

Space Weather Highlights
02 - 08 January 2006

SEC PRF 1584
10 January 2006

Solar activity ranged from very low to low. The largest event of the period occurred at 05/0923 UTC from Region 843 (N12, L=235, class/area, Cao/080 on 26 December) when the region produced an impulsive C4/Sf flare with an associated Type II sweep (1100 km/s). No other significant activity was observed.

No greater than 10 MeV proton events were observed this period.

The greater than 2 MeV electron flux at geosynchronous orbit was at high levels 02 – 05 January.

The geomagnetic field generally ranged from quiet to unsettled levels with some active to minor storm periods observed at high latitudes. Solar wind speed ranged from a high of about 450 km/s early on 02 January to a low of near 350 km/s midday on 05 January. The Bz component of the IMF did not vary much beyond +/- 5 nT for the entire period. A brief period of southward Bz to -7 nT on 06 January resulted in some active to minor storm periods at high latitudes midday on the 6th.

Space Weather Outlook
11 January - 06 February 2006

Solar activity is expected to be at very low to low levels.

No greater than 10 MeV proton events are expected.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at high levels on 24 January – 01 February.

The geomagnetic field is expected to range from quiet to minor storm levels. Active to minor storm periods are possible on 23 – 24 January due to effects from a recurrent coronal hole wind stream. Otherwise, quiet to unsettled conditions are expected.



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	
02 January	85	37	170	A4.9	0	0	0	0	0	0	0	0	0
03 January	85	39	120	A3.6	0	0	0	0	0	0	0	0	0
04 January	84	25	120	A3.5	0	0	0	0	0	0	0	0	0
05 January	83	23	90	A3.3	1	0	0	1	0	0	0	0	0
06 January	82	24	60	A2.8	0	0	0	0	0	0	0	0	0
07 January	79	11	50	A2.1	0	0	0	0	0	0	0	0	0
08 January	78	11	40	A1.4	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
	02 January	1.1E+6	1.4E+4	3.1E+3		5.6E+7
03 January	9.7E+5	1.4E+4	3.2E+3		6.1E+7	
04 January	1.1E+6	1.5E+4	3.8E+3		5.9E+7	
05 January	1.3E+6	1.5E+4	3.5E+3		5.8E+7	
06 January	8.4E+5	1.6E+4	3.9E+3		1.9E+7	
07 January	6.2E+5	1.6E+4	3.9E+3		9.9E+6	
08 January	5.1E+5	1.6E+4	4.2E+3		1.0E+7	

Daily Geomagnetic Data

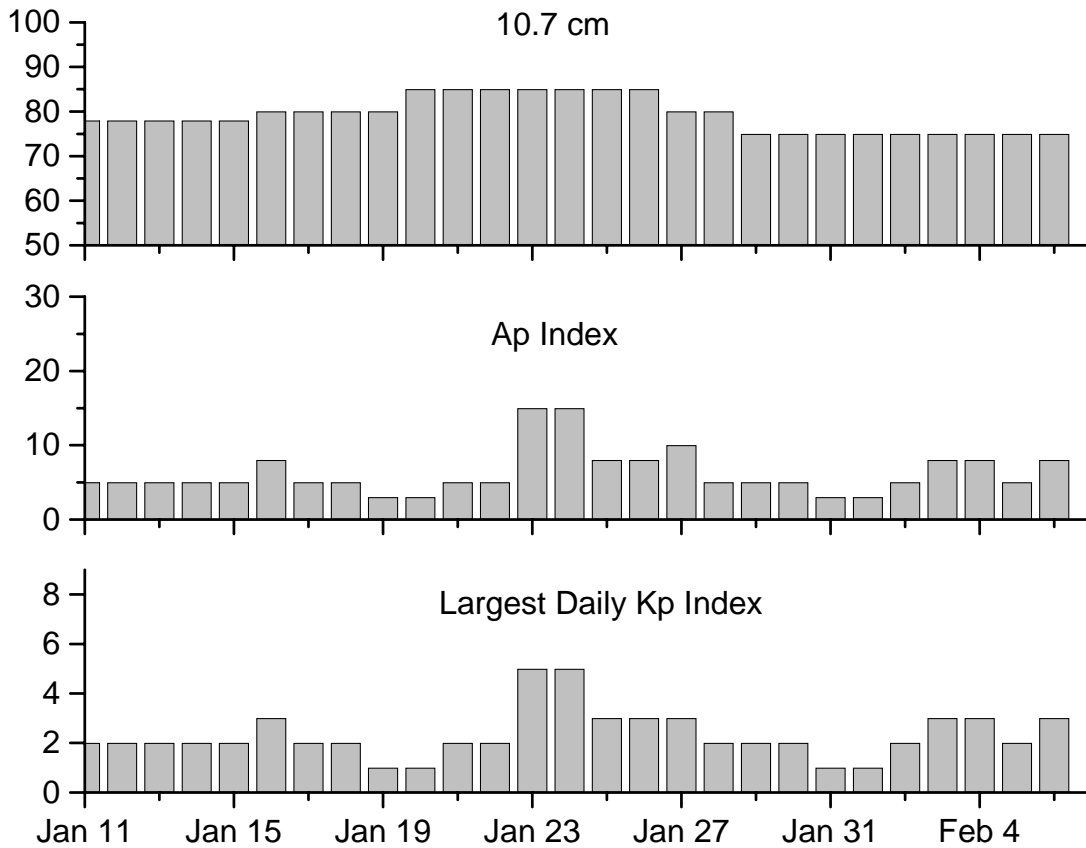
Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	02 January	5	2-2-1-2-1-1-1-2	3	0-1-0-2-0-0-1-2	5
03 January	3	2-1-0-0-1-2-1-0	2	0-0-0-1-2-2-0-0	3	2-0-0-0-1-1-1-1
04 January	1	0-1-0-0-1-1-0-0	0	0-0-0-0-0-0-0-0	2	0-1-0-0-0-0-0-0
05 January	3	0-0-2-2-1-1-0-1	2	0-0-1-2-1-0-0-0	3	0-0-1-2-2-0-0-1
06 January	6	1-3-1-1-2-2-1-1	15	0-1-4-4-5-3-1-0	6	1-2-2-2-3-2-1-1
07 January	6	1-1-3-2-2-2-1-0	7	1-0-2-2-3-4-0-0	5	1-1-2-2-1-2-1-0
08 January	5	0-0-3-2-2-2-0-0	6	0-0-2-3-3-2-1-0	4	0-1-2-2-2-0-0-1

Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
02 Jan 1502	ALERT: Electron 2MeV Integral Flux > 1000pfu	02 Jan 1435
03 Jan 1449	ALERT: Electron 2MeV Integral Flux > 1000pfu	03 Jan 1410
04 Jan 1409	ALERT: Electron 2MeV Integral Flux > 1000pfu	04 Jan 1350
05 Jan 1200	ALERT: Type II Radio Emission	05 Jan 0923
05 Jan 1423	ALERT: Electron 2MeV Integral Flux > 1000pfu	05 Jan 1345
06 Jan 1443	ALERT: Geomagnetic K=4	06 Jan 1440



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
11 Jan	78	5	2	25 Jan	85	8	3
12	78	5	2	26	85	8	3
13	78	5	2	27	80	10	3
14	78	5	2	28	80	5	2
15	78	5	2	29	75	5	2
16	80	8	3	30	75	5	2
17	80	5	2	31	75	3	1
18	80	5	2	01 Feb	75	3	1
19	80	3	1	02	75	5	2
20	85	3	1	03	75	8	3
21	85	5	2	04	75	8	3
22	85	5	2	05	75	5	2
23	85	15	5	06	75	8	3
24	85	15	5				



Energetic Events

Date	Time		X-ray		Optical Information			Peak		Sweep Freq	
	Begin	Max	Max	Class	Flux	Imp/	Location	Radio Flux		Intensity	
						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.			
02 January	1752	1756	1758	B1.1			843
03 January	0511	0514	0516	B1.1			841
	1134	1137	1140	B1.1			841
	1411	1415	1418	B2.8			843
	1442	1446	1449	B1.9			843
	1708	1711	1713	B1.0			843
	1723	1727	1735	B1.3			843
	2122	2128	2131	B1.7			841
04 January	0940	0944	0947	B1.4			841
05 January	0542	0546	0551	B1.2			840
	0720	0742	0820	B8.6			841
	0921	0921	0931	C4.4	Sf	N14W57	843
	1044	1047	1049	B1.8			
06 January	No Flares						Observed
07 January	No Flares						Observed
08 January	No Flares						Observed



Region Summary

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

Region 840

24 Dec	S03E66	262	0050	02	Hsx	001	A								
25 Dec	S03E53	262	0040	02	Hax	001	A								
26 Dec	S03E40	262	0050	03	Cso	003	B								
27 Dec	S03E27	262	0030	01	Hsx	001	A								
28 Dec	S03E14	261	0020	02	Hsx	002	A								
29 Dec	S03E01	261	0030	04	Cso	006	B								
30 Dec	S02W13	262	0020	02	Hsx	002	A								
31 Dec	S03W26	262	0020	01	Hsx	001	A								
01 Jan	S03W40	262	0010	01	Hax	001	A								
02 Jan	S03W53	262	0010	01	Axx	001	A								
03 Jan	S03W67	262	0000	01	Axx	001	A								
04 Jan	S03W80	262													

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 261

Region 841

24 Dec	N04E74	254	0090	02	Hsx	001	A								
25 Dec	N12E60	255	0120	07	Cso	004	B	1			1				
26 Dec	N12E47	255	0170	09	Dso	008	B								
27 Dec	N12E34	255	0140	09	Cso	004	B								
28 Dec	N12E21	254	0130	06	Cso	003	B								
29 Dec	N12E08	254	0130	09	Cao	004	B	1							
30 Dec	N12W07	256	0110	04	Cao	005	B								
31 Dec	N12W16	252	0150	09	Cao	004	B								
01 Jan	N12W31	253	0170	08	Cso	003	B								
02 Jan	N12W48	257	0140	03	Hax	002	A								
03 Jan	N13W61	256	0090	03	Cso	004	B								
04 Jan	N13W76	258	0080	03	Hax	002	A								
05 Jan	N13W91	261	0040	04	Hsx	001	A								

2 0 0 1 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 256



Region Summary – continued.

Location		Sunspot Characteristics						Flares						
Date	(° 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 843

26 Dec	N12E67	235	0080	09	Cao	004	B											
27 Dec	N12E54	235	0080	05	Cao	008	B											
28 Dec	N12E40	235	0030	05	Cso	004	B	1				1						
29 Dec	N12E27	235	0030	05	Cso	007	B											
30 Dec	N12E15	234	0030	04	Cao	004	B											
31 Dec	N12E02	234	0030	04	Cso	005	B											
01 Jan	N11W12	234	0020	05	Dsi	007	B											
02 Jan	N12W25	234	0020	03	Hsx	004	A											
03 Jan	N13W38	233	0030	02	Hax	004	A											
04 Jan	N13W51	233	0040	02	Hax	003	A											
05 Jan	N12W64	234	0050	02	Hax	002	A	1				1						
06 Jan	N12W77	234	0010	01	Axx	002	A											
07 Jan	N12W90	234																
										2	0	0	2	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 234

Region 845

06 Jan	N18E72	085	0050	02	Cao	002	B											
07 Jan	N19E56	088	0050	02	Hsx	001	A											
08 Jan	N18E44	086	0040	02	Hax	001	A											
										0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 086

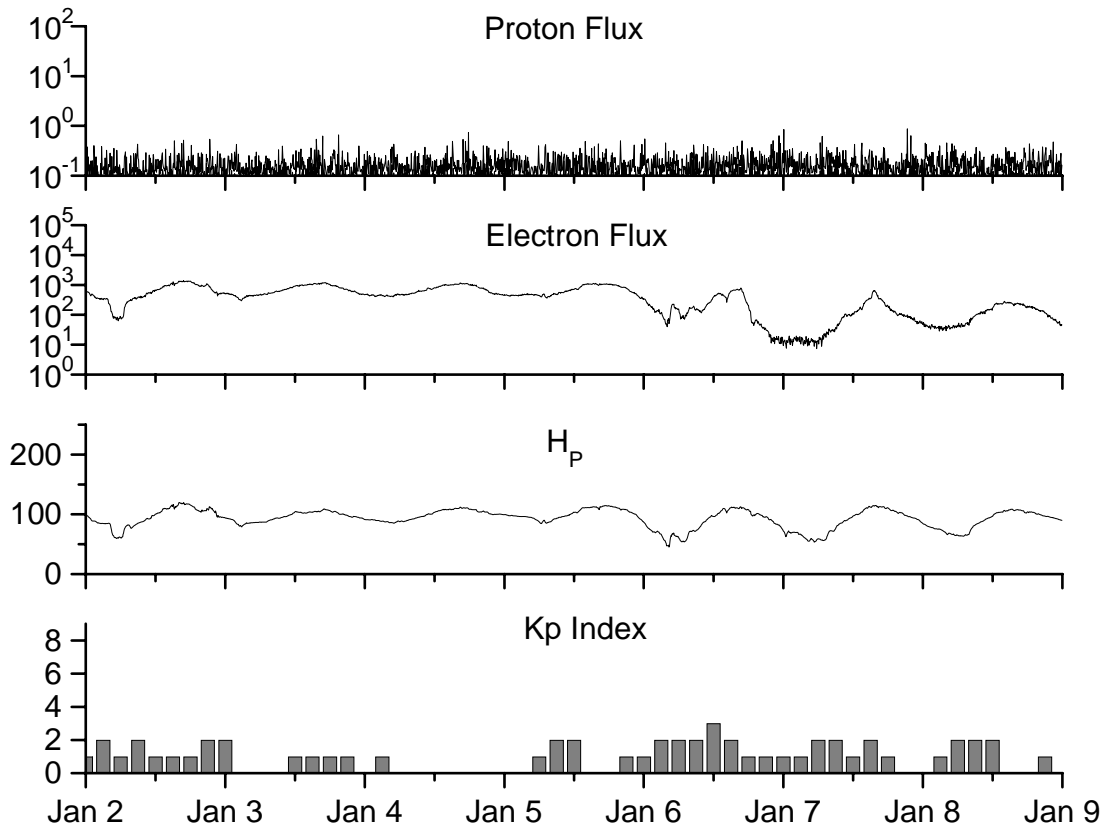


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

Month	Sunspot Numbers			Smooth values		Radio Flux		Geomagnetic	
	Observed SEC	values RI	Ratio RI/SEC	SEC	RI	*Penticton 10.7 cm	Smooth Value	Planetary Ap	Smooth Value
2004									
January	62.3	37.7	0.61	87.9	52.0	114.1	116.3	22	18.1
February	75.6	45.8	0.61	84.2	49.4	107.0	115.5	13	17.7
March	81.0	49.1	0.61	80.9	47.2	112.2	114.6	14	16.9
April	59.3	39.3	0.66	77.9	45.6	101.2	112.3	11	15.5
May	77.3	41.5	0.54	74.1	43.9	99.8	109.2	8	14.3
June	78.9	43.2	0.55	70.4	41.7	97.4	107.2	8	14.0
July	87.8	51.0	0.58	68.3	40.2	118.5	105.9	23	13.8
August	69.5	40.9	0.59	66.6	39.3	110.1	105.0	11	13.8
September	50.0	27.7	0.55	63.7	37.6	103.1	103.7	10	13.6
October	77.9	48.4	0.62	61.3	35.9	105.7	102.1	9	13.5
November	70.5	43.7	0.62	60.0	35.4	113.2	101.5	26	14.1
December	34.7	17.9	0.52	58.8	35.3	94.6	101.3	11	14.8
2005									
January	52.0	31.3	0.60	57.3	34.7	102.4	100.3	22	14.7
February	45.4	29.1	0.64	56.4	34.0	97.3	98.5	11	14.6
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			96.6		16	
August	65.6	36.4	0.55			90.7		16	
September	39.2	22.1	0.56			90.8		21	
October	13.0	8.5	0.65			76.7		7	
November	32.2	18.0	0.56			86.3		8	
December	62.6	41.2	0.66			90.8		7	

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 02 January 2006*

Protons plot contains the five-minute averaged integral proton flux (protons/cm²-sec-sr) as measured by GOES-11 (W108) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

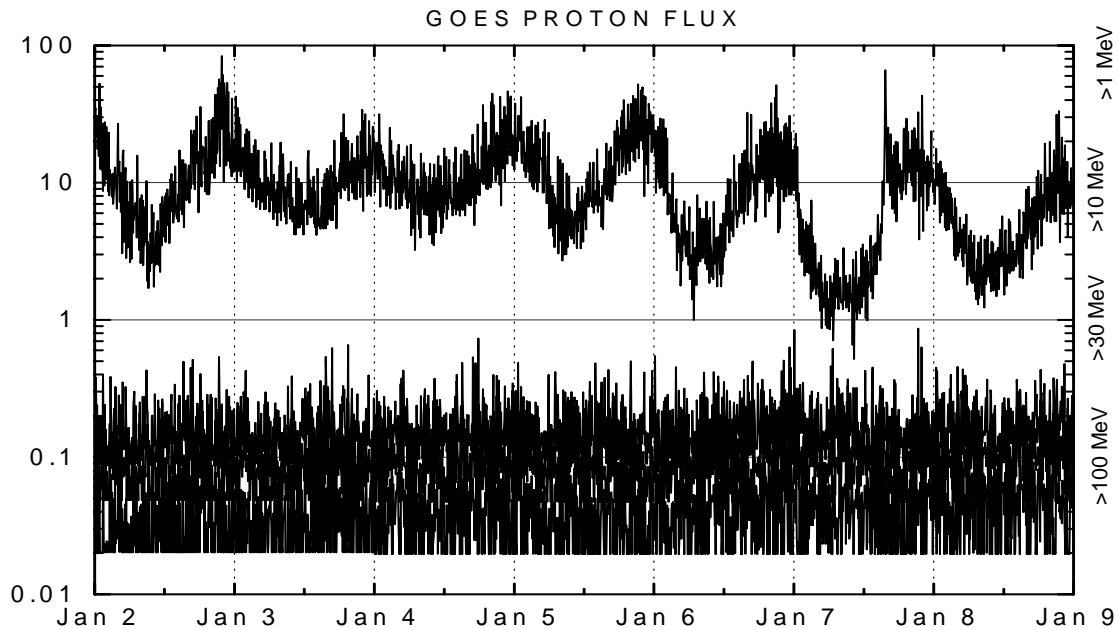
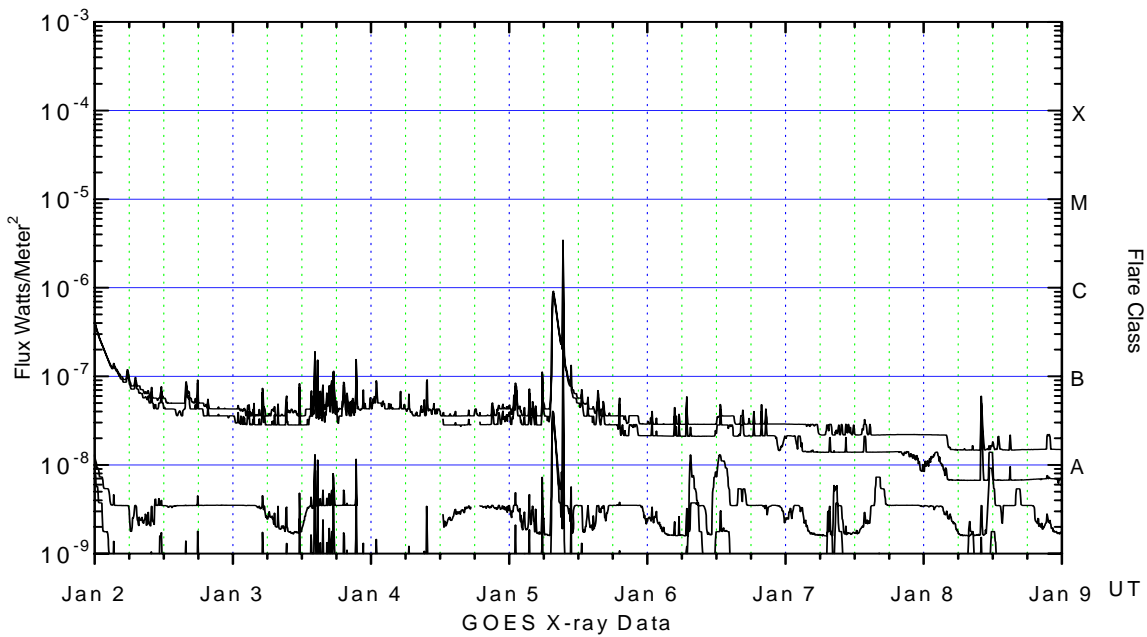
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec-sr) with energies greater than 2 MeV at GOES-12 (W75).

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

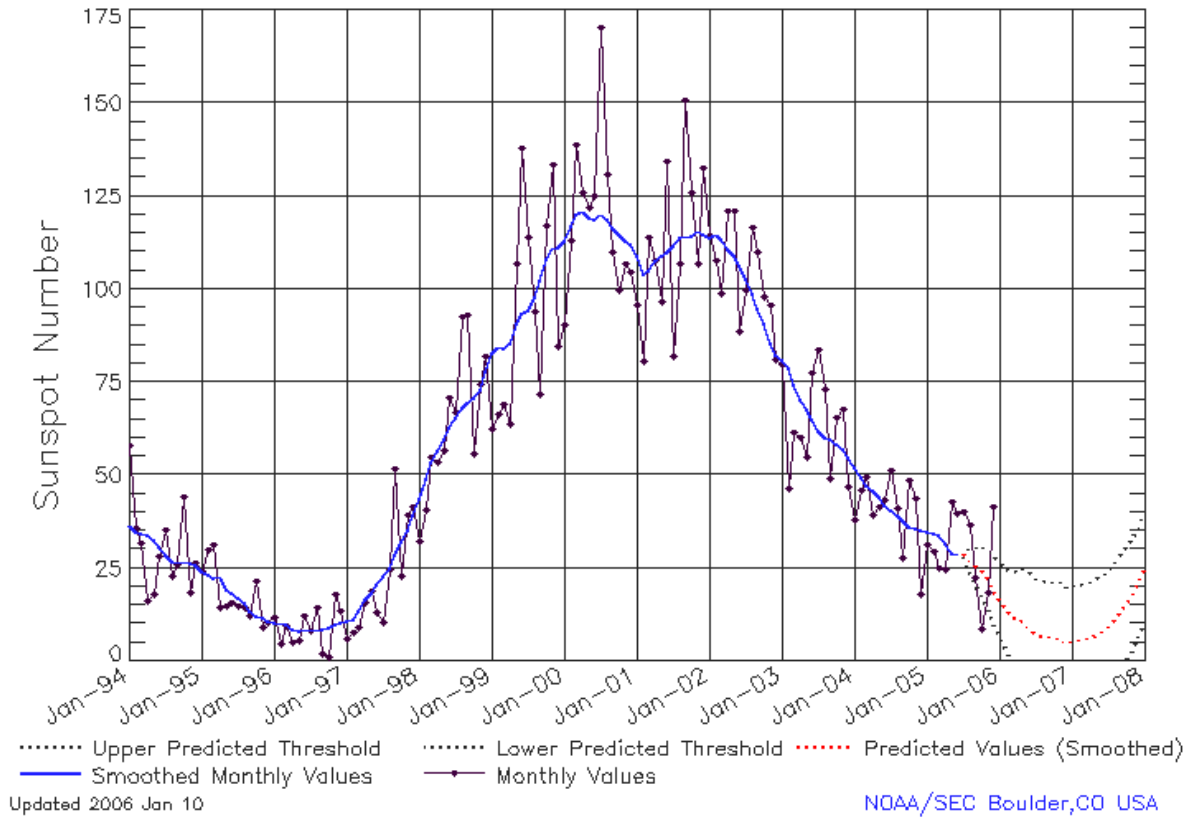
X-ray plot contains five-minute averaged x-ray flux (watts/m²) as measured by GOES 12 (W75) and GOES 10 (W135) in two wavelength bands, .05 - .4 and .1 - .8 nm. The letters A, B, C, M and X refer to x-ray event levels for the .1 - .8 nm band.

Proton plot contains the five-minute averaged integral proton flux (protons/cm²-sec-sr) as measured by GOES-11 (W108) 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 31 Dec 05



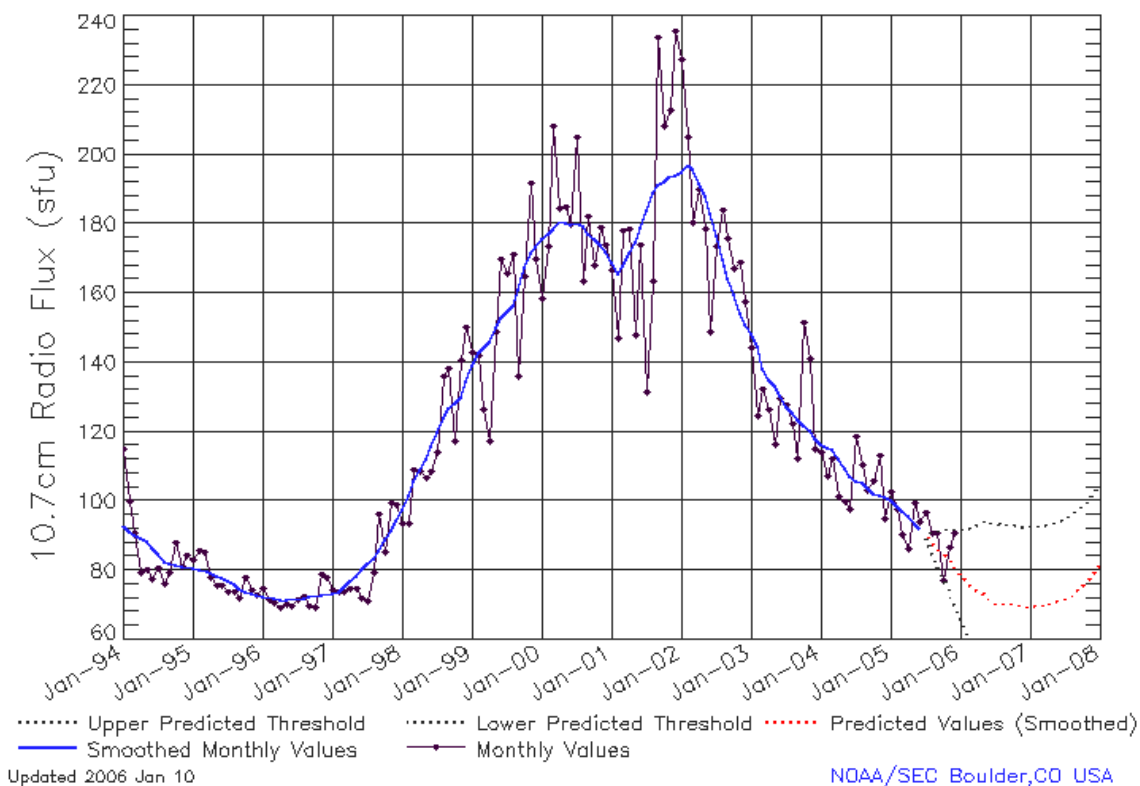
SEC Prediction of Smoothed Sunspot Number

	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 (1)	27 (3)	26 (5)	24 (7)	22 (8)	19 (9)
2006	17 (10)	14 (11)	12 (12)	11 (13)	11 (14)	9 (15)	7 (15)	7 (15)	7 (15)	6 (15)	6 (15)	5 (15)
2007	5 (15)	6 (15)	6 (15)	6 (15)	7 (15)	8 (15)	10 (15)	11 (15)	13 (15)	16 (15)	18 (15)	21 (15)



ISES Solar Cycle F10.7cm Radio Flux Progression

Data Through 31 Dec 05



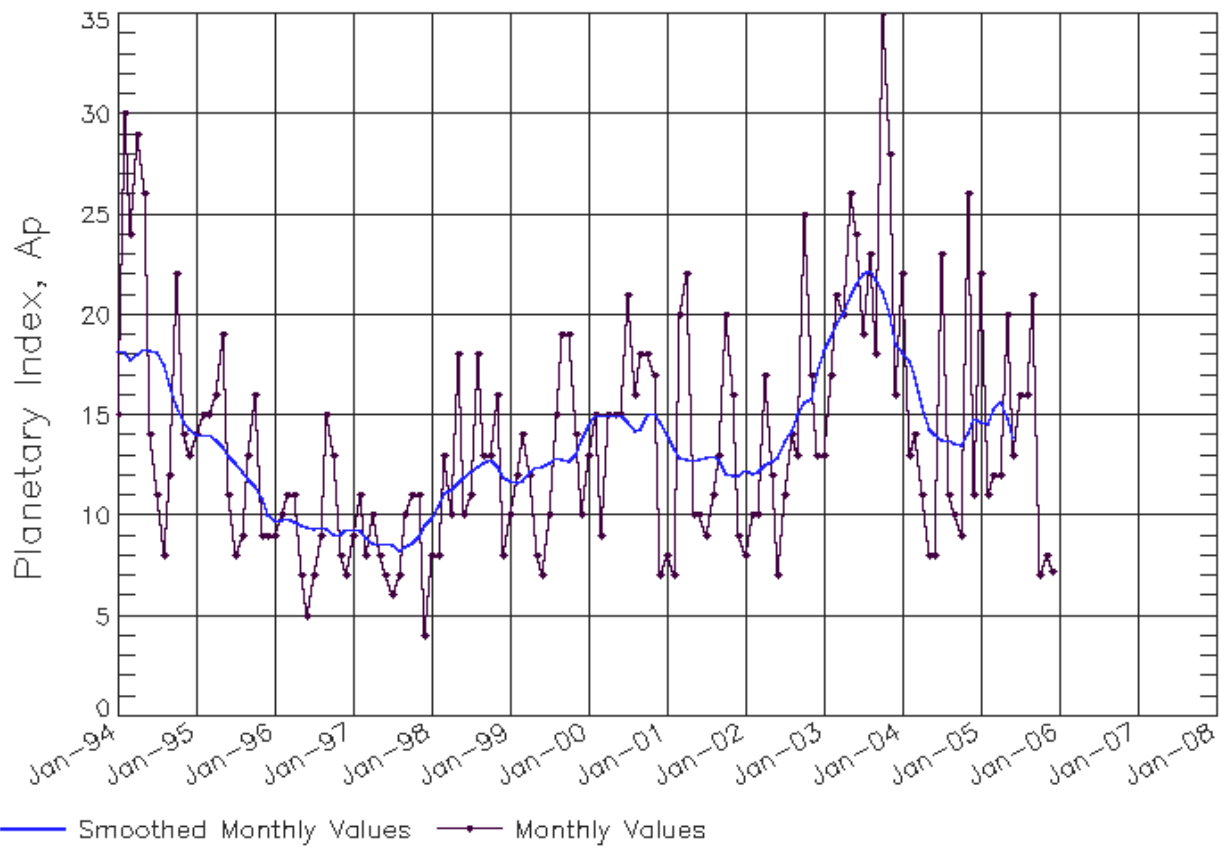
SEC Prediction of Smoothed F10.7cm Radio Flux

	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 (1)	88 (3)	86 (5)	85 (7)	83 (9)	81 (11)
2006	79 (13)	77 (15)	75 (15)	74 (14)	73 (13)	72 (12)	71 (11)	71 (11)	70 (10)	70 (10)	70 (10)	70 (10)
2007	70 (10)	70 (10)	70 (10)	70 (10)	71 (11)	71 (11)	72 (12)	73 (13)	74 (14)	76 (16)	77 (17)	79 (19)



ISES Solar Cycle Ap Progression

Data Through 31 Dec 05



Updated 2006 Jan 10

NOAA/SEC Boulder, CO USA

