Space Weather Highlights
31 Jan – 06 Feb 2000

Solar activity ranged from very low to high levels. Occasional B- and C-class flares occurred during 31 January - 03 February. Activity increased to moderate levels on 04 February as Region 8858 (N26, L - 200, class/area Eai/170 on 05 February) produced an impulsive M3/SF at 04/0919UT during a period of growth. Activity increased to high levels on 05 February by virtue of an impulsive X1/3B flare at 05/1928UT, also from Region 8858. A 350 SFU Tenflare and Type II radio sweep were associated with this flare. Activity dropped to low levels on 06 February as Region 8858 stabilized as a moderate-sized, mixed-polarity spot group.

Real-time solar wind data were available from the NASA Advanced Composition Explorer (ACE) spacecraft for most of the period. Recurrent, negative-polarity coronal hole effects began late on 05 February and continued through the rest of the period. The transition to the coronal hole wind stream was accompanied by increased velocities, which reached a peak of 720 km/sec on 06 January; low densities, increased IMF Bz variability with southerly deflections to minus 16 nT (GSM), and a shift to a toward (negative polarity) solar sector.

There were no proton events detected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at moderate to high levels during 31 January - 05 February, then dropped to normal to moderate levels on 06 February.

The geomagnetic field was at quiet to unsettled levels through most of 05 February. A coronal hole-induced disturbance began late on 05 February and continued through the rest of the period. Unsettled to major storm levels were detected during the disturbance with storm levels mostly limited to high latitudes.

Space Weather Outlook
09 February - 06 March 2000

Solar activity is expected to range from low to moderate levels during the period. Occasional C-class flares are likely throughout the period. Isolated M-class flares will be possible through 16 February and again during 01 - 06 March. There is also a slight chance for another major flare from Region 8858 before it departs the visible disk on 16 February.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at moderate to high levels through 11 February. A decline to normal to moderate fluxes is expected during 12 - 24 February. Moderate to high fluxes are expected for the remainder of the period.

Geomagnetic field activity is expected to be at mostly quiet to unsettled levels through 23 February. Active to minor storm levels will be possible during 24 - 25 February and 03 - 06 March due to recurrent coronal hole effects. Quiet to unsettled levels are expected for the rest of the period, barring an Earth-directed CME.

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	4
31 January	139	82	260	B3.6	6	0	0	4	0	0	0	0
01 February	138	107	350	B5.2	0	0	0	1	0	0	0	0
02 February	144	127	420	B4.7	2	0	0	0	0	0	0	0
03 February	154	149	640	B6.4	7	0	0	2	0	0	0	0
04 February	167	136	630	B5.5	17	1	0	10	1	0	0	0
05 February	168	153	750	B7.2	10	0	1	14	0	0	1	0
06 February	178	173	590	B7.1	10	0	0	15	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
31 January	5.9E+5	1.4E+4	2.7E+3		1.4E+8	
01 February	8.5E+5	1.4E+4	3.2E+3		2.4E+8	
02 February	5.9E+5	1.4E+4	3.1E+3		2.4E+8	
03 February	5.2E+5	1.3E+4	3.2E+3		2.0E+8	
04 February	1.6E+5	1.3E+4	3.1E+3		4.8E+7	
05 February	1.2E+6	1.3E+4	2.8E+3		9.6E+7	
06 February	5.3E+5	1.2E+4	2.7E+3		4.1E+6	

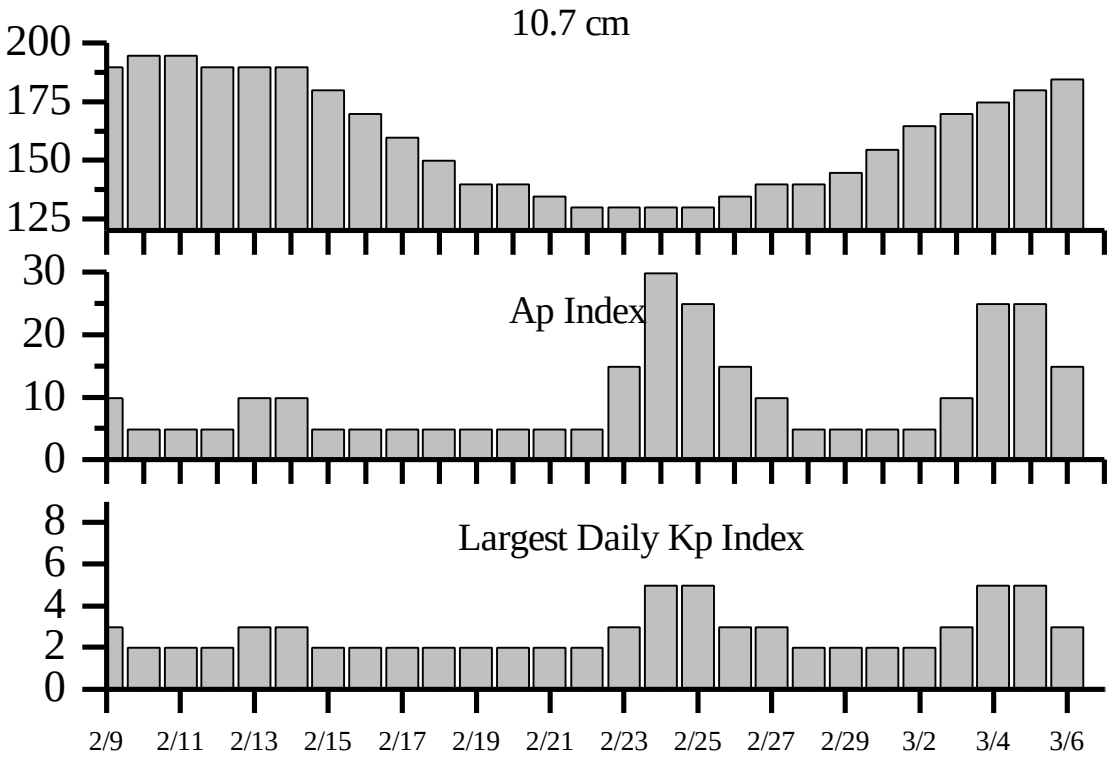
Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg A	K-indices	High Latitude College A	K-indices	Estimated Planetary A	K-indices
31 January	7	2-2-2-2-3-2-2-1		*-*-*-*-*-3-2-2	6	3-2-2-2-3-3-2-2
01 February	5	1-1-2-0-2-2-2-2		1-1-2-1-*-3-*-1	8	3-1-2-1-3-3-2-2
02 February	9	3-1-0-2-2-4-2-1	15	1-2-0-2-4-4-5-1	7	3-1-0-2-3-3-2-1
03 February	7	1-1-3-1-3-1-2-2	16	1-1-3-4-5-4-1-1	8	1-1-3-2-2-2-3-3
04 February	4	2-1-2-0-2-1-1-1	7	1-2-4-0-3-1-0-0	4	2-0-2-0-2-1-2-1
05 February	10	1-0-0-1-1-2-5-3	16	0-0-0-2-0-3-6-4	9	0-0-0-1-1-3-4-4
06 February	21	3-4-3-3-4-3-4-4	43	3-3-4-7-5-5-4-4	24	4-4-4-5-4-4-3-4

Alerts and Warnings Issued

Date & Time of Issue (UT)	Type of Alert or Warning	Date & Time of Event (UT)
31 Jan 0123	CONTINUED Electron Event ≥1000pfu >2MeV	29 Jan 1115
01 Feb 0013	CONTINUED Electron Event ≥1000pfu >2MeV	29 Jan 1115
01 Feb 0042	3 - 245 MHz Bursts	31 Jan
02 Feb 0019	1-245 MHz Burst	01 Feb
02 Feb 0021	CONTINUED Electron Event ≥1000pfu >2MeV	29 Jan 1115
03 Feb 0010	1-245 MHz Burst	02 Feb
03 Feb 0013	CONTINUED Electron Event ≥1000pfu >2MeV	29 Jan 1115
03 Feb 1341	Stratwarm Alert Exists Stratwarm Thursday	
04 Feb 0009	CONTINUED Electron Event ≥1000pfu >2MeV	29 Jan 1115
04 Feb 0059	2-245 MHz Bursts	03 Feb
04 Feb 1143	Stratwarm Alert Exists Stratwarm Friday	
05 Feb 0054	CONTINUED Electron Event ≥1000pfu >2MeV	29 Jan 1115
05 Feb 1351	Stratwarm Alert Exists Stratwarm Saturday	
05 Feb 1949	X-Ray event X1.2 /3B N25E53	05 Feb 1917
05 Feb 1957	Type II Radio Emission	05 Feb 1925
05 Feb 1958	K= 4 Warning	05/2000 – 6/1500 Feb
05 Feb 2111	K= 4 Observed	05 Feb 18- 21
05 Feb 2149	10cm Radio Burst 350 F.U.	05 Feb 1924
06 Feb 0056	CONTINUED Electron Event≥1000pfu >2MeV	29 Jan 1115
06 Feb 0100	1- 245 MHz Burst	05 Feb
06 Feb 1158	A ≥ 20 Observed	06 Feb 1200
06 Feb 1357	Stratwarm Alert Exists Stratwarm Sunday	
06 Feb 1715	K= 4 Warning	06/1715 - 07/1500 Feb
06 Feb 1800	K= 4 Observed	06 Feb 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
09 Feb	190	10	3	23	130	15	3
10	195	5	2	24	130	30	5
11	195	5	2	25	130	25	5
12	190	5	2	26	135	15	3
13	190	10	3	27	140	10	3
14	190	10	3	28	140	5	2
15	180	5	2	29	145	5	2
16	170	5	2	01 Mar	155	5	2
17	160	5	2	02	165	5	2
18	150	5	2	03	170	10	3
19	140	5	2	04	175	25	5
20	140	5	2	05	180	25	5
21	135	5	2	06	185	15	3
22	130	5	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
04 Feb	0911	0919	0928	M3.0	.020	SF	N25E71		8858	27			
05 Feb	1917	1928	1931	X1.2	.029	3B	N26E52		8858	180	350	3	

Flare List

Date	Time			X-ray	Optical		Rgn
	Begin	Max	End	Class.	Imp / Brtns	Location Lat CMD	#
31 January	0152	0158	0230	C1.7	SF	S28W44	8841
	0231	0239	0259	C1.3	SN	S28W44	8841
	0825	0826	0836	B7.9	SF	S30W55	8841
	1016	1024	1031	C1.5			
	1101	1101	1104	C1.0	SF	N28E39	8851
	1348	1406	1417	C1.4			
	2227	2231	2234	C1.4			
01 February	2337	2338	2344		SF	S08E01	8848
02 February	0335	0338	0340	C1.1			
	2220	2238	2304	C4.4			
03 February	0106	0110	0115	C1.3			
	0452	0457	0502	C2.7			
	0716	0717	0723		SF	S08W17	8848
	1026	1030	1035	B8.1			
	1201	1205	1210	C1.2			
	1501	1506	1508	C1.4			
	1635	1659	1705	C1.0			
	1849	1852	1854	B8.7			
	1957	2000	2004	C8.4			
	2008	2010	2015		SF	S36E66	8854
	2046	2055	2110	C1.7			
	2335	2339	2343	B8.2			
04 February	0010	0011	A0028	C1.0	SF	N27W09	8851
	0208	0211	0214	B9.9			
	0350	0351	0358	C1.2	SF	N25W12	8851
	0426	0428	0435		SF	N20W11	8851
	0526	0530	0535	C1.2			
	0640	0642	0644		SF	N25E68	8858
	0650	0659	0711	C5.3			
	0844	0849	0855	C1.3			
	0916	0922	0937	M3.0	SF	N25E71	8858
	0939	0943	0948		SF	N23E65	8858
	1036	1039	1043	C1.1			
	1048	1056	1102	C2.6			
	1104	1117	1126	C3.5			
	1205	1210	1214	C1.2			
	1255	1303	1308	C4.0			

Flare List-continued

Date	Time Begin	Time Max	Time End	X-ray Class.	Optical Imp / Brtns	Optical Location Lat CMD	Optical Rgn #
04 February	1338	1341	1357	C1.1			
	1602	1605	1608	C1.4			
	1759	1800	1806	C4.9	SF	N25E71	8858
	1849	1852	1855	C1.3			
	1926	1935	2028	C7.0	1F	N24E57	8858
	2115	2116	2120	C3.3	SF	N25E65	8858
	2233	2235	2244	C4.3	SF	N26E68	8858
	2308	2309	2320		SF	N27W22	8851
05 February	0049	0052	0055	C1.2			
	0120	0134	0148	C1.3			
	B0346	0351	0358		SF	N23E59	8858
	0432	0433	0438		SF	N23E59	8858
	0441	0442	0445		SF	N23E59	8858
	0513	0513	0517		SF	N23E59	8858
	0522	0522	0527		SF	N23E59	8858
	0559	0605	0610	C1.2			
	0810	0812	0815		SF	N23E57	8858
	0827	U0843	A0846	C7.8	SF	N23E57	8858
	0852	0856	0901		SF	N23E57	8858
	1001	1004	1007	C1.7			
	1238	1244	1247	C1.2			
	1252	1255	1259	C1.2			
	1612	1616	1620	C1.3			
	1816	1820	1825	C1.2	SF	N27W32	8851
	1920	1928	2019	X1.2	3B	N26E52	8858
	2036	2037	2049		SF	N25E60	8858
	2036	2039	2049		SF	N27W32	8851
	2216	2217	2222		SF	N27W34	8851
	2318	2320	2324		SF	N25E51	8858
	2346	2347	2355	C1.5	SF	N23E50	8858
06 February	0034	0038	0048		SF	N20W35	8851
	0111	0115	0120	C1.0			
	0217	0220	0242	C2.2	SF	N24E57	8858
	0502	0515	0529	C1.1			
	0717	0717	0723	C1.7	SF	N25E49	8858
	B1205	U1206	1230	C1.8	SF	N19E00	8855
	1344	1402	1419	C1.0			
	1641	1648	1713	C2.4	SF	N20W45	8851
	1655	1655	1702		SF	N06W24	8861
	1657	1657	1706		SF	S19W32	8857
	1715	1720	1729		SF	N20W46	8851
	1851	1851	1902	C1.6	SF	N19W45	8851

Flare List-continued

Date	Time Begin	Time Max	Time End	X-ray Class.	Optical Imp / Brtns	Optical Location Lat CMD	Rgn #
06 February	2001	2001	2007		SF	N07W25	8861
	2103	2108	2112	C1.4	SF	N07W28	8861
	2123	2131	2152		SF	S19W34	8857
	2159	2204	2208	C1.3	SF	N06W29	8861
	2312	2341	A2354		SF	N27W48	8851
	2316	2321	2326		SF	N06W27	8861

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	X-ray M	X-ray X	Optical S	Optical 1	Optical 2	Optical 3	Optical 4
	Region	*8841*													
21 Jan	S28E70	021	0030	08	CAO	003	B								
22 Jan	S30E57	021	0060	08	CAO	005	B								
23 Jan	S29E43	022	0080	09	CSO	004	B								
24 Jan	S29E30	022	0120	10	DSO	007	B	1			1				
25 Jan	S29E18	020	0150	10	DSO	010	B	2			3				
26 Jan	S30E05	020	0150	09	CSO	005	B								
27 Jan	S30W09	021	0140	09	CSO	009	B								
28 Jan	S30W22	021	0180	10	CAO	008	B	1			1				
29 Jan	S30W33	019	0130	07	CAO	003	B								
30 Jan	S30W47	020	0090	05	DAO	004	B								
31 Jan	S31W61	020	0080	06	DAO	004	B	2			3				
01 Feb	S32W74	020	0080	07	DSO	005	B								
02 Feb	S32W85	019	0050	08	CSO	003	B								
03 Feb	S32W96	016	0050	02	HSX	001	A								
								6	0	0	8	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 020

	Region 8845														
25 Jan	S14E24	014	0020	04	CSO	004	B								
26 Jan	S15E09	016	0040	06	CAO	006	B	1			2				
27 Jan	S16W06	018	0040	07	CAO	009	B								
28 Jan	S16W20	019	0030	04	CSO	004	B								
29 Jan	S17W33	019	0020	08	BXO	005	B				1				
30 Jan	S16W48	021	0020	01	HSX	001	A								
31 Jan	S16W61	020	0010	01	HRX	001	A								
01 Feb	S16W74	020	0010	01	HRX	001	A								
02 Feb	S15W86	020	0030	01	HRX	001	A								
								1	0	0	3	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 018

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 8846												
26 Jan	N37E51	334	0000	02	AXX	002	A								
27 Jan	N38E39	333	0010	10	BXO	002	B								
28 Jan	N37E25	334	0000	03	BXO	003	B								
29 Jan	N37E12	334													
30 Jan	N37W01	334													
31 Jan	N37W14	334													
01 Feb	N37W27	334													
02 Feb	N37W40	334													
03 Feb	N37W53	334													
04 Feb	N37W66	334													
05 Feb	N37W79	334													
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 334

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 8848												
26 Jan	S07E78	307	0010	00	AXX	001	A								
27 Jan	S08E66	306	0030	06	CAO	003	B				2				
28 Jan	S09E54	305	0080	08	CAO	005	B	1			3				
29 Jan	S09E41	305	0100	08	CSO	006	B								
30 Jan	S09E27	306	0070	08	CSO	005	B	1			1				
31 Jan	S09E13	306	0070	05	CSO	004	B								
01 Feb	S09W01	307	0080	06	CSO	005	B				1				
02 Feb	S08W16	310	0070	03	CSO	003	B								
03 Feb	S08W29	309	0090	04	CSO	006	B				1				
04 Feb	S08W43	310	0050	02	HSX	001	A								
05 Feb	S08W56	309	0080	02	HSX	002	A								
06 Feb	S08W70	310	0090	04	CSO	004	B								
								2	0	0	8	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 307

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 8849														
28 Jan	S16E19	340	0010	03	BXO	003	B								
29 Jan	S17E07	339	0010	04	CRO	002	B								
30 Jan	S17W06	339	0020	05	BXO	003	B								
31 Jan	S17W19	339													
01 Feb	S17W32	339													
02 Feb	S17W45	339													
03 Feb	S17W58	339													
04 Feb	S17W71	339													
05 Feb	S17W84	339													
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 339

	Region 8850														
30 Jan	S18E25	308	0010	02	BXO	002	B								
31 Jan	S17E11	308	0010	03	BXO	002	B								
01 Feb	S17W02	308													
04 Feb	S17W41	308													
05 Feb	S17W54	308													
06 Feb	S17W67	308													
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 308

	Region 8851														
30 Jan	N27E42	291	0020	05	BXO	003	B								
31 Jan	N27E29	290	0070	07	DAO	006	B	1			1				
01 Feb	N27E16	290	0130	09	DAO	014	B								
02 Feb	N26E03	291	0110	10	DSO	018	B								
03 Feb	N26W10	290	0120	10	DSO	019	B								
04 Feb	N25W22	289	0150	10	DSO	019	B	2			4				
05 Feb	N25W35	288	0130	11	ESO	020	B	1			3				
06 Feb	N24W48	288	0080	10	DSO	012	B	2			5				
								6	0	0	13	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 291

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 8852														
31 Jan	N10E14	305	0020	05	CRO	005	B								
01 Feb	N10E00	306	0030	07	CRO	010	B								
02 Feb	N10W12	306	0010	05	BXO	005	B								
03 Feb	N10W25	306													
04 Feb	N10W38	306													
05 Feb	N10W51	306													
06 Feb	N10W64	306													
								0	0	0	0	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		306													
	Region 8853														
01 Feb	S10E64	242	0000	00	AXX	001	A								
02 Feb	S10E52	242	0010	02	AXX	002	A								
03 Feb	S11E41	239	0020	02	BXO	003	B								
04 Feb	S12E29	238	0010	02	AXX	003	A								
05 Feb	S13E14	239	0010	03	BXO	002	B								
06 Feb	S13W01	241	0020	03	BXO	005	B								
								0	0	0	0	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		241													
	Region 8854														
01 Feb	S33E81	225	0020	02	HSX	001	A								
02 Feb	S35E70	224	0080	03	HAX	001	A								
03 Feb	S34E59	221	0100	12	CAO	005	B				1				
04 Feb	S35E46	221	0100	04	DAO	003	B								
05 Feb	S34E35	218	0080	07	DAO	005	B								
06 Feb	S34E23	217	0040	08	CSO	006	B								
								0	0	0	1	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		217													
	Region 8855														
02 Feb	N15E57	237	0020	08	BXO	003	B								
03 Feb	N17E41	239	0000	05	BXO	002	B								
04 Feb	N17E28	239													
05 Feb	N17E15	239													
06 Feb	N17E02	239						1			1				
								1	0	0	1	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		239													

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 8856														
02 Feb	S13E81	213	0040	02	HSX	001	A								
03 Feb	S13E69	211	0180	13	ESO	003	B								
04 Feb	S13E59	208	0120	13	ESO	003	B								
05 Feb	S13E46	207	0190	11	ESO	003	B								
06 Feb	S13E32	208	0120	11	EAO	004	B								
								0	0	0	0	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		208													
	Region 8857														
03 Feb	S19E04	276	0010	04	BXO	004	B								
04 Feb	S18W10	277	0040	06	DAO	005	B								
05 Feb	S18W23	276	0010	04	BXO	003	B								
06 Feb	S17W36	276	0010	06	CRO	007	B				2				
								0	0	0	2	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		276													
	Region 8858														
03 Feb	N24E72	208	0030	02	HRX	001	A								
04 Feb	N26E64	203	0090	10	DSO	005	B	4	1		6	1			
05 Feb	N26E53	200	0170	13	EAI	011	B	2		1	11			1	
06 Feb	N27E40	200	0120	12	EAO	021	B	2			2				
								8	1	1	19	1	0	1	0
Still on Disk.															
Absolute heliographic longitude:		200													
	Region 8859														
03 Feb	N22W51	331	0040	05	CRO	005	B								
04 Feb	N22W66	333	0060	07	DAO	002	B								
05 Feb	N23W77	330	0060	08	DAO	002	B								
								0	0	0	0	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		331													
	Region 8860														
04 Feb	N26E06	261	0010	03	BXO	005	B								
05 Feb	N26W07	260	0010	03	BXO	003	B								
06 Feb	N30W20	260	0000	00	AXX	001	A								
								0	0	0	0	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		261													

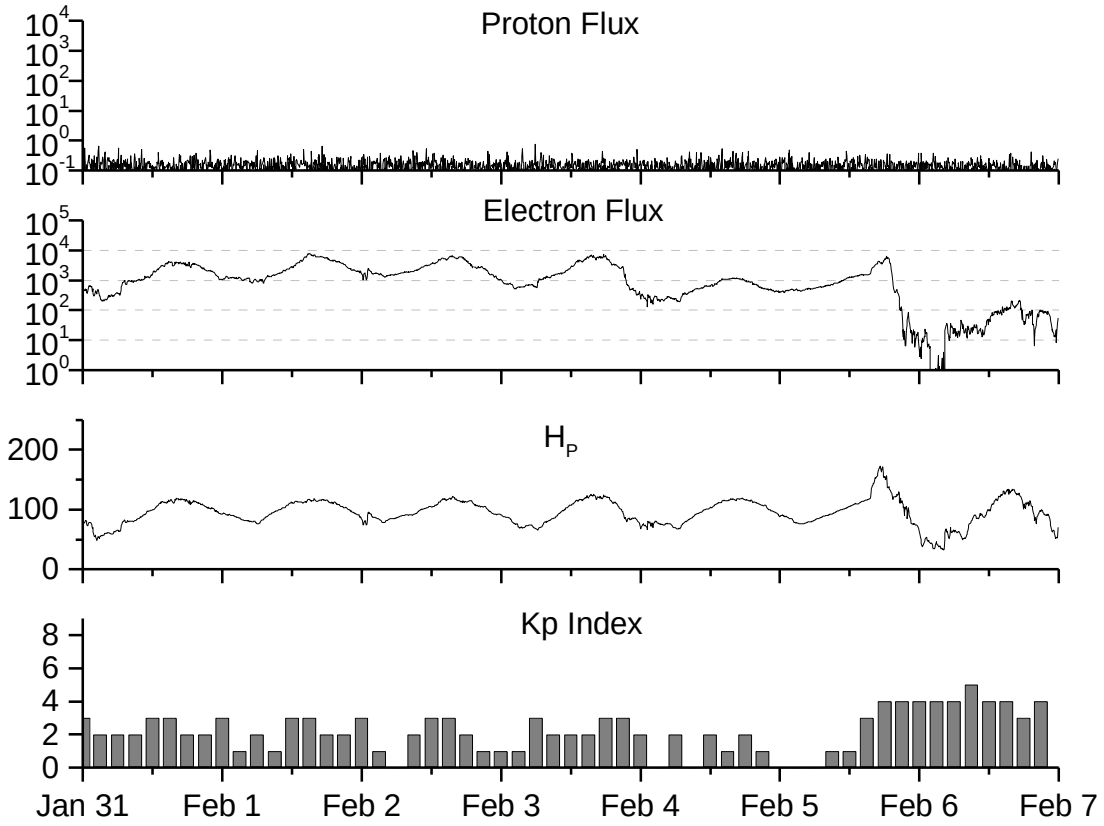
Region Summary - continued.

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 8861												
05 Feb	N08W15	268	0010	01	AXX	002	A								
06 Feb	N07W27	267	0020	05	DRO	012	B	2			5				
								2	0	0	5	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		268													
			Region 8862												
06 Feb	S04E75	165	0090	03	HSX	001	A								
								0	0	0	0	0	0	0	0
Still on Disk.															
Absolute heliographic longitude:		165													

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
					1998				
February	54.4	40.3	0.74	67.4	48.9	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	108.9	10	11.3
May	74.3	56.3	0.76	81.4	59.4	106.7	112.0	18	11.6
June	93.6	70.7	0.76	85.9	62.5	108.4	115.8	10	11.9
July	98.3	66.6	0.68	90.3	65.5	114.0	120.3	11	12.2
August	118.6	92.2	0.78	93.7	67.8	136.0	124.1	18	12.4
September	119.0	92.9	0.78	96.1	69.5	138.3	126.8	13	12.6
October	77.0	55.5	0.72	97.7	70.5	117.3	127.9	13	12.8
November	99.5	74.0	0.74	101.3	73.0	140.2	130.0	16	12.4
December	120.8	81.9	0.68	108.8	77.9	150.1	134.3	08	11.9
					1999				
January	94.3	62.0	0.66	116.5	82.6	142.6	139.0	10	11.7
February	93.4	66.3	0.71	120.2	84.6	142.0	142.6	12	11.6
March	100.5	68.8	0.68	120.5	83.8	126.3	144.0	14	11.7
April	92.9	63.7	0.69	123.8	85.4	117.2	145.8	12	12.2
May	140.5	106.3	0.76	131.7	90.4	148.6	150.0	08	12.4
June	208.3	137.4	0.66	136.0	93.0	169.8	152.9	07	12.4
July	169.2	113.5	0.67	138.0	94.4	165.6	154.4	10	12.3
August	136.1	93.7	0.69			170.8		15	
September	107.4	70.9	0.66			135.7		19	
October	167.7	116.4	0.69			164.9		19	
November	199.3	132.7	0.67			191.7		14	
December	123.5	86.4	0.70			169.8		10	
					2000				
January	140.8	90.2	0.64			158.3		06	

NOTE: All smoothed values after November 1998 and monthly values after June 1999 are preliminary estimates. The lowest smoothed sunspot index number for Cycle 22, RI = 8.0, occurred in May 1996. The highest smoothed sunspot number for Cycle 22, RI= 158.5, occurred July 1989. * After June 1991, the 10.7 cm radio flux data source is Penticton, B.C. Canada. Prior to that, it was Ottawa.



Weekly Geosynchronous Satellite Environment Summary
Week Beginning 31 January 1999

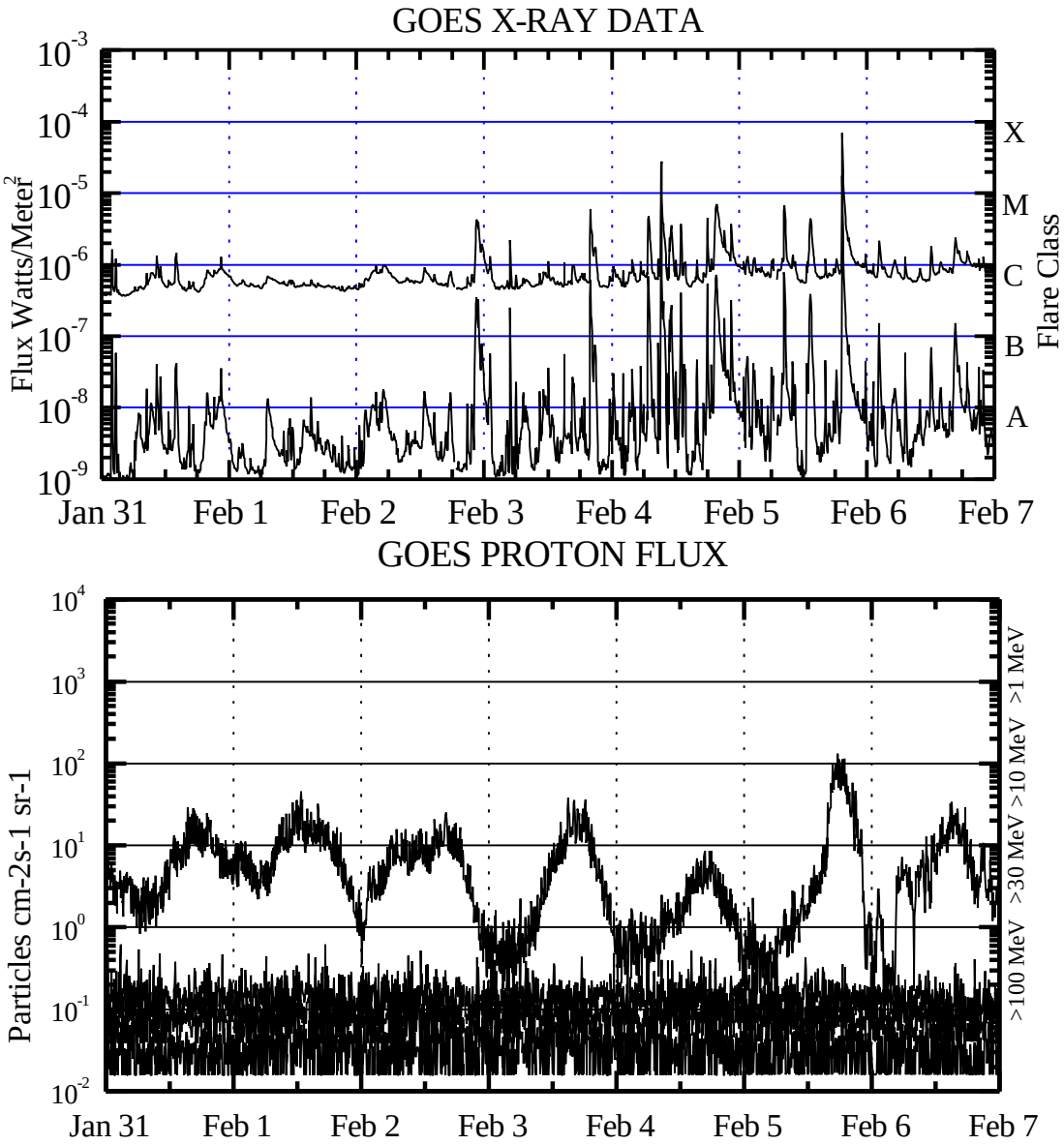
Protons plot contains the five-minute averaged integral proton flux (protons/cm^2 –sec –sr) as measured by GOES-8 (W75) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

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.

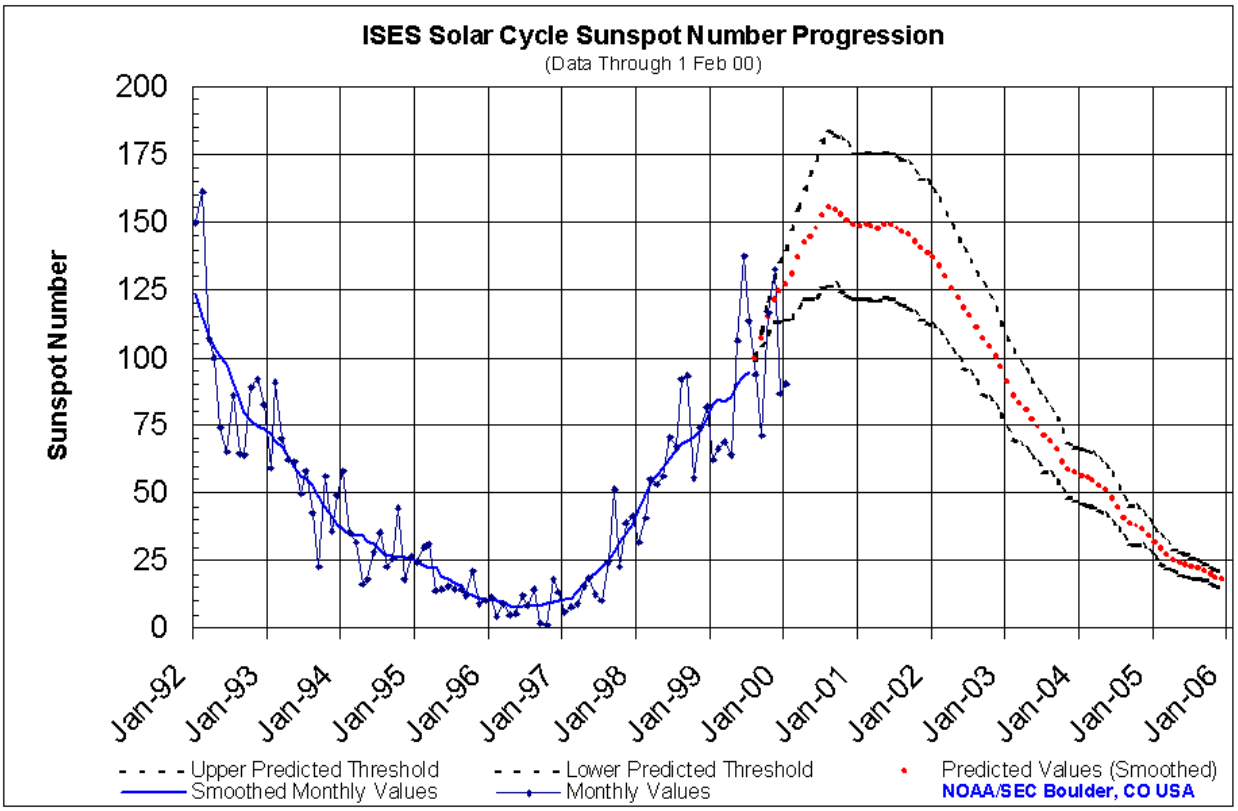
The data included here are those now available in real time at the SWO and are incomplete in that they do not include the full set of parameters and energy ranges known to cause satellite operating anomalies. The proton and electron fluxes and Kp are " global " parameters that are applicable to a first 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

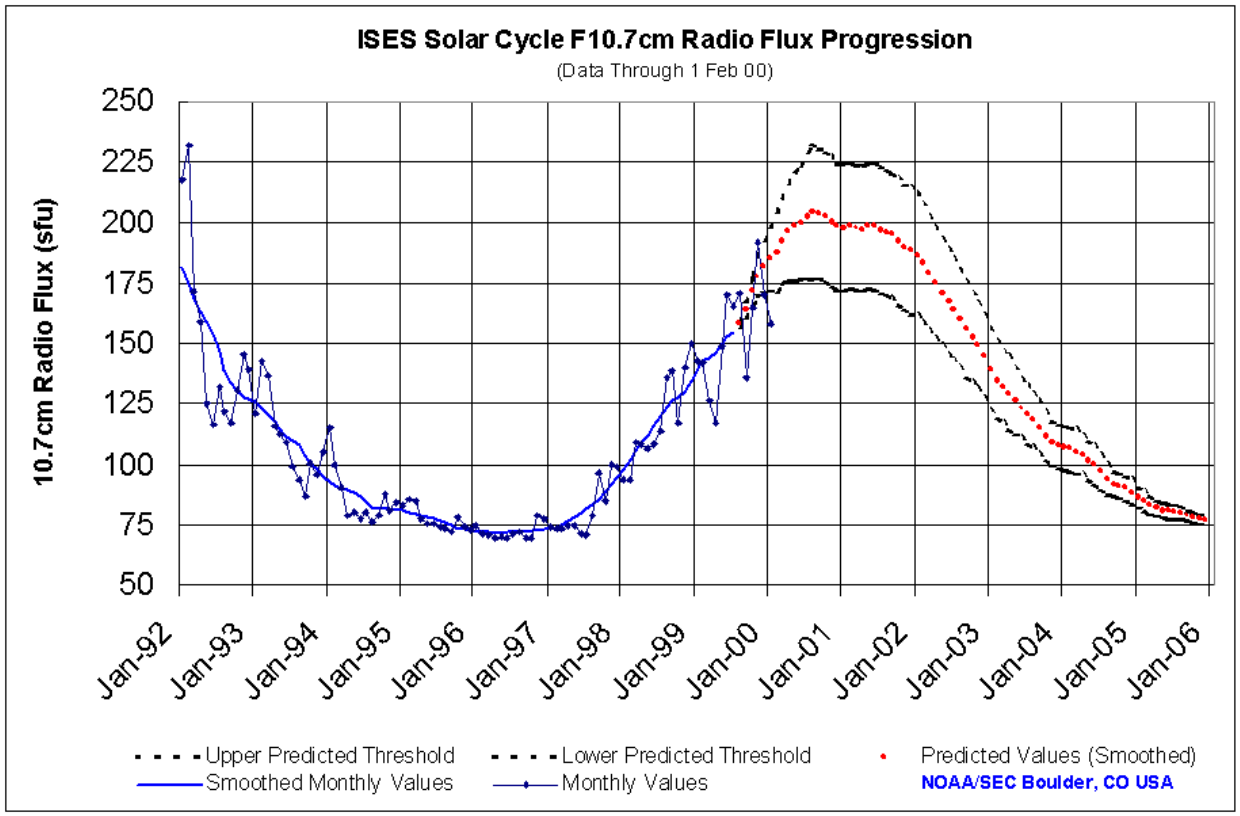
X-ray plot contains five minute averaged x-ray flux (watts/$m^{2)}$ as measured by GOES 8 and 10 in two wavelength bands, .05 -. 4 and .1 - .8 nm. The letters A, B, C, M and X refer to x-ray event levels for the .1 - .8 nm band.

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.



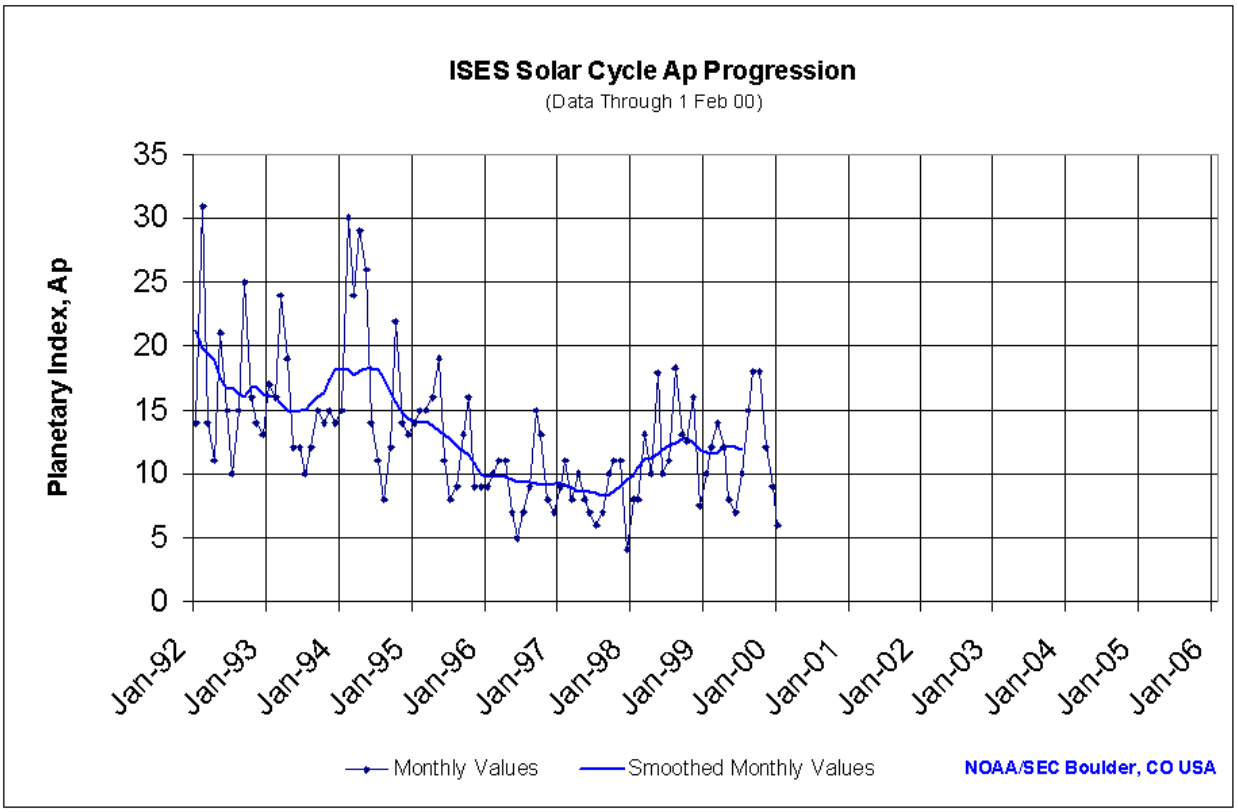
SEC Prediction of Smoothed Sunspot Number

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1996	10	10	10	9	8	9	8	8	8	9	10	10
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)
1997	11	11	14	17	18	20	23	25	28	32	35	39
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)
1998	44	49	53	57	59	63	66	68	70	71	73	78
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)
1999	83	85	84	85	90	93	94	**99**	**107**	**115**	**121**	**124**
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(1)	(3)	(6)	(8)	(11)
2000	**127**	**131**	**137**	**142**	**144**	**148**	**153**	**155**	**154**	**153**	**151**	**148**
	(13)	(16)	(18)	(20)	(23)	(25)	(27)	(29)	(28)	(28)	(28)	(27)
2001	**148**	**149**	**148**	**148**	**149**	**149**	**147**	**146**	**145**	**143**	**140**	**139**
	(27)	(27)	(27)	(27)	(27)	(27)	(27)	(27)	(27)	(26)	(26)	(26)
2002	**137**	**134**	**130**	**125**	**122**	**118**	**115**	**111**	**107**	**104**	**100**	**96**
	(25)	(25)	(24)	(23)	(22)	(22)	(21)	(20)	(20)	(19)	(18)	(17)
2003	**91**	**86**	**83**	**81**	**77**	**74**	**71**	**69**	**66**	**62**	**59**	**57**
	(17)	(16)	(15)	(15)	(14)	(13)	(13)	(12)	(12)	(11)	(10)	(10)
2004	**56**	**56**	**55**	**53**	**51**	**48**	**44**	**41**	**38**	**38**	**36**	**34**
	(10)	(10)	(10)	(9)	(9)	(9)	(8)	(7)	(7)	(7)	(6)	(6)
2005	**31**	**29**	**27**	**25**	**24**	**23**	**23**	**22**	**21**	**20**	**19**	**18**
	(5)	(5)	(5)	(4)	(4)	(4)	(4)	(4)	(3)	(3)	(3)	(3)



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	102	106	109	112	116	120	124	127	128	130	134
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)
1999	139	143	144	146	150	153	154	**158**	**164**	**171**	**178**	**182**
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(1)	(3)	(6)	(8)	(11)
2000	**185**	**188**	**192**	**196**	**198**	**200**	**203**	**204**	**204**	**202**	**200**	**198**
	(13)	(16)	(18)	(20)	(23)	(24)	(26)	(28)	(27)	(27)	(27)	(26)
2001	**198**	**198**	**198**	**197**	**198**	**198**	**197**	**196**	**195**	**192**	**190**	**188**
	(26)	(26)	(26)	(26)	(26)	(26)	(26)	(26)	(26)	(26)	(26)	(26)
2002	**187**	**184**	**179**	**175**	**171**	**167**	**164**	**160**	**156**	**153**	**149**	**145**
	(25)	(25)	(24)	(23)	(22)	(22)	(21)	(20)	(20)	(19)	(18)	(17)
2003	**140**	**135**	**132**	**130**	**126**	**123**	**120**	**118**	**115**	**112**	**110**	**108**
	(17)	(16)	(15)	(15)	(14)	(12)	(12)	(11)	(11)	(10)	(9)	(9)
2004	**107**	**106**	**105**	**104**	**102**	**100**	**97**	**94**	**92**	**91**	**90**	**88**
	(9)	(9)	(9)	(8)	(8)	(8)	(7)	(6)	(5)	(5)	(5)	(5)
2005	**87**	**85**	**83**	**82**	**81**	**81**	**80**	**80**	**79**	**78**	**78**	**77**
	(4)	(4)	(4)	(3)	(3)	(3)	(3)	(3)	(2)	(2)	(2)	(2)


ISES Solar Cycle Ap Progression
(Data Through 1 Feb 00)
Planetary Index, Ap
35
30
25
20
15
10
5
0
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Monthly Values
Smoothed Monthly Values
NOAA/SEC Boulder, CO USA

Sudden Storm Commencements and Impulses

Space Environment Center

January 2000
(Month 40)

Preliminary data