

**Space Weather Highlights
27 July – 02 Aug 1998**

Solar activity ranged from very low to low. Low levels occurred during 31 July - 02 August by virtue of isolated C-class flares, three of which were notable. The first was an optically uncorrelated C1 x-ray flare at 31/0345UT with associated Types II and IV radio sweeps. The second was a long-duration C2/2F at 31/0538UT accompanied by a Type II radio sweep from Region 8283 (N27, L = 346, class/area Hsx/050 on 29 July). The final flare of note was a B7/1F at 01/0631UT with associated Types II and IV radio sweeps from Region 8288 (S27, L = 315, class/area Hax/020 on 01 August). Sunspot groups were generally characterized by weak magnetic fields, small spot counts, and no remarkable growth or decay.

Real-time solar wind data were available from the Advanced Composition Explorer (ACE) spacecraft during most of the period. Velocities ranged from 300 - 460 km/sec with no remarkable variance. There were two periods of enhanced densities. The first occurred during 28 - 29 July (peak 45 p/cc on 28 July). The other occurred on 31 July and reached a peak of 70 p/cc. Bz ranged from plus to minus 05 nT (GSM) during most of the period. However, Bz turned southward early on 31 July with maximum southerly deflections of minus 12 nT (GSM) before turning northward during the latter half of the day with maximum northerly deflections of plus 14 nT. Solar sector orientation was not readily discernible during most of the period.

There were no significant proton enhancements detected at geosynchronous altitude.

The greater than 2 MeV electron flux at geosynchronous altitude was at high levels during 27 - 28 July, then dropped to normal levels for the balance of the period.

The geomagnetic field was at quiet to unsettled levels through 30 July. The field became disturbed during 31 July - 01 August with unsettled to minor storm levels detected at all latitudes and some brief major storm periods at high latitudes. Field activity dropped to quiet levels on the last day of the period.

**Space Weather Forecast
05 August 1998 - 31 August 1998**

Solar activity is expected to be low during most of the period with a chance for isolated M-class flares. No major flare activity is expected.

No proton enhancements are expected at geosynchronous altitude.

The greater than 2 MeV electron flux at geosynchronous altitude is expected to be at moderate to high levels during 20 - 24 August. Otherwise, normal to moderate levels are expected.

The geomagnetic field is expected to be at quiet to unsettled levels during most of the period. However, active to minor storm levels are possible during 19 - 20 August due to recurrent coronal hole effects.

NOTE: Effective 27 July 1998, GOES-8 is considered primary and GOES-10 back up for all SWO data and products. Since the GOES-10 spacecraft is inverted to the normal GOES orientation, its Space Environment Monitor (SEM) sensors have the following limitations: **X-rays**-No differences expected except at low levels. **particle data** - The inversion of GOES-10 relative to GOES-8 and -9 means that the sensors are looking in a different direction (east instead of West), and some differences will be observed during proton events. **magnetometer data** - The data are still being validated and will be released later.



Daily Solar Data

Date	Radio Flux	Sun spot	Sunspot Area	X-ray Background	X-ray Flux			Flares				
	10.7 cm	No. (10 ⁶ hemi.)			C	M	X	S	1	2	3	4
27 July	120	109	960	B2.2	0	0	0	1	0	0	0	0
28 July	121	116	790	B2.0	0	0	0	4	0	0	0	0
29 July	120	115	810	B2.2	0	0	0	0	0	0	0	0
30 July	115	69	680	B1.5	0	0	0	0	0	0	0	0
31 July	114	107	680	B1.5	2	0	0	1	0	1	0	0
01 August	112	74	570	B1.9	1	0	0	1	1	0	0	0
02 August	110	121	520	B2.4	1	0	0	2	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
27 July	5.6E+5	1.6E+4	3.6E+3		4.9E+8	
28 July	6.9E+5	1.6E+4	3.7E+3		2.2E+8	
29 July	2.1E+5	1.6E+4	3.8E+3		3.8E+6	
30 July	1.8E+5	1.7E+4	3.9E+3		4.4E+6	
31 July	1.1E+5	1.6E+4	3.8E+3		1.1E+6	
01 August	6.7E+4	1.6E+4	4.0E+3		8.1E+5	
02 August	1.3E+5	1.7E+4	4.0E+3		1.0E+6	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
27 July	5	1-1-1-3-2-1-1-2	*	*-*-*-*-2-0-1	6	1-1-1-3-2-2-2-2
28 July	5	0-1-1-0-2-2-3-2	4	0-2-0-1-1-3-1-0	6	1-1-1-1-2-2-2-3
29 July	8	2-3-2-1-2-2-2-2	9	2-3-2-1-2-1-3-3	6	2-3-2-2-2-3-3-3
30 July	11	2-2-0-1-2-1-3-5	8	2-1-0-1-1-2-2-4	12	2-2-1-2-2-3-3-5
31 July	21	3-3-4-3-3-3-4-4	34	3-4-6-5-4-4-4-2	33	4-4-6-5-4-4-4-4
01 August	17	2-2-2-2-4-3-5-3	13	2-2-2-1-4-4-3-1	15	2-1-2-2-4-4-5-3
02 August	7	2-2-2-2-1-1-2-3	6	1-2-2-3-2-1-1-1	8	3-1-2-2-1-2-3-2

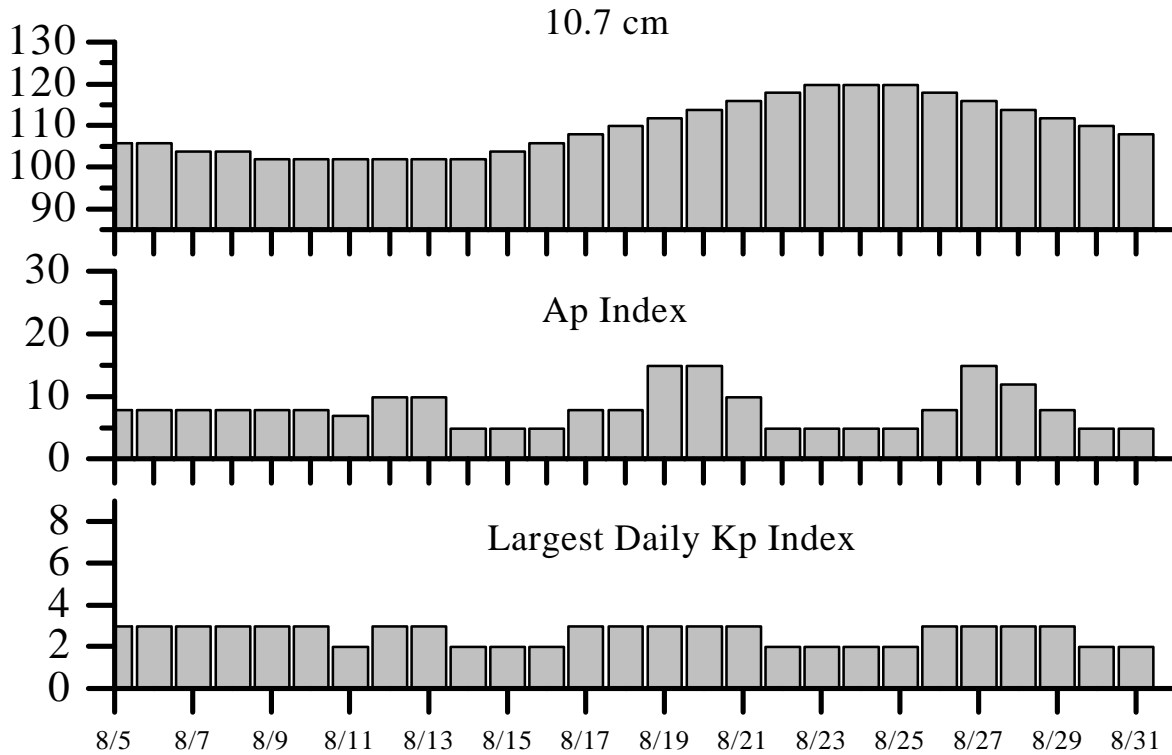


Alerts and Warnings Issued

<u>Date and Time of Issue (UT)</u>	<u>Type of Alert or Warning</u>	<u>Date and Time of Event (UT)</u>
28 Jul 0048	3-245MHz Radio Bursts	27 Jul
28 Jul 0103	245 MHz Radio Noise Storm	27 Jul
30 Jul 0030	1-245MHz Radio Burst	29 Jul
30 Jul 0030	245MHz Radio Noise Storm	29 Jul
31 Jul 0007	K = 5 Observed	30 Jul 21-24
31 Jul 0007	Sudden Impulse observed at Boulder	30 Jul 2340
31 Jul 0044	4-245 MHz Radio Bursts	30 Jul
31 Jul 0300	K = 4 Observed	31 Jul 00-03
31 Jul 0625	Type II Radio Emission	31 Jul 0533
31 Jul 1208	A ≥ 20 Observed	31 Jul 1200
31 Jul 1220	Type IV Radio Emission	31 Jul 0417
31 Jul 1243	Type II Radio Emission	31 Jul 0338
31 Jul 1804	K = 4 Observed	31 Jul 15-18
01 Aug 0659	Type II Radio Emission	01 Aug 0646
01 Aug 0720	Type IV Radio Emission	01 Aug 0659
01 Aug 1806	K = 5 Observed	01 Aug 15-18



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
05 Aug	106	8	3	19 Aug	112	15	3
06	106	8	3	20	114	15	3
07	104	8	3	21	116	10	3
08	104	8	3	22	118	5	2
09	102	8	3	23	120	5	2
10	102	8	3	24	120	5	2
11	102	7	2	25	120	5	2
12	102	10	3	26	118	8	3
13	102	10	3	27	116	15	3
14	102	5	2	28	114	12	3
15	104	5	2	29	112	8	3
16	106	5	2	30	110	5	2
17	108	8	3	31	108	5	2
18	110	8	3				



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

No Events Observed

Flare List

Date	Time			X-ray Class.	Optical Imp / Brtns	Location Lat CMD	Rgn #
	Begin	Max	End				
27 July	1317	1321	1326	B4.1			
	1525	1528	1554		SF	N17W01	8281
	2345	2349	2353	B3.2			
28 July	0016	0020	0022	B3.2			
	0357	0401	0405	B3.9			
	0453	0456	0458	B3.0			
	0517	0526	0556		SF	N25W31	8284
	0631	0632	0649		SF	N25W31	8284
	0816	0821	0845	B9.0	SF	S25E03	8280
	0821	0824	0832		SF	N23W52	8279
	2131	2137	2141	B7.9			
	2259	2303	2306	B6.3			
29 July	No Flares Observed						
30 July	0139	0145	0149	B4.6			
	0804	0810	0822	B3.2			
31 July	0331	0345	0413	C1.2			
	0528	0539	0708	C2.9	2F	N28E31	8283
	1433	1540	1610	B7.1			
01 August	1605	1605	1611		SF	N18E68	8290
	0622	0631	0707	B7.8	1F	S19E44	8288
	1102	1105	1114		SF	N17W05	8286
	1131	1137	1141	B6.2			
	1552	1610	1628	B9.2			
	1804	1820	1842	C3.3			
	2217	2221	2225	B5.3			
02 August	0009	0015	0019	B7.0			
	0422	0432	0438	B5.1			
	0450	0513	0532	C1.7			
	0714	0715	0717	B8.2	SF	S18E79	
	0814	0818	0822	B6.1			
	0849	0855	0910	B9.2	1F	S19E78	
	1014	1019	1029	B5.8			
	1151	1156	1201	B8.9			
	1411	1415	1419	B3.5			
	1459	1503	1506	B3.6			
	1527	1530	1534	B3.8	SF	S21E74	8293
	1619	1623	1626	B6.5			



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 8272</i>																					
15 Jul	S28E55	161	0020	04	BXO	003	B	1													
16 Jul	S29E44	158	0030	07	BXO	006	B	1													
17 Jul	S28E31	158	0010	04	BXO	003	B														
18 Jul	S28E16	160	0000	03	BXO	002	B														
19 Jul	S28E03	160																			
20 Jul	S28W10	160																			
21 Jul	S31W18	154	0010	08	BXO	003	B														
22 Jul	S31W31	154																			
23 Jul	S32W43	153	0000	04	BXO	002	B														
24 Jul	S32W56	153																			
25 Jul	S32W69	153																			
26 Jul	S32W82	153																			

2 0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 160

<i>Region 8275</i>																				
16 Jul	N16E64	138	0010	03	BXO	002	B													
17 Jul	N16E51	138	0010	00	AXX	001	A													
18 Jul	N14E37	139	0000	00	AXX	001	A													
19 Jul	N14E24	139																		
20 Jul	N14E11	139																		
21 Jul	N14W02	139																		
22 Jul	N14W15	139																		
23 Jul	N14W28	139																		
24 Jul	N14W41	139																		
25 Jul	N14W54	139																		
26 Jul	N14W67	139																		

0 0 0 0 0 0 0 0 0

Died on Disk.

Absolute heliographic longitude: 139



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 8276</i>																					
19 Jul	S19E62	101	0000	00	AXX	001	A														
20 Jul	S19E48	102	0010	06	BXO	004	B														
21 Jul	S20E36	100	0000	04	BXO	002	B														
22 Jul	S21E19	104	0000	00	AXX	001	A														
23 Jul	S21E06	104																			
24 Jul	S21W07	104	0000	02	BXO	002	B														
25 Jul	S21W20	104																			
26 Jul	S21W33	104																			
27 Jul	S21W46	102																			
28 Jul	S21W59	102																			
29 Jul	S21W72	102																			

0 0 0 0 0 0 0 0 0

Died on Disk.

Absolute heliographic longitude: 104

<i>Region 8278</i>																				
20 Jul	S28E52	098	0000	00	AXX	001	A													
21 Jul	S28E38	098	0010	04	BXO	003	B													
22 Jul	S27E26	097	0020	05	BXO	005	B													
23 Jul	S27E13	097	0010	06	BXO	008	B													
24 Jul	S27W03	100	0010	03	BXO	003	B													
25 Jul	S28W18	101	0000	00	AXX	001	A													
26 Jul	S28W31	101																		
27 Jul	S28W44	100																		
28 Jul	S28W57	100																		
29 Jul	S28W70	100																		

0 0 0 0 0 0 0 0 0

Died on Disk.

Absolute heliographic longitude: 100



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 8279</i>															
21 Jul	N26E33	103	0010	03	CRO	002	B								
22 Jul	N27E20	103	0030	05	DAO	006	B								
23 Jul	N26E07	103	0020	07	CRO	006	B								
24 Jul	N24W08	105	0030	05	CSO	005	B								
25 Jul	N24W22	105	0030	05	CSO	006	B								
26 Jul	N24W36	106	0020	05	BXO	005	B								
27 Jul	N23W50	106	0010	03	AXX	004	A								
28 Jul	N24W62	105	0010	04	BXO	002	B								
29 Jul	N23W81	111	0010	04	BXO	002	B								
								0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 104

Region 8280

21 Jul	S21E75	061	0130	04	HKX	001	A								
22 Jul	S21E63	060	0340	13	EKO	008	B	1							
23 Jul	S21E54	056	0500	12	EKI	013	B	1							
24 Jul	S23E40	057	0510	11	EHO	010	B	1							
25 Jul	S23E27	056	0430	10	DHO	013	B	1							
26 Jul	S24E14	056	0450	11	EHO	013	B								
27 Jul	S24E02	054	0380	10	DHO	010	B								
28 Jul	S23W11	054	0300	09	DHO	008	B								
29 Jul	S23W24	054	0340	09	CHO	008	B								
30 Jul	S22W41	058	0310	04	HHX	001	A								
31 Jul	S23W54	058	0340	04	HHX	001	A								
01 Aug	S25W68	058	0340	03	HHX	001	A								
02 Aug	S24W81	058	0220	04	HHX	001	A								
								4	0	0	0	0	0	0	0

Still on Disk.

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	4						
<i>Region 8281</i>																					
21 Jul	N16E73	063	0000	00	AXX	001	A														
22 Jul	N17E59	064	0030	05	CRO	007	B														
23 Jul	N18E45	065	0020	07	CRO	005	B	1													
24 Jul	N17E34	063	0020	04	CSO	006	B														
25 Jul	N16E22	061	0010	03	BXO	003	B														
26 Jul	N16E08	062	0010	02	BXO	003	B														
27 Jul	N16W05	061																			
28 Jul	N16W17	060	0010	02	BXO	002	B														
29 Jul	N17W33	063	0010	03	BXO	004	B														
30 Jul	N17W46	063																			
31 Jul	N17W59	063																			
01 Aug	N17W72	063																			
02 Aug	N17W85	063																			

1 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 061

Region 8282

22 Jul	N33E67	056	0010	06	BXO	003	B													
23 Jul	N33E56	054	0040	07	CRO	010	B													
24 Jul	N32E43	054	0210	07	DAI	013	B													
25 Jul	N31E31	052	0420	09	DAI	012	B													
26 Jul	N32E16	054	0560	08	DKI	019	BD													
27 Jul	N32E04	052	0530	07	DKI	016	BD													
28 Jul	N31W09	052	0390	08	DKI	014	BD													
29 Jul	N32W27	057	0320	06	DKI	018	B													
30 Jul	N31W34	051	0280	06	DKO	012	B													
31 Jul	N31W48	052	0260	05	CAO	010	B													
01 Aug	N30W60	050	0160	04	CAO	004	B													
02 Aug	N30W72	049	0130	04	CAO	004	B													

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 052



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 8283</i>																							
27 Jul	N27E68	348	0040	02	HSX	001	A																
28 Jul	N27E55	348	0050	02	HSX	001	A																
29 Jul	N28E43	347	0050	02	HSX	002	A																
30 Jul	N27E30	347	0040	02	CSO	002	B																
31 Jul	N27E16	348	0030	01	HSX	001	A	1													1		
01 Aug	N27E04	346	0030	01	HSX	001	A																
02 Aug	N24W10	347	0040	05	HSX	001	A																
								1	0	0	0	0	0	0	1	0	0	0					

Still on Disk.

Absolute heliographic longitude: 346

Region 8284

27 Jul	N27W24	080	0000	03	BXO	004	B														
28 Jul	N27W38	081	0030	06	CSO	007	B														
29 Jul	N27W53	083	0070	08	CSO	010	B														
30 Jul	N26W67	084	0040	06	DSO	003	B														
31 Jul	N25W82	086	0000	00	AXX	001	A														
01 Aug	N25W95	086																			
								0	0	0	0	0	0	0	0	0	0	0			

Crossed West Limb.

Absolute heliographic longitude: 080

Region 8285

27 Jul	S23E18	038	0000	00	AXX	001	A														
28 Jul	S22E04	039	0000	00	AXX	001	A														
29 Jul	S22W09	039																			
30 Jul	S22W22	039																			
31 Jul	S22W35	039																			
01 Aug	S22W48	039																			
02 Aug	S22W61	039																			
								0	0	0	0	0	0	0	0	0	0	0			

Still on Disk.

Absolute heliographic longitude: 039



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 8286</i>															
27 Jul	N18E54	002	0000	03	BXO	003	B								
28 Jul	N17E40	003	0000	00	AXX	001	A								
29 Jul	N17E27	003													
30 Jul	N17E14	003													
31 Jul	N17E01	003													
01 Aug	N17W12	003													
02 Aug	N18W23	360	0010	00	BXO	003	B								
								0	0	0	0	0	0	0	0
Still on Disk.															
Absolute heliographic longitude: 003															
<i>Region 8287</i>															
29 Jul	N17W55	085	0010	00	AXX	001	A								
30 Jul	N17W68	085													
31 Jul	N17W81	085													
								0	0	0	0	0	0	0	0
Crossed West Limb.															
Absolute heliographic longitude: 085															
<i>Region 8288</i>															
30 Jul	S26E62	315	0010	00	HRX	001	A								
31 Jul	S27E48	316	0000	00	AXX	001	A					1			
01 Aug	S27E35	315	0020	01	HAX	001	A					1			
02 Aug	S28E22	315	0010	01	AXX	002	A								
								0	0	0	0	2	0	0	0
Still on Disk.															
Absolute heliographic longitude: 315															
<i>Region 8289</i>															
31 Jul	N22W63	067	0010	03	BXO	003	B								
01 Aug	N22W76	067													
02 Aug	N22W89	067													
								0	0	0	0	0	0	0	0
Still on Disk.															
Absolute heliographic longitude: 067															



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 8290</i>																	
31 Jul	N16E63	301	0010	00	AXX	002	A										
01 Aug	N16E49	301	0010	01	AXX	002	A										
02 Aug	N16E36	301	0010	01	AXX	002	A										
								0	0	0	0	0	0	0	0	0	
Still on Disk.																	
Absolute heliographic longitude: 301																	
<i>Region 8291</i>																	
31 Jul	S23E09	355	0030	03	BXO	008	B										
01 Aug	S24W03	353	0010	04	BXO	005	B										
02 Aug	S22W20	357	0000	00	AXX	001	A										
								0	0	0	0	0	0	0	0	0	
Still on Disk.																	
Absolute heliographic longitude: 353																	
<i>Region 8292</i>																	
02 Aug	N25E03	334	0010	04	BXO	003	B										
								0	0	0	0	0	0	0	0	0	
Still on Disk.																	
Absolute heliographic longitude: 334																	
<i>Region 8293</i>																	
02 Aug	S20E69	268	0080	04	HSX	001	A										
								0	0	0	0	0	0	0	0	0	
Still on Disk.																	
Absolute heliographic longitude: 268																	
<i>Region 8294</i>																	
02 Aug	N18E16	321	0010	00	BXO	003	B										
								0	0	0	0	0	0	0	0	0	
Still on Disk.																	
Absolute heliographic longitude: 321																	



**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
1996									
August	20.5	14.4	0.70	13.1	08.3	72.4	72.1	09	09.4
September	02.9	01.6	0.55	13.3	08.4	69.4	72.3	15	09.3
October	02.3	00.9	0.39	14.0	08.8	69.2	72.6	13	09.1
November	26.7	17.9	0.67	15.4	09.8	78.7	73.0	08	09.1
December	21.1	13.3	0.63	16.2	10.4	77.8	73.3	07	09.3
1997									
January	09.0	05.7	0.63	16.5	10.5	74.0	73.4	09	09.3
February	11.3	07.6	0.67	17.4	11.0	73.8	73.7	11	09.2
March	14.4	08.7	0.60	20.4	13.5	73.5	75.1	08	08.9
April	24.5	15.5	0.63	24.0	16.5	74.5	76.8	10	08.6
May	28.6	18.5	0.65	26.4	18.3	74.6	78.4	08	08.6
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	25.1*	79.0	83.4*	07	08.3
September	52.8	51.3	0.88	40.5	28.4*	96.2	85.7*	10	08.4
October	33.6	22.8	0.68	45.4	31.9*	84.9	88.6*	11	08.6
November	53.5	39.0	0.73	49.3	35.1*	99.5	91.4*	11	09.0
December	57.9	41.2	0.71	54.2	39.1*	98.8	94.2*	05	09.6*
1998									
January	51.8	32.3*	0.62*	60.6	43.8*	93.5*	97.6*	07	10.0*
February	54.4	40.7*	0.75*			93.6*		07	
March	81.8	54.8*	0.67*			109.4*		11	
April	73.6	53.3*	0.72*			108.3*		10	
May	74.3	56.9*	0.77*			106.6*		18	
June	93.6	70.5*	0.75*			108.4*		11*	
July	98.3	66.2*	0.67*			114.0*		12*	

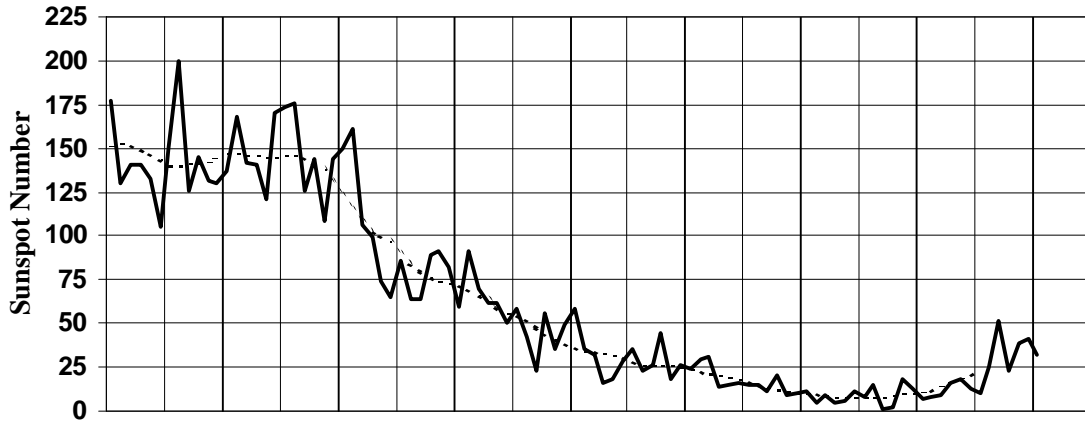
*Preliminary estimates.

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.

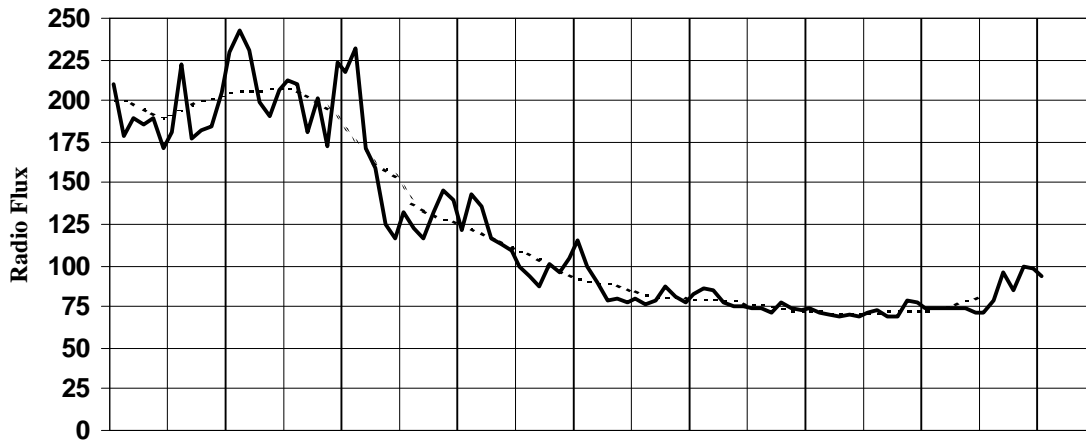
** From June 1991 onward, the 10.7-cm radio flux data source is Penticton, B.C. Canada. Prior to that, it was Ottawa.



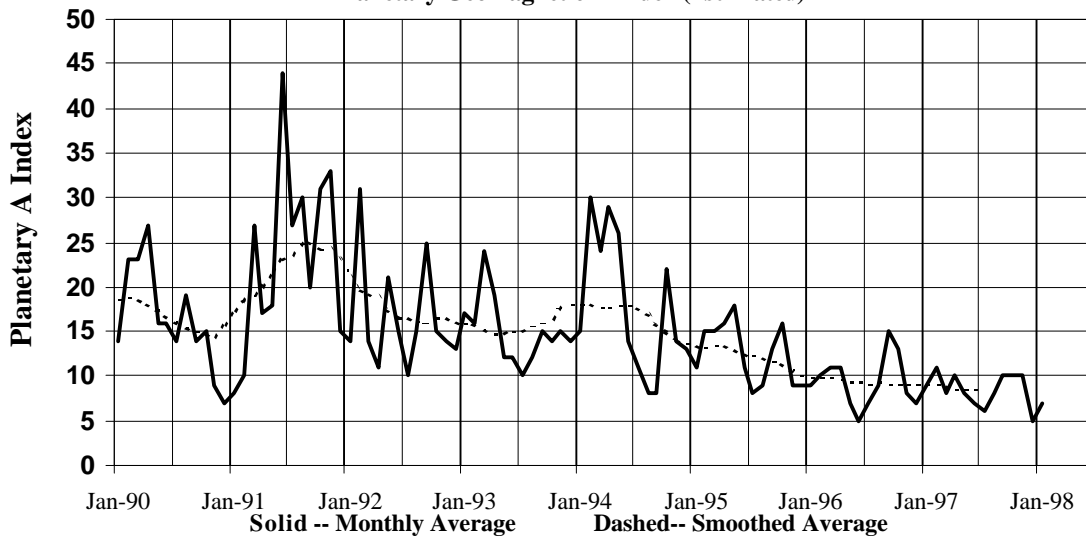
International Sunspot Number

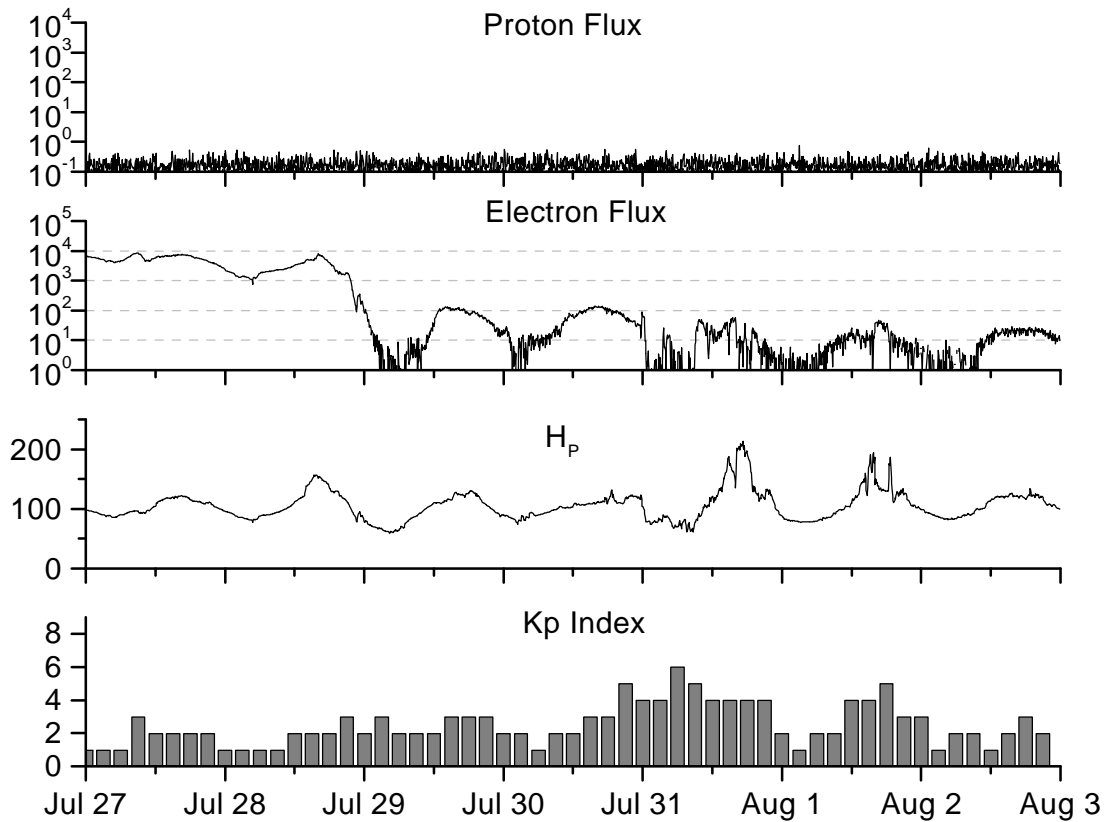


Penticton (DRAO) Radio Flux 2800MHz (10.7cm)



Planetary Geomagnetic A Index (Estimated)





Weekly Geosynchronous Satellite Environment Summary
Week Beginning 27 July 1998

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.

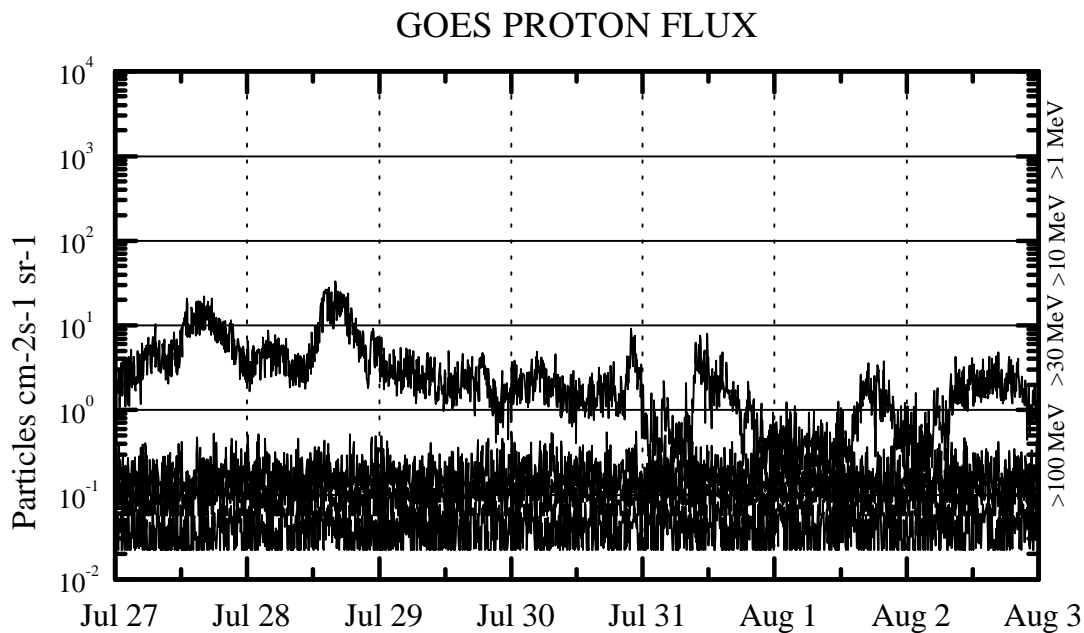
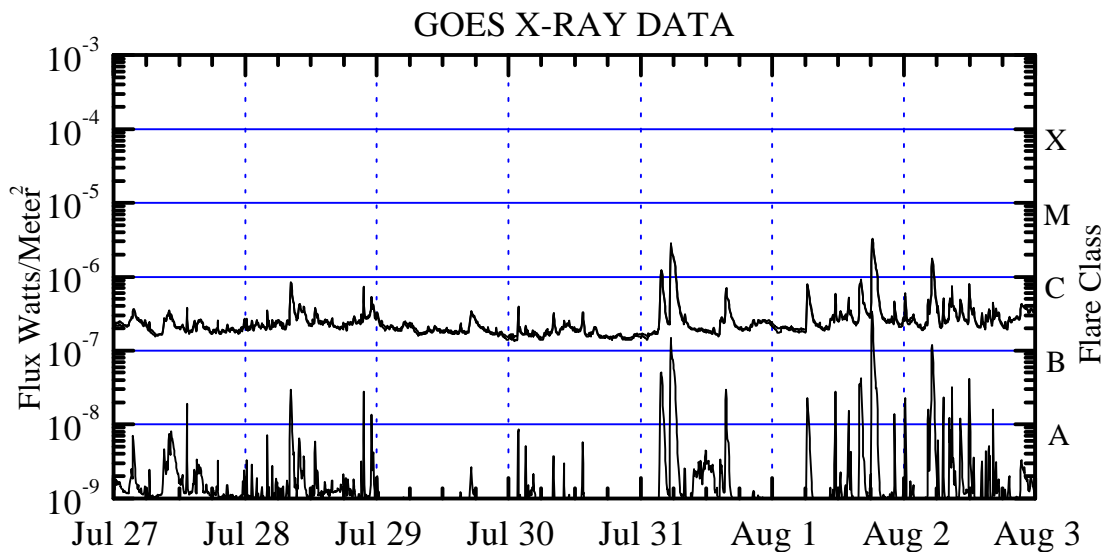
Electrons plot contains the five-minute averaged integral electron flux (electrons/ cm^2 -sec-sr) with energies greater than 2 MeV at GOES-8.

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 a more localized phenomena and the measurements generally are applicable to within a few degrees of longitude of the measuring satellite.





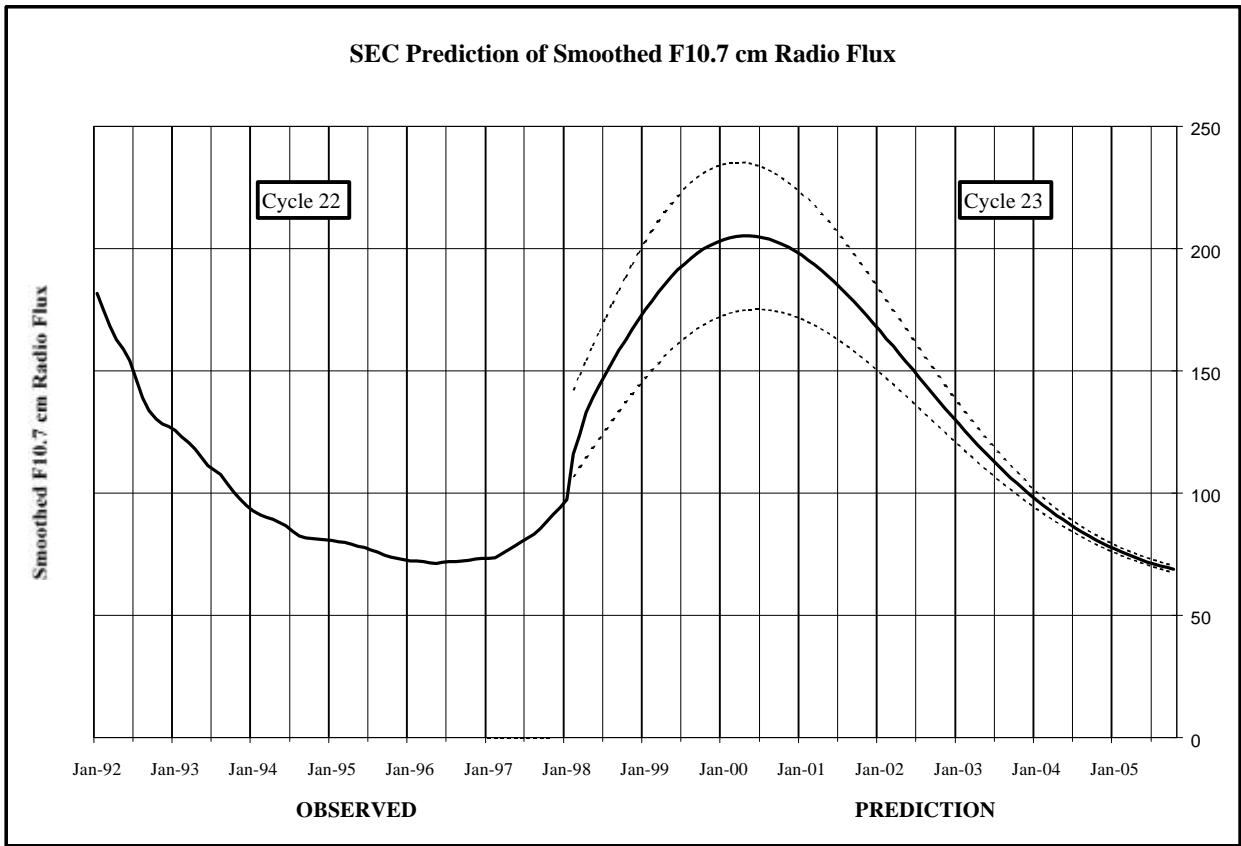
Weekly GOES Satellite X-ray and Proton Plots

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.



SEC Prediction of Smoothed F10.7 cm Radio Flux

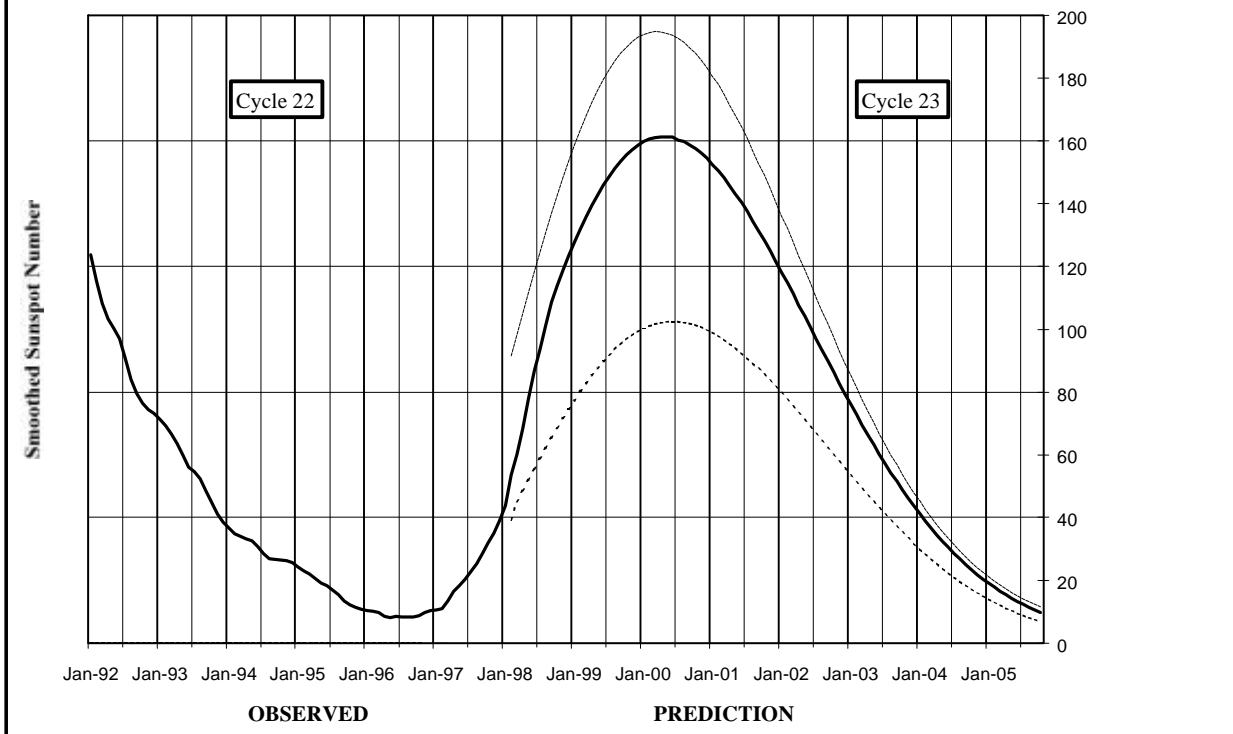


SEC Prediction of Smoothed F10.7cm Radio Flux

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1996	72 (***)	72 (***)	72 (***)	72 (***)	71 (***)	72 (***)	72 (***)	72 (***)	72 (***)	73 (***)	73 (***)	73 (***)
1997	73 (***)	74 (***)	75 (***)	77 (***)	78 (***)	80 (***)	82 (***)	83 (***)	86 (***)	89 (***)	91 (***)	94 (***)
1998	98 (***)	116 (19)	124 (20)	133 (20)	139 (21)	144 (21)	149 (22)	154 (22)	158 (23)	163 (23)	167 (23)	171 (24)
1999	175 (24)	179 (25)	182 (25)	186 (25)	189 (25)	191 (26)	194 (26)	196 (26)	198 (27)	200 (27)	202 (28)	203 (28)
2000	204 (30)	205 (30)	205 (30)	205 (30)	205 (30)	205 (28)	205 (27)	204 (27)	203 (26)	202 (26)	201 (26)	199 (26)
2001	197 (25)	195 (25)	193 (25)	191 (25)	189 (24)	186 (24)	184 (24)	181 (24)	178 (23)	175 (23)	173 (23)	170 (22)
2002	166 (22)	163 (22)	160 (21)	157 (21)	154 (21)	151 (21)	147 (20)	144 (20)	141 (19)	138 (19)	135 (18)	132 (18)
2003	129 (17)	126 (17)	123 (17)	120 (16)	117 (16)	114 (15)	112 (15)	109 (15)	106 (14)	104 (14)	102 (14)	99 (13)
2004	97 (13)	95 (13)	93 (12)	91 (12)	89 (11)	87 (10)	86 (9)	84 (9)	83 (8)	81 (7)	80 (9)	78 (9)
2005	77 (8)	76 (8)	75 (8)	74 (7)	73 (7)	72 (7)	71 (7)	70 (6)	70 (6)	69 (2)	68 (2)	68 (2)



SEC Prediction of Smoothed Sunspot Number



SEC Prediction of Smoothed Sunspot Number

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1996	10 (***)	10 (***)	10 (***)	9 (***)	8 (***)	9 (***)	9 (***)	8 (***)	9 (***)	9 (***)	10 (***)	11 (***)
1997	11 (***)	11 (***)	14 (***)	17 (***)	18 (***)	20 (***)	23 (***)	25 (***)	29 (***)	32 (***)	35 (***)	34 (***)
1998	44 (***)	54 (22)	60 (22)	68 (23)	78 (24)	87 (24)	94 (25)	101 (25)	109 (26)	114 (26)	119 (27)	124 (27)
1999	128 (27)	132 (28)	136 (28)	139 (29)	143 (29)	146 (29)	149 (29)	151 (29)	154 (29)	156 (29)	157 (29)	159 (29)
2000	160 (30)	161 (30)	161 (30)	161 (30)	161 (29)	161 (29)	160 (29)	160 (29)	159 (29)	158 (29)	156 (29)	155 (28)
2001	153 (28)	151 (28)	148 (28)	146 (27)	143 (27)	141 (27)	138 (27)	135 (26)	132 (26)	128 (26)	125 (25)	122 (25)
2002	119 (24)	115 (24)	111 (24)	108 (23)	104 (23)	101 (22)	97 (22)	94 (21)	90 (21)	86 (21)	83 (20)	80 (20)
2003	76 (19)	73 (19)	70 (18)	66 (18)	63 (17)	60 (17)	57 (17)	54 (16)	52 (16)	49 (15)	46 (15)	44 (14)
2004	41 (14)	39 (14)	37 (13)	35 (13)	32 (12)	31 (12)	29 (11)	27 (11)	25 (11)	23 (10)	22 (10)	20 (9)
2005	19 (9)	18 (9)	17 (8)	15 (8)	14 (8)	13 (8)	12 (7)	11 (7)	11 (7)	10 (6)	9 (5)	8 (4)

