

Space Weather Highlights 12 – 18 June 2000

**SWO PRF 1294
20 June 2000**

Solar activity ranged from low to high levels. Activity was at low levels during 12 - 14 June due to occasional C-class subflares. Activity increased to moderate levels on 15 June due to an M1/2N flare at 15/1957UT with an associated 250 SFU Tenflare and Type II radio sweep from Region 9041 (N18, L = 028, class/area Dao/150 on 12 June) and an M2/1F at 15/2343UT from Region 9040 (N18, L = 303, class/area Cao/100 on 14 June). Solar activity declined to low levels on 16 June. Activity returned to moderate levels on 17 June as Region 9033 (N23, L = 016, class/area Fkc/560 on 10 June) produced an M3/2B flare at 17/0237UT. Activity increased to high levels on 18 June as Region 9033 produced an X1/SF flare at 18/0159UT with an associated 300 SFU Tenflare and a Type II radio sweep. Region 9033, a moderate-sized mixed-polarity region, had been in a state of gradual decay prior to the X-flare. This flare occurred as Region 9033 was crossing the west limb.

Real-time solar wind data were available from the NASA Advanced Composition Explorer (ACE) spacecraft for most of the period. A relatively weak CME passage occurred during 12 - 13 June. The passage was accompanied by a brief velocity increase (480 to 650 km/sec) followed by a southward turning of IMF Bz for several hours (maximum southward deflections to minus 06 nT (GSM)). A coronal hole signature was observed during 15 June as velocities increased to a high of 760 km/sec, densities dropped to 1 to 2 p/cc, and IMF Bz showed increased variability with a range of plus 7 to minus 11 nT. Another weak transient signature was observed late on 18 June characterized by a brief velocity increase (360 to 480 km/sec) and a period of southward IMF Bz with maximum southerly deflections to minus 8 nT.

The greater than 10 MeV proton flux at geosynchronous orbit was enhanced, but declining as the period began in the aftermath of a major flare that occurred on 10 June. Proton fluxes returned to background levels by 13 June. Greater than 10 MeV proton flux enhancements also occurred on 17 and 18 June following flare activity from Region 9033. Proton fluxes had returned to background levels by the end of the period.

The greater than 2 MeV electron flux at geosynchronous orbit was at normal to moderate levels. Mostly moderate levels occurred during 15 - 18 June.

The geomagnetic field was disturbed during 12 - 15 June. Quiet to active levels were observed during 12 - 13 June with brief minor storm levels at high latitudes. Quiet to major storm levels occurred during 14 - 15 June (storm levels were observed during 14/2100 - 15/0300UT). Activity decreased to quiet to unsettled levels during 16 - 18 June with the exception of an active period during 18/1800-2100UT.

Space Weather Outlook 21 June - 17 July 2000

Solar activity is expected to vary between low and moderate levels during most of the period, with occasional C-class and isolated M-class flares expected. Chances for M-class activity are expected to increase during 02 - 15 July with the return of old Region 9033.

There will be a chance for a proton event at geosynchronous orbit during 02 - 15 July due to the return of old Region 9033.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at normal to moderate levels through most of the period. However, there will be a chance for high flux levels during 26 - 27 June and 12 - 13 July.

The geomagnetic field is expected to be at quiet to unsettled levels during most of the period, barring an Earth-directed CME. However, there will be a chance for active levels during 25 - 26 June and 11 - 12 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			Optical				
					C	M	X	S	1	2	3	4
12 June	193	236	1780	C1.1	8	0	0	18	2	0	0	0
13 June	199	243	1750	B8.8	8	0	0	17	0	0	0	0
14 June	201	278	1930	B9.4	5	0	0	22	2	0	0	0
15 June	202	261	1910	C1.0	9	2	0	26	3	1	0	0
16 June	198	252	2090	C1.2	7	0	0	19	0	0	0	0
17 June	193	211	1710	C1.1	6	1	0	9	0	1	0	0
18 June	188	250	1450	C1.3	1	0	1	4	0	0	0	0

Daily Particle Data

Date	Proton Fluence (protons/cm ² -day-sr)			Electron Fluence (electrons/cm ² -day-sr)		
	>1MeV	>10MeV	>100MeV	>.6MeV	>2MeV	>4MeV
	12 June	7.9E+6	1.1E+5	2.0E+3		1.4E+7
13 June	4.2E+6	2.6E+4	1.9E+3		1.7E+7	
14 June	1.9E+6	1.2E+4	2.2E+3		6.0E+6	
15 June	1.7E+5	1.2E+4	2.6E+3		8.2E+6	
16 June	3.4E+5	1.2E+4	2.9E+3		2.2E+7	
17 June	1.4E+6	2.6E+4	2.9E+3		3.2E+7	
18 June	6.0E+6	8.2E+4	3.1E+3		2.3E+7	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	12 June	12	3-2-3-1-2-3-2-4	21	3-3-3-2-5-5-3-2	15
13 June	10	2-2-3-2-3-2-2-3	26	1-2-5-6-5-3-1-2	16	3-3-4-4-4-3-3-3
14 June	27	3-2-4-2-3-3-5-6	17	3-2-4-3-3-3-4-3	23	4-2-4-3-4-4-5-5
15 June	21	6-2-2-2-3-3-4-2	21	4-4-3-3-5-3-2-3	20	5-2-3-3-3-4-3-3
16 June	5	1-0-1-1-1-2-3-2	*	2-2-*-*-*-*-*	9	3-1-1-2-2-3-3-3
17 June	6	2-0-2-2-1-2-2-3	*	*-*-*-*-*-*	10	3-1-2-2-3-3-3-3
18 June	10	2-1-1-3-2-3-4-2	*	*-*-*-*-*-*	11	2-1-2-2-3-3-4-3

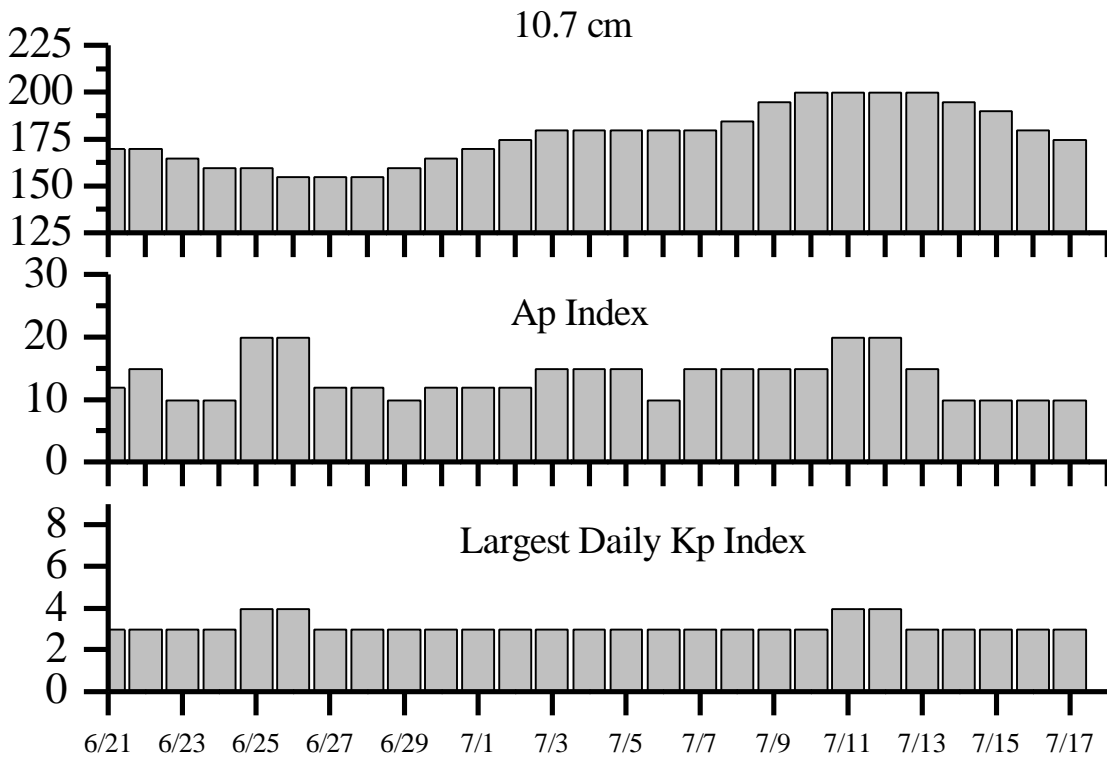


Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UT
12 Jun 0006	CONTINUED Electron Event >2MeV \geq 1000pfu	11/1550 – 12/0100 Jun
12 Jun 0032	245 Mhz Radio Burst	11 Jun
12 Jun 1203	ENDED A \geq 20 Observed	11/1800 - 12/1200 Jun
12 Jun 1804	K = 4 Observed	12 Jun 15 - 18
12 Jun 1952	K = 4 Warning	12/1951 - 14/1200 Jun
12 Jun 2116	A \geq 30 Watch	13 Jun
12 Jun 2118	A \geq 20 Watch	14 Jun
12 Jun 2219	Sudden Impulse observed at Boulder 28 nT	12 Jun 2210
12 Jun 2228	K = 5 Warning	12/2230 - 13/1500 Jun
13 Jun 0104	5 – 245 MHz Radio Bursts	12 Jun
13 Jun 1934	CANCELLED A \geq 20 Watch	14 Jun
14 Jun 0123	245 MHz Radio Burst	13 Jun
14 Jun 0123	245 Mhz Radio Noise Storm	13 Jun
14 Jun 1504	K = 4 Observed	14 Jun 12 - 15
14 Jun 1510	K = 4 Warning	14/1510 - 15/0000 Jun
14 Jun 1803	K = 4 Observed	14 Jun 15 - 18
14 Jun 2007	Type II Radio Emission	14 Jun 1349
14 Jun 2336	EXTENDED K = 4 Warning	14/1510 - 15/1500 Jun
15 Jun 0000	A \geq 20 Observed	14 Jun 2359
15 Jun 0005	K = 5 Observed	14 Jun 21 - 24
15 Jun 0007	K = 5 Warning	15 Jun 0010 - 1500
15 Jun 0046	3 – 245 MHz Radio Bursts	14 Jun
15 Jun 0046	245 MHz Radio Noise Storm	14 Jun
15 Jun 1610	Type II Radio Emission	15 Jun 1519
15 Jun 1801	K = 4 Observed	15 Jun 15 - 18
15 Jun 1808	K = 4 Warning	15/1808 - 16/1500 Jun
15 Jun 2024	10cm Radio Burst 290 F.U.	15 Jun 1941
16 Jun 0000	ENDED A \geq 20 Observed	14 Jun 2359
16 Jun 0046	4 – 245 MHz Radio Bursts	15 Jun
16 Jun 0046	245 Mhz Radio Noise Storm	15 Jun
16 Jun 2007	A \geq 20 Watch	18 Jun
17 Jun 0030	2 – 245 MHz Radio Bursts	16 Jun
18 Jun 0212	10cm Radio Burst 300 F.U.	18 Jun 0155
18 Jun 0225	X-Ray event X1.0/SF	18 Jun 0152
18 Jun 0233	Type II Radio Emission	18 Jun 0158
18 Jun 1953	K = 4 Warning	18/2000 - 19/1500 Jun
18 Jun 2102	K = 4 Observed	18 Jun 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
21 June	170	12	3	05 July	180	15	3
22	170	15	3	06	180	10	3
23	165	10	3	07	180	15	3
24	160	10	3	08	185	15	3
25	160	20	4	09	195	15	3
26	155	20	4	10	200	15	3
27	155	12	3	11	200	20	3
28	155	12	3	12	200	20	4
29	160	10	3	13	200	15	4
30	165	12	3	14	195	10	3
01 July	170	12	3	15	190	10	3
02	175	12	3	16	180	10	3
03	180	15	3	17	175	10	3
04	180	15	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
15 Jun 00	1938	1957	2019	M1.8	.031	2N	N20W65	9041	62	250	1	
15 Jun 00	2336	2343	2349	M2.0	.009	1F	N19E19	9040	690	59		
17 Jun 00	0225	0237	0244	M3.5	.024	2B	N22W72	9033	90	69		
18 Jun 00	0152	0159	0203	X1.0	.034	SF	N23W85	9033	11000	300	3	

Flare List

Date	Time			X-ray Class.	Imp / Brtns	Location Lat CMD	Rgn
	Begin	Max	End				
12 June	0124	0126	0131		SF	N13W53	9030
	0128	0133	0154	C6.1	SF	S25E41	9036
	0132	0140	0155		SF	N20W06	9033
	0236	0239	0253		SF	N19W09	9033
	0259	0305	0323	C3.0	1N	N19W09	9033
	0312	0314	0320		SF	N23W56	9026
	0429	0435	0442	C2.2			
	0646	0655	0705	C2.3			
	0857	0857	0904		SF	N19W12	9033
	1009	1012	1018		SF	N22W05	9033
	B1120	U1122	1125	C2.0	SF	N19E90	9042
	B1226	U1226	1254	C6.4	1B	N16E87	9042
	1408	1412	1422		SF	N20W14	9033
	1421	1422	1443		SF	N14W64	9026
	B1428	U1429	1442		SF	N17W63	9026
	1451	1452	1457	C2.4	SF	N20E81	9042
	1534	1538	1542		SF	N20E81	9042
	1551	1553	1600		SF	N19E79	9042
	1747	1747	1751		SF	N18W15	9033
	1757	1757	1810		SF	N18W21	9041
1838	1838	1844		SF	S17W50	9032	
2023	2026	2031		SF	N25W05	9033	
2045	2051	2057	C2.5				
13 June	0059	0134	0148		SF	N18E80	9042
	0302	0307	0320		SF	N26E15	
	0410	0416	0423	C2.1			
	0502	0507	0519	C1.8	SF	N19E78	9042
	0745	0749	0802	C2.0			
	0824	0828	0837	C2.3	SF	N19E73	9042
	0914	0935	0947	C2.1			
	1028	U1030	A1058	C3.0	SF	N14W26	9041
	1311	1350	1435	C4.1	SF	N22W36	9041
	1319	1334	1352		SF	N21E74	9042
1337	1349	1439		SF	N23W21	9033	



Flare List – continued.

Date	Time			X-ray	Optical		Rgn Lat CMD
	Begin	Max	End		Imp / Class.	Location Brtns	
13 June	1406	1412	1416		SF	N21E74	9042
	1501	1501	1505		SF	N19E67	9042
	1623	1624	1630		SF	N24W16	9033
	1649	1649	1656		SF	N16E70	9042
	1701	1703	1707		SF	N19E66	9042
	1709	1720	1728	C2.0	SF	N19E66	9042
	2330	2331	2334		SF	N20E68	9042
	2335	2338	2344		SF	N19E62	9042
	2359	2359	0039		SF	N20E05	9037
	14 June	0011	0011	0017		SF	N19E40
0034		0034	0046		SF	N24W22	9033
0128		0128	0133		SF	N24W28	9033
0144		0148	0213	C4.5	SN	N19E68	9042
0422		0422	0436	C2.6	SF	N23W30	9033
0425		0426	0428		SF	N14W61	9038
0509		0517	0539		SF	N20E67	9042
0657		0702	0714		SF	N21W39	9033
0702		0703	0730		SF	N20E65	9042
0833		0837	0842		SF	N21E65	9042
0837		0840	0845		SF	N15W63	9038
1344		1349	1354	C1.8			
1345		1347	1407	C1.8	1F	N23W31	9033
1501		1503	1505		SF	S18W63	9032
1515		1517	1528		SF	S15W74	9032
1532		1534	1538		SF	N19E61	9042
1619		1620	1628		SF	S15W63	9035
1625		1629	1636		SF	S15W75	9032
1629		1633	1640		SF	S15W63	9035
B1653		1702	1737		1F	N17E27	9040
1755		1757	1805		SF	N15W68	9038
1903		1905	1929		SF	N23W38	9033
1949		1952	2004		SF	N19E60	9042
1952		1952	2005		SF	S15W66	9035
2035		2037	2041		SF	N20E37	9040
2253		2310	2322	C2.4			
15 June		0039	0039	0044		SF	N21E56
	0136	0136	0139		SF	N19E48	9042
	0218	0221	0228		SF	N15W73	9038
	0339	0347	0355		SF	N15W73	9038
	0519	0527	0553	C7.4	SN	N18E30	9040
	1128	1132	1139	C6.0			
	1313	1317	1326		SF	N24E51	9042



Flare List – continued.

Date	Time			X-ray	Optical		Rgn Lat CMD	
	Begin	Max	End		Imp / Class.	Location Brtns		
15 June	1333	1334	1342		SF	N21E79	9046	
	1509	1512	1521		SF	N18E48	9042	
	1512	1513	1519	C6.6	SN	N26W54	9033	
	1544	1547	1616	C3.2	SF	N06W61	9039	
	1552	1613	1617		SF	N21W49	9033	
	1554	1555	1559		SF	S18W18	9036	
	1559	1602	1609	C2.6	SF	N23W55	9041	
	1708	1719	1745	C4.1	1F	N25W54	9033	
	1801	1802	1807	C4.9	SN	N24W57	9033	
	1821	1822	1826		SF	N24W52	9041	
	1824	1824	1832		SF	S19W12	9036	
	1913	1914	1918	C2.8	SF	N21W57	9033	
	1940	1945	2048	M1.8	2N	N20W65	9041	
	1943	1945	2041		SF	N23W58	9033	
	2056	2101	2104		SF	N20W60	9041	
	2102	2102	2105		SF	N24W58	9033	
	2106	2111	2112		SF	N15W61	9041	
	2119	2128	2251	C9.9	1F	N23W54	9033	
	2130	2135	2203		SF	N15W62	9041	
	2130	2135	2203		SF	N15W62	9041	
	2215	2229	2238		SF	N15W62	9041	
	2228	2228	2234		SF	S18W77	9035	
	2256	2258	2314		SF	N23W49	9033	
	2337	2346	0024	M2.0	1F	N19E19	9040	
	16 June	0012	0027	0041		SF	N22W56	9033
		0012	0012	0030		SF	N07W65	9039
0150		0157	0232		SF	N21W57	9033	
0224		0225	0228		SF	S24W14	9036	
0249		0259	0315	C3.8	SF	S14W64	9034	
0332		0333	0342		SF	N22W57	9033	
0546		0551	0555		SF	N22W52	9033	
0703		0717	0827	C7.6	SN	N22W58	9033	
1329		1336	1419	C4.7	SF	N19W65	9041	
1418		1423	1429	C3.4				
1506		1507	1512		SF	N09W74	9039	
1620		1626	1635		SF	N19W66	9041	
1651		1651	1655		SF	N15W72	9041	
1656		1657	1703		SF	N15W72	9041	
1721		1721	1726		SF	S14W73	9035	
1728		1729	1732		SF	S14W73	9035	
1733		1733	1743		SF	S14W73	9035	
1744		1747	1749		SF	S18W87	9035	
1943		1945	1951		SF	N19E03	9040	



Flare List – continued.

Date	Time			X-ray Class.	Optical		Rgn
	Begin	Max	End		Imp / Brtns	Location Lat CMD	
16 June	2010	2012	2023	C2.4	SF	N23W57	9033
	2147	2201	2215	C2.4			
	2320	2328	2335	C2.9			
17 June	0108	0109	0114		SF	S15W79	9034
	0228	0238	0501	M3.5	2B	N22W72	9033
	0843	0844	0847		SF	N23E52	9046
	1049	1052	1055	C2.2			
	1219	1219	1303	C2.2	SF	N17E30	9042
	1336	1338	1342		SF	S41E58	9049
	1353	1353	1405	C2.6	SF	N23W78	9033
	1511	1513	1541		SF	N18E52	9046
	1651	1653	1709		SF	N21E23	9042
	1756	1806	1841	C2.5	SF	N09W23	9048
	1807	1812	1817		SF	N23E25	9042
	2036	2048	2101	C2.8			
	2227	2316	2358	C4.6			
18 June	0156	0157	0213	X1.0	SF	N23W85	9033
	0351	0353	0401		SF	N25E12	9042
	0812	0819	0847		SF	N24W47	9037
	1659	1703	1706	C1.4			
	2232	2236	2239		SF	N18E33	9046



Region Summary

Date	Location		Sunspot Characteristics				Flares										
	° Lat ° CMD	Helio	Area (10 ⁶ hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical						
		Lon						C	M	X	S	1	2	3	4		
<i>Region 9026</i>																	
01 Jun	N19E75	075	0260	07	DKO	003	B	3	1	11	1						
02 Jun	N20E61	076	0720	15	EKO	008	B	1	3	4	2	1					
03 Jun	N20E48	076	0910	15	EKO	017	BG	7	2	12	2	1					
04 Jun	N21E36	074	0870	16	FKI	027	BGD	7	1	9							
05 Jun	N21E23	074	0820	15	EKC	022	BGD	1		4	1						
06 Jun	N20E10	074	0800	16	FKI	022	BGD	5	2	2	4	1	1				
07 Jun	N20W03	074	0630	17	FKC	028	BGD	3		1	5			1			
08 Jun	N22W17	075	0470	16	FAI	040	BGD	5		9							
09 Jun	N22W29	072	0400	15	ESI	033	BG	1		5							
10 Jun	N22W40	070	0200	11	EAO	006	B		1	1	1	1					
11 Jun	N21W52	069	0190	10	DSO	008	B										
12 Jun	N22W64	068	0190	10	CSO	003	B			3							
13 Jun	N22W75	066	0150	02	HSX	001	A										
14 Jun	N22W90	067	0090	02	HSX	001	A										
								33	10	3	67	6	4	3	0		

Crossed West Limb.

Absolute heliographic longitude: 074

<i>Region 9030</i>																	
03 Jun	N11E58	066	0010	05	BXO	004	B			2							
04 Jun	N10E44	066	0030	07	BXO	008	B										
05 Jun	N12E30	067	0010	04	BXO	003	B										
06 Jun	N12E17	067	0000	00		000											
07 Jun	N11E07	064	0000	00	AXX	001	A										
08 Jun	N11W07	065	0000	00	AXX	001	A			1							
09 Jun	N12W24	067	0020	04	DSO	006	B										
10 Jun	N12W39	069	0040	07	DAO	010	B										
11 Jun	N12W51	068	0020	07	CRO	010	B	2		2	1						
12 Jun	N13W62	066	0010	02	BXO	003	B			1							
13 Jun	N13W75	066	0000	00		000											
								2	0	0	6	1	0	0	0		

Crossed West Limb.

Absolute heliographic longitude: 064



Region Summary-continued

Date	Location		Sunspot Characteristics					Flares										
	(° Lat ° CMD)	Helio	Area (10 ⁶ hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical							
		Lon						C	M	X	S	1	2	3	4			
<i>Region 9032</i>																		
05 Jun	S18E41	056	0010	03	BXO	003	B											
06 Jun	S16E25	059	0030	03	CSO	004	B											
07 Jun	S17E13	058	0030	04	DSO	006	B											
08 Jun	S17W01	059	0030	05	CSO	008	B											
09 Jun	S17W16	059	0020	07	CSO	008	B											
10 Jun	S16W28	058	0020	05	CSO	005	B											
11 Jun	S17W37	054	0000	01	AXX	001	A											
12 Jun	S17W50	054	0000	00		000							1					
13 Jun	S17W63	054	0000	00		000												
14 Jun	S19W81	058	0010	00	HRX	002	B							3				
								0	0	0	4	0	0	0	0	0		

Crossed West Limb.

Absolute heliographic longitude: 059

<i>Region 9033</i>																		
05 Jun	N24E77	020	0120	06	HAX	002	A	2					2					
06 Jun	N22E63	021	0290	15	FSO	005	B						1					
07 Jun	N22E55	016	0380	15	EKO	009	B						3					
08 Jun	N22E42	016	0460	16	EKI	030	B	1					2					
09 Jun	N22E28	015	0550	18	FKC	043	BG						1					
10 Jun	N22E17	013	0560	18	FKC	043	BG						1					
11 Jun	N22E01	016	0540	20	FKO	043	BG	1	1				6	1				
12 Jun	N23W10	014	0460	18	FKI	044	BG	1					7	1				
13 Jun	N24W23	014	0390	19	FKI	034	BG						2					
14 Jun	N24W36	013	0320	20	FKI	035	BG	2					5	1				
15 Jun	N25W51	015	0210	19	FAI	025	BG	5					7	2				
16 Jun	N24W67	018	0200	14	CAI	016	BG	2					6					
17 Jun	N24W79	017	0070	09	CSO	005	B	1	1				1		1			
18 Jun	N25W85	010	0000	00	AXX	001	A						1	1				
								15	2	1	45	5	1	0	0			

Still on Disk.

Absolute heliographic longitude: 016



Region Summary-continued

Date	Location		Sunspot Characteristics					Flares									
	(° Lat ° CMD)	Helio Lon	Area (10 ⁶ hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical						
								C	M	X	S	1	2	3	4		
<i>Region 9034</i>																	
06 Jun	S10E68	016	0060	02	HSX	001	A										1
07 Jun	S10E54	017	0090	02	HSX	001	A										
08 Jun	S10E41	017	0080	02	HSX	001	A										
09 Jun	S10E27	016	0080	02	HSX	001	A										
10 Jun	S10E15	015	0070	04	CSO	005	B										
11 Jun	S10E01	016	0120	02	HSX	002	A										
12 Jun	S09W11	015	0100	02	HSX	001	A										
13 Jun	S09W25	016	0070	02	HSX	001	A										
14 Jun	S09W40	017	0070	02	HSX	002	A										
15 Jun	S08W53	017	0050	02	HSX	001	A										
16 Jun	S10W67	018	0060	02	HSX	001	A	1					1				
17 Jun	S10W81	019	0080	01	HRX	001	A										1
								1	0	0	0	3	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 016

Region 9035

08 Jun	S17E15	043	0020	03	BXO	004	B										
09 Jun	S18E01	042	0030	06	DAO	006	B										
10 Jun	S17W12	042	0030	08	DSO	006	B										
11 Jun	S16W25	042	0010	08	CRO	003	B										
12 Jun	S16W40	044	0000	00	AXX	001	A										
13 Jun	S14W54	045	0000	03	BXO	003	B										
14 Jun	S16W67	044	0020	03	CRO	003	B										3
15 Jun	S15W79	043	0030	06	CRO	004	B										1
16 Jun	S15W86	037	0030	05	CAO	004	B										4
								0	0	0	0	8	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 042



Region Summary-continued

Date	Location		Sunspot Characteristics				Flares											
	(° Lat ° CMD)	Helio Lon	Area (10 ⁶ hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical							
								C	M	X	S	1	2	3	4			
<i>Region 9036</i>																		
08 Jun	S23E73	345	0080	02	HSX	001	A											
09 Jun	S23E60	343	0170	03	HAX	002	A											
10 Jun	S24E52	338	0220	14	CAO	009	B	1			8							
11 Jun	S23E40	337	0280	11	EAO	011	B	1			2							
12 Jun	S22E28	336	0290	14	EAO	012	B	1			1							
13 Jun	S22E13	338	0240	09	DAO	012	B											
14 Jun	S23W03	340	0240	09	DAO	008	B											
15 Jun	S20W17	341	0230	06	DAO	012	B				2							
16 Jun	S20W30	341	0250	06	DHO	008	B				1							
17 Jun	S19W43	341	0170	05	CSO	006	B											
18 Jun	S20W57	342	0150	02	HSX	002	A											
								3	0	0	14	0	0	0	0	0		

Still on Disk.

Absolute heliographic longitude: 340

Region 9037

10 Jun	N18E51	339	0020	01	HSX	001	A				1							
11 Jun	N19E36	341	0100	05	DSO	008	B				1							
12 Jun	N21E24	340	0240	08	DAO	011	B											
13 Jun	N21E10	341	0180	08	DSO	016	B				1							
14 Jun	N20W04	341	0160	10	DAO	014	B											
15 Jun	N21W17	341	0090	09	DAO	014	B											
16 Jun	N22W28	339	0040	06	CSO	008	B											
17 Jun	N21W40	338	0010	00	HRX	001	A											
18 Jun	N22W52	337	0010	00	HRX	001	A				1							
								0	0	0	4	0	0	0	0	0		

Still on Disk.

Absolute heliographic longitude: 341

Region 9038

11 Jun	N15W29	046	0030	04	CAO	005	B											
12 Jun	N15W42	046	0030	05	CRO	009	B											
13 Jun	N16W57	048	0020	06	CRO	004	B											
14 Jun	N16W71	048	0030	06	CRO	006	B				3							
15 Jun	N16W84	048	0030	08	CSO	004	B	1			2							
16 Jun	N14W93	044	0030	03	CRO	003	B											
								0	1	0	5	0	0	0	0	0		

Crossed West Limb.

Absolute heliographic longitude: 046



Region Summary-continued

Date	Location		Sunspot Characteristics				Flares										
	(° Lat ° CMD)	Helio	Area (10 ⁶ hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical						
		Lon						C	M	X	S	1	2	3	4		
<i>Region 9039</i>																	
11 Jun	N07W10	027	0040	04	DSO	004	B						1				
12 Jun	N07W22	026	0110	06	DAO	015	B										
13 Jun	N08W37	028	0110	06	DAO	015	B										
14 Jun	N09W51	028	0080	05	DAO	010	B										
15 Jun	N10W65	029	0030	05	CRO	007	B	1				1					
16 Jun	N08W76	027	0020	03	BXO	002	B						2				
								1	0	0	4	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 27

Region 9040

11 Jun	N19E73	304	0090	02	HSX	001	A										
12 Jun	N19E60	304	0140	02	HSX	001	A										
13 Jun	N18E47	304	0100	03	HAX	002	A										
14 Jun	N17E33	304	0100	04	CAO	006	B					2	1				
15 Jun	N18E21	303	0080	05	CAO	010	B	1	1			1	1				
16 Jun	N18E07	304	0080	04	CAO	006	B					1					
17 Jun	N19W05	303	0060	03	CAO	003	B										
18 Jun	N20W17	302	0050	04	CSO	006	B										
								1	1	0	4	2	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 303

Region 9041

11 Jun	N17W11	028	0020	04	BXO	008	B						3				
12 Jun	N17W23	027	0150	06	DAO	013	B						1				
13 Jun	N18W37	028	0150	09	DAO	011	B	2				2					
14 Jun	N18W51	028	0130	10	DAO	011	B										
15 Jun	N19W65	029	0090	10	DAO	008	B	1	1			7		1			
16 Jun	N18W76	027	0060	07	BXO	005	B	1				4					
17 Jun	N19W87	025	0030	05	DRO	003	B										
								4	1	0	17	0	1	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 28



Region Summary-continued

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

Region 9042

12 Jun	N21E76	288	0060	02	HSX	003	A	3			4	1					
13 Jun	N20E69	282	0320	10	EAI	008	B	3			11						
14 Jun	N21E56	281	0570	14	EKI	020	BG	1			6						
15 Jun	N20E43	281	0680	15	EKI	029	BG		1		4						
16 Jun	N20E29	282	0690	13	EKI	035	BG										
17 Jun	N22E16	282	0550	17	FKI	036	BG	1			3						
18 Jun	N21E03	282	0470	17	FKI	042	BG				1						
								8	1	0	29	1	0	0	0	0	

Still on Disk.

Absolute heliographic longitude: 282

Region 9043

13 Jun	N26E04	347	0020	04	CRO	004	B										
14 Jun	N25W12	349	0010	03	BXO	003	B										
15 Jun	N25W25	349	0000	00		000											
16 Jun	N25W38	349	0000	00		000											
17 Jun	N25W51	349	0000	00		000											
18 Jun	N25W64	349	0000	00		000											
								0	0	0	0	0	0	0	0	0	

Still on Disk.

Absolute heliographic longitude: 347

Region 9044

13 Jun	S24W27	018	0000	03	BXO	002	B										
14 Jun	S24W40	018	0000	00		000											
15 Jun	S24W53	018	0000	00		000											
16 Jun	S24W66	018	0000	00		000											
17 Jun	S16W86	024	0120	03	CSO	003	B										
								0	0	0	0	0	0	0	0	0	

Crossed West Limb.

Absolute heliographic longitude: 18

Region 9045

14 Jun	S15E19	318	0010	05	BXO	006	B										
15 Jun	S15E04	320	0010	04	DRO	005	B										
16 Jun	S14W07	318	0000	00	AXX	001	A										
17 Jun	S14W20	318	0000	00		000											
18 Jun	S17W33	318	0010	03	BXO	003	B										
								0	0	0	0	0	0	0	0	0	

Still on Disk.

Absolute heliographic longitude: 320



Region Summary-continued

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

Region 9046

14 Jun	N15E82	255	0090	02	HSX	001	A											
15 Jun	N18E69	255	0370	08	DKO	005	B						1					
16 Jun	N18E57	254	0570	08	DKI	017	BG											
17 Jun	N19E44	254	0540	10	DKO	011	B						2					
18 Jun	N19E31	254	0580	09	DKI	030	BG						1					
								0	0	0	0	4	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 254

Region 9047

15 Jun	S32E30	294	0010	12	BXO	007	B											
16 Jun	S32E17	294	0000	00		000												
17 Jun	S32E04	294	0000	00		000												
18 Jun	S27W04	289	0010	03	BXO	003	B											
								0	0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 294

Region 9048

16 Jun	N07W13	324	0010	01	AXX	002	A											
17 Jun	N07W27	325	0020	04	DAO	004	B	1				1						
18 Jun	N06W40	325	0090	07	DAO	011	B											
								1	0	0	0	1	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 324

Region 9049

16 Jun	S40E65	246	0050	04	BXO	004	B											
17 Jun	S38E52	246	0040	07	CRO	004	B						1					
18 Jun	S38E41	244	0040	07	CSO	008	B											
								0	0	0	0	1	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 244

Region 9050

17 Jun	S13E06	292	0010	02	CRO	003	B											
18 Jun	S15W08	293	0020	05	DSO	007	B											
								0	0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 292



Region Summary-continued

Location		Sunspot Characteristics					Flares							
Date	(° Lat ° CMD)	Helio Lon	Area (10 ⁶ hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical			
							C	M	X	S	1	2	3	4
<i>Region 9051</i>														
17 Jun	N16E61	237	0010	00	HRX	001	A							
18 Jun	N16E49	236	0010	00	HRX	001	A							
								0	0	0	0	0	0	0
Still on Disk.														
Absolute heliographic longitude: 236														
<i>Region 9052</i>														
18 Jun	S29W10	295	0010	03	BXO	005	B							
								0	0	0	0	0	0	0
Still on Disk.														
Absolute heliographic longitude: 295														

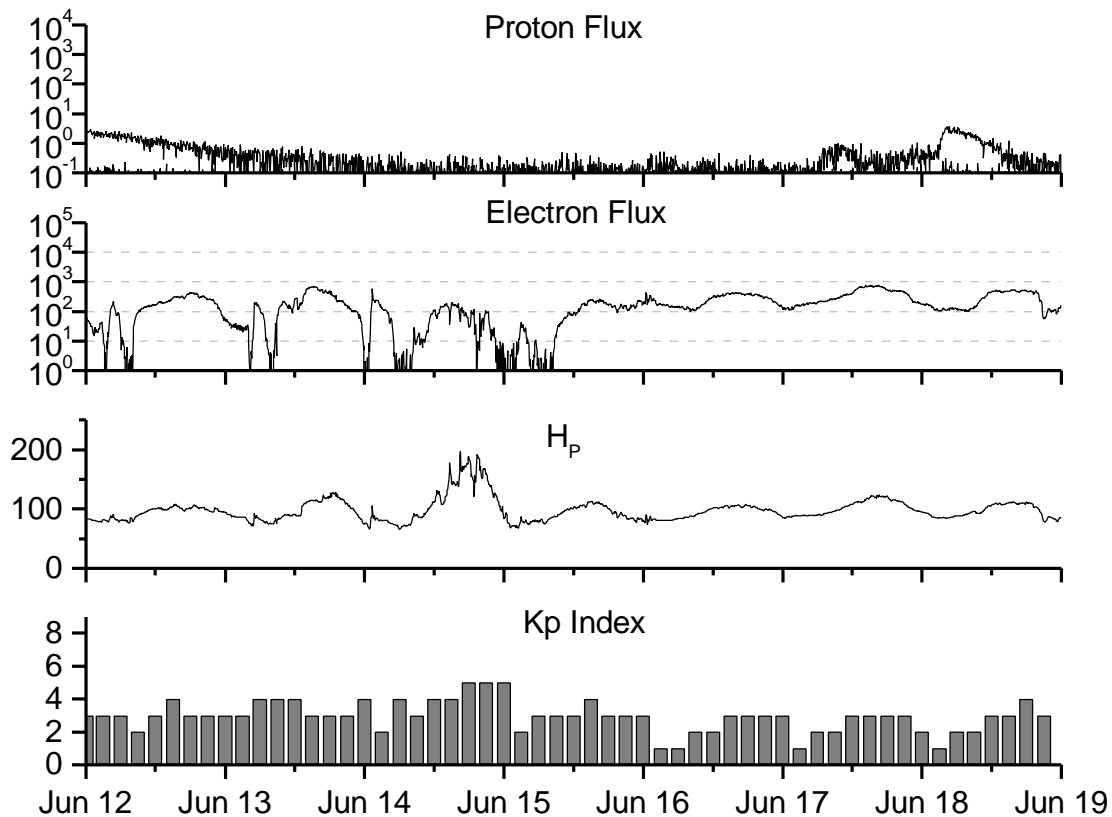


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

Month	Sunspot Numbers				Radio Flux		Geomagnetic		
	<u>Observed values</u>		<u>Ratio</u>	<u>Smooth values</u>		<u>*Penticton</u>	<u>Smooth</u>	<u>Planetary</u>	<u>Smooth</u>
	SWO	RI	RI/SWO	SWO	RI	10.7 cm	Value	Ap	Value
1998									
June	93.6	70.7	0.76	85.9	62.5	108.4	115.8	10	11.9
July	98.3	66.6	0.68	90.3	65.5	114.0	120.3	11	12.2
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
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			169.8		10	
2000									
January	140.8	90.2	0.64			158.1		13	
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	

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 12 June 2000*

Protons plot contains the five-minute averaged integral proton flux (protons/cm²-sec -sr) as measured by GOES-8 (W75) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

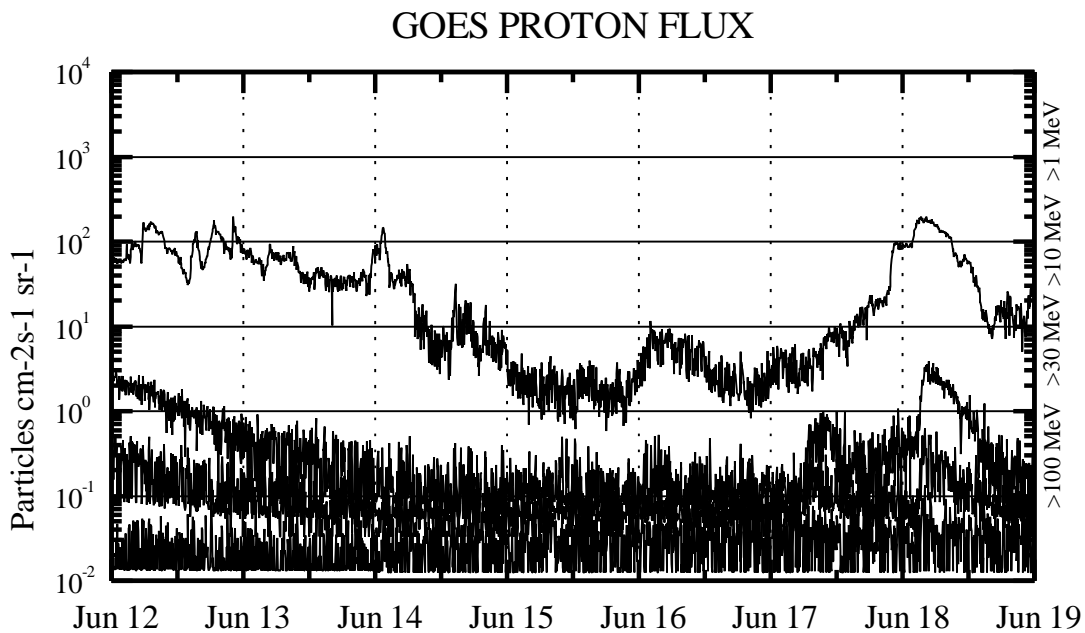
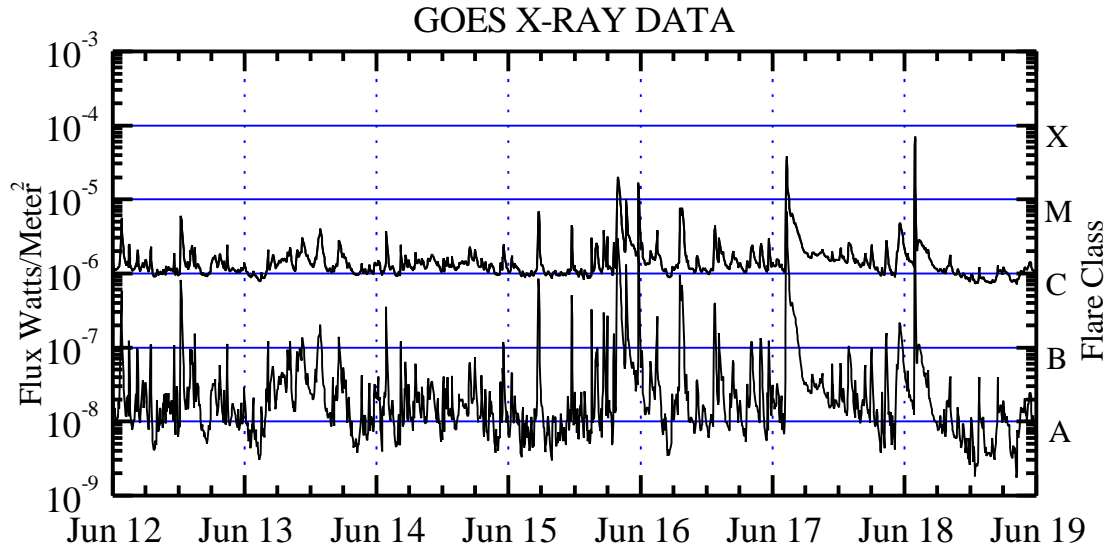
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV at GOES-8.

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

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

The data included here are those now available in real time at the SWO and are incomplete in that they do not include the full set of parameters and energy ranges known to cause satellite operating anomalies. The proton and electron fluxes and K_p are “ global ” parameters that are applicable to a first order approximation over large areas. H_{parallel} is subject to more localized phenomena and the measurements generally are applicable to within a few degrees of longitude of the measuring satellite.





Weekly GOES Satellite X-ray and Proton Plots

X-ray plot contains five minute averaged x-ray flux (watts/m²) as measured by GOES 8 and 10 in two wavelength bands, .05 - .4 and .1 - .8 nm. The letters A, B, C, M and X refer to x-ray event levels for the .1 - .8 nm band.

Proton plot contains the five minute averaged integral proton flux (protons/cm²-sec-sr) as measured by GOES-8 (W75) for each of the energy thresholds: >1, >10, >30 and >100 MeV. P10 event threshold is 10 pfu (protons/cm²-sec-sr) at greater than 10 MeV.

