

Space Weather Highlights
31 May – 06 Jun 1999

Solar activity ranged from low to moderate levels. Numerous C-class subflares occurred during the period from a variety of small- to moderate-sized active regions. Activity rose to moderate levels during 03 - 04 June due to isolated M-class flares from Region 8562 (S16, L=292, class/area Dki/420 on 03 June) and Region 8552 (N19, L=346, class/area Eko/360 on 27 May). One of these flares, an impulsive M3/2B from Region 8552 at 04/0703UT, was associated with a Type IV radio sweep, a 360 SFU Tenflare, a partial-halo CME, and a proton event.

Real-time solar wind data were available from the Advanced Composition Explorer (ACE) spacecraft for most of the period. A small shock passed the spacecraft at about 02/2035UT. The following changes were associated with the shock passage: a brief density increase to 13 p/cc, a velocity increase from 380 to 440 km/sec, and southward IMF Bz deflections to minus 11 nT (GSM). No significant discontinuities were noted in the solar wind flow during the remainder of the period.

Two greater than 10 MeV proton events were detected at geo-synchronous orbit during the period. The first began at 02/0245UT, reached a maximum of 48 PFU at 02/1010UT, and ended at 03/1410UT. This event was probably associated with activity on the far side of the Sun. The second event began at 04/0925UT, reached a maximum of 64 PFU at 04/1055UT, and ended at 05/0515UT. This event was associated with the M3/2B flare mentioned above.

The greater than 2 MeV electron flux at geo-synchronous altitude was at normal levels during most of the period.

The geomagnetic field was disturbed during 02/2100 - 03/0300UT with unsettled to active levels detected at all latitudes. This disturbance followed the shock passage mentioned above. The field was at quiet to unsettled levels during the rest of the period.

Space Weather Outlook
09 June - 05 July 1999

Solar activity is expected to range from low to moderate levels. Isolated M-class flares are expected during the period. There will also be a slight chance for a major flare sometime during the period.

No significant proton flux enhancements are expected at geo-synchronous altitude.

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

Geomagnetic field activity is expected to increase to unsettled to active levels around 14 and 21 June due to recurrent coronal hole effects. Otherwise, the field is expected to be at quiet to unsettled levels, 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	
31 May	165	157	990	B6.3	6	0	0	9	0	0	0	0
01 June	176	190	1300	B7.6	10	0	0	17	3	0	0	0
02 June	173	214	1690	B7.5	12	0	0	9	1	0	0	0
03 June	174	176	1790	C1.3	10	1	0	31	4	0	0	0
04 June	171	209	1490	B7.5	5	1	0	17	0	1	0	0
05 June	164	233	1110	B6.5	4	0	0	5	0	0	0	0
06 June	168	238	900	B7.4	2	0	0	16	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
31 May	5.8E+4	1.8E+4	3.5E+3		1.1E+6	
01 June	1.5E+5	3.7E+4	4.7E+3		2.9E+6	
02 June	8.0E+6	2.3E+6	2.2E+4		1.1E+6	
03 June	6.2E+6	9.9E+5	5.7E+3		7.7E+5	
04 June	1.8E+7	2.4E+6	5.6E+3		3.3E+6	
05 June	2.0E+7	1.3E+6	4.4E+3		3.3E+6	
06 June	4.9E+6	2.8E+5	3.8E+3		2.8E+6	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	31 May	2	1-0-0-0-1-0-1-2	2	1-1-0-1-1-0-0-1	4
01 June	6	0-1-2-1-2-2-2-3	4	0-1-1-0-3-1-1-1	8	1-2-2-1-2-3-2-3
02 June	9	3-1-1-2-2-1-2-4	4	2-2-0-1-0-0-1-3	11	3-2-0-3-2-2-2-4
03 June	9	4-2-2-2-2-1-2-2	4	3-1-2-1-1-0-1-0	8	4-1-1-2-2-2-2-2
04 June	8	1-2-3-1-2-2-1-3	10	1-3-3-1-4-2-1-2	8	1-2-3-2-2-3-2-3
05 June	3	2-0-0-1-1-0-2-2	5	2-0-0-3-2-1-2-1	4	2-1-0-1-2-1-2-2
06 June	5	1-1-0-2-2-2-2-1	*	*_*_*_*_*_*_*_*_*_*	4	1-1-1-1-2-2-1-0

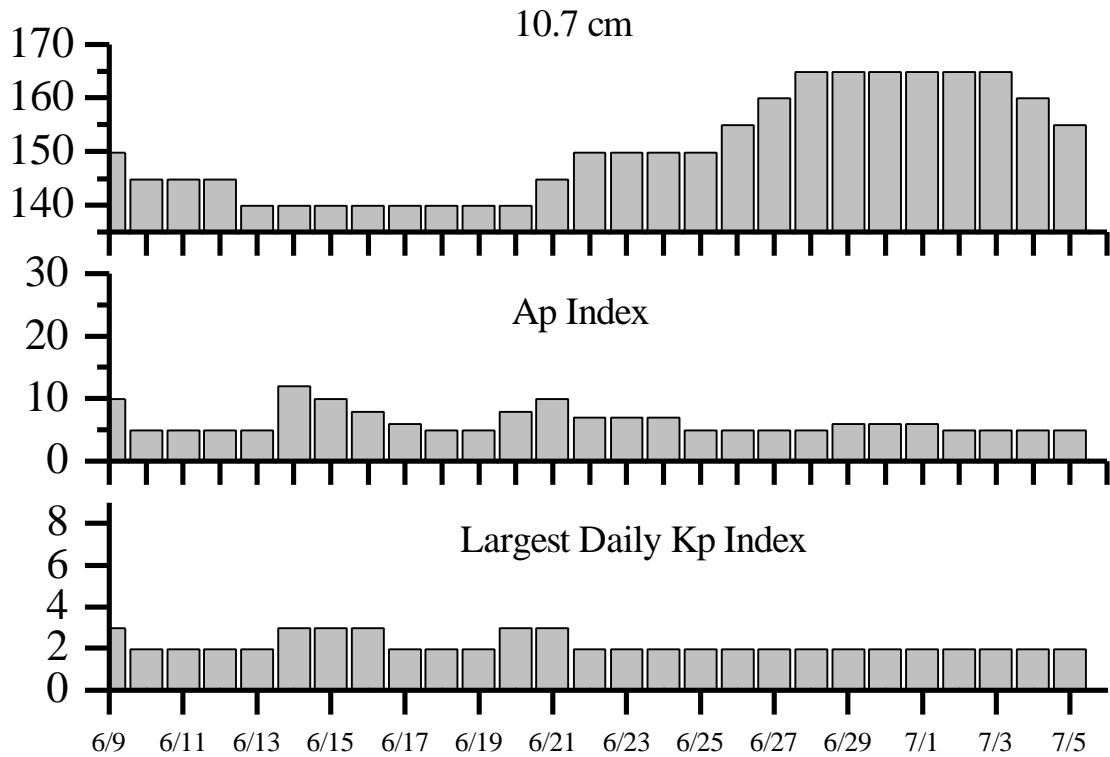


Alerts and Warnings Issued

Date and Time of Issue (UT)	Type of Alert or Warning	Date and Time of Event (UT)
31 May 1036	Type II Radio Emission	31 May 0945
01 Jun 0012	10-245 MHz Bursts	31 May
01 Jun 0012	1-245 MHz Noise Storm	31 May
02 Jun 0026	6-245 MHz Burst	01 Jun
02 Jun 0026	1-245 MHz Noise Storm	01 Jun
02 Jun 0317	Proton Event >10 MeV @ =10pfu BEG	02 Jun 0245
03 Jun 0133	4 - 245 MHz Bursts	02 Jun
03 Jun 0104	K= 4 Observed	02 Jun 21- 24
03 Jun 0400	K= 4 Observed	03 Jun 00- 03
03 Jun 1308	Proton Event >10 MeV @ =10pfu CONTINUED	02 Jun 0245
03 Jun 2210	Proton Event >10 MeV @ =10pfu ENDED 03/1410	02 Jun 0245
03 Jun 2340	Sudden Impulse Observed	03 Jun 2221
04 Jun 0112	14-245 MHz Bursts	03 Jun
04 Jun 0112	1-245 MHz Noise Storm	03 Jun
04 Jun 0821	10cm Radio Burst 360 F.U.	04 Jun 0653
04 Jun 0821	Type IV Radio Emission	04 Jun 0658
04 Jun 1032	Proton Event >10 MeV @ =10pfu BEG	04 Jun 0925
05 Jun 0045	5 - 245 MHz Bursts	04 Jun
05 Jun 0045	1-245 MHz Noise Storm	04 Jun
05 Jun 1305	Proton Event >10 MeV @ =10pfu CONTINUED	04 Jun 0925
06 Jun 0025	2-245 MHz Bursts	05 Jun
06 Jun 0025	1-245 MHz Noise Storms	05 Jun
06 Jun 0703	Proton Event >10 MeV @ =10pfu ENDED 05/0515	04 Jun 0925



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
09 Jun	150	10	3	23	150	7	2
10	145	5	2	24	150	7	2
11	145	5	2	25	150	5	2
12	145	5	2	26	155	5	2
13	140	5	2	27	160	5	2
14	140	12	3	28	165	5	2
15	140	10	3	29	165	6	2
16	140	8	3	30	165	6	2
17	140	6	2	01 Jul	165	6	2
18	140	5	2	02	165	5	2
19	140	5	2	03	165	5	2
20	140	8	3	04	160	5	2
21	145	10	3	05	155	5	2
22	150	7	2				



Energetic Events

Date	Time (UT)			X-ray		Optical Information			Peak		Sweep Freq		
	Begin	Max	½	Class	Flux	Imp/ Brtns	Location		Rgn #	Radio Flux		Intensity	
			Max				Lat	CMD		245	2695	II	IV
03 Jun	0640	0644	0650	M1.0	.004	SF	S15W08		8562				
04 Jun	0652	0703	0711	M3.9	.024	2B	N17W6		8552	660	360		3

Flare List

Date	Time			X-ray Class.	Optical Imp / Brtns	Location Lat CMD	Rgn #
	Begin	Max	End				
31 May	No Flares Observed						
	0808	0814	0823	C4.8	SF	S24E30	8560
	0936	0937	0949	C2.8	SF	N19W26	8552
	1058	1107	1110	C1.7			
	1202	1205	1212	C1.1	SF	S15E31	
	1421	1443	1458		SF	S19E29	8560
	1544	1547	1551	B6.4			
	1627	1631	1640		SF	S15E26	8562
	1702	1702	1715	C1.0	SF	S14E26	8562
	1849	1852	1857		SF	S19E27	8560
	1859	1859	1903		SF	S24E29	8560
	2023	2029	2037	C1.3	SF	S14E24	8562
01 June	0235	0240	0250	C1.3			
	B0420	U0425	0501		SF	N25W40	8554
	0621	0621	0625	C4.6	SF	N25W41	8554
	0626	0628	0638		SF	S15E18	8562
	0629	0630	0637	C6.2	1F	S21E19	8557
	0740	0741	0749		SF	S23E21	8557
	0751	0759	0815	C2.5	SF	N25W39	8554
	0757	0759	0804		SF	N18W36	8552
	0859	0907	0924		SF	N25W43	8554
	0902	0912	0944		SF	N18W33	8552
	0925	0928	0943		SF	S29E61	8563
	0928	0938	0944		SF	N25W43	8554
	0928	0943	0946		SF	S15E16	8562
	B1114	U1114	A1137	C6.2	SF	S14E16	8562
	B1233	U1233	A1248	C1.2	SF	S28E12	8557
	1508	1509	1516		SF	N24W45	8554
	1642	1644	1650	C1.3	1F	S27E54	8563
	1739	1742	1746		SF	S14E13	8562
	1754	1756	1759		1F	S14E13	8562
	1853	1904	1932	C1.2			



Flare List-continued

Date	Time			X-ray	Optical		Rgn Lat CMD #	
	Begin	Max	End		Imp / Class.	Location Brtns		
01 June	2039	2039	2046		SF	S22E10	8557	
	2102	2108	2110	C1.2				
	2242	2252	2300	C5.1				
	2334	2338	2346		SF	N19W43	8552	
02 June	0143	0147	0151	C1.9				
	0340	0401	0410	C2.5				
	0444	0448	0451	C2.9				
	0507	0512	0533	C9.2	1F	S15E05	8562	
	0708	0709	0714	C2.4	SF	N32W82	8551	
	0823	0826	0837	C2.3	SF	N25W51	8554	
	0905	0906	A0914	C3.5	SF	S15E01	8562	
	B1056	U1056	A110	C1.2	SF	N32W81	8551	
	1109	1115	1123	C2.0				
	1138	1152	1158		SF	N18W50	8552	
	1151	1159	1213		SF	S14E02	8562	
	1336	1340	1344	C1.6				
	1419	1423	1437		SF	S29W03	8557	
	1507	1507	1513		SF	N24W56	8554	
	1618	1618	1623		SF	N16E09	8558	
	1923	1935	1947	C2.3				
	2050	2127	2234	C5.0				
	03 June	0120	0132	A014		SF	N20W62	8552
		0220	0221	0227		SF	N19W62	8552
0228		0257	0302		1F	N19W63	8552	
0232		0232	0236		SF	N24W62	8554	
0345		0346	0452		SF	N19W59	8552	
0605		0614	0621		SF	N18W65	8552	
0607		0608	0620		SF	S17W07	8562	
0629		0631	0637		SF	S28W11	8557	
0633		0634	0642		SF	N18W62	8552	
0640		0646	0701	M1.0	SF	S15W08	8562	
0650		0651	0657		SF	N18W6	8552	
0739		0745	0839	C5.6	1N	S23W07	8557	
0741		0741	0753		SF	S15W10	8562	
0800		0804	0810		SF	S15W09	8562	
0834		0837	0848	C2.9	SF	S15W10	8562	
0947		0948	0953	C2.3	SF	S15W10	8562	
1010		1011	1017		SF	S15W10	8562	
1034		1048	1126	C3.5	1F	S15W11	8562	
B1100		U1100	1109		SF	N26W66	8554	
1104	1105	1110		SF	S17W10	8562		
1130	1133	1205	C2.9	1F	S20W11	8562		



Flare List-continued

Date	Begin	Time		Class.	X-ray	Optical		Rgn #
		Max	End			Imp / Brtns	Location Lat CMD	
03 June		1154	1157	1204	C2.3	SF	S18W11	8562
		1234	1235	1247		SF	N17W66	8552
		1337	1338	1347		SF	S17W11	8562
		1410	1413	1417	C2.5	SF	S17W12	8562
		1605	1608	1612				
		1748	1749	1759		SF	N25W73	8554
		1818	1819	1822		SF	N24W70	8554
		1926	1930	1942		SF	S15W17	8562
		1955	1956	2000		C1.8	SF	N27W74
		2000	2004	2012	SF		S16W17	8562
		2101	2104	2107	C1.5	SF	N19W69	8552
		2111	2111	2124	C5.0	SF	N24W74	8554
		2237	2237	2249		SF	N24W73	8554
		2302	2305	2309	SF	N24W73	8554	
		2355	2359	0002	SF	N24W74	8554	
	04 June	0017	0022	0027		SF	N19W71	8552
		0031	0035	0036		SF	N25W73	8554
		0246	0247	0251	C1.6	SF	N24W74	8554
		0438	0441	0445		SF	N19W70	8552
0446		0453	0504	SF	N19W73	8552		
0615		0616	0625	SF	S28W27	8557		
0632		0636	0650	SF	S27W21	8557		
0635		0636	0639	SF	S16W23	8562		
0655		0700	0720	M3.9	2B	N17W69	8552	
0657		0659	0704		SF	N20W65	8559	
0721		0722	0725		SF	N19W75	8552	
0725		0731	0737	SF	N19W75	8552		
0752		0758	0813	SF	N19W75	8552		
1154		1156	1225	C2.7	SF	N11W48		
1240		1241	1248	C1.8	SF	S24W22	8557	
1426		1429	1433	C1.8	SF	N24W86	8554	
1504		1505	1507		SF	N12W52	8568	
2000		2001	2008	C1.4	SF	S16W28	8562	
05 June		0139	0140	0143	C1.3	SF	N19W85	8552
	0403	0409	0423	C1.0				
	0652	0655	0658		SF	S20E71	8571	
	0744	0751	0801	C1.7	SF	N26W47		
	0815	0815	0818	C1.7	SF	S18W39	8562	
	1320	1321	1326		SF	S20E68	8571	



Flare List-continued

Date	Time			X-ray	Imp / Class.	Optical		#
	Begin	Max	End			Location Brtns	Rgn Lat CMD	
06 June	0139	0142	0151	C1.6	SF	N15W38	8558	
	0207	0207	0216		SF	N29E41	8574	
	0417	0417	0420		SF	N26W59	8572	
	0500	0500	0506		SF	N15W41	8558	
	0557	0557	0604		SF	N16W39	8558	
	0658	0703	0706		SF	S16W49	8562	
	0814	0816	0830		SF	N29E35	8574	
	0854	0854	0857	SF	N28E36	8574		
	1126	1132	1138	C2.0				
	1338	1751	1916		SF	N29E30	8574	
	1417	1457	1507		SF	N29E32	8574	
	B1636	U1638	A1640		SF	N28E32	8574	
	1717	1724	1726		SF	S14W48	8562	
	1857	1858	1901		SF	N21E54	8569	
	2025	2026	2030		SF	N30E28	8574	
	2228	2232	2242	SF	N29E29	8574		

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

Region 8550

20 May	S14E70	029	0120	10	CSO	004	B										
21 May	S14E55	030	0220	10	DAO	008	B					1					
22 May	S14E43	029	0190	11	ESO	014	B					1					
23 May	S13E30	029	0150	12	EAO	014	B	1				1					
24 May	S14E17	029	0210	13	EAO	016	B	2				3					
25 May	S14E02	031	0160	13	EAO	021	B	1				5					
26 May	S14W12	031	0120	10	DSO	017	B	1				2					
27 May	S15W30	036	0050	07	DAO	010	B										
28 May	S15W45	038	0030	06	DRO	008	B										
29 May	S15W57	037	0010	01	AXX	001	A										
30 May	S15W72	039	0010	00	AXX	001	A										
31 May	S15W85	039															
								5	0	0	13	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 031



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 8551</i>																		
21 May	N32E62	023	0060	04	CSO	002	B											
22 May	N33E50	022	0050	03	CSO	003	B											
23 May	N32E36	023	0040	07	CSO	006	B	2				2						
24 May	N32E25	021	0070	06	CSO	009	B	3				3						
25 May	N32E10	023	0060	07	CSO	005	B											
26 May	N31W0	021	0050	10	CSO	005	B					1						
27 May	N32W1	020	0050	12	CSO	006	B					1						
28 May	N32W2	018	0020	01	HSX	001	A											
29 May	N31W3	017	0020	01	HSX	001	A											
30 May	N30W4	016	0010	02	AXX	003	A	1				1						
31 May	N30W62	016																
01 Jun	N32W77	017	0000	00	AXX	001	A											
02 Jun	N32W90	017	0000	00	AXX	001	A	2				2						
								8	0	0	10	0	0	0	0	0		

Crossed West Limb.

Absolute heliographic longitude: 021

<i>Region 8552</i>																		
24 May	N20E68	338	0200	07	CHO	003	B	2				4						
25 May	N20E54	339	0270	10	CSO	004	B	2				4						
26 May	N11E41	338	0330	13	CHO	006	B	1	1			5		1				
27 May	N20E25	341	0360	14	EKO	016	BG	3				6	2					
28 May	N21E06	347	0170	14	EAI	013	BG											
29 May	N18W0	346	0180	08	DAI	016	BG					1						
30 May	N19W1	345	0200	09	DAO	011	BG	1				1						
31 May	N18W32	346	0150	08	CSO	011	B	1				1						
01 Jun	N18W44	344	0250	10	DSO	005	B					3						
02 Jun	N20W57	344	0250	11	CSO	006	B					1						
03 Jun	N20W72	346	0290	13	CAO	005	B	1				8	1					
04 Jun	N19W86	347	0250	10	DAO	004	B			1		6		1				
								11	2	0	40	3	2	0	0			

Crossed West Limb.

Absolute heliographic longitude: 347



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 8553

25 May	N25W0	035	0010	07	AXX	005	A												
26 May	N29W0	027	0010	07	BXO	008	B												
27 May	N29W2	027																	
28 May	N29W3	027																	
29 May	N29W4	027																	
30 May	N29W6	027																	
31 May	N29W73	027																	
01 Jun	N29W86	027																	
												0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 035

Region 8554

25 May	N27E39	354	0010	05	BXO	005	B												
26 May	N26E26	353	0030	08	CRO	012	B	1				3							
27 May	N26E11	355	0060	05	CAO	011	B	2				4							
28 May	N27W0	355	0020	06	DRO	007	B					1							
29 May	N24W1	354	0020	07	DRO	004	B	1				3							
30 May	N24W2	354	0010	05	BXO	004	B												
31 May	N25W35	349	0010	03	BXO	003	B												
01 Jun	N25W48	348	0030	08	CSO	014	B	2				6							
02 Jun	N27W63	350	0120	07	DAO	008	B	1				2							
03 Jun	N24W78	352	0130	07	DAO	008	B	2				9							
04 Jun	N25W89	350	0080	08	DAO	004	B	2				3							
												11	0	0	31	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 355



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 8555

26 May	N16E75	304	0050	02	HSX	001	A										
27 May	N15E61	305	0060	02	HAX	001	A										
28 May	N17E49	304	0050	01	HSX	001	A										
29 May	N17E35	305	0050	02	HSX	001	A										
30 May	N16E22	305	0050	01	HSX	001	A										
31 May	N17E08	306	0040	04	CSO	003	B										
01 Jun	N17W06	306	0040	04	CSO	003	B										
02 Jun	N16W18	305	0040	04	CAO	004	B										
03 Jun	N16W30	304	0030	02	HSX	001	A										
04 Jun	N15W44	305	0020	02	HSX	001	A										
05 Jun	N16W57	305	0010	01	AXX	001	A										
06 Jun	N16W70	305															

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 306

Region 8556

27 May	S14E08	358	0010	03	BXO	004	B										
28 May	S14W06	359	0010	05	BXO	004	B										
29 May	S14W19	359															
30 May	S14W32	359															
31 May	S14W45	359															
01 Jun	S14W58	359															
02 Jun	S14W71	359															
03 Jun	S14W84	359															
04 Jun	S14W97	359															

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 359



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 8557

27 May	S28E73	293	0090	06	DSO	005	B	2			2						
28 May	S29E56	297	0030	06	DRO	004	B	1			4						
29 May	S30E46	294	0130	03	CAO	007	B				1						
30 May	S30E34	293	0070	03	DAO	005	A										
31 May	S30E21	293	0030	03	HAX	005	A										
01 Jun	S29E08	292	0020	06	CRO	009	B	1			3	1					
02 Jun	S27W06	293	0010	05	BXO	004	B				1						
03 Jun	S27W19	293						1			1	1					
04 Jun	S27W32	293						1			3						
05 Jun	S27W45	293															
06 Jun	S27W58	293															
										6	0	0	15	2	0	0	0

Still on Disk.

Absolute heliographic longitude: 293

Region 8558

28 May	N14E68	285	0020	02	HRX	001	A				1						
29 May	N16E56	284	0120	09	DSI	012	B				1						
30 May	N16E43	284	0300	09	DAI	029	B	1			6						
31 May	N16E30	284	0410	08	DSO	019	B										
01 Jun	N15E18	282	0570	08	DKI	021	B										
02 Jun	N15E04	283	0600	09	DKI	023	B				1						
03 Jun	N16W09	283	0600	09	DKI	023	B										
04 Jun	N16W22	283	0390	09	DKI	024	B										
05 Jun	N16W35	283	0330	09	DAI	023	B										
06 Jun	N16W49	283	0210	08	DSO	017	B	1			3						
										2	0	0	12	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 283



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 8559

28 May	N21E13	344	0300	04	HKX	004	A												
29 May	N20E03	337	0250	05	HKX	003	A											1	
30 May	N21W0	335	0330	05	DKO	007	B												
31 May	N20W23	337	0260	04	HSX	001	A												
01 Jun	N19W33	333	0170	05	HHX	003	A												
02 Jun	N22W50	337	0240	06	CHO	002	B												
03 Jun	N21W63	337	0250	03	HHX	001	A												
04 Jun	N21W76	337	0160	03	HSX	001	A											1	
05 Jun	N21W90	338	0100	03	HSX	001	A												
																			0 0 0 2 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 337

Region 8560

28 May	S25E61	292	0090	03	HAX	003	A												
29 May	S23E50	290	0070	05	CAO	005	B												1
30 May	S24E35	292	0070	04	DAO	007	A												
31 May	S24E22	292	0030	05	DSO	009	B	1											4
								1	0	0	5	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 292

Region 8561

29 May	N22E11	329	0000	01	AXX	001	A												
30 May	N25E06	321	0000	00	AXX	001	A												
31 May	N25W07	321																	
01 Jun	N25W20	321																	
02 Jun	N25W33	321																	
03 Jun	N25W46	321																	
04 Jun	N25W59	321																	
05 Jun	N25W72	321																	
06 Jun	N25W85	321																	
																			0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 321



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 8562

31 May	S15E22	292	0050	05	CAO	013	B	2			3						
01 Jun	S16E09	291	0190	07	DAI	026	B	1			4	1					
02 Jun	S16W05	292	0340	08	DAI	032	BG	2			2	1					
03 Jun	S15W18	292	0420	09	DKI	029	BG	5	1		13	2					
04 Jun	S16W31	292	0420	10	DKI	024	B	1			2						
05 Jun	S15W45	293	0410	10	DAI	026	B	1			1						
06 Jun	S15W57	291	0300	13	EAO	022	BG				2						
								12	1	0	27	4	0	0	0	0	

Still on Disk.

Absolute heliographic longitude: 292

Region 8563

31 May	S25E63	251	0010	05	BXO	003	B										
01 Jun	S26E51	249	0010	08	BXO	007	B	1			1	1					
02 Jun	S26E38	249	0020	07	BXO	007	B										
03 Jun	S25E25	249	0010	05	BXO	003	B										
04 Jun	S24E11	250	0010	04	BXO	003	B										
05 Jun	S24W04	252	0000	04	BXO	004	B										
06 Jun	S24W17	251	0010	05	BXO	006	B										
								1	0	0	1	1	0	0	0	0	

Still on Disk.

Absolute heliographic longitude: 252

Region 8564

01 Jun	S15E68	232	0020	01	HSX	001	A										
02 Jun	S16E53	234	0040	03	CSO	002	B										
03 Jun	S14E40	234	0030	02	HSX	001	A										
04 Jun	S14E27	234	0020	02	HSX	001	A										
05 Jun	S15E13	235	0020	01	HSX	001	A										
06 Jun	S15E00	234	0020	01	HSX	001	A										
								0	0	0	0	0	0	0	0	0	

Still on Disk.

Absolute heliographic longitude: 234

Region 8565

02 Jun	S07E42	245	0020	03	CRO	004	B										
03 Jun	S07E29	245															
04 Jun	S07E16	245															
05 Jun	S07E03	245															
06 Jun	S07W10	245															
								0	0	0	0	0	0	0	0	0	

Still on Disk.

Absolute heliographic longitude: 245



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 8566

02 Jun	N23E74	213	0010	00	HSX	001	A										
03 Jun	N23E63	211	0020	01	HRX	001	A										
04 Jun	N22E50	211	0010	00	AXX	001	A										
05 Jun	N22E37	211	0000	00	AXX	001	A										
06 Jun	N24E26	208	0000	03	BXO	003	B										

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 208

Region 8567

03 Jun	S14W04	278	0010	04	CSO	004	B										
04 Jun	S14W18	279	0020	06	BXO	008	B										
05 Jun	S14W32	280	0020	08	CRO	008	B										
06 Jun	S14W43	277	0000	05	BXO	003	B										

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 278

Region 8568

04 Jun	N12W55	316	0010	03	CRO	005	B						1				
05 Jun	N11W69	317	0020	03	CAO	003	B										
06 Jun	N10W81	315	0010	03	BXO	004	B										

0 0 0 1 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 316

Region 8569

04 Jun	N18E73	188	0060	05	CAO	002	B										
05 Jun	N21E59	189	0100	07	CAO	005	B										
06 Jun	N18E47	187	0090	09	CSO	008	B						1				

0 0 0 1 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 187

Region 8570

04 Jun	S14E74	187	0040	01	HSX	001	A										
05 Jun	S14E60	188	0050	01	HSX	001	A										
06 Jun	S14E48	186	0050	02	HSX	001	A										

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 186



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 8571</i>																	
05 Jun	S19E60	188	0030	02	HRX	003	A					2					
06 Jun	S19E48	186	0150	07	CAO	011	B										
								0	0	0	2	0	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 186																	
<i>Region 8572</i>																	
05 Jun	N26W58	306	0010	05	CRO	002	B										
06 Jun	N26W69	303	0000	04	BXO	003	B					2					
								0	0	0	2	0	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 306																	
<i>Region 8573</i>																	
05 Jun	N18W45	293	0000	00	AXX	001	A										
06 Jun	N18W59	293															
								0	0	0	0	0	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 293																	
<i>Region 8574</i>																	
05 Jun	N30E40	208	0010	05	CRO	003	B										
06 Jun	N29E28	206	0050	07	DAO	013	B					8					
								0	0	0	8	0	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 206																	
<i>Region 8575</i>																	
06 Jun	N13E32	202	0000	01	AXX	002	A										
								0	0	0	0	0	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 202																	
<i>Region 8576</i>																	
06 Jun	S29E52	182	0010	06	BXO	004	B										
								0	0	0	0	0	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 182																	



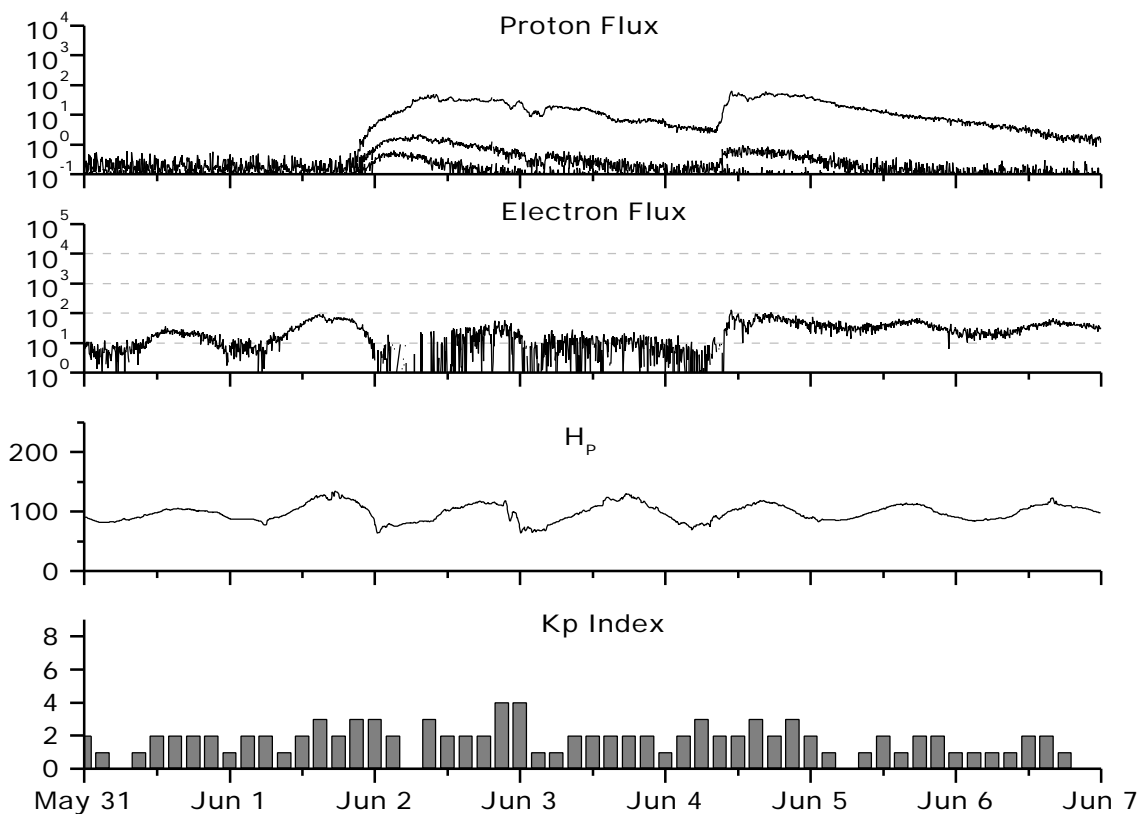
**Recent Solar Indices (preliminary)
of the observed monthly mean values**

Month	Sunspot Numbers			Radio Flux		Geomagnetic			
	Observed values SWO	Ratio RI	Ratio RI/SWO	Smooth values SWO	Smooth values RI	*Penticton 10.7 cm	Smooth Value	Planetary Ap	Smooth Value
1997									
June	22.1	12.7	0.57	29.0	20.3	71.7	80.1	07	08.6
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	55.6	0.72	97.7	70.5	117.3	127.9	13	12.5
November	99.5	73.6	0.74	101.3	73.0	140.2	130.0	16	12.3
December	120.8	81.6	0.68			150.1		08	
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			148.4		10	

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 31 May 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.

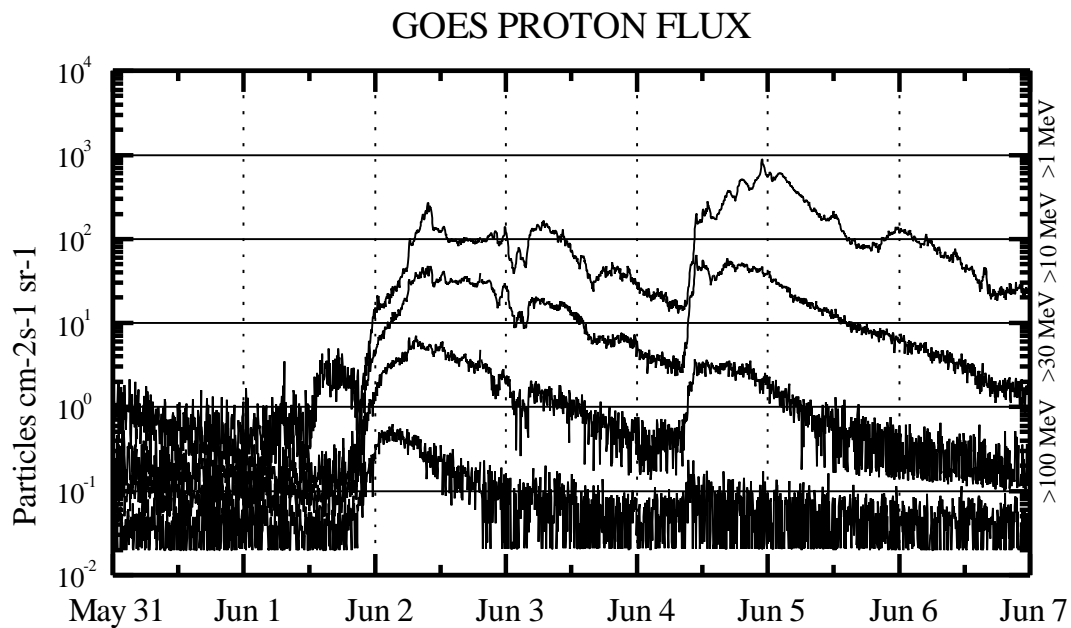
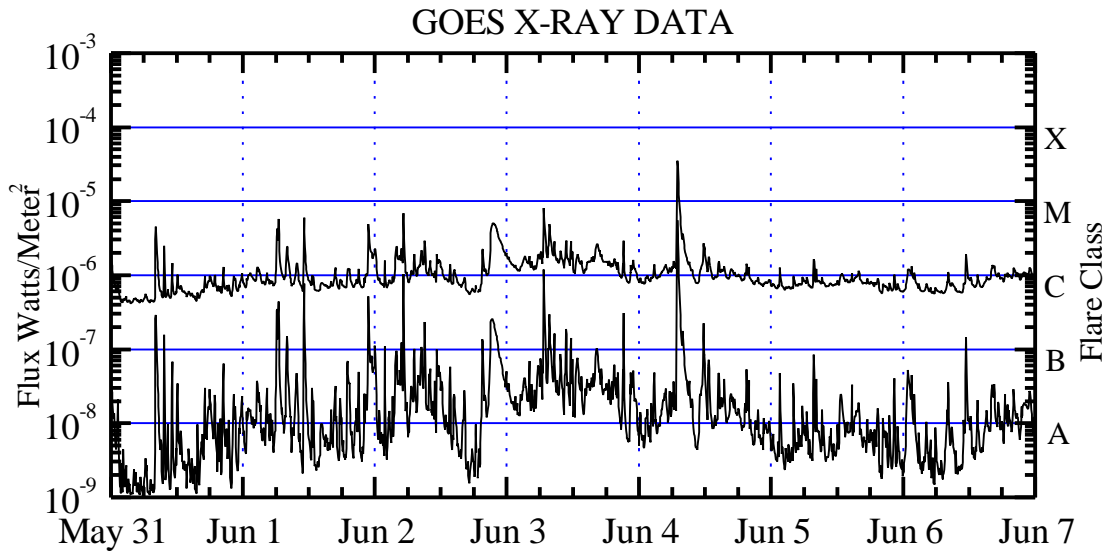
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV at GOES-8.

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

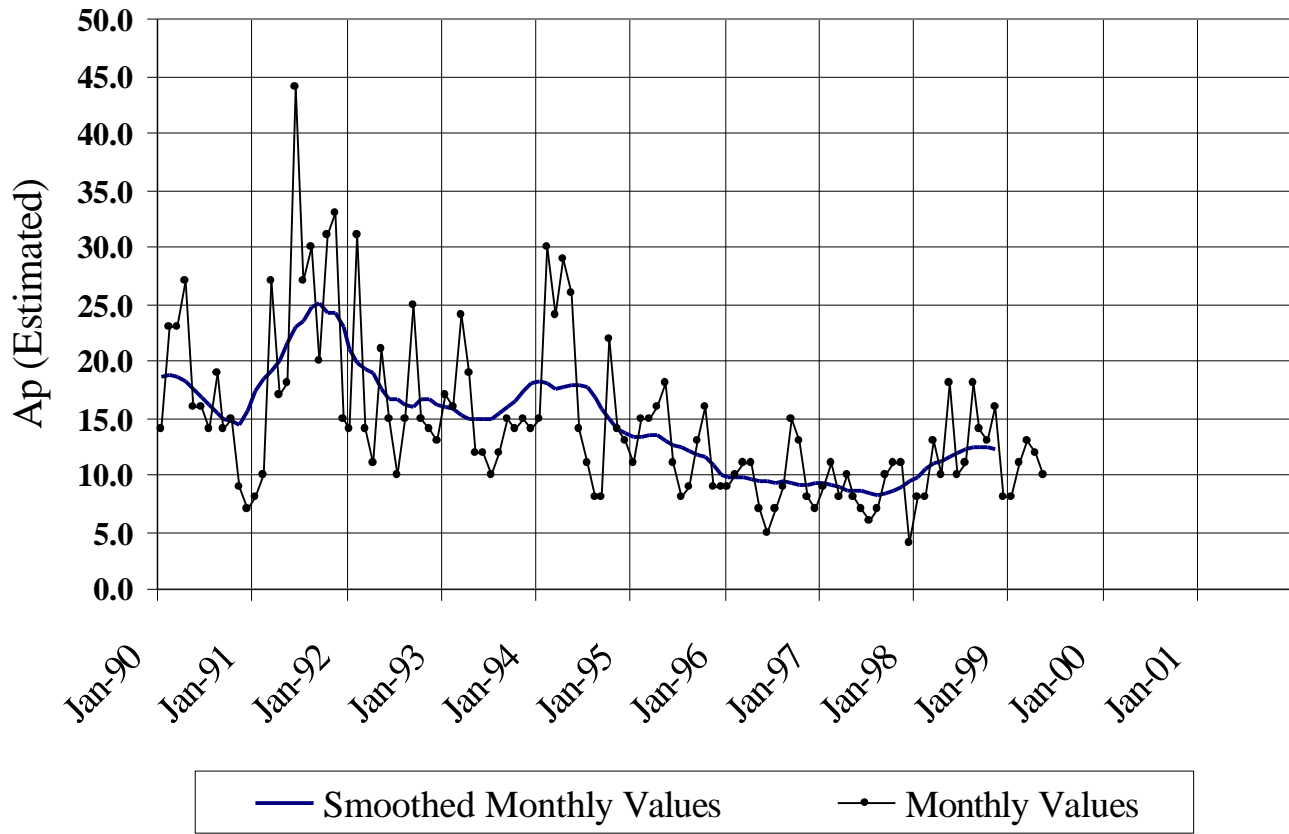
X-ray plot contains five minute averaged x-ray flux (watts / m²) as measured by GOES 8 and 10 in two wavelength bands, .05 -.4 and .1 - .8 nm. The letters A, B, C, M and X refer to x-ray event levels for the .1 - .8 nm band.

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.



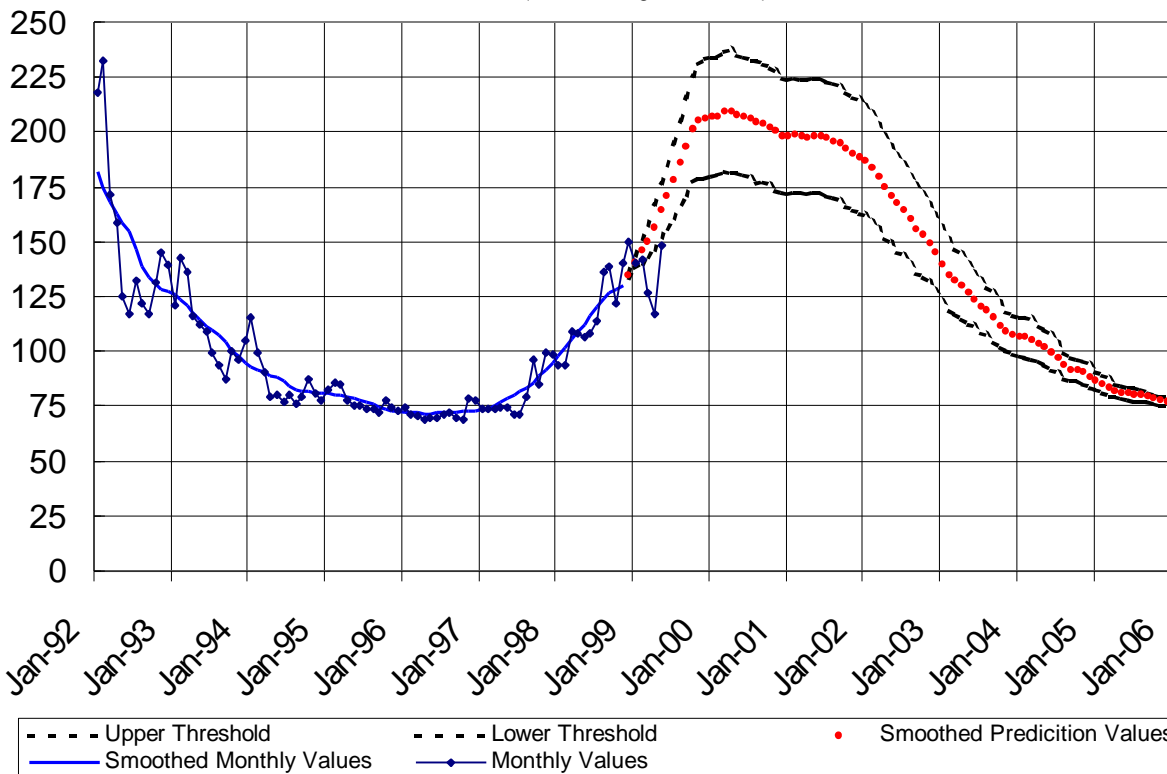
Smoothed and Monthly Values

(Data Through 1 June 99)



ISES Solar Cycle F10.7cm Radio Flux Progression

(Data Through 1 June 99)



ISES Solar Cycle Sunspot Number Progression

(Data Through 1 June 99)

