

Space Weather Highlights
19-25 July 1999

Solar activity was low to high during the period. High conditions were experienced on 19 July due to an M5/2N event at 19/0846UT from Region 8636 (N20, L=334, class/areaEai/330 on 19 July). This event also produced Type II and IV sweeps. Region 8636 continued to grow in size and complexity until near the middle of the period. It then began to simplify and show signs of decay toward the end of the period. High conditions were also experienced on 24 July. This was due to 5 M-class events that day. Two were optically uncorrelated and the other three were from Region 8645 (S26, L=251, class/area Dko/190 on 24 July). Region 8645 is thought to be the returning Region 8611, which produced multiple C and M-class events during its last rotation. Moderate conditions were experienced on 23 and 25 July. Solar activity was low on 20-22 July. The only other region of note was Region 8639 (N38, L=032, class/area Dao/230 on 25 July). This region produced an M2/SF on 25/1338UT accompanied by Type II and IV sweep frequency bursts.

Real-time solar wind data were available from the Advanced Composition Explorer (ACE) spacecraft for most of the period. Solar wind velocity showed a steady increase from 320 to 490 km/sec on 22 July. Velocity increased to over 500 km/sec on 23 July and then returned to normal levels on 24 July.

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

The greater than 2 MeV electron flux at geo-synchronous orbit was at normal levels.

The geomagnetic field was mostly quiet to unsettled. Isolated active conditions were experienced on 21 July. Minor storm conditions were experienced on 22/0300-0600UT. The increased geomagnetic activity was thought to have been related to a Halo CME early on 19 July.

Space Weather Outlook

28 July - 23 August 1999

Solar activity is expected to range from low to moderate levels. Isolated M-class flares from Regions 8636 and 8645 may occur at any time during the period. There will also be a slight chance for a major flare sometime during the period.

There will be a slight chance for a proton event at geo-synchronous altitude.

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

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



Daily Solar Data

Date	Radio Flux 10.7 cm	Sun spot No. (10 ⁶ hemi.)	Sunspot Area	X-ray Background	Flares							
					X-ray Flux			Optical				
					C	M	X	S	1	2	3	
19 July	141	126	620	B7.9	3	1	0	8	0	1	0	0
20 July	140	115	550	B6.6	8	0	0	5	0	0	0	0
21 July	147	124	580	B5.8	6	0	0	8	0	0	0	0
22 July	153	127	1110	C1.1	3	0	0	16	0	0	0	0
23 July	194	158	1210	C3.6	5	3	0	14	1	1	0	0
24 July	184	173	1270	C1.9	8	4	0	11	1	0	0	0
25 July	182	183	1390	C1.3	5	2	0	13	1	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
19 July	6.4E+4	1.7E+4	4.9E+3		5.9E+5	
20 July	8.5E+4	1.6E+4	3.8E+3		7.1E+5	
21 July	7.8E+4	1.6E+4	3.5E+3		2.1E+5	
22 July	6.6E+4	1.4E+4	3.2E+3		1.1E+5	
23 July	1.1E+5	1.4E+4	3.3E+3		3.1E+6	
24 July	9.7E+4	1.4E+4	3.0E+3		7.5E+6	
25 July	6.9E+4	1.3E+4	2.9E+3		2.2E+7	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
19 July	3	1-1-1-1-1-0-1-1	3	1-1-0-0-2-2-0-0	4	2-1-1-1-1-1-1-1
20 July	5	1-1-0-0-3-2-1-2	5	1-1-0-0-3-3-1-1	6	1-1-1-1-3-3-2-2
21 July	9	1-1-2-2-2-2-4-2	11	1-1-2-2-2-4-4-2	13	2-1-3-2-2-4-4-3
22 July	23	2-4-4-4-4-4-3	30	3-3-4-4-5-6-3-3	24	3-4-5-4-4-4-4-3
23 July	10	3-3-1-2-3-2-3-1	17	3-2-1-5-3-4-3-2	12	3-3-1-3-3-3-3-2
24 July	8	2-2-1-3-2-1-2-3	16	3-3-2-5-4-1-2-2	11	3-3-2-3-3-2-3-3
25 July	8	3-2-2-1-2-1-3-2	13	2-2-2-2-4-4-2-3	8	2-3-2-1-2-2-2-3

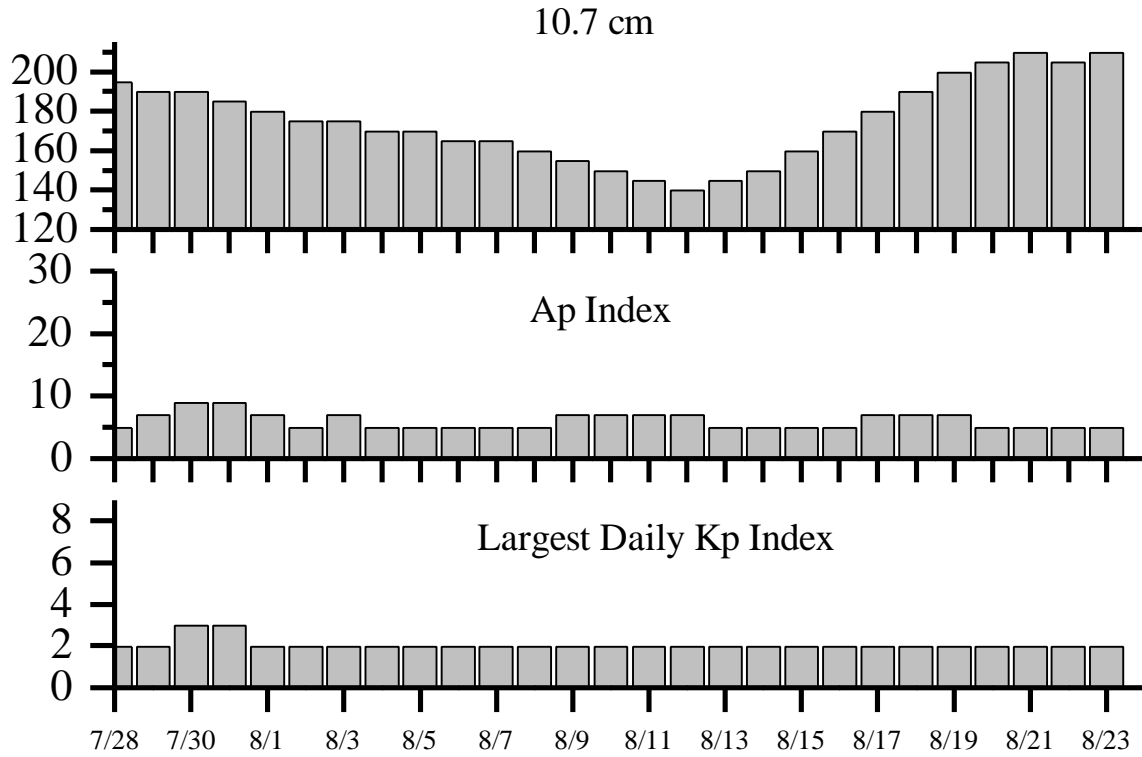


Alerts and Warnings Issued

Date and Time of Issue (UT)	Type of Alert or Warning	Date and Time of Event (UT)
19July 0113	1- 245 MHz Bursts	19 Jul
19 Jul 0244	Type II Radio Emission	19 Jul 0216
19 Jul 0334	Type IV Radio Emission	19 Jul 0238
19 Jul 0916	10cm Radio Burst 140 sfu	19 Jul 0824
19 Jul 0916	Type II Radio Emission	19 Jul 0837
19 Jul 0916	X-Ray event M5.8/2B	19 Jul 0846
19 Jul 0945	Type IV Radio Emission	19 Jul 0852
21 Jul 1806	K= 4 Observed	21 Jul 15 - 18
22 Jul 0011	1- 245 MHz Bursts	21 Jul
22 Jul 0602	K= 5 Observed	22 Jul 03 - 06
22 Jul 0602	K= 5 Warning valid	22 Jul 06 - 09
22 Jul 1205	K= 4 Observed	22 Jul 09 - 12
22 Jul 1205	K= 4 Warning valid	22 Jul 12 - 24
22 Jul 1224	A \geq 20 Observed	22 Jul 1200
24 Jul 0134	2-245 MHz Bursts	23 Jul
25 Jul 0131	1 - 245 MHz Bursts	24 Jul
25 Jul 1353	10cm Radio Burst 600 sfu	25 Jul 1308
25 Jul 1353	Type II Radio Emission	25 Jul 1321
25 Jul 1425	Type IV Radio Emission	25 Jul 1332



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
28 July	195	5	2	11 Aug	145	7	2
29	190	7	2	12	140	7	2
30	190	9	3	13	145	5	2
31	185	9	3	14	150	5	2
01 Aug	180	7	2	15	160	5	2
02	175	5	2	16	170	5	2
03	175	7	2	17	180	7	2
04	170	5	2	18	190	7	2
05	170	5	2	19	200	7	2
06	165	5	2	20	205	5	2
07	165	5	2	21	210	5	2
08	160	5	2	22	205	5	2
09	155	7	2	23	210	5	2
10	150	7	2				



Energetic Events

Date	Time (UT)			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
19 Jul	0816	0846	0910	M5.8	.110	2N	N18E59	8636	140		2	2
23 Jul	1554	1601	1613	M1.0	.010			8645				
23 Jul	1832	2005	2046	M1.1	.065	2F	N20E04	8636	140	27		
23 Jul	2255	2300	2306	M1.2	.006	SF	S26E87	8645				
24 Jul	0356	0404	0408	M1.7	.008	1N	S29E87	8645				
24 Jul	0749	0802	0825	M3.3	.051	SF	S28E78	8645				
24 Jul	1119	1122	1128	M2.1	.008				15			
24 Jul	1129	1133	1139	M2.0	.011							
25 Jul	1308	1338	1417	M2.4	.075	SF	N38W81	8639	100	600	1	1

Flare List

Date	Time			X-ray Class.	Optical Imp / Brtns	Location Lat CMD	Rgn #
	Begin	Max	End				
19 July	0159	0206	0246		SF	N19E67	8636
	0206	0210	0258	C4.2	SF	N15W1	8631
	0315	0316	0320		SF	N19E60	8636
	0816	0837	0925	M5.8	2N	N18E59	8636
	1458	1459	1505		SF	N20E56	8636
	1508	1508	1520		SF	S13W75	8627
	1940	1940	1957	C3.8	SF		8636
	1959	2019	2025		SF	N20E48	8636
	2116	2119	2122	C1.4			8627
	2118	2119	2123		SF	S13W73	8627
20 July	0026	0026	0035	C4.5	SF	N19E56	8636
	0603	0609	0614	C2.1			
	0816	0822	0826	C1.7			
	1155	1158	1204	C1.3	SF		8636
	1318	1318	1322		SF		8627
	1330	1330	1339	C1.2	SF		8636
	1710	1710	1718	C1.1	SF		8636
	2030	2034	2038	C1.1			
	2111	2127	2144	C2.4			
	21 July	0200	0204	0209	C1.2		
0323		0333	0345	C1.4			
0405		0408	0411	B8.3			
0812		0813	0823	C1.8	SF	N19E32	8636
0831		0831	0834		SF	N18E30	8636
0909		0913	0916	B7.4			
1403		1406	1410	B7.6			
1432		1433	1441	C1.0	SF	S18E69	8642
1454		1459	1504		SF	N19E31	8636
1514		1536	1545	B8.9	SF	N19E24	8636



Flare List-continued

Date	Time			X-ray Class.	Optical		Rgn #
	Begin	Max	End		Imp / Brtns	Location Lat CMD	
21 July	1545	1546	1550		SF	N19E24	8636
	1751	1758	1803		SF	S18E67	8642
	1841	1842	1847	C2.1	SF	N20E27	8636
	2107	2112	2114	B8.5			
	2131	2212	0013	C2.4			
22 July	0053	0053	0100		SF	S15E58	8642
	0106	0114	0117		SF	N22E29	8636
	0233	0236	0249	C2.5	SF	N37W3	8639
	0243	0244	0249		SF	N22W4	8639
	0252	0257	0311		SF	N37W4	8639
	0330	0331	0341		SF	N23E32	8636
	0504	0510	0511		SF	S16E61	8642
	0527	0534	0546		SF	N21E20	8636
	0547	0553	0621		SF	N38W4	8639
	0610	0611	0621		SF	N20E20	8636
	0929	0929	0938		SF	N21E18	8636
	B1110	U1112	A112		SF	N21E14	8636
	1142	1212	1243		SF	N21E17	8636
	1435	1439	1444	C1.1	SF	N20E12	8636
	2055	2109	2125	C7.1			
	B2130	U2130	2139		SF	N21E14	8636
	2145	2147	2156		SF	N20E15	8636
23 July	0033	0040	0108	C6.6	SF	N22E13	8636
	0122	0125	0136		SF	N36W5	8639
	0216	0217	0219		SF	N21E17	8636
	0416	0418	0421		SF	N22E05	8636
	0449	0449	0501		SF	N22E07	8636
	0503	0507	0538	C9.3	SF	N21E14	8636
	0627	0631	0653	C4.9	1F	N36W5	8639
	0657	0658	0708		SF	N20E13	8636
	0715	0720	0724		SF	N19E13	8636
	0829	0834	0847		SF	N19E09	8636
	0906	0914	0929	C3.0			
	1003	1005	1014		SF	N22E05	8636
	1132	U1145	1149		SF	N23E05	8636
	1237	1243	1258	C5.9			
	1439	1442	1446		SF	N21E07	8636
1439	1442	1444		SF	S27E87	8644	
1447	1449	1452		SF	N19E06	8636	
1452	1453	1459		SF	N19E08	8636	
1504	1509	1543		SF	N21E01	8636	



Flare List-continued

Date	Time			X-ray Class.	Optical		Rgn #	
	Begin	Max	End		Imp / Brtns	Location Lat CMD		
23 July	1554	1601	1613	M1.0			8645	
	1832	1942	2057	M1.1	2F	N20E04	8636	
	2104	2109	2115	C8.8				
	2300	2300	2315	M1.2	SF	S26E87	8645	
	2351	2354	2356		SF	N21E00	8636	
24 July	0209	0213	0220	C3.8				
	0318	0331	0339	C6.4				
	0347	0347	0353		SF	N34W6	8639	
	0359	0403	0418	M1.7	1N	S29E87	8645	
	0502	0504	0513	C3.1	SF	N21W1	8636	
	0540	0541	0545	C3.3	SF	N21W0	8636	
	0552	0556	0559	C3.9				
	0713	0719	0754		SF	N21W0	8636	
	0755	0756	0810	M3.3	SF	S28E78	8645	
	1119	1122	1128	M2.1				
	1129	1133	1139	M2.0				
	1325	1329	1334		SF	N35W7	8639	
	1443	1445	1457		SF	N38W6	8639	
	1523	1523	1534		SF	N34W7	8636	
	1607	1621	1636	C7.3				
	2039	2045	A211	C7.7	SF	N19W1	8636	
	2044	2045	2053		SF	N36W7	8639	
	2240	2245	2249	C2.6	SF	S26E68	8645	
	25 July	0058	0102	0158	C5.2	SN	S29E70	8645
		0131	0132	0207	C8.5	SF	N18W1	8636
0201		0205	0209		SF	N38W7	8639	
0229		0235	0238		SF	S26E59	8645	
0247		0250	0303		SF	S26E59	8645	
0323		0325	0330		SF	S26E59	8645	
0403		0429	0439	M1.0	1F	S26E58	8645	
0510		0512	0535	C3.8	SF	N20W2	8636	
0535		0535	0542		SF	N36W8	8639	
0819		0833	0845	C3.9				
1343		1343	1356	M2.4	SF	N38W8	8639	
B1351		1359	1406		SF	S18E57	8647	
1421		1424	1432		SF	S18E57	8647	
1741		1745	1754		SF	N20W2	8636	
1836		1841	1845	C3.1				
1850	1853	1856		SF	N20W2	8636		



Region Summary

Date	Location		Sunspot Characteristics				Flares											
	° Lat	° CMD	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 8625</i>																		
06 Jul	S20E76	121	0020	02	HRX	001	A											
07 Jul	S20E63	121	0040	02	HSX	001	A											
08 Jul	S20E49	122	0040	02	HSX	001	A											
09 Jul	S20E36	120	0040	02	HSX	001	A											
10 Jul	S19E23	120	0030	01	HSX	001	A											
11 Jul	S20E10	120	0020	02	HSX	002	A											
12 Jul	S20W02	119	0020	04	CSO	003	B											
13 Jul	S19W14	118	0030	05	CSO	006	B											
14 Jul	S19W26	116	0030	06	DSO	006	B											
15 Jul	S18W40	117	0020	07	CRO	007	B	1			2							
16 Jul	S18W54	118	0070	07	DSO	008	B											
17 Jul	S18W66	117	0080	10	DAO	009	B											
18 Jul	S17W79	117	0080	09	CSO	005	B											
19 Jul	S15W90	115	0060	09	DAO	003	B											
								1	0	0	2	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 119

<i>Region 8627</i>																		
08 Jul	S12E70	101	0040	02	HSX	001	A											2
09 Jul	S13E61	095	0090	12	ESO	004	B	2										3 1
10 Jul	S12E47	096	0120	13	ESO	010	B											1
11 Jul	S14E33	097	0210	16	FAO	015	B											
12 Jul	S14E19	098	0210	16	FAO	019	B											1
13 Jul	S14E06	098	0250	16	FAC	018	B											1
14 Jul	S15W06	096	0140	15	EAO	018	B											
15 Jul	S14W20	097	0130	16	FAO	017	B											1
16 Jul	S14W34	098	0160	15	EAO	012	BG		1									1
17 Jul	S13W47	098	0150	17	FAO	016	BGD											1
18 Jul	S13W60	098	0130	15	EAO	014	B											
19 Jul	S13W71	096	0060	11	CAO	005	B	1										2
20 Jul	S12W83	094	0030	07	BXO	004	B											1
21 Jul	S12W96	094																
								3	1	0	14	1	0	0	0	0	0	

Crossed West Limb.

Absolute heliographic longitude: 098



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 8628

09 Jul	N18E52	104	0030	04	CRO	003	B	1			1						
10 Jul	N19E36	107	0020	09	CRO	007	B				1	1					
11 Jul	N18E20	110	0170	11	EAO	020	B	2			4						
12 Jul	N17E04	113	0210	08	DAO	021	B	3			3						
13 Jul	N17W09	113	0220	09	DAO	022	B				3						
14 Jul	N18W22	112	0150	10	DAO	016	B										
15 Jul	N18W35	112	0140	11	EAO	019	B										
16 Jul	N18W48	112	0140	11	EAO	014	B										
17 Jul	N19W62	113	0100	10	DAO	011	B										
18 Jul	N18W76	114	0100	10	DAO	006	B										
19 Jul	N20W88	113	0070	07	DSO	002	B										
								6	0	0	12	1	0	0	0	0	

Crossed West Limb.

Absolute heliographic longitude: 113

Region 8631

11 Jul	N11E77	053	0080	04	HAX	001	A										
12 Jul	N11E64	053	0140	03	HAX	001	A										
13 Jul	N11E50	054	0160	03	HAX	001	A										
14 Jul	N10E38	052	0130	02	HAX	002	A										
15 Jul	N11E24	053	0120	02	HAX	002	A										
16 Jul	N11E10	054	0170	04	CAO	007	B										
17 Jul	N11W03	054	0080	03	DAO	007	B										
18 Jul	N12W16	054	0090	04	DSO	009	B										
19 Jul	N12W29	054	0060	03	CSO	005	B	1			1						
20 Jul	N12W42	053	0030	02	HSX	003	A										
21 Jul	N12W54	052	0030	01	HSX	002	A										
22 Jul	N11W69	054	0020	02	AXX	002	A										
23 Jul	N14W80	052	0010	02	BXO	003	B										
								1	0	0	1	0	0	0	0	0	

Crossed West Limb.

Absolute heliographic longitude: 054



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 8633

12 Jul	N42E21	096	0010	04	BXO	004	B												
13 Jul	N41E08	096	0000	00	AXX	001	A												
14 Jul	N41W05	096																	
15 Jul	N41W18	096																	
16 Jul	N41W31	096																	
17 Jul	N41W44	096																	
18 Jul	N41W57	096																	
19 Jul	N41W70	096																	
20 Jul	N41W83	096																	
21 Jul	N41W96	096																	
										0	0	0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 096

Region 8634

12 Jul	S18E69	048	0010	01	AXX	001	A	1				1							
13 Jul	S18E59	045	0010	01	AXX	001	A												
14 Jul	S19E43	047	0010	01	HRX	001	A							1					
15 Jul	S19E30	047	0000	00	HRX	001	A							1					
16 Jul	S19E17	047																	
17 Jul	S19E04	047																	
18 Jul	S19W09	047																	
19 Jul	S19W22	047																	
20 Jul	S19W35	047																	
21 Jul	S19W48	047																	
22 Jul	S19W61	047																	
23 Jul	S19W74	047																	
										1	0	0	2	1	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 047



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 8636

17 Jul	N20E73	338	0070	07	CAO	004	B												6
18 Jul	N20E61	337	0310	11	EAO	009	B	1											9
19 Jul	N20E51	334	0330	13	EAI	018	BG	1	1					5					1
20 Jul	N20E36	335	0390	15	EAI	025	BG	4						4					
21 Jul	N21E25	333	0390	18	FSO	035	BG	2						6					
22 Jul	N21E12	333	0550	20	FKI	045	BGD	2						10					
23 Jul	N21E00	332	0600	22	FKC	061	BG	1	1					15					1
24 Jul	N21W14	333	0570	20	FKC	058	BG	3	1					5					
25 Jul	N21W28	333	0560	18	FKI	052	BG	2						4					
								16	3	0	64	0	2	0	0	0			

Still on Disk.

Absolute heliographic longitude: 332

Region 8637

18 Jul	N12W27	065	0020	05	BXO	004	B												
19 Jul	N12W42	067	0020	06	CRO	006	B												
20 Jul	N13W56	067	0030	07	BXO	005	B												
21 Jul	N12W66	064	0010	00	AXX	001	A												
22 Jul	N12W79	064																	

Crossed West Limb.

Absolute heliographic longitude: 065

Region 8638

18 Jul	S10E67	331	0010	01	AXX	002	A												
19 Jul	S10E51	334	0010	02	AXX	002	A												
20 Jul	S13E38	334																	
21 Jul	S13E25	334																	
22 Jul	S13E12	334																	
23 Jul	S13W01	334																	
24 Jul	S13W14	334																	
25 Jul	S13W27	334																	

Still on Disk.

Absolute heliographic longitude: 334



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 8639</i>																		
19 Jul	N38W14	039	0010	04	BXO	005	B											
20 Jul	N39W26	037	0020	04	BXO	005	B											
21 Jul	N38W37	035	0050	05	DSO	011	B											
22 Jul	N38W50	035	0400	07	DAI	012	B	1				4						
23 Jul	N38W62	034	0390	08	DKO	013	B	1				1	1					
24 Jul	N38W74	033	0290	08	DAO	014	B	1				4						
25 Jul	N38W87	032	0230	10	DAO	008	B		1			3						
								3	1	0	12	1	0	0	0	0		

Still on Disk.

Absolute heliographic longitude: 039

Region 8640

20 Jul	N17E76	295	0040	01	HSX	001	A											
21 Jul	N17E63	295	0080	02	HSX	001	A											
22 Jul	N17E49	296	0090	02	HSX	001	A											
23 Jul	N17E37	295	0110	03	HSX	001	A											
24 Jul	N17E24	295	0120	02	HAX	001	A											
25 Jul	N17E10	295	0090	02	HSX	001	A											
										0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 295

Region 8641

20 Jul	N32W57	068	0010	03	BXO	002	B											
21 Jul	N30W73	071	0000	00	AXX	001	A											
										0	0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 068

Region 8642

21 Jul	S18E65	293	0020	04	BXO	003	B	1				2						
22 Jul	S18E51	294	0040	03	DSO	004	B					2						
23 Jul	S18E38	294	0060	03	CSO	005	B											
24 Jul	S18E25	294	0030	04	BXO	007	B											
25 Jul	S18E11	294	0020	04	BXO	005	B											
								1	0	0	4	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 294



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 8643</i>																		
22 Jul	N21W62	048	0010	03	BXO	003	B											
23 Jul	N20W74	046	0010	05	BXO	004	B											
24 Jul	N21W91	050	0010	01	AXX	002	A											
								0	0	0	0	0	0	0	0	0	0	
Crossed West Limb.																		
Absolute heliographic longitude: 048																		
<i>Region 8644</i>																		
23 Jul	S24E68	264	0030	02	HAX	001	A	2		1								
24 Jul	S25E54	265	0040	05	CAO	002	B											
25 Jul	S25E42	263	0040	02	HSX	001	A											
								0	2	0	1	0	0	0	0	0	0	
Still on Disk.																		
Absolute heliographic longitude: 263																		
<i>Region 8645</i>																		
24 Jul	S26E68	251	0190	09	DKO	005	B	1	2		2	1						
25 Jul	S27E59	246	0320	17	FAO	015	B	1	1		4	1						
								2	3	0	6	2	0	0	0	0	0	
Still on Disk.																		
Absolute heliographic longitude: 246																		
<i>Region 8646</i>																		
24 Jul	N12W19	338	0020	03	BXO	004	B											
25 Jul	N12W32	337	0020	03	BXO	004	B											
								0	0	0	0	0	0	0	0	0	0	
Still on Disk.																		
Absolute heliographic longitude: 338																		
<i>Region 8647</i>																		
25 Jul	S18E63	242	0110	09	CAO	006	B				2							
								0	0	0	2	0	0	0	0	0	0	
Still on Disk.																		
Absolute heliographic longitude: 242																		
<i>Region 8648</i>																		
25 Jul	N24E84	221	0000	01	AXX	001	A											
								0	0	0	0	0	0	0	0	0	0	
Still on Disk.																		
Absolute heliographic longitude: 221																		



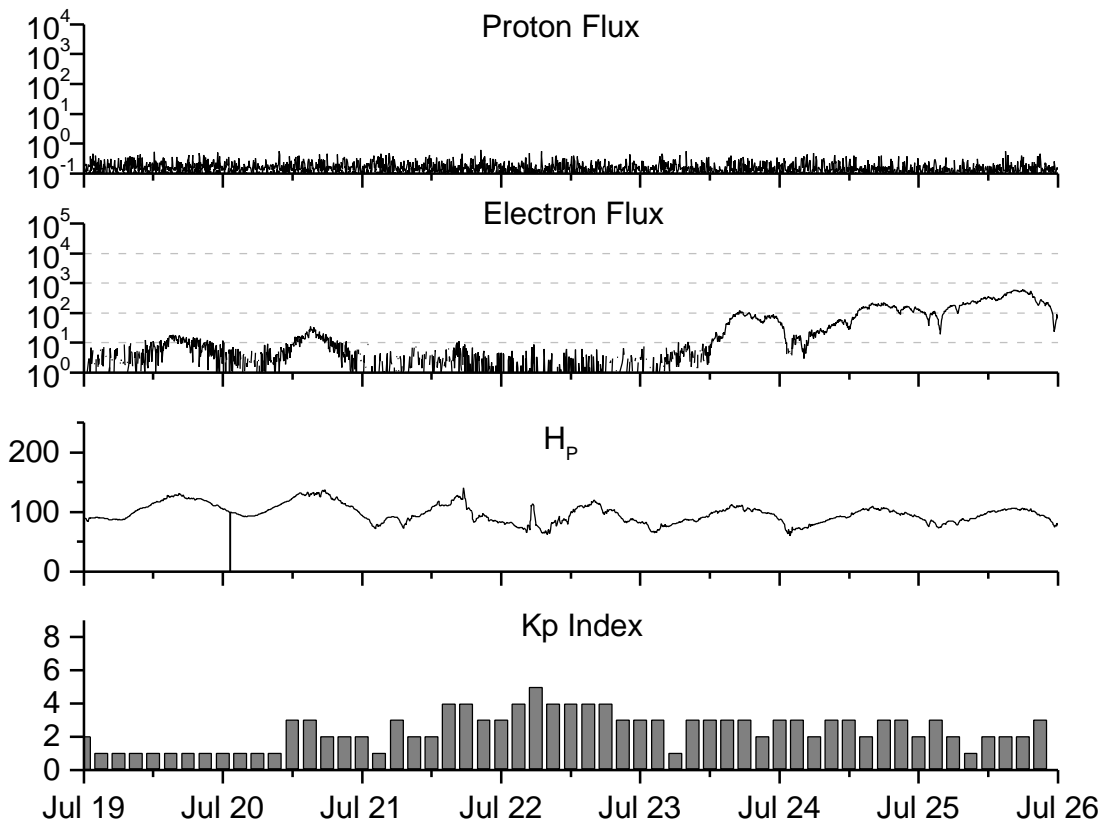
**Recent Solar Indices (preliminary)
of the observed monthly mean values**

Month	Sunspot Numbers				Radio Flux		Geomagnetic		
	Observed values		Ratio	Smooth values		*Penticton	Smooth	Planetary	Smooth
	SWO	RI	RI/SWO	SWO	RI	10.7 cm	Value	Ap	Value
1997									
July	17.0	10.4	0.61	32.4	22.6	71.1	81.8	06	08.5
August	36.7	24.4	0.66	35.9	25.0	79.0	83.4	07	08.3
September	52.8	51.3	0.88	40.5	28.3	96.2	85.7	10	08.4
October	33.6	22.8	0.68	45.4	31.8	84.9	88.6	11	08.6
November	53.5	39.0	0.73	49.3	35.0	99.5	91.3	11	09.0
December	57.9	41.2	0.71	54.2	39.0	98.8	94.2	05	09.5
1998									
January	51.8	31.9	0.62	60.6	43.7	93.4	97.5	08	09.9
February	54.4	40.3	0.74	67.4	48.8	93.4	101.7	08	10.5
March	81.8	54.8	0.67	73.3	53.4	109.1	105.8	13	11.1
April	73.6	53.4	0.73	77.7	56.5	108.3	109.1	10	11.3
May	74.3	56.3	0.76	81.4	59.3	106.7	112.4	18	11.6
June	93.6	70.7	0.76	85.9	62.4	108.4	116.2	10	11.9
July	98.3	66.2	0.67	90.3	65.4	114.0	120.3	11	12.2
August	118.6	91.7	0.77	93.7	67.8	136.0	124.1	18	12.4
September	119.0	92.9	0.78	96.1	69.4	138.4	126.8	13	12.5
October	77.0	55.5	0.72	97.7	70.5	117.3	127.9	13	12.5
November	99.5	74.0	0.74	101.3	73.0	140.2	130.0	16	12.3
December	120.8	81.9	0.69	108.8	77.9	150.1	134.3	08	11.9
1999									
January	94.3	62.4	0.66			142.6		10	
February	93.4	66.1	0.70			142.0		11	
March	100.5	69.1	0.70			126.3		13	
April	92.9	63.9	0.69			117.3		12	
May	140.5	106.3	0.76			148.6		10	
June	208.3	137.4	0.66			170.0		08	

NOTE: All smoothed values after January 1998 and monthly values after September 1998 are preliminary estimates.

The lowest smoothed sunspot indices number for Cycle 22, RI = 8.0, occurred in May 1996. The highest smoothed sunspot number for Cycle 22, RI= 158.5, occurred July 1989. * After June 1991, the 10.7 cm radio flux data source is Penticton, B.C. Canada. Prior to that, it was Ottawa.





Weekly Geosynchronous Satellite Environment Summary

Week Beginning 19 July 1999

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.

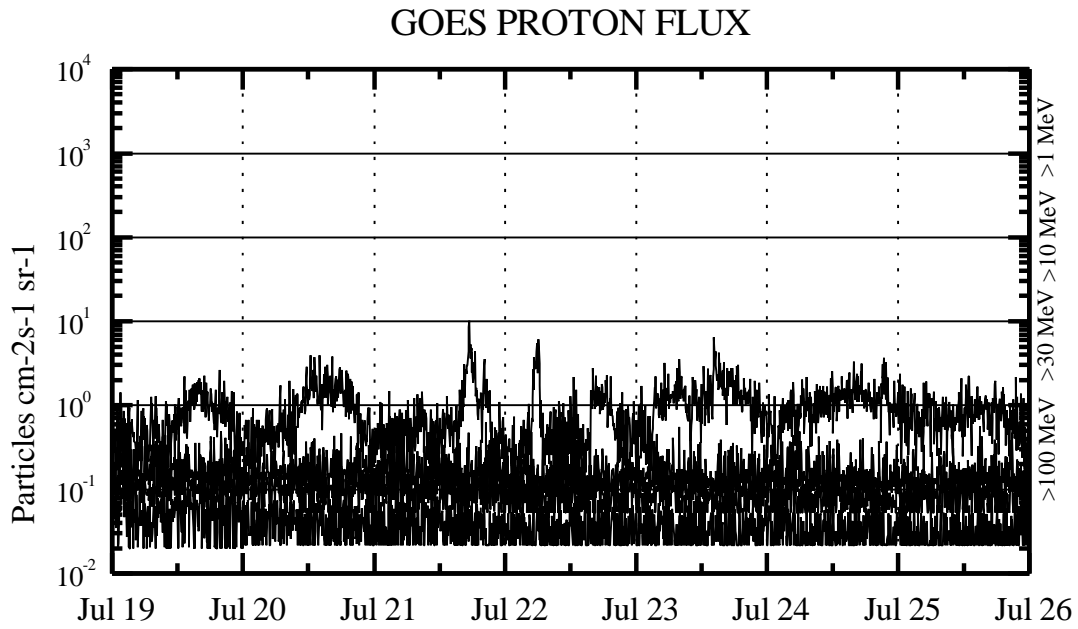
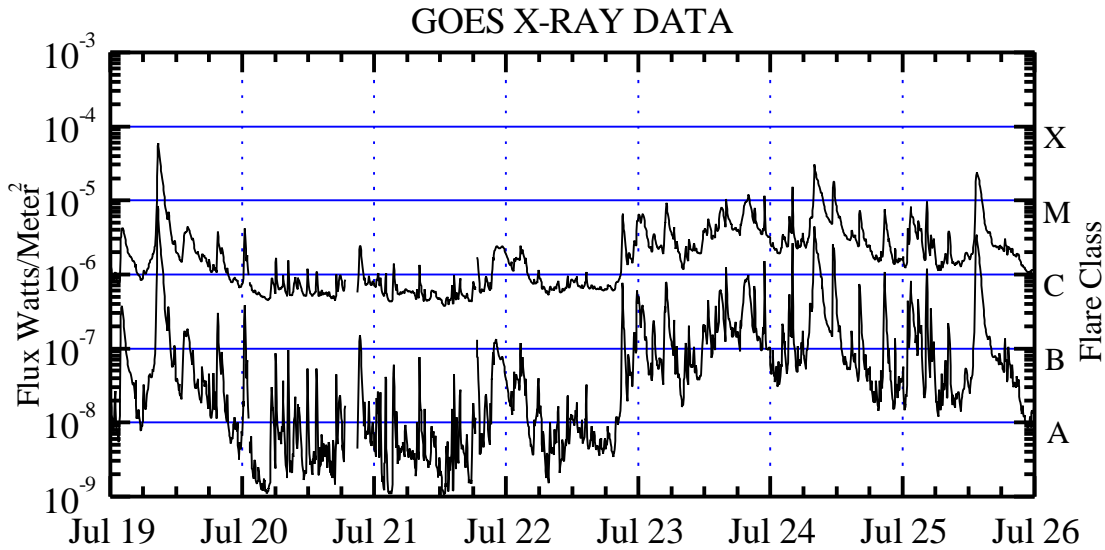
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm² -sec -sr) with energies greater than 2 MeV at GOES-8.

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_p 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.

