	1			1				
20 Jun	S13W50	170	0120	04	DAO	011	B								
21 Jun	S13W64	171	0060	04	CAO	008	B								
22 Jun	S13W78	172	0050	02	HSX	002	A								
23 Jun	S13W90	171	0030	01	HAX	001	A								
								2	0	0	2	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 171

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 9502														
12 Jun	S25E68	158	0140	07	DAO	003	B								
13 Jun	S26E58	154	0150	08	DSO	005	B	1	2		2	2			
14 Jun	S26E45	154	0160	08	DAO	012	B								
15 Jun	S25E32	154	0160	08	DSO	014	BG	1	1		4	1			
16 Jun	S25E19	154	0110	08	DAO	019	B	1			1				
17 Jun	S25E05	155	0090	09	DAO	014	B								
18 Jun	S26W08	154	0060	09	DAO	010	B								
19 Jun	S26W21	154	0020	08	BXO	007	B								
20 Jun	S27W30	150	0030	02	CRO	002	B								
21 Jun	S27W43	150													
22 Jun	S27W56	150													
23 Jun	S27W69	150													
24 Jun	S27W82	150													
								3	3	0	7	3	0	0	0

Still on Disk.
Absolute heliographic longitude: 155

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 9503														
13 Jun	N13E68	144	0160	07	CSO	004	B								
14 Jun	N15E59	140	0250	15	EAO	014	B								
15 Jun	N15E46	140	0290	14	EAI	024	B								
16 Jun	N13E33	140	0420	16	FKC	035	BG								
17 Jun	N14E20	140	0520	15	EKI	039	BG	1			1				
18 Jun	N14E07	139	0470	15	EKI	042	BG	1			7				
19 Jun	N16W06	139	0550	16	FAI	056	BG								
20 Jun	N16W20	140	0510	17	FAI	049	BG	1				1			
21 Jun	N16W33	140	0460	17	FKI	040	BGD	1			1				
22 Jun	N17W46	140	0380	18	FAI	029	BG	1	1		3	1			
23 Jun	N16W61	142	0310	18	FAO	020	BG				5				
24 Jun	N15W75	142	0250	14	EAO	017	BG	1			1				
								6	1	0	18	2	0	0	0

Still on Disk.
Absolute heliographic longitude: 139

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 9504														
13 Jun	N06E76	136	0140	05	HSX	001	A								
14 Jun	N07E63	136	0320	06	CKO	007	B								
15 Jun	N07E51	135	0290	05	CKO	005	B								
16 Jun	N07E37	136	0410	04	CKO	007	B								
17 Jun	N08E24	136	0370	04	CKO	005	B				1				
18 Jun	N08E11	135	0320	05	CKO	005	B								
19 Jun	N08W02	135	0390	05	CKO	008	B	1			1				
20 Jun	N09W17	137	0360	05	CKO	005	B	1			1				
21 Jun	N08W28	135	0330	05	CKO	010	B	3			3				
22 Jun	N09W42	136	0260	05	DKO	004	B				1				
23 Jun	N08W56	137	0260	05	CKO	005	B								
24 Jun	N07W70	137	0250	04	DSO	004	B								
								5	0	0	7	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 135

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 9505														
14 Jun	N22E73	126	0060	02	BXO	003	B								
15 Jun	N23E59	127	0120	04	DAO	003	B								
16 Jun	N21E46	127	0100	03	DSO	002	B	1			1				
17 Jun	N21E32	128	0050	03	DAO	003	B								
18 Jun	N21E19	127	0060	03	DAO	003	B								
19 Jun	N22E05	128	0030	03	DSO	003	B								
20 Jun	N22W07	127	0020	03	CSO	003	B								
21 Jun	N21W21	128	0010	01	HSX	001	A								
22 Jun	N21W34	128	0000	00	AXX	001	A								
								1	0	0	1	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 128

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 9506												
14 Jun	N17E79	120	0050	02	HSX	001	A								
15 Jun	N17E67	119	0180	07	CAO	006	B	1				1			
16 Jun	N17E61	112	0720	22	FKI	017	BG				1				
17 Jun	N17E48	112	0460	22	FKI	024	B								
18 Jun	N17E34	112	0330	22	FAI	030	B	2	1		2		2		
19 Jun	N19E21	112	0360	24	FAO	035	BG								
20 Jun	N19E08	112	0250	22	FAO	027	BG								
21 Jun	N19W04	111	0240	24	FSO	027	BG	1			1				
22 Jun	N19W18	112	0280	24	FSI	015	B								
23 Jun	N18W34	115	0270	22	FAO	013	B								
24 Jun	N17W46	113	0220	17	FSO	009	B	1			1				
								5	1	0	5	1	2	0	0

Still on Disk.
Absolute heliographic longitude: 111

			Region 9507												
15 Jun	N13E26	160	0040	04	CSO	005	B								
16 Jun	N12E11	162	0030	04	CSO	002	B								
17 Jun	N12W01	161	0020	04	BXO	004	B								
18 Jun	N12W14	161													
19 Jun	N12W27	161													
20 Jun	N12W40	161													
21 Jun	N12W53	161													
22 Jun	N12W66	161													
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 161

			Region 9508												
16 Jun	S20W60	233	0010	01	AXX	001	A								
17 Jun	S20W72	232	0010	01	AXX	001	A								
18 Jun	S20W85	232													
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 233

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 9509														
19 Jun	S11W04	137	0030	04	DSO	008	B								
20 Jun	S10W18	138	0050	06	DAO	015	B								
21 Jun	S11W31	138	0060	07	DAO	015	B								
22 Jun	S10W45	139	0070	08	DSO	012	B	2			2	1			
23 Jun	S09W60	141	0060	07	CSO	005	B				1				
24 Jun	S10W76	143	0050	05	CSO	003	B								
								2	0	0	3	1	0	0	0

Still on Disk.
Absolute heliographic longitude: 137

	Region 9510														
20 Jun	S06W35	155	0020	03	BXO	004	B								
21 Jun	S06W49	156	0030	06	DSO	003	B								
22 Jun	S07W64	158	0040	06	DSO	004	B								
23 Jun	S07W78	159	0060	07	CRO	003	B								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 155

	Region 9511														
20 Jun	N11E53	067	0010	01	AXX	001	A								
21 Jun	N10E39	068	0000	01	AXX	001	A								
22 Jun	N10E25	069	0040	05	DSO	008	BG	2	2		3	1			
23 Jun	N10E13	068	0110	07	DAO	022	BGD	7	2	1	16	4			
24 Jun	N10E00	067	0100	08	DAI	021	B	2			2				
								11	4	1	21	5	0	0	0

Still on Disk.
Absolute heliographic longitude: 067

	Region 9512														
21 Jun	S23E31	076	0030	04	DAO	006	B								
22 Jun	S22E17	077	0110	08	DAO	013	B								
23 Jun	S22E05	076	0130	11	EAO	017	B								
24 Jun	S22W09	076	0220	12	EAI	024	B								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 076

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 9513												
21 Jun	N21E76	031	0040	02	HSX	001	A								
22 Jun	N22E66	028	0120	10	DAO	004	B								
23 Jun	N23E56	025	0160	16	FAO	013	B								
24 Jun	N23E44	023	0200	14	EAO	019	B								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 023

			Region 9514												
22 Jun	N17E65	029	0040	02	HSX	001	A								
23 Jun	N17E54	027	0040	02	HSX	003	A								
24 Jun	N17E41	026	0050	02	HAX	001	A								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 026

			Region 9515												
23 Jun	S06E46	035	0070	04	CAO	005	B				1				
24 Jun	S06E32	035	0140	06	DAO	012	B								
								0	0	0	1	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 035

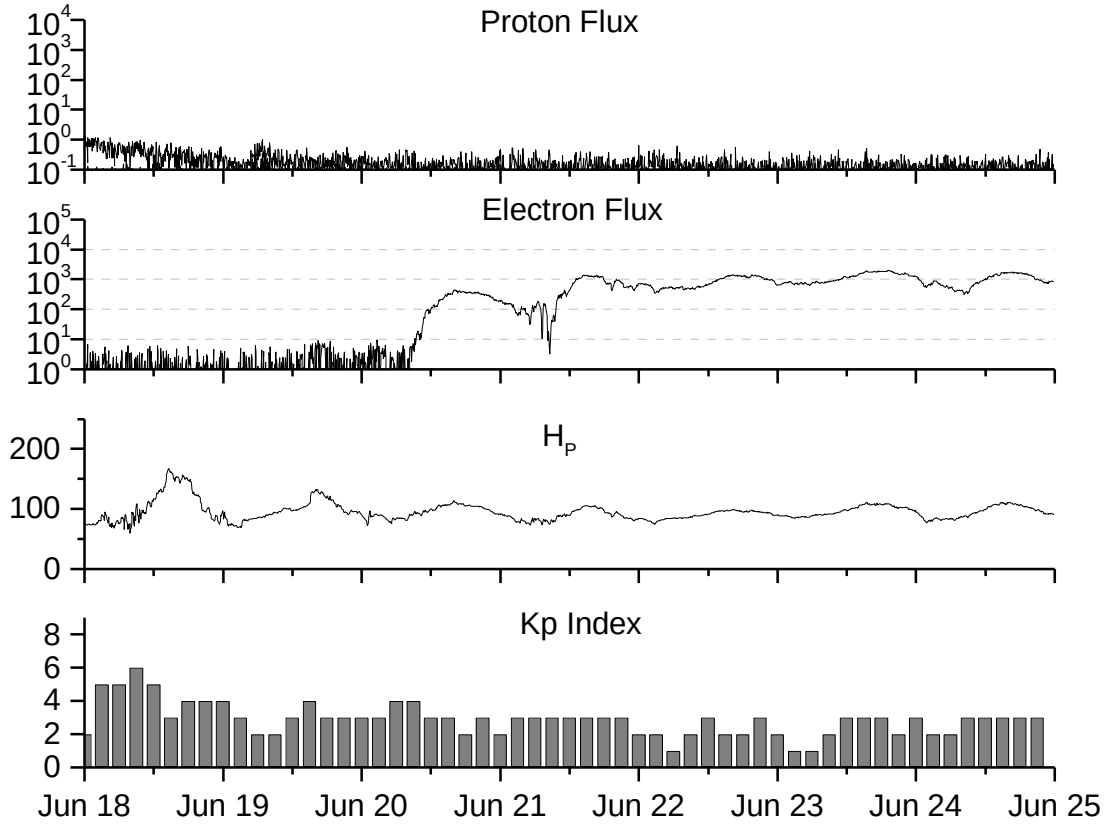
			Region 9516												
23 Jun	N12E70	011	0090	05	HAX	001	A								
24 Jun	N11E55	012	0090	03	HSX	002	A								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 012

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
					1999				
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	94.3	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	0.67	150.0	102.3	135.7	161.0	19	12.8
October	167.7	116.7	0.70	158.5	107.8	164.8	167.2	19	12.7
November	199.3	133.2	0.67	164.7	110.0	191.5	171.5	14	13.1
December	123.5	86.4	0.69	165.9	111.1	169.8	173.4	10	13.8
					2000				
January	140.8	90.1	0.64	168.0	112.9	158.1	175.5	13	14.5
February	161.9	112.9	0.70	172.1	116.7	173.2	176.8	15	15.0
March	203.6	138.5	0.68	175.4	119.9	208.2	178.4	09	15.0
April	193.4	125.5	0.65	176.3	120.8	184.2	180.5	15	15.0
May	188.8	121.6	0.64	173.1	119.0	184.5	180.0	15	15.0
June	190.3	124.9	0.66	172.0	118.7	179.8	179.7	15	15.1
July	236.7	169.1	0.71	173.0	119.7	204.7	180.2	21	14.8
August	166.6	130.5	0.78	171.8	118.6	163.1	179.5	16	14.2
September	157.9	109.9	0.70	169.0	116.2	182.1	177.1	18	14.2
October	138.9	100.1	0.72	166.2	114.4	167.7	175.6	18	14.6
November	149.9	106.5	0.71	162.7	112.7	178.8	173.6	17	14.6
December	146.4	104.5	0.71			173.6		08	
					2001				
January	142.7	95.1	0.67			166.7		08	
February	131.0	80.1	0.61			147.3		06	
March	166.7	114.2	0.69			177.7		17	
April	163.6	108.2	0.66			178.3		18	
May	135.1	97.3	0.72			148.7		12	

NOTE: All smoothed values after December 1999 and monthly values after June 2000 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 18 June 2001

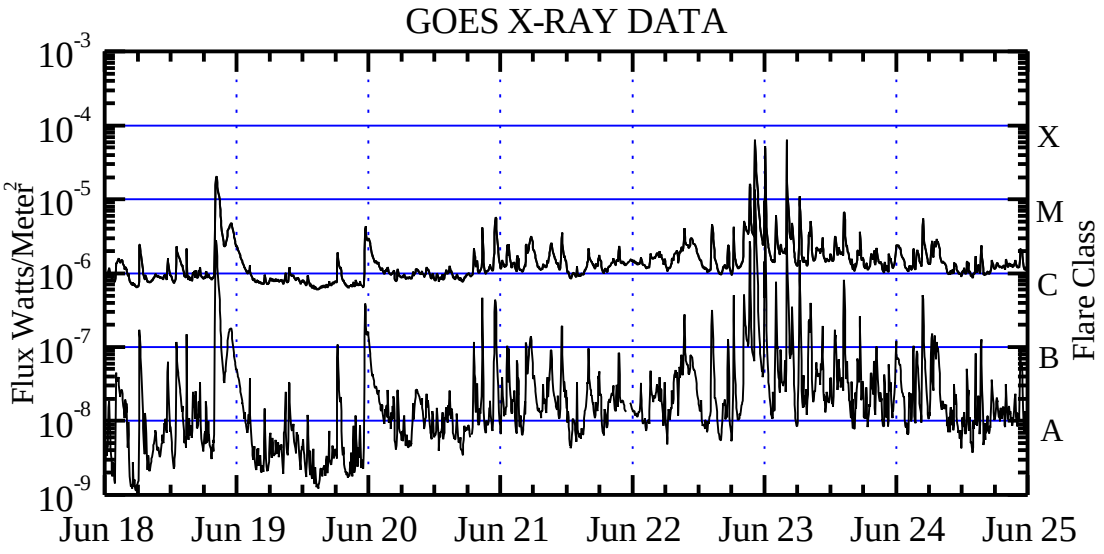
Protons plot contains the five-minute averaged integral proton flux (protons/cm^2 –sec –sr) as measured by GOES-8 (W75) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

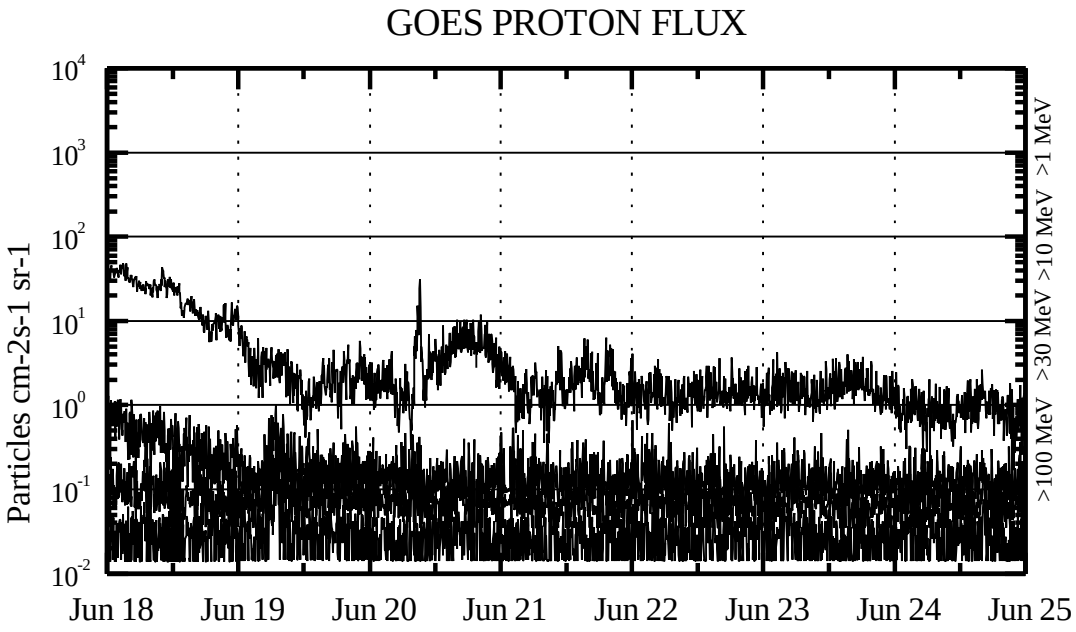
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm^2 –sec –sr) with energies greater than 2 MeV at GOES-8.

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 Air Force Weather Agency) 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/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.