

Space Weather Highlights
27 March – 02 April 2006

SEC PRF 1596
04 April 2006

Solar activity was at very low levels. New Region 865 (S11, L=110, class/area, Ehc/340 on 02 April) produced a majority of the activity this period. The region showed slow, but steady growth since first rotating on the disk on 28 March.

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

The greater than 2 MeV electron flux at geosynchronous orbit was at normal levels.

Geomagnetic activity ranged from quiet to unsettled levels at all latitudes. One isolated period of active conditions was observed at high latitudes midday on 31 March. Solar wind speed ranged from a high of about 420 km/s early on 28 March to a low of near 275 km/s late on 02 April. The IMF Bz did not vary much beyond +/- 5 nT the entire period.

Space Weather Outlook
05 April – 01 May 2006

Solar activity is expected to be at predominately very low to low levels with isolated moderate activity possible through 09 April.

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 16 – 22 April.

The geomagnetic field is expected to be at quiet to unsettled levels for the majority of the period. From 14 – 17 April, active to major storm conditions are expected due to effects from a recurrent coronal hole wind 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	
27 March	74	0	0	A1.1	0	0	0	0	0	0	0	0	0
28 March	79	11	20	A6.6	0	0	0	0	0	0	0	0	0
29 March	82	31	200	A6.1	0	0	0	0	0	0	0	0	0
30 March	84	35	210	A6.5	0	0	0	2	0	0	0	0	0
31 March	86	39	330	A6.8	0	0	0	0	0	0	0	0	0
01 April	87	39	320	A7.3	0	0	0	0	0	0	0	0	0
02 April	91	68	490	A6.9	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
	27 March	3.4E+5	1.6E+4	4.0E+3		2.0E+6
28 March	4.0E+5	1.6E+4	3.8E+3		4.5E+6	
29 March	3.6E+5	1.7E+4	4.1E+3		6.8E+6	
30 March	4.1E+5	1.6E+4	3.9E+3		3.5E+6	
31 March	4.3E+5	1.7E+4	4.2E+3		4.2E+6	
01 April	4.2E+5	1.6E+4	4.3E+3		1.9E+6	
02 April	5.8E+5	1.7E+4	4.1E+3		1.8E+6	

Daily Geomagnetic Data

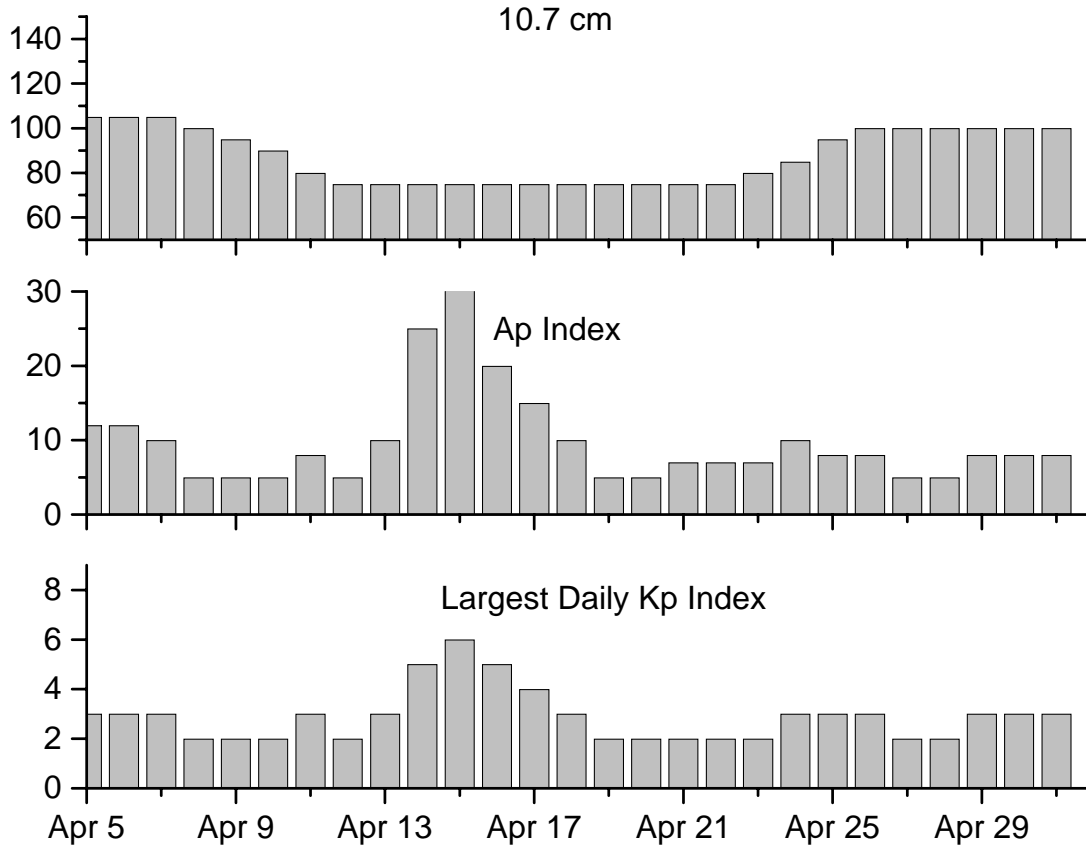
Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	27 March	8	3-3-0-0-1-3-1-3	5	2-2-0-0-1-3-1-2	9
28 March	4	0-3-1-0-1-1-1-1	4	1-2-1-0-2-1-1-1	6	1-3-1-0-1-1-2-1
29 March	4	1-1-0-1-2-2-1-1	2	0-1-0-2-0-0-0-1	6	1-2-0-1-2-3-2-2
30 March	2	1-1-0-0-0-1-1-1	2	2-0-0-0-0-0-2-1	4	1-1-0-0-1-2-2-2
31 March	2	0-0-1-1-1-1-2-0	9	2-0-3-3-4-2-0-0	4	1-0-1-2-2-1-2-1
01 April	1	0-0-0-0-1-0-0-1	0	0-0-0-0-0-1-0-0	2	1-0-0-0-1-0-0-1
02 April	1	0-0-0-0-2-0-0-0	0	0-0-0-0-0-0-0-0	1	1-0-0-0-1-0-0-1

Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
28 Mar 0431	ALERT: Geomagnetic K=4	28 Mar 0428
31 Mar 0026	245 MHz Radio Noise Storm	30 Mar
01 Apr 0012	1- 245 MHz Radio Burst	31 Mar
02 Apr 0005	4- 245 MHz Radio Bursts	01 Apr



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 April	105	12	3	19 April	75	5	2
06	105	12	3	20	75	5	2
07	105	10	3	21	75	7	2
08	100	5	2	22	75	7	2
09	95	5	2	23	80	7	2
10	90	5	2	24	85	10	3
11	80	8	3	25	95	8	3
12	75	5	2	26	100	8	3
13	75	10	3	27	100	5	2
14	75	25	5	28	100	5	2
15	75	35	6	29	100	8	3
16	75	20	5	30	100	8	3
17	75	15	4	01 May	100	8	3
18	75	10	3				



Energetic Events

Date	Time		X-ray	Optical Information			Peak		Sweep Freq
	Begin	Max	Integ	Imp/	Location	Rgn	Radio Flux		Intensity
			Class	Flux	Lat	CMD	#	245	2695

No Events Observed

Flare List

Date	Time			Optical	Imp / Brtns	Location Lat CMD	Rgn
	Begin	Max	End	X-ray Class.			
27 March	1817	1823	1838	B1.5			
28 March	0649	0653	0658	B1.0			
	0807	0811	0816	B1.1			
	1342	1349	1357	B3.3			
	1554	1600	1605	B7.4			865
29 March	1759	1805	1810	B2.3			865
	0602	0606	0611	B1.3			
	0752	0755	0757	B1.0			865
	1226	1231	1239	B1.3			
	1321	1324	1328	B1.0			
30 March	2151	2235	2245	B2.5			865
	0654	0658	0700	B1.0			
	1311	1346	1406	B2.3			
	1514	1515	1522	B9.0	Sf	S14E39	865
	1701	1709	1715	B7.1			866
31 March	1825	1825	1829	B3.3	Sf	S12E34	865
	2201	2232	2258	B2.9			
	0853	0858	0904	B1.1			
	1002	1007	1012	B1.3			
	1622	1627	1640	B1.3			
	1714	1748	1758	B2.3			865
01 April	2146	2149	2153	B1.0			
	2211	2214	2217	B1.0			
	0025	0040	0103	B7.8			865
02 April	0456	0459	0502	B1.7			
	1346	1403	1415	B3.7			
	0048	0052	0054	B1.4			866
	0229	0233	0235	B1.9			866
	1326	1333	1335	B6.7			866
	1501	1505	1516	B1.7			
	1613	1623	1632	B1.4			
	1753	1802	1825	B3.2			865



Region Summary

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

Region 865

28 Mar	S13E60	110	0020	02	Hsx	001	A								
29 Mar	S12E48	109	0130	09	Dso	010	B								
30 Mar	S13E32	111	0140	09	Dai	013	Bg				2				
31 Mar	S13E20	110	0210	11	Eai	018	B								
01 Apr	S12E07	110	0240	12	Eai	018	Bgd								
02 Apr	S11W06	110	0340	12	Ehc	027	Bgd								
								0	0	0	2	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 110

Region 866

29 Mar	S06E69	088	0070	02	Hsx	001	A								
30 Mar	S08E56	087	0070	03	Hsx	002	A								
31 Mar	S07E42	088	0120	03	Hsx	001	A								
01 Apr	S06E28	089	0080	03	Hsx	001	A								
02 Apr	S06E16	088	0100	03	Hax	003	A								
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 088

Region 867

02 Apr	S16E16	088	0050	07	Dso	008	B								
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 088

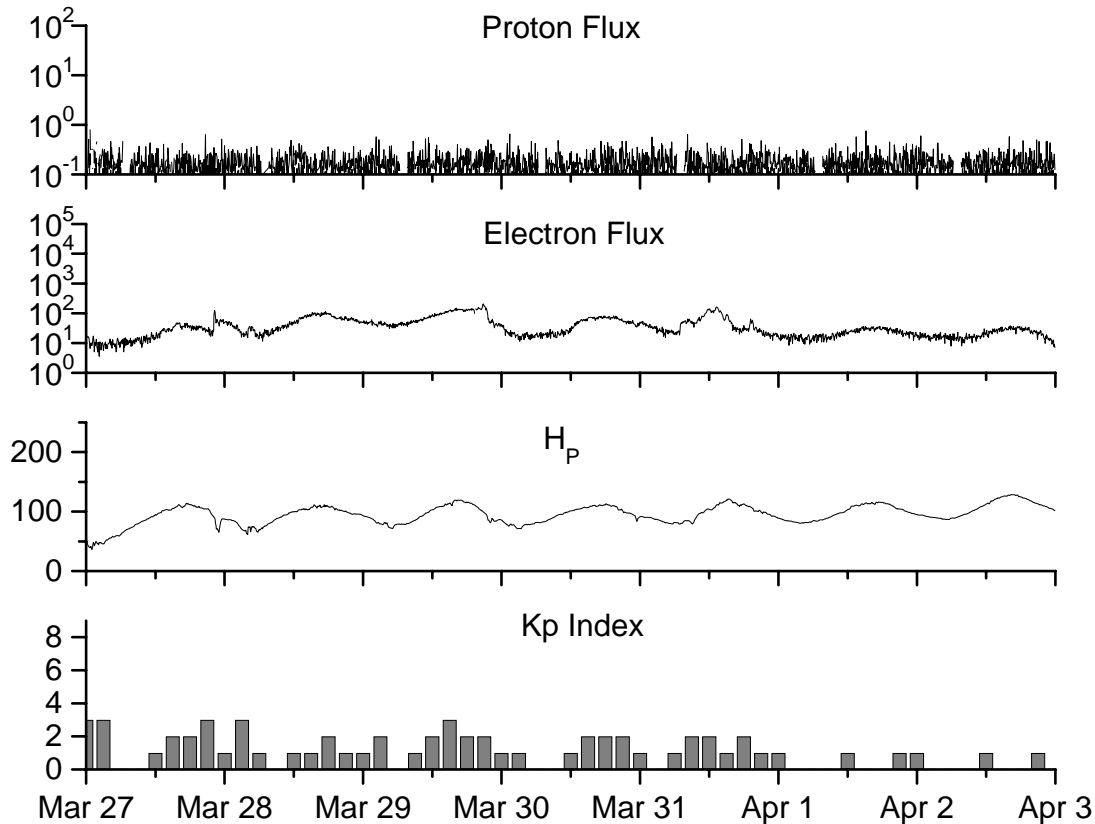


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

Month	Sunspot Numbers			Radio Flux		Geomagnetic			
	Observed values SEC	Ratio RI	Ratio RI/SEC	Smooth values SEC	Smooth values RI	*Penticton 10.7 cm	Smooth Value	Planetary Ap	Smooth Value
2004									
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	42.9	25.9	96.6	87.8	16	11.8
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			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	
2006									
January	28.0	15.4	0.55			83.8		6	
February	5.3	4.7	0.89			76.6		6	
March	21.3	10.8	0.51			75.5		8	

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 27 March 2006

Protons plot contains the five-minute averaged integral proton flux (protons/cm²-sec -sr) as measured by GOES-11 (W103) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

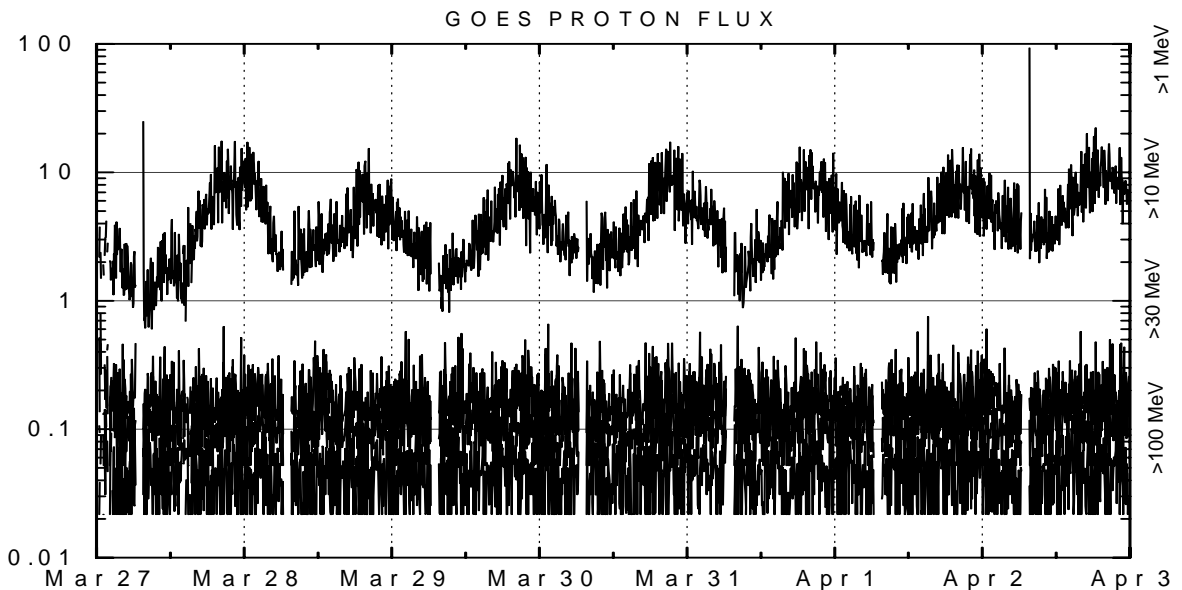
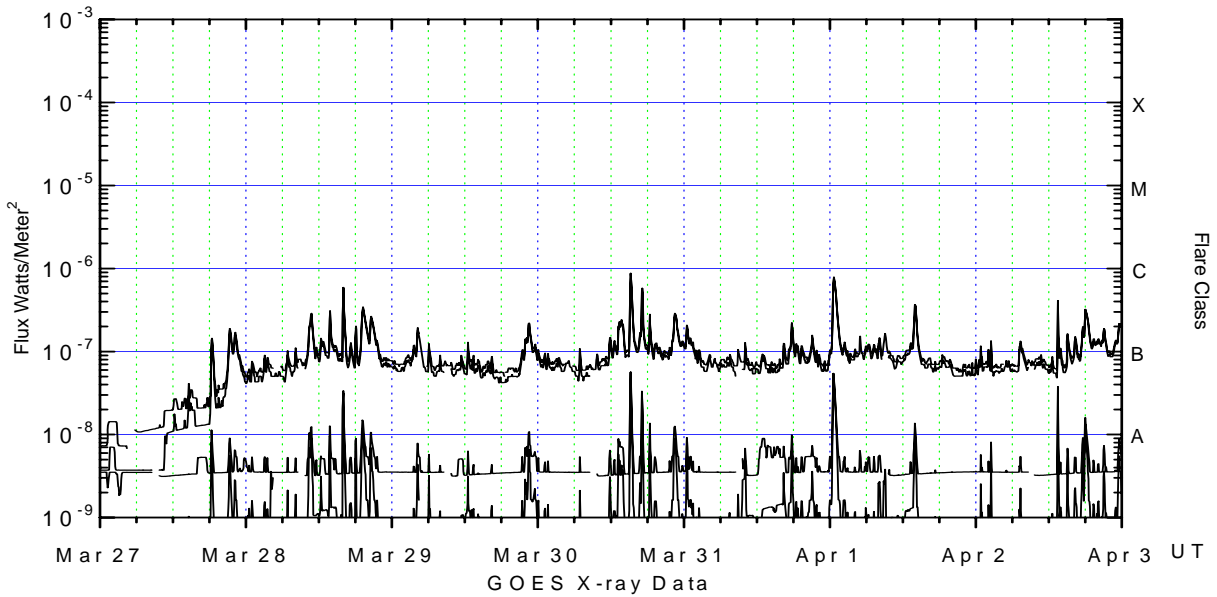
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV at GOES-12 (W75).

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

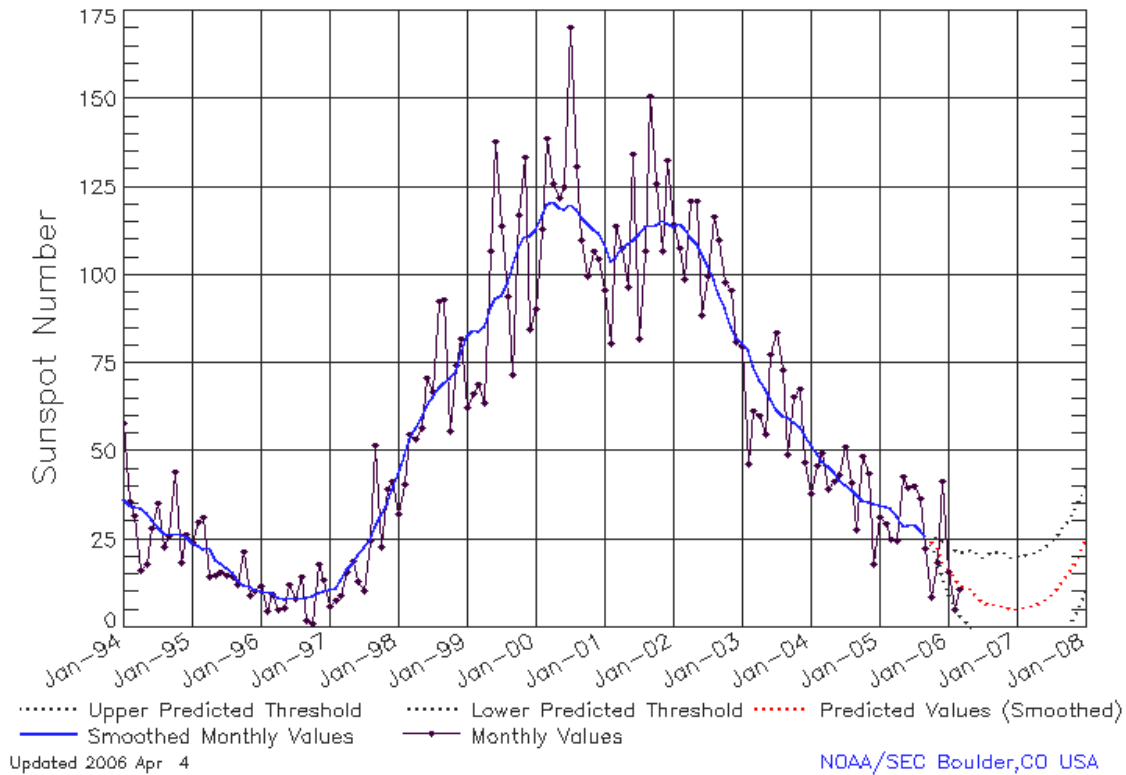
X-ray plot contains five-minute averaged x-ray flux (watts/m²) as measured by GOES 12 (W75) and GOES 10 (W135) in two wavelength bands, .05 - .4 and .1 - .8 nm. The letters A, B, C, M and X refer to x-ray event levels for the .1 - .8 nm band.

Proton plot contains the five-minute averaged integral proton flux (protons/cm²-sec-sr) as measured by GOES-11 (W103) 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 Mar 06



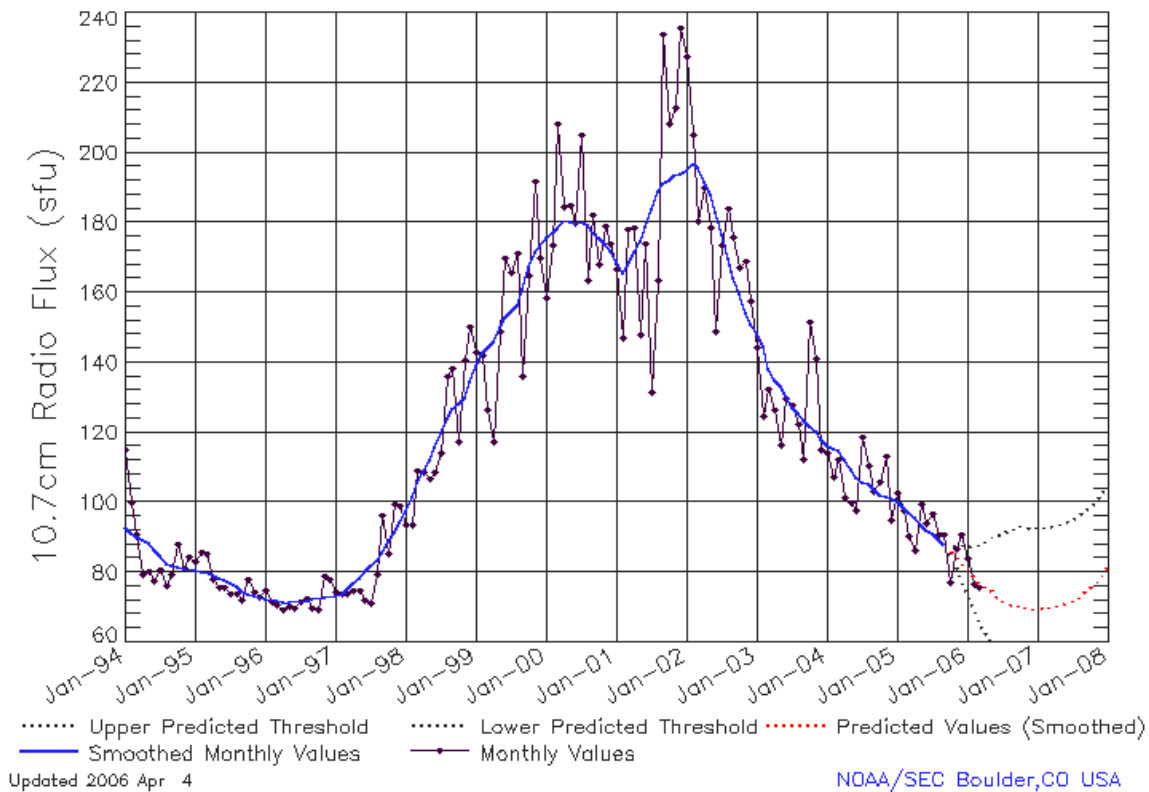
SEC Prediction of Smoothed Sunspot Number

	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	25	23	20
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(1)	(3)	(5)	(7)
2006	17	15	13	12	11	9	7	7	7	6	6	5
	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(15)	(15)	(15)	(15)
2007	5	6	6	6	7	8	10	11	13	16	18	21
	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)



ISES Solar Cycle F10.7cm Radio Flux Progression

Data Through 31 Mar 06



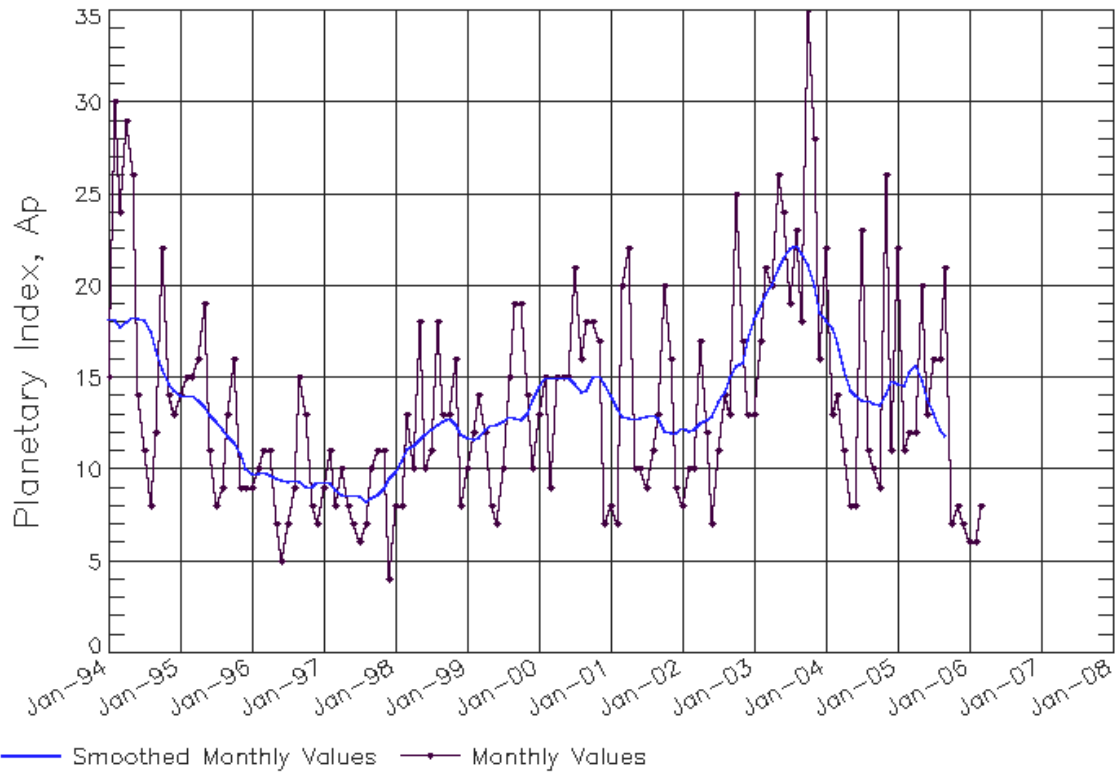
SEC Prediction of Smoothed F10.7cm Radio Flux

	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 (***)	87 (1)	86 (3)	84 (5)	82 (7)
2006	80 (9)	78 (11)	76 (13)	75 (15)	74 (15)	73 (14)	71 (13)	71 (11)	70 (11)	70 (10)	70 (10)	70 (10)
2007	70 (10)	70 (10)	70 (10)	70 (10)	71 (10)	71 (11)	72 (11)	73 (12)	74 (13)	76 (14)	77 (16)	79 (17)



ISES Solar Cycle Ap Progression

Data Through 31 Mar 06



Updated 2006 Apr 4

NOAA/SEC Boulder, CO USA

