

Space Weather Highlights
26 February – 04 March 2007

SEC PRF 1644
06 March 2007

Solar activity was very low. Isolated B-class flares occurred on 27 February and 02 March.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit reached high levels during 01 – 04 March.

The geomagnetic field was at quiet to unsettled levels on 26 February. Activity increased to quiet to active levels on 27 February as a recurrent coronal hole high-speed stream began to influence the field. A further increase to quiet to minor storm levels occurred on 28 February with major storm periods at high latitudes. Activity decreased to quiet to active levels on 01 March with minor storm periods at high latitudes. Activity decreased to quiet levels at all latitudes during the remainder of the period. ACE near real-time solar wind data indicated the recurrent high-speed stream began early on 27 March, reached a peak of 700 km/sec at 28/2159 UTC, then began to gradually subside on 01 March. Maximum IMF variability occurred as the high-speed stream commenced with a minimum southward Bz reading of -15 nT observed at 27/0712 UTC and a maximum Bt reading of 15 nT at 27/0616 UTC. Proton density reached a peak of 44 pfu at 26/0221 UTC in advance of the high-speed stream.

Space Weather Outlook
07 March – 02 April 2007

Solar activity is expected to be at very low levels.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to reach high levels during 08 – 09, 14 – 23, and 28 - 31 March.

The geomagnetic field is expected to be at quiet to unsettled levels during 07 – 11 March.

Field activity is expected to increase to unsettled to minor storm levels during 12 – 13 March due to a recurrent coronal hole high-speed stream. Quiet to unsettled conditions are expected during 14 – 25 March. Field activity is expected to increase to unsettled to minor storm levels during 26 - 27 March due to a recurrent coronal hole high-speed stream. Quiet to unsettled conditions are expected during 28 March – 01 April. Activity is expected to increase to unsettled to minor storm levels on 02 April due to a recurrent coronal hole high-speed stream.



Daily Solar Data

Date	Radio Flux 10.7 cm	Sun spot No.	Sunspot Area (10 ⁻⁶ hemi.)	X-ray Background	Flares							
					X-ray Flux			Optical				
					C	M	X	S	1	2	3	4
26 February	75	22	130	<A1.0	0	0	0	0	0	0	0	0
27 February	75	23	120	<A1.0	0	0	0	0	0	0	0	0
28 February	76	22	130	<A1.0	0	0	0	0	0	0	0	0
01 March	75	11	90	<A1.0	0	0	0	0	0	0	0	0
02 March	76	23	160	<A1.0	0	0	0	0	0	0	0	0
03 March	73	11	90	<A1.0	0	0	0	0	0	0	0	0
04 March	73	24	70	<A1.0	0	0	0	0	0	0	0	0

Daily Particle Data

Date	Proton Fluence (protons/cm ² -day-sr)			Electron Fluence (electrons/cm ² -day-sr)		
	>1 MeV	>10 MeV	>100 MeV	>.6 MeV	>2MeV	>4 MeV
26 February	1.8E+6	1.7E+4	3.7E+3		2.3E+6	
27 February	2.0E+6	1.6E+4	3.8E+3		2.9E+6	
28 February	3.0E+6	1.7E+4	3.6E+3		7.9E+6	
01 March	3.5E+6	1.6E+4	3.6E+3		2.0E+8	
02 March	1.1E+6	1.6E+4	3.7E+3		2.5E+8	
03 March	1.3E+6	1.7E+4	3.9E+3		2.9E+8	
04 March	1.7E+6	1.7E+4	3.9E+3		1.9E+8	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
26 February	4	2-3-1-1-1-1-0-0	3	1-2-1-2-0-0-0-0	4	2-3-1-1-0-0-0-0
27 February	7	0-0-2-2-2-2-3-3	16	2-0-3-4-4-4-3-2	12	0-0-3-2-1-3-4-3
28 February	12	3-3-3-3-2-2-2-3	38	3-4-6-6-5-4-3-3	23	3-5-5-4-3-3-3-3
01 March	7	3-2-3-1-2-1-1-1	21	2-2-4-5-5-3-3-1	11	4-3-3-2-3-2-1-2
02 March	4	0-2-2-1-1-1-1-1	3	0-0-2-2-2-0-1-0	5	1-2-2-1-1-2-2-1
03 March	0	0-0-0-0-0-1-0-0	1	0-0-0-0-1-1-0-0	2	0-0-0-0-1-1-1-1
04 March	4	0-1-1-1-2-1-1-2	2	0-0-1-2-1-0-1-0	3	0-0-1-1-1-0-1-2

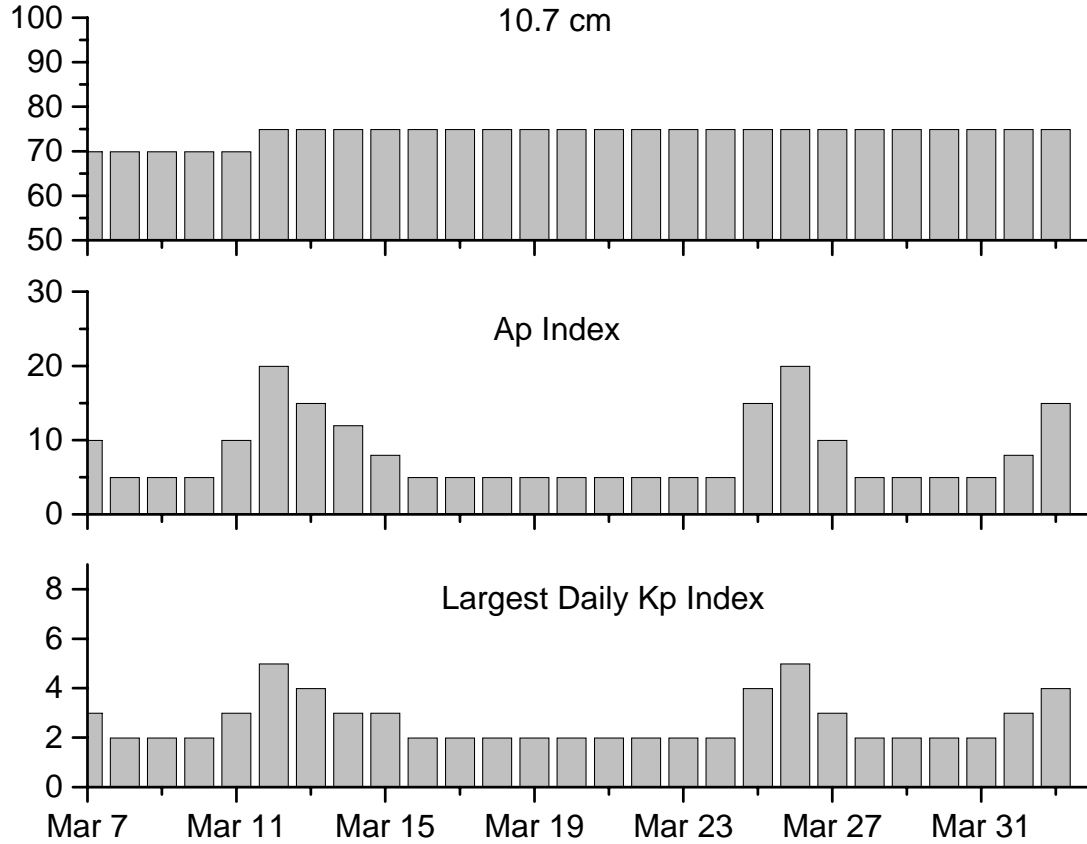


Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
27 Feb 1624	WARNING: Geomagnetic K=4	27 Feb 1625 - 28/1600
27 Feb 1627	ALERT: Geomagnetic K=4	27 Feb 1627
28 Feb 0542	WARNING: Geomagnetic K=5	28 Feb 0543 - 1600
28 Feb 0829	ALERT: Geomagnetic K=5	28 Feb 0828
28 Feb 1558	EXTENDED WARNING: Geomagnetic K=4	27 Feb 1625 - 01 Mar 1600
01 Mar 0636	WARNING: Geomagnetic K=5	01 Mar 0636 - 1600
01 Mar 1111	ALERT: Electron 2MeV Integral Flux >1000pfu	01 Mar 1055
02 Mar 0629	ALERT: Electron 2MeV Integral Flux >1000pfu	02 Mar 0605
03 Mar 0501	ALERT: Electron 2MeV Integral Flux >1000pfu	03 Mar 0500
04 Mar 0501	ALERT: Electron 2MeV Integral Flux >1000pfu	04 Mar 0500



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
07 Mar	70	10	3	21 Mar	75	5	2
08	70	5	2	22	75	5	2
09	70	5	2	23	75	5	2
10	70	5	2	24	75	5	2
11	70	10	3	25	75	15	4
12	75	20	5	26	75	20	5
13	75	15	4	27	75	10	3
14	75	12	3	28	75	5	2
15	75	8	3	29	75	5	2
16	75	5	2	30	75	5	2
17	75	5	2	31	75	5	2
18	75	5	2	01 Apr	75	8	3
19	75	5	2	02	75	15	4
20	75	5	2				



Energetic Events

Date	Time		X-ray		Optical Information			Peak		Sweep Freq	
	$\frac{1}{2}$		Integ		Imp/	Location	Rgn	Radio Flux		Intensity	
	Begin	Max	Max	Class	Flux	Brtns	Lat CMD	#	245	2695	
										II	IV

No Events Observed

Flare List

Date	Time			Optical	Imp / Brtns	Location Lat CMD	Rgn
	Begin	Max	End	X-ray Class.			
26 February	No Flares Observed						
27 February	0723	0727	0730	B2.0			
28 February	No Flares Observed						
01 March	No Flares Observed						
02 March	0503	0529	0550	B2.5			944
03 March	No Flares Observed						
04 March	No Flares Observed						

Region Summary

Region Summary															
Location			Sunspot Characteristics												
			Flares												
Helio			Area	Extent	Spot	Spot	Mag	X-ray			Optical				
Date	(° Lat ° CMD)	Lon	(10 ⁻⁶ hemi)	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4

Region 942

16 Feb S13E69	131	0060	03	Cao	002	B
17 Feb S11E55	132	0020	01	Hsx	001	A
18 Feb S12E41	133	0040	03	Cso	002	B
19 Feb S12E28	132	0060	02	Cso	003	B
20 Feb S11E15	132	0040	02	Bxo	004	B
21 Feb S11E05	129	0050	09	Dso	004	B
22 Feb S10W09	130	0020	08	Bxo	004	B
23 Feb S11W26	133	0010	01	Axx	001	A
24 Feb S11W39	133					
25 Feb S11W52	133					
26 Feb S11W65	133					
27 Feb S11W78	133					
28 Feb S11W91	133					

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 129



Region Summary-Continued

Region Summary, Continued															
Location			Sunspot Characteristics												
Date	(° Lat ° CMD)	Helio Lon	Flares					X-ray				Optical			
			Area	Extent	Spot	Spot	Mag								
			(10 ⁻⁶ hemi)	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4

Region 943

19 Feb S12E04	156	0050	03	Cao	003	B
20 Feb S12W10	157	0040	03	Bxo	003	B
21 Feb S12W23	157					
22 Feb S12W36	157					
23 Feb S12W49	157					
24 Feb S12W62	157					
25 Feb S12W75	157					
26 Feb S12W88	157					

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 156

Region 944

22 Feb S10E75	046	0120	03	Hsx	001	A
23 Feb S03E61	046	0110	03	Hsx	001	A
24 Feb S07E49	044	0090	03	Hsx	001	A
25 Feb S08E37	043	0110	03	Hsx	002	A
26 Feb S07E22	045	0110	03	Hkx	001	A
27 Feb S06E11	043	0100	02	Hsx	001	A
28 Feb S06W04	045	0100	02	Hsx	001	A
01 Mar S06W17	045	0090	02	Hsx	001	A
02 Mar S05W30	044	0090	03	Hsx	001	A
03 Mar S06W43	044	0090	02	Hsx	001	A
04 Mar S06W57	045	0060	02	Hax	001	A

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 045

Region 945

26 Feb S06E60	007	0020	02	Hsx	001	A
27 Feb S05E48	006	0020	01	Axx	002	A
28 Feb S05E34	007	0030	01	Axx	001	A
01 Mar S05E21	007					
02 Mar S07E11	003	0070	02	Dao	002	B
03 Mar S07W02	003					
04 Mar S07W15	003					

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 003

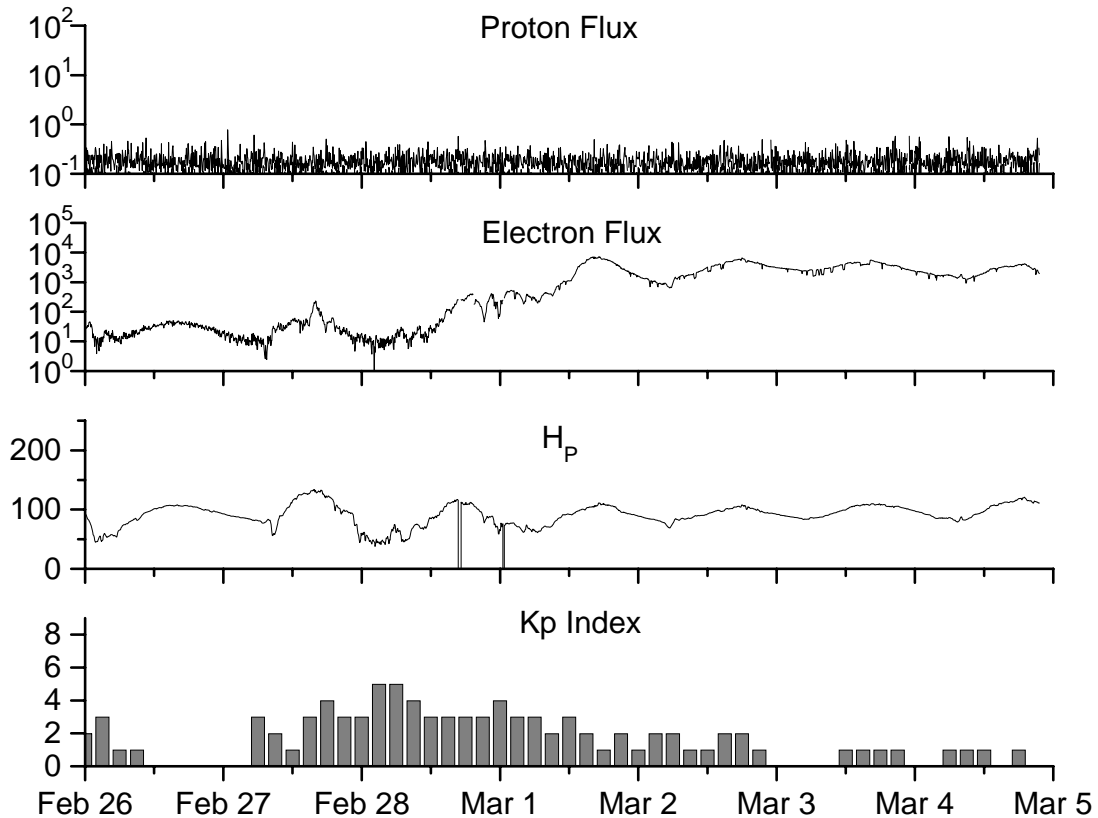


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

Month	Sunspot Numbers					Radio Flux		Geomagnetic	
	Observed values SEC	values RI	Ratio RI/SEC	Smooth values SEC	values RI	*Penticton 10.7 cm	Smooth Value	Planetary Ap	Smooth Value
2005									
March	41.0	24.8	0.60	55.8	33.6	90.0	97.2	12	15.3
April	41.5	24.4	0.59	52.6	31.7	85.9	95.5	12	15.7
May	65.4	42.6	0.65	48.3	29.0	99.5	93.2	20	14.8
June	59.8	39.6	0.66	47.9	28.9	93.7	91.9	13	13.9
July	71.0	39.9	0.56	48.1	29.2	96.6	90.9	16	13.1
August	65.6	36.4	0.55	45.4	27.5	90.7	89.3	16	12.2
September	39.2	22.1	0.56	42.9	25.9	90.8	87.8	21	11.8
October	13.0	8.5	0.65	42.6	25.5	76.7	87.4	7	11.6
November	32.2	18.0	0.56	42.1	24.9	86.3	86.7	8	11.1
December	62.6	41.2	0.66	40.1	23.0	90.8	85.4	7	10.4
2006									
January	28.0	15.4	0.55	37.2	20.8	83.8	84.0	6	9.9
February	5.3	4.7	0.89	33.4	18.7	76.6	82.6	6	9.2
March	21.3	10.8	0.51	31.0	17.4	75.5	81.6	8	8.4
April	55.2	30.2	0.55	30.6	17.1	89.0	80.9	11	7.9
May	39.6	22.2	0.56	30.7	17.3	81.0	80.8	8	7.9
June	37.7	13.9	0.37	28.9	16.3	80.1	80.6	9	8.3
July	22.6	12.2	0.54	27.2	15.3	75.8	80.3	7	8.7
August	22.8	12.9	0.57			79.0		9	
September	25.2	14.5	0.58			77.8		8	
October	15.7	10.4	0.66			74.3		8	
November	31.5	21.5	0.68			86.4		9	
December	22.2	13.6	0.61			84.3		15	
2007									
January	26.6	16.9	0.64			83.5		6	
February	17.2	10.6	0.62			77.8		6	

NOTE: All smoothed values after September 2002 and monthly values after March 2003 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 23, RI = 120.8, occurred April 2000. *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 26 February 2007

Protons plot contains the five-minute averaged integral proton flux (protons/cm²-sec-sr) as measured by GOES-11 (W135) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

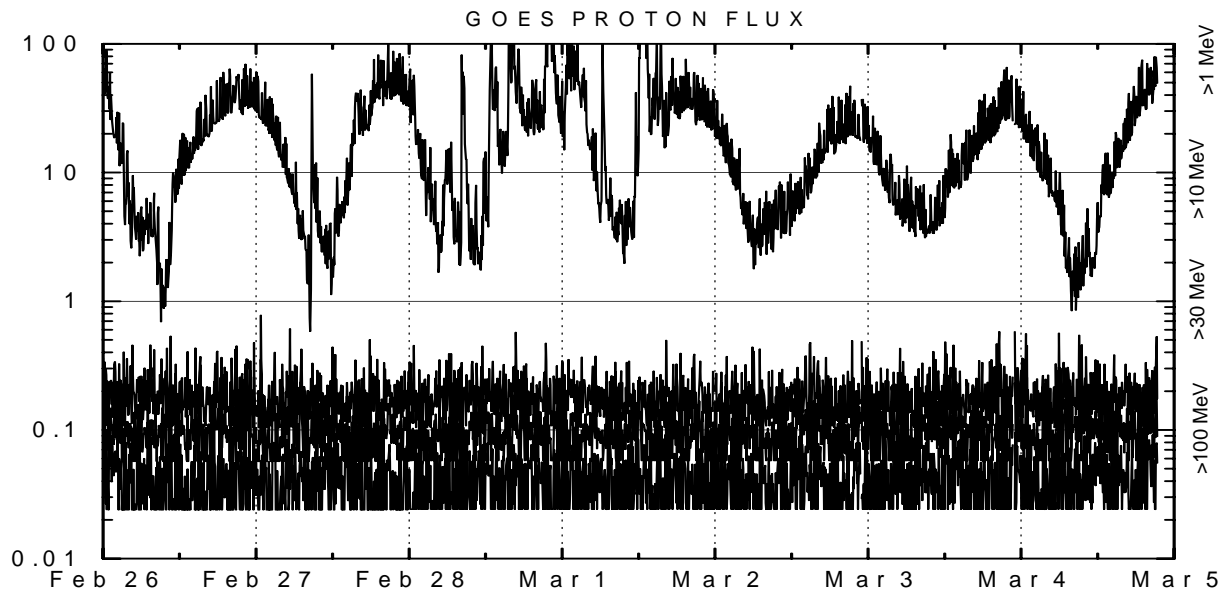
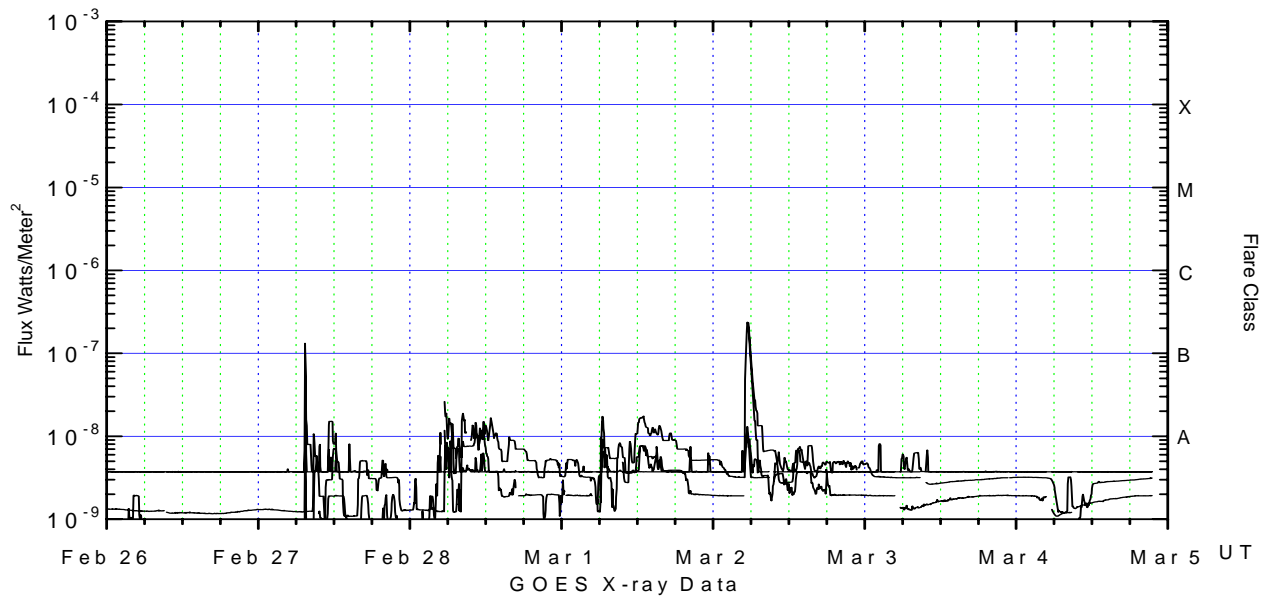
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec-sr) with energies greater than 2 MeV at GOES-12 (W075).

H_p plot contains the five minute averaged magnetic field H - component in nanoteslas (nT) as measured by GOES-12. 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 Air Force Weather Agency) 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 Hartland, UK. These data are made available through cooperation from the Geological Survey of Canada (GSC), British Geological Survey (BGS) 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 SEC 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 parallel 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

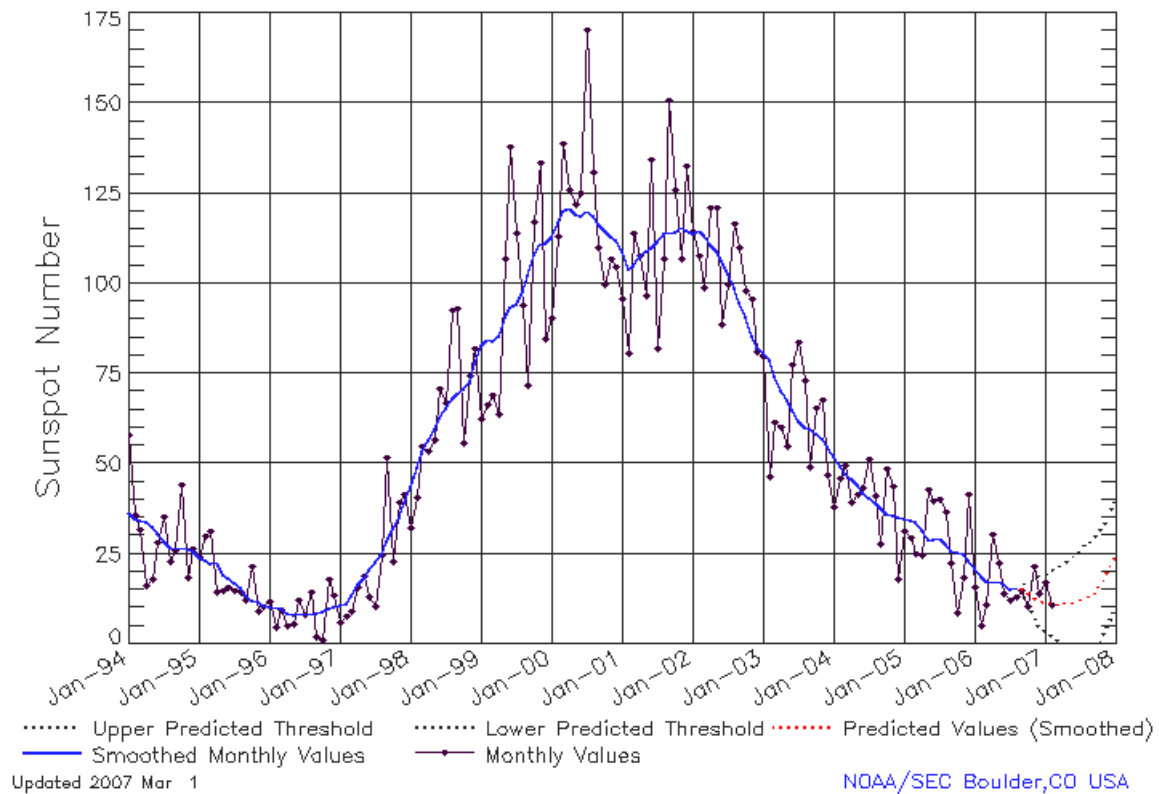
X-ray plot contains five-minute averaged x-ray flux (watts/m²) as measured by GOES 12 (W075) and GOES 11 (W135) in two wavelength bands, .05 - .4 and .1 - .8 nm. The letters A, B, C, M and X refer to x-ray event levels for the .1 - .8 nm band.

Proton plot contains the five-minute averaged integral proton flux (protons/cm²-sec-sr) as measured by GOES-11 (W135) 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.



ISES Solar Cycle Sunspot Number Progression

Data Through 28 Feb 07



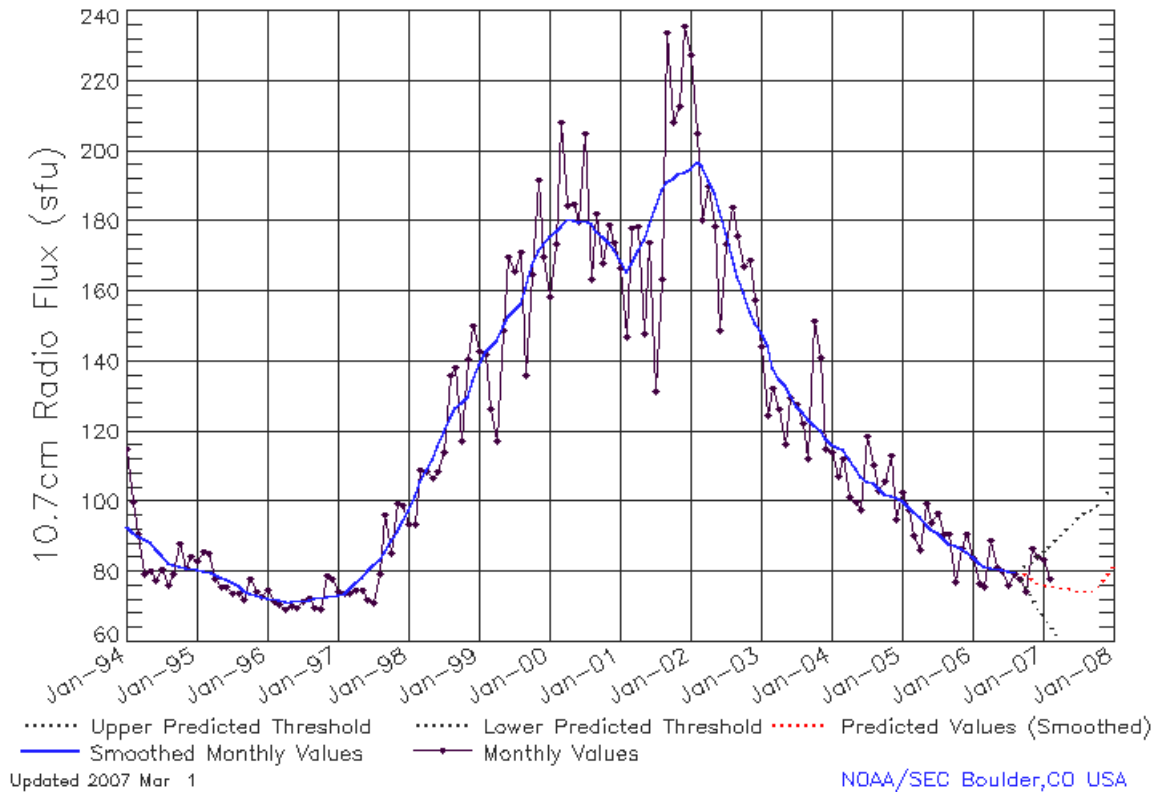
SEC Prediction of Smoothed Sunspot Number

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1998	44	49	53	57	59	63	66	68	70	71	73	78
	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)
1999	83	85	84	86	91	93	94	98	102	108	111	111
	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)
2000	113	117	120	121	119	119	120	119	116	115	113	112
	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)
2001	109	104	105	108	109	110	112	114	114	114	116	115
	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)
2002	114	115	113	111	109	106	103	99	95	91	85	82
	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)
2003	81	79	74	70	68	65	62	60	60	58	57	55
	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)
2004	52	49	47	46	44	42	40	39	38	36	35	35
	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)
2005	35	34	34	32	29	29	29	28	26	26	25	23
	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)
2006	21	19	17	17	17	16	15	16	16	14	13	12
	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(**)	(1)	(3)	(5)	(7)
2007	12	11	11	11	12	12	12	14	13	16	18	21
	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(15)	(15)	(15)	(15)



ISES Solar Cycle F10.7cm Radio Flux Progression

Data Through 28 Feb 07



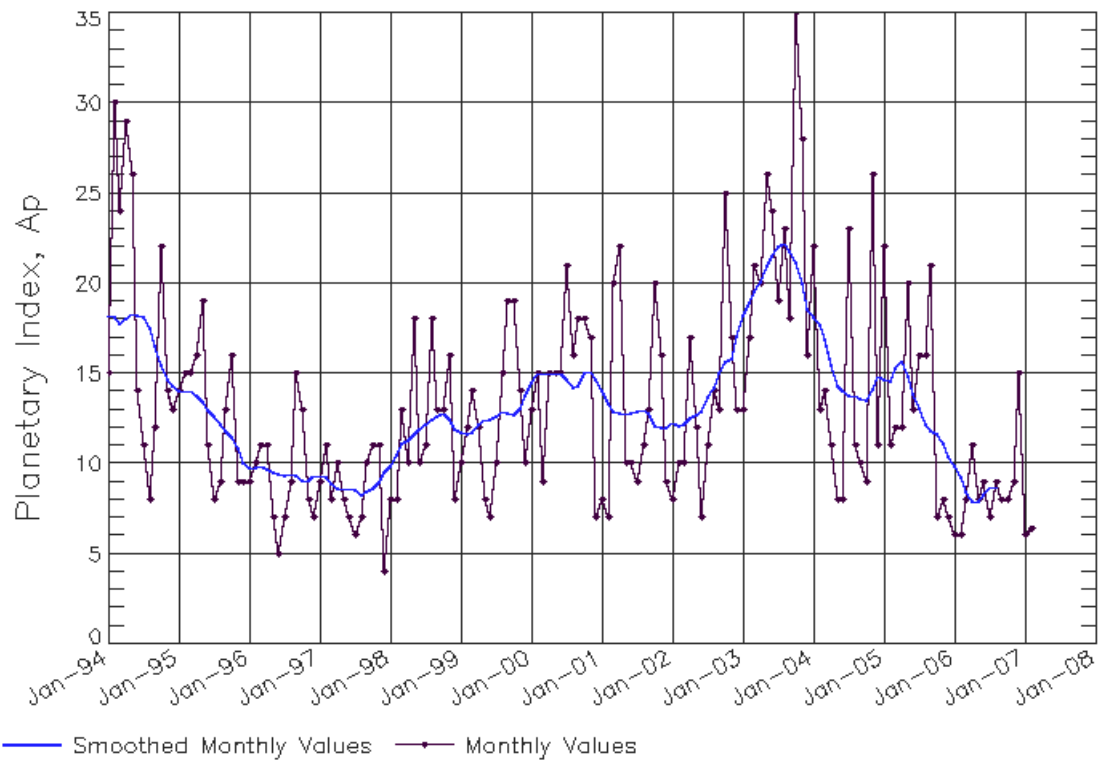
SEC Prediction of Smoothed F10.7cm Radio Flux

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1998	98	102	106	109	112	116	120	124	127	128	130	134
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)
1999	139	143	144	146	150	153	154	156	161	167	172	173
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)
2000	176	177	178	181	180	180	180	179	177	176	174	172
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)
2001	169	166	168	172	175	179	184	189	191	192	194	194
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)
2002	195	197	196	192	188	183	176	170	164	159	154	151
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)
2003	148	145	138	135	133	130	127	125	124	122	120	118
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)
2004	116	116	115	112	109	107	106	105	104	102	102	101
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)
2005	100	99	97	96	93	92	91	89	88	87	87	85
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)
2006	84	83	82	81	81	81	80	80	80	79	78	77
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(1)	(3)	(5)	(7)
2007	77	76	76	76	75	75	75	75	74	76	77	79
	(9)	(13)	(13)	(14)	(14)	(13)	(12)	(11)	(10)	(10)	(10)	(10)



ISES Solar Cycle Ap Progression

Data Through 28 Feb 07



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NOAA/SEC Boulder, CO USA

