Space Weather Highlights
12-18 July 1999

Solar activity was mostly low with moderate conditions experienced on 16 July. On that date fast growing Region 8635 (N44, L=143, class/area Eao/140 on 16 Jul) produced an M3/0N event at 16/1551UT. Region 8627 (S14, L=098, class/area Eao/160 on 16 Jul) produced an M1/SF at 16/1731UT. The only other region of note was Region 8636 (N20, L=337, class/area Eao/310 on 18 Jul). This is believed to be returning Region 8598, which produced several C and M-class events during the last rotation. Currently this region is producing consistent C-class events and is showing continuous plage fluctuations and Real-time solar wind data were available from the Advanced Composition Explorer (ACE) spacecraft for most of the period.

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 with isolated unsettled periods during the week. Active conditions were experienced on 12 July immediately following a 20 nT sudden impulse observed at Boulder on 12/0218UT. The geomagnetic field returned to quiet levels within 12 hours after the event.

Space Weather Outlook
21 July -16 August 1999

Solar activity is expected to range from low to moderate levels. Isolated M-class flares from Region 8636 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.	Sunspot Area (10^{-6} hemi.)	X-ray Background	Flares: X-ray Flux C	M	X	Flares: Optical S	1	2	3	
12 July	154	199	1130	B6.8	8	0	0	16	0	0	0	0
13 July	144	188	940	B6.8	2	0	0	4	0	0	0	0
14 July	130	120	550	B4.1	0	0	0	0	1	0	0	0
15 July	130	109	430	B2.7	2	0	0	6	0	0	0	0
16 July	132	97	680	B3.0	1	2	0	4	0	0	0	0
17 July	137	97	480	B6.5	8	0	0	14	0	0	0	0
18 July	138	119	740	C1.6	10	0	0	9	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
12 July	4.9E+4	1.6E+4	4.5E+3		1.9E+5	
13 July	4.1E+4	1.7E+4	4.6E+3		2.1E+5	
14 July	4.8E+4	1.7E+4	4.6E+3		3.1E+5	
15 July	6.3E+4	1.9E+4	5.9E+3		6.3E+5	
16 July	4.7E+4	1.8E+4	5.4E+3		1.1E+6	
17 July	5.7E+4	1.7E+4	4.9E+3		1.4E+6	
18 July	5.6E+4	1.7E+4	4.8E+3		6.8E+5	

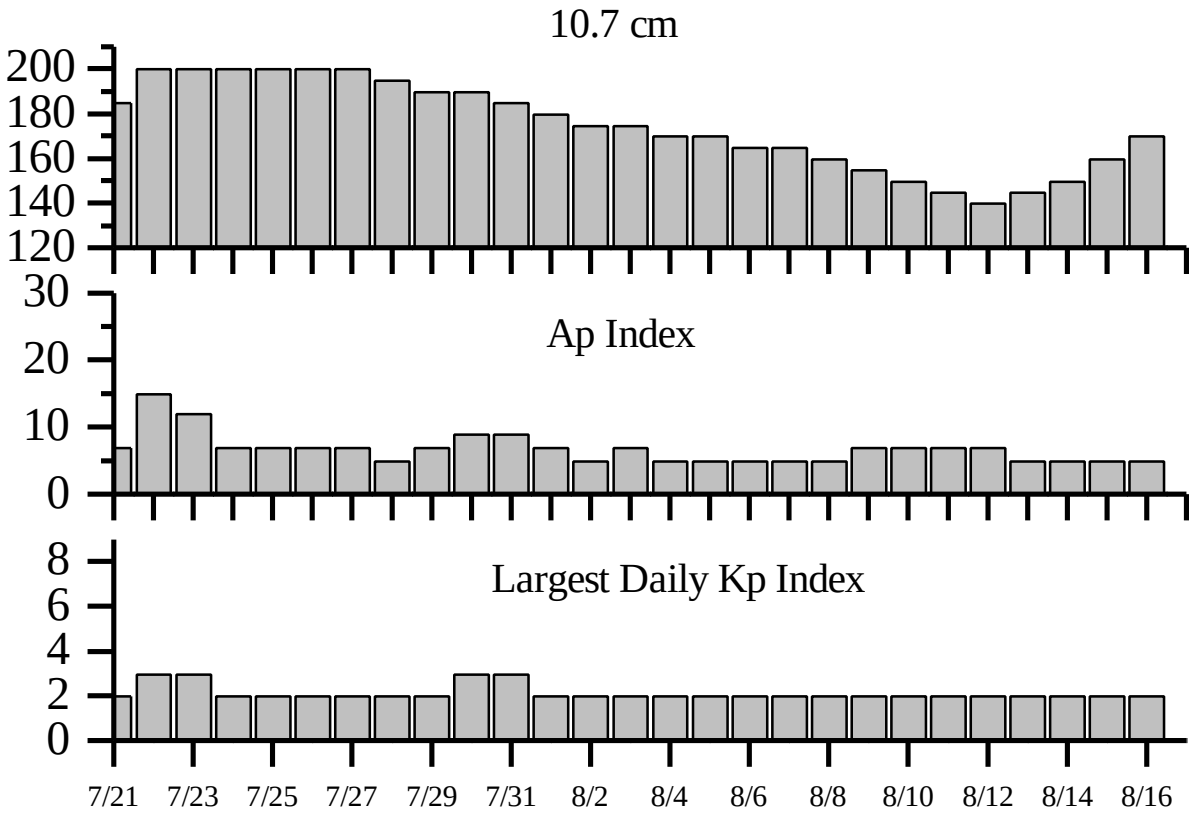
Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg A	K-indices	High Latitude College A	K-indices	Estimated Planetary A	K-indices
12 July	12	3-4-2-3-2-2-2-2	20	3-3-5-5-3-2-2-1	14	3-4-4-3-3-2-3-2
13 July	3	1-2-1-0-0-1-1-1	3	2-2-0-0-1-1-1-0	6	1-2-0-1-1-3-3-2
14 July	5	0-0-0-1-1-0-3-3	5	0-0-0-3-3-0-2-1	6	2-0-1-2-2-1-3-3
15 July	8	3-2-3-1-2-1-1-2	24	4-4-3-5-5-3-2-2	10	3-2-3-2-2-2-3-2
16 July	5	1-1-1-1-2-2-1-2	3	1-1-0-1-2-1-1-1	5	2-1-1-2-2-2-2-2
17 July	3	1-0-1-1-2-1-1-0	2	1-0-1-0-1-2-0-0	5	1-0-1-1-2-2-2-2
18 July	5	1-1-2-2-2-1-1-2	3	0-1-2-1-1-2-0-1	4	1-1-1-1-2-2-1-2

Alerts and Warnings Issued

Date and Time of Issue (UT)	Type of Alert or Warning	Date and Time of Event (UT)
12 Jul 0237	Sudden Impulse observed at Boulder 20 nT	12 Jul 0218
12 Jul 0601	K= 4 Observed	12 Jul 03 - 06
12 Jul 1158	K= 4 Observed	12 Jul 09 - 12
12 Jul 1925	Type II Radio Emission	12 Jul 1840
13 Jul 0010	6 – 245 MHz Radio Bursts	12 Jul
13 Jul 0639	Type II Radio Emission	13 Jul 0602
14 Jul 0011	1 – 245 MHz Radio Burst	13 Jul
14 Jul 0011	1 – 245 MHz Radio Noise Storm	13 Jul
16 Jul 0017	2 – 245 MHz Radio Bursts	15 Jul
16 Jul 1829	Type II Radio Emission	16 Jul 1555

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 Jul	185	7	2	04 Aug	170	5	2
22	200	15	3	05	170	5	2
23	200	12	3	06	165	5	2
24	200	7	2	07	165	5	2
25	200	7	2	08	160	5	2
26	200	7	2	09	155	7	2
27	200	7	2	10	150	7	2
28	195	5	2	11	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				

Energetic Events

Date	Time (UT)			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
16 Jul 99	1542	1550	1554	M3.1	.011	SN	N43W7	8635	86	54	2	
16 Jul 99	1734	1750	1809	M1.1	.016	SF	S31W13	8627				

Flare List

Date	Time Begin	Time Max	Time End	X-ray Class.	Optical Imp / Brtns	Optical Location Lat CMD	Optical Rgn #
12 July	0036	0039	0044	B9.9			
	0102	0106	0120	C2.8	SF	N18W6	8614
	0314	0318	0321		SF	S20W58	8632
	0329	0330	0341	C1.5	SF	N17E22	8628
	0459	0503	0509		SF	S18W61	8632
	0701	0705	0711		SF	S18W63	8632
	0709	0716	0721	C2.1	SF	N17E16	8628
	0834	0840	0859		SF	S19W62	8632
	0848	0854	0858	C2.6			8632
	0857	0908	0912		SF	N22W5	8620
	1031	1031	1050		SF	S14E26	8627
	B1104	U1104	A1125		SF	S24W81	8626
	1313	1316	1324		SF	S22W85	8626
	1316	1318	1321		SF	S20W65	8632
	1504	1505	1510		SF	S20W87	8626
	1647	1648	1652	C1.2	SF	S20E79	8634
	1810	2134	2142	C1.9			
	1943	1950	2004	C1.5	SF	N19E12	8628
	2130	2135	2138		SF	S20W72	8626
	2329	2332	2334	C2.1			
13 July	0402	0405	0413	C1.2			
	0522	0546	0609	C2.9			
	0559	0600	0608		SF	N16E06	8628
	0851	0855	0903	B7.8			
	1301	1302	1307		SF	N18E02	8628
	1318	1320	1325		SF	N19E03	8628
	1350	1350	1356		SF	S15E16	8627
	1657	1703	1712	B9.0			
14 July	0038	0047	0053	B8.8	1F	S17E58	8634

Flare List-continued

Date	Time Begin	Time Max	Time End	X-ray Class.	Optical Imp / Brtns	Optical Location Lat CMD	Rgn #
15 July	0058	0058	0109		SF	N43W5	
	0146	0146	0152	B5.4	SF	S20W29	8625
	0748	0751	0756	B5.2			
	0915	0916	0922	B8.2	SF	S21E40	8634
	1431	1435	1438	C1.1	SF	N43W5	8635
	1548	1558	1609	C1.0	SF	S17W34	8625
	2001	2002	2025	B8.1	SF	S11W19	8627
	2305	2308	2311	B5.0			
16 July	0046	0049	0051	B4.9			
	0639	0643	0645	B7.5			
	0737	0740	0742	B7.5			
	0837	0838	0840	C7.6	SF	N44W6	8635
	1542	1551	1610	M3.1	SN	N43W7	8635
	1709	1709	1715		SF	N43W7	8635
	1728	1731	1746	M1.1	SF	S31W13	8627
17 July	0220	0225	0231		SF	N45W7	8635
	0231	0236	0241		SF	N44W7	8635
	0246	0251	0255		SF	N45W7	8635
	0307	0346	0353		SF	N18E85	8636
	0335	0336	0340		SF	N45W7	8635
	0635	0639	0647		SF	N18E85	8636
	0709	0710	0716		SF	N18E78	8636
	0732	0741	0747	C1.3			
	0821	0823	0828		SF	N18E77	8636
	0837	0840	0844	C1.7			
	0951	0954	1006		SF	N18E76	8636
	1032	1042	1047	C5.5			
	1245	1246	1251		SF	N18E75	8636
	1351	1358	1401	C2.7	SF	N42W8	8635
	1353	1357	1402		SF	N43W8	8635
	1445	1445	1445		SF	S15W44	8627
	1630	1631	A1644	C3.4	SF	N42W8	8635
	1718	1734	1753	C2.0			
	2154	2202	2206	C1.9			
	2301	2309	2324	C4.9			

Flare List-continued

Date	Time Begin	Time Max	Time End	X-ray Class.	Optical Imp / Brtns	Optical Location Lat CMD	Rgn #
18 July	0000	0005	0008	C4.3			
	0036	0036	0043		SF	N18E78	8636
	0059	0103	0106		SF	N21E78	8636
	0207	0215	0222		SF	N18E77	8636
	0346	0352	0358	C1.6			
	0455	0459	0511		SF	N18E72	8636
	0545	0549	0555	C1.7			
	0621	0622	0625		SF	N18E65	8636
	0739	0746	0757	C4.0			
	0901	1028	1058	C3.3			
	1348	1447	1531		SF	N19E64	8636
	1632	1633	1636		SF	N19E65	8636
	1723	1723	1730		SF	N20E64	8636
	1749	1752	1804	C3.4	SF	N20E64	8636
	1837	1851	1901	C2.9			
	2028	2032	2037	C1.2			
	2207	2216	2223	C1.6			
	2337	2343	2350	C2.3			

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	M	X	Optical S	1	2	3	4
			Region 8614												
01 Jul	N19E72	192	0010	01	AXX	001	A								
02 Jul	N20E63	188	0090	10	DSO	005	B				1				
03 Jul	N19E47	190	0090	13	EAO	006	BG								
04 Jul	N18E29	195	0080	10	DSO	021	B	1			2				
05 Jul	N18E14	197	0200	10	DAI	028	B	3	1		9				
06 Jul	N18E01	196	0470	11	EKO	022	B								
07 Jul	N17W1	196	0450	12	EKO	017	B								
08 Jul	N18W2	197	0280	11	ESO	009	B								
09 Jul	N18W3	195	0220	11	ESO	010	B								
10 Jul	N18W5	195	0240	12	ESO	012	B								
11 Jul	N18W6	196	0170	11	EAO	007	B								
12 Jul	N17W8	197	0160	12	EAO	004	B	1			1				
13 Jul	N17W9	197	0030	02	HAX	001	A								
								5	1	0	13	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 196

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 8615												
01 Jul	S29E77	187	0040	02	HSX	001	A								
02 Jul	S29E63	188	0090	03	HAX	001	A								
03 Jul	S29E50	187	0130	03	HSX	001	A	1			1				
04 Jul	S29E37	187	0200	03	HSX	001	A								
05 Jul	S29E25	186	0190	03	HSX	002	A								
06 Jul	S29E11	186	0200	02	HAX	001	A								
07 Jul	S29W02	186	0210	02	HSX	001	A				3				
08 Jul	S29W16	187	0180	02	HSX	002	A								
09 Jul	S29W28	184	0180	07	CSO	007	B	1			4				
10 Jul	S31W40	183	0150	09	CAO	008	B	2			2				
11 Jul	S29W55	185	0190	06	CAO	009	B	1			2				
12 Jul	S30W69	186	0170	05	CAO	005	B								
13 Jul	S29W83	187	0120	05	CAO	003	B								
14 Jul	S28W92	182	0030	02	HAX	001	A								
								5	0	0	12	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 186

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 8618												
03 Jul	S17E57	180	0010	01	AXX	001	A								
04 Jul	S18E44	180	0010	00	AXX	001	A				2				
05 Jul	S13E31	180													
06 Jul	S17E18	180													
07 Jul	S17E05	180													
08 Jul	S17W08	180													
09 Jul	S17W21	180													
10 Jul	S17W34	180													
11 Jul	S17W47	180													
12 Jul	S17W60	180													
13 Jul	S17W73	180													
14 Jul	S17W86	180													
								0	0	0	2	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 180

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 8619												
03 Jul	S17E71	166	0010	04	BXO	002	B								
04 Jul	S18E57	167	0010	01	AXX	002	A								
05 Jul	S18E44	167	0040	02	HAX	002	A								
06 Jul	S17E30	167	0020	02	HRX	003	A								
07 Jul	S17E17	167	0010	01	AXX	002	A								
08 Jul	S18E03	168	0010	04	BXO	002	B								
09 Jul	S18W10	168													
10 Jul	S18W23	168													
11 Jul	S18W36	168									1				
12 Jul	S18W49	168													
13 Jul	S18W62	168													
14 Jul	S18W75	168													
								0	0	0	1	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 168

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 8620												
03 Jul	N22E56	181	0040	02	HAX	001	A								
04 Jul	N21E42	182	0080	02	HSX	001	A								
05 Jul	N20E29	182	0090	04	CSO	004	B								
06 Jul	N20E16	181	0090	05	CSO	004	B	1			1				
07 Jul	N20E02	182	0110	03	CSO	002	B								
08 Jul	N21W1	181	0100	02	HSX	002	A								
09 Jul	N21W2	178	0080	04	CAO	003	B								
10 Jul	N22W3	177	0060	06	CAO	003	B								
11 Jul	N22W4	178	0060	06	CAO	004	B								
12 Jul	N22W6	178	0040	09	CSO	003	B				1				
13 Jul	N22W7	179	0040	08	CSO	005	B								
14 Jul	N22W8	179													
								1	0	0	2	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 182

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 8621												
04 Jul	N20E68	156	0030	02	HSX	001	A								
05 Jul	N20E54	157	0040	06	CAO	005	B				1				
06 Jul	N20E44	153	0020	07	BXO	003	B								
07 Jul	N20E27	157	0010	06	BXO	005	B				1				
08 Jul	N20E16	155	0010	03	BXO	005	B				1				
09 Jul	N20E03	155													
10 Jul	N20W0	150	0010	01	AXX	003	A								
11 Jul	N21W2	150	0000	03	AXX	004	A								
12 Jul	N21W3	150													
13 Jul	N21W4	150													
14 Jul	N21W5	150													
15 Jul	N21W7	150													
16 Jul	N21W8	150													
								0	0	0	3	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 155

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 8623														
06 Jul	N26W1	208	0000	00	AXX	001	A								
07 Jul	N26W2	208													
08 Jul	N26W3	208													
09 Jul	N26W5	208													
10 Jul	N26W6	208													
11 Jul	N26W7	208													
12 Jul	N26W8	208													
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 208

	Region 8624														
06 Jul	N24E26	171	0000	01	AXX	002	A								
07 Jul	N25E13	171													
08 Jul	N26E00	171	0000	02	AXX	002	A								
09 Jul	N24W1	170	0000	03	BXO	004	B								
10 Jul	N23W2	170	0000	03	BXO	003	B								
11 Jul	N24W4	171	0010	04	BXO	003	B								
12 Jul	N23W5	173	0020	03	BXO	005	B								
13 Jul	N22W7	174	0030	03	BXO	004	B								
14 Jul	N23W8	175	0060	09	CSO	006	B								
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 171

	Region 8625														
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								
								1	0	0	2	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 119

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 8626														
07 Jul	S21W16	200	0040	05	BXO	009	B	1			1				
08 Jul	S21W30	201	0080	07	DAO	011	B	1			3				
09 Jul	S21W43	199	0100	08	DAO	012	B				3				
10 Jul	S20W57	200	0080	09	CAO	008	B				1				
11 Jul	S20W71	201	0160	10	DAO	009	B	2			7				
12 Jul	S21W84	201	0090	10	DSO	007	B				4				
13 Jul	S20W88	192	0020	10	BXO	003	B								
								4	0	0	19	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 200

	Region 8627														
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								
								2	1	0	11	1	0	0	0

Still on Disk.
Absolute heliographic longitude: 098

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 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	N17W0	113	0220	09	DAO	022	B				3				
14 Jul	N18W2	112	0150	10	DAO	016	B								
15 Jul	N18W3	112	0140	11	EAO	019	B								
16 Jul	N18W4	112	0140	11	EAO	014	B								
17 Jul	N19W6	113	0100	10	DAO	011	B								
18 Jul	N18W7	114	0100	10	DAO	006	B								
								6	0	0	12	1	0	0	0

Still on Disk.
Absolute heliographic longitude: 113

			Region 8630												
09 Jul	S10W55	211	0020	04	BXO	005	B								
10 Jul	S10W68	211	0010	04	BXO	003	B								
11 Jul	S09W82	212	0010	06	BXO	005	B								
12 Jul	S09W95	212													
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 211

			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	N11W0	054	0080	03	DAO	007	B								
18 Jul	N12W1	054	0090	04	DSO	009	B								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 054

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 8632												
11 Jul	S19W58	188	0030	04	CSO	003	B								
12 Jul	S19W72	189	0050	07	DAO	006	B	1			5				
13 Jul	S20W84	188	0030	09	DRO	003	B								
14 Jul	S20W97	188													
								1	0	0	5	0	0	0	0
Crossed West Limb.															
Absolute heliographic longitude:		188													
			Region 8633												
12 Jul	N42E21	096	0010	04	BXO	004	B								
13 Jul	N41E08	096	0000	00	AXX	001	A								
14 Jul	N41W0	096													
15 Jul	N41W1	096													
16 Jul	N41W3	096													
17 Jul	N41W4	096													
18 Jul	N41W5	096													
								0	0	0	0	0	0	0	0
Still on Disk.															
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													
								1	0	0	2	1	0	0	0
Still on Disk.															
Absolute heliographic longitude:		047													
			Region 8635												
15 Jul	N42W6	141	0020	06	CRO	003	B	1			1				
16 Jul	N44W7	143	0140	11	EAO	006	B	1	1		3				
17 Jul	N44W9	143						2			7				
								4	1	0	11	0	0	0	0
Crossed West Limb.															
Absolute heliographic longitude:		141													

Region Summary-continued

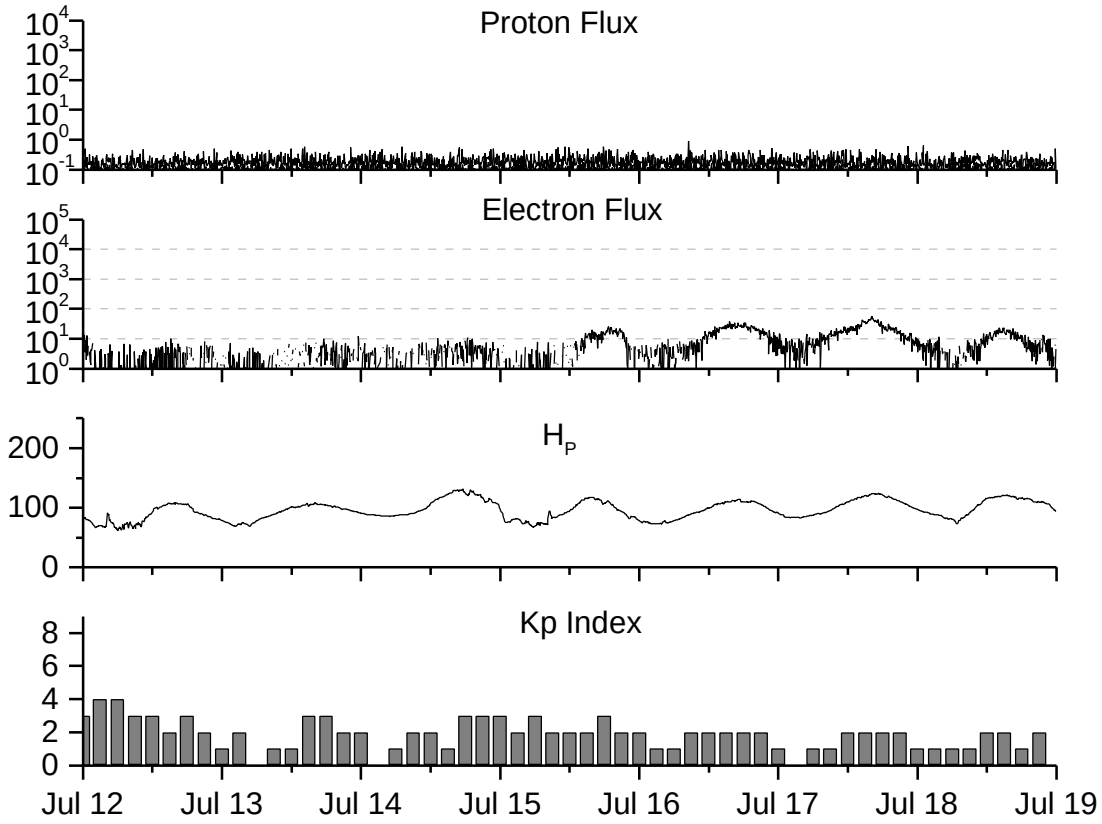
Date	Location (° Lat ° CMD)	Helio Lon	Sunspot Characteristics: Area (10^{-6} hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	Flares: X-ray C	M	X	Optical S	1	2	3	4
			Region 8636												
17 Jul	N20E73	338	0070	07	CAO	004	B				6				
18 Jul	N20E61	337	0310	11	EAO	009	B	1			9				
								1	0	0	15	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:			337												
			Region 8637												
18 Jul	N12W2	065	0020	05	BXO	004	B								
								0	0	0	0	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:			065												
			Region 8638												
18 Jul	S10E67	331	0010	01	AXX	002	A								
								0	0	0	0	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:			331												

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
					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 12 July 1999

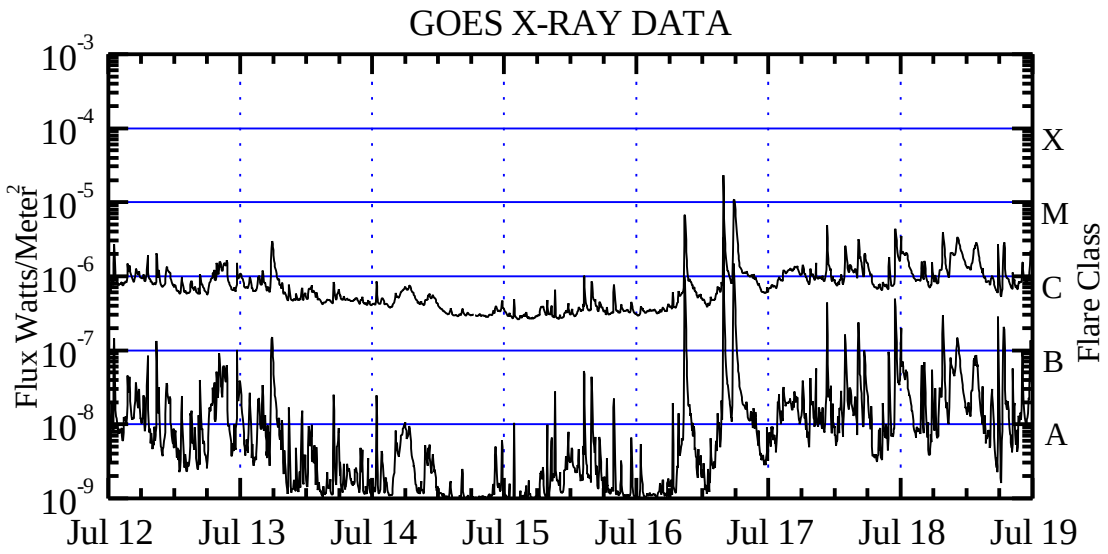
Protons plot contains the five-minute averaged integral proton flux (protons/cm^2 –sec –sr) as measured by GOES-8 (W75) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

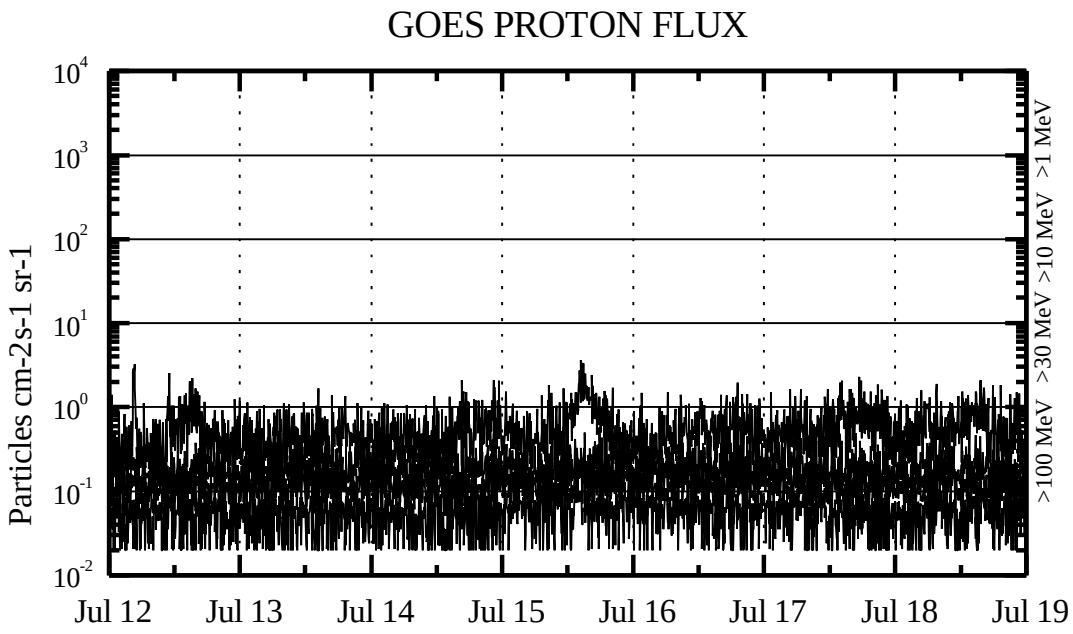
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm^2 –sec –sr) with energies greater than 2 MeV at GOES-8.

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 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.





Weekly 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/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/cm^2-sec-sr) at greater than 10 MeV.