

## **Space Weather Highlights** **04 April – 10 April 2005**

**SWO PRF 1545**  
**12 April 2005**

Solar activity ranged from very low to low. Before rotating off the disk on 08 April, three low-level C-class flares were observed from Region 747 (S05, L=249, class/area, Dai/130 on 05 April), one on 05 April and two on 06 April. On 09 April, SOHO/LASCO imagery observed two CME's off the SW limb. The first was around 09/0826 UTC and the second was at 09/1350 UTC. Both appeared to be backside events. The remainder of the disk and limb were quiet and stable.

Solar wind data were available from the NASA Advanced Composition Explorer (ACE) spacecraft during most of the summary period. Solar wind speed ranged from a high of near 680 km/s early on 05 April to a low of near 305 km/s late on 09 April. The period began with solar wind speed weak at near 350 km/s and the IMF Bz ranging at +/- 3 nT. By about 0530 UTC on 04 April, the IMF Bz began to oscillate through +10 to -8 nT while temperature, density, and wind speed increased, all indicative of a co-rotating interactive region (CIR) and the onset of a high speed coronal hole wind stream. At about 0200 UTC on 05 April, a reverse shock was detected in the ACE data as temperature and density showed a sudden decrease while wind speed increased to near 680 km/s. By midday on the 5th, wind speed began to gradually decline and the IMF Bz relaxed, not varying much beyond +/- 5 nT as the coronal hole wind stream began to rotate out of a geoeffective position. Through the balance of the summary period, wind speed gradually declined and ended near 305 km/s, while the IMF Bz did not vary much beyond +/- 3 nT.

No greater than 10 MeV proton events were observed this period

The greater than 2 MeV electron flux at geosynchronous orbit reached high levels on 05 - 09 April.

The geomagnetic field ranged from quiet to severe storm levels. The period began with the geomagnetic field at quiet levels. By 04/1800 UTC, activity levels increased to active to minor storm levels as a recurrent coronal hole wind stream rotated into a geoeffective position. Early on 05 April, activity levels further increased to minor to severe storm levels and persisted through 0900 UTC. For the remainder of the 5th, activity levels decreased to unsettled to active. On 06 and 07 April, activity levels were mostly quiet to unsettled, with isolated periods of active to minor storming at high latitudes midday on the 6th and 7th, as the coronal hole stream rotated out of a geoeffective position. For the remainder of the summary period, the field was quiet to unsettled.

## **Space Weather Outlook** **13 April - 09 May 2005**

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

A greater than 10 MeV proton event is not expected.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at high levels on 13 – 15 April, 22 – 29 April, and again on 03 – 08 May.

The geomagnetic field is expected to range from quiet to major storm levels. Recurrent coronal hole high speed wind streams are expected to produce unsettled to minor storm levels on 13 – 14 April; unsettled to active levels on 21 – 23 April; and unsettled to major storm levels on 01 – 03 May. Otherwise, expect quiet to unsettled conditions.



### *Daily Solar Data*

Date	Radio Flux 10.7 cm	Sun spot No.	Sunspot Area (10 <sup>-6</sup> hemi.)	X-ray Background	Flares							
					X-ray Flux			Optical				
					C	M	X	S	1	2	3	4
04 April	85	54	170	A6.6	0	0	0	0	0	0	0	0
05 April	88	56	290	A7.1	1	0	0	1	0	0	0	0
06 April	88	50	180	A7.8	2	0	0	0	0	0	0	0
07 April	88	49	240	A6.9	0	0	0	0	0	0	0	0
08 April	88	56	250	A6.1	0	0	0	0	0	0	0	0
09 April	88	43	190	A8.5	0	0	0	0	0	0	0	0
10 April	88	42	140	B1.0	0	0	0	0	0	0	0	0

### *Daily Particle Data*

Date	Proton Fluence (protons/cm <sup>2</sup> -day-sr)			Electron Fluence (electrons/cm <sup>2</sup> -day-sr)		
	>1MeV	>10MeV	>100MeV	>.6MeV	>2MeV	>4MeV
	04 April	6.1E+5	1.4E+4	3.1E+3		7.6E+6
05 April	1.7E+6	1.4E+4	2.8E+3		9.8E+7	
06 April	1.0E+6	1.4E+4	3.0E+3		3.6E+8	
07 April	6.8E+5	1.4E+4	3.2E+3		6.4E+8	
08 April	7.1E+5	1.4E+4	3.3E+3		8.6E+8	
09 April	1.4E+6	1.4E+4	3.4E+3		1.4E+9	
10 April	1.5E+6	1.5E+4	3.1E+3		5.5E+8	

### *Daily Geomagnetic Data*

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	04 April	11	1-2-2-2-2-3-3-4	17	1-1-2-2-3-5-4-4	17
05 April	30	6-6-4-2-2-2-2-4	*	5-*. *-*. *-4-3-3	48	7-7-5-3-3-3-3-4
06 April	7	3-2-1-1-2-2-2-2	17	3-2-3-5-3-4-1-2	11	3-2-2-3-2-3-3-3
07 April	4	2-2-2-2-1-1-0-0	11	1-1-3-5-3-2-0-0	8	2-2-3-2-2-2-1-1
08 April	2	2-1-1-0-1-0-1-0	2	1-0-2-1-0-0-0-0	4	2-0-1-1-1-1-2-1
09 April	2	1-1-0-0-0-0-0-2	0	0-0-0-0-0-0-0-0	4	2-1-0-1-1-2-2-1
10 April	2	1-1-0-0-1-1-1-1	2	1-0-0-1-1-0-0-1	4	1-0-0-1-2-2-1-1

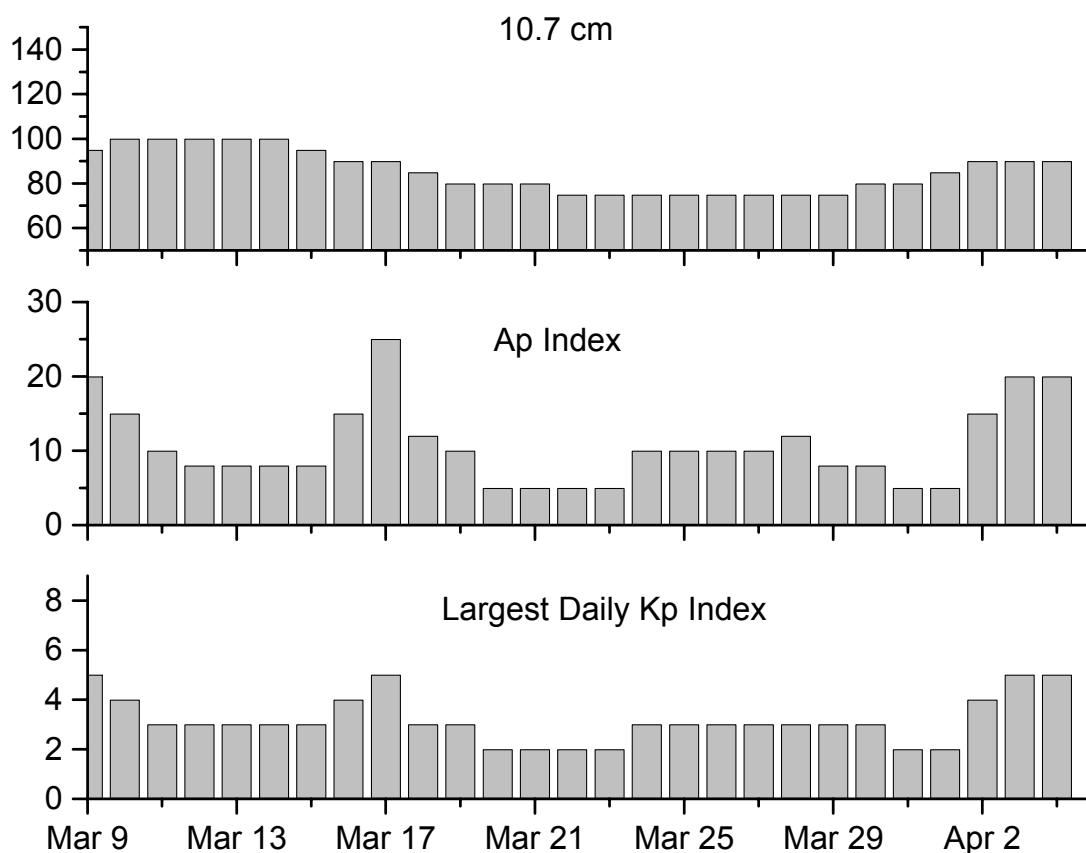


### *Alerts and Warnings Issued*

<u>Date &amp; Time of Issue</u>	<u>Type of Alert or Warning</u>	<u>Date &amp; Time of Event UTC</u>
04 Apr 1709	WARNING: Geomagnetic K= 4	04 Apr 1709 – 2359
04 Apr 1711	ALERT: Geomagnetic K= 4	04 Apr 1710
04 Apr 2107	EXTENDED WARNING: Geomagnetic K= 4	04 Apr 1709 – 05/1600
05 Apr 0037	WARNING: Geomagnetic K= 5	05 Apr 0038 – 1600
05 Apr 0044	ALERT: Geomagnetic K= 6	05 Apr 0040
05 Apr 0353	ALERT: Geomagnetic K= 6	05 Apr 0350
05 Apr 0405	WARNING: Geomagnetic K= 6	05 Apr 0405 – 0600
05 Apr 1407	ALERT: Electron 2MeV Integral Flux > 1000pfu	05 Apr 1345
05 Apr 1556	EXTENDED WARNING: Geomagnetic K= 4	04 Apr 1709 – 05/2359
05 Apr 2354	EXTENDED WARNING: Geomagnetic K= 4	04 Apr 1709 – 06/1600
06 Apr 0007	245 MHz Radio Burst	05 Apr
06 Apr 0521	ALERT: Electron 2MeV Integral Flux > 1000pfu	06 Apr 0500
07 Apr 0515	ALERT: Electron 2MeV Integral Flux > 1000pfu	07 Apr 0500
08 Apr 0522	ALERT: Electron 2MeV Integral Flux > 1000pfu	08 Apr 0500
09 Apr 0914	ALERT: Electron 2MeV Integral Flux > 1000pfu	09 Apr 0500
10 Apr 0519	ALERT: Electron 2MeV Integral Flux > 1000pfu	10 Apr 0500
10 Apr 1655	WATCH: Geomagnetic A $\geq$ 20	12 Apr
10 Apr 1657	WATCH: Geomagnetic A $\geq$ 20	13 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
13 Apr	88	25	5	27 Apr	80	8	2
14	88	18	4	28	80	8	2
15	88	10	3	29	80	5	2
16	88	8	2	30	80	8	2
17	88	8	2	01 May	80	20	4
18	88	5	2	02	80	30	6
19	85	5	2	03	85	15	4
20	80	8	3	04	85	10	3
21	80	18	4	05	85	5	2
22	80	15	4	06	85	8	2
23	80	15	4	07	85	8	2
24	80	10	3	08	85	8	2
25	80	5	2	09	85	10	3
26	80	8	2				



### *Energetic Events*

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

*No Events Observed*

### *Flare List*

Date	Time			Optical	Imp / Brtns	Location Lat CMD	Rgn	
	Begin	Max	End	X-ray Class.				
04 April	0212	0223	0235	B1.6			747	
	0346	0349	0352	B1.4			747	
	0648	0711	0717	B1.9			747	
	1247	1251	1253	B2.9			747	
05 April	2040	2044	2047	B1.3				
	0445	0449	0451	B3.3				
	0756	0801	0805	B2.0			747	
	1222	1226	1232	B1.4			747	
	1709	1713	1718	B6.7			747	
06 April	1906	1914	1918	B2.0			747	
	2004	2004	2009	C1.1	Sf	S05W44	747	
	0357	0400	0403	B1.0				
	0410	0433	0435	B2.0			747	
	0446	0511	0530	B7.3				
	0548	0605	0621	C1.0			747	
	0631	0636	0641	C1.6			747	
	0805	0809	0816	B4.2			747	
	1000	1004	1008	B1.3				
	1550	1555	1558	B2.3			750	
	2346	2356	0012	B3.3			750	
	07 April	0248	0257	0303	B5.6			750
		1230	1235	1239	B1.3			750
1548		1553	1602	B1.3				
08 April	<i>No Flares Observed</i>							
09 April	0712	0719	0733	B1.9			751	
	0821	0827	0836	B2.6			751	
	1200	1222	1227	B8.2			751	
	1318	1322	1348	B2.1			751	
	1429	1441	1447	B4.4			751	
	1525	1530	1542	B1.2			751	
	1550	1603	1610	B2.3			751	
	1727	1739	1750	B2.2			751	
	1845	1850	1853	B2.7			751	
10 April	2333	0036	0119	B8.9				
	0220	0224	0229	B1.9			751	
	0547	0554	0602	B1.6			751	
	0718	0722	0729	B1.9			751	



**Flare List – continued.**

Date	Time			Optical	Imp / Brtns	Location Lat CMD	Rgn
	Begin	Max	End	X-ray Class.			
10 April	0913	0925	0931	B6.7			751
	1019	1023	1029	B2.7			751
	1058	1109	1126	B5.1			751
	1348	1354	1358	B3.6			751
	1430	1509	1521	B2.8			751
	1521	1524	1526	B3.3			
	1553	1557	1600	B2.6			
	1620	1624	1626	B3.7			751
	1657	1702	1704	B5.2			751
	1741	1745	1747	B2.8			751
	1800	1814	1836	B8.2			
	2004	2007	2009	B2.3			751

**Region Summary**

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

*Region 747*

31 Mar S07E23	245	0010	01	Hsx	001	A												
01 Apr S09E10	245	0040	03	Dao	005	B												
02 Apr S07W04	245	0070	05	Dso	009	B												
03 Apr S05W19	247	0060	06	Dao	006	B												
04 Apr S06W32	247	0110	09	Dai	021	B												
05 Apr S05W47	249	0130	10	Dai	012	B	1				1							
06 Apr S05W59	247	0080	08	Dso	006	B	2											
07 Apr S06W74	249	0080	10	Cao	005	B												
08 Apr S04W91	253	0060	04	Cro	004	B												
							3	0	0	1	0	0	0	0	0			

Crossed West Limb.

Absolute heliographic longitude: 245

*Region 748*

31 Mar N09E59	209	0020	01	Hsx	001	A												
01 Apr N09E46	209	0020	01	Hsx	001	A												
02 Apr N09E33	208	0030	01	Hax	001	A												
03 Apr N11E20	208	0010	01	Hsx	001	A												
04 Apr N11E08	207	0020	01	Hsx	001	A												
05 Apr N12W06	208	0020	02	Axx	002	A												
06 Apr N11W18	206	0010	02	Axx	002	A												
07 Apr N11W31	206																	
							0	0	0	0	0	0	0	0	0			

Still on Disk.

Absolute heliographic longitude: 208



**Region Summary – continued.**

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

*Region 749*

03 Apr	S06E63	165	0050	01	Hsx	001	A										
04 Apr	S06E52	163	0040	01	Hsx	002	A										
05 Apr	S06E38	164	0020	02	Hax	001	A										
06 Apr	S05E24	164	0020	01	Hsx	001	A										
07 Apr	S05E11	164	0020	01	Hsx	002	A										
08 Apr	S06W02	164	0020	01	Hax	002	A										
09 Apr	S05W17	166	0010	01	Hsx	001	A										
10 Apr	S06W30	166	0010	01	Axx	001	A										
								0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude:164

*Region 750*

05 Apr	S08E84	118	0120	01	Hax	001	A										
06 Apr	S07E65	123	0070	02	Hax	001	A										
07 Apr	S07E51	124	0140	07	Dai	012	B										
08 Apr	S07E36	126	0150	07	Dao	009	B										
09 Apr	S07E24	125	0100	04	Dai	006	B										
10 Apr	S07E12	124	0070	05	Dso	006	B										
								0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude:124

*Region 751*

08 Apr	S08W59	221	0020	01	Hsx	001	A										
09 Apr	S07W74	223	0080	06	Dai	006	B										
10 Apr	S07W83	219	0060	06	Dso	005	B										
								0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude:221



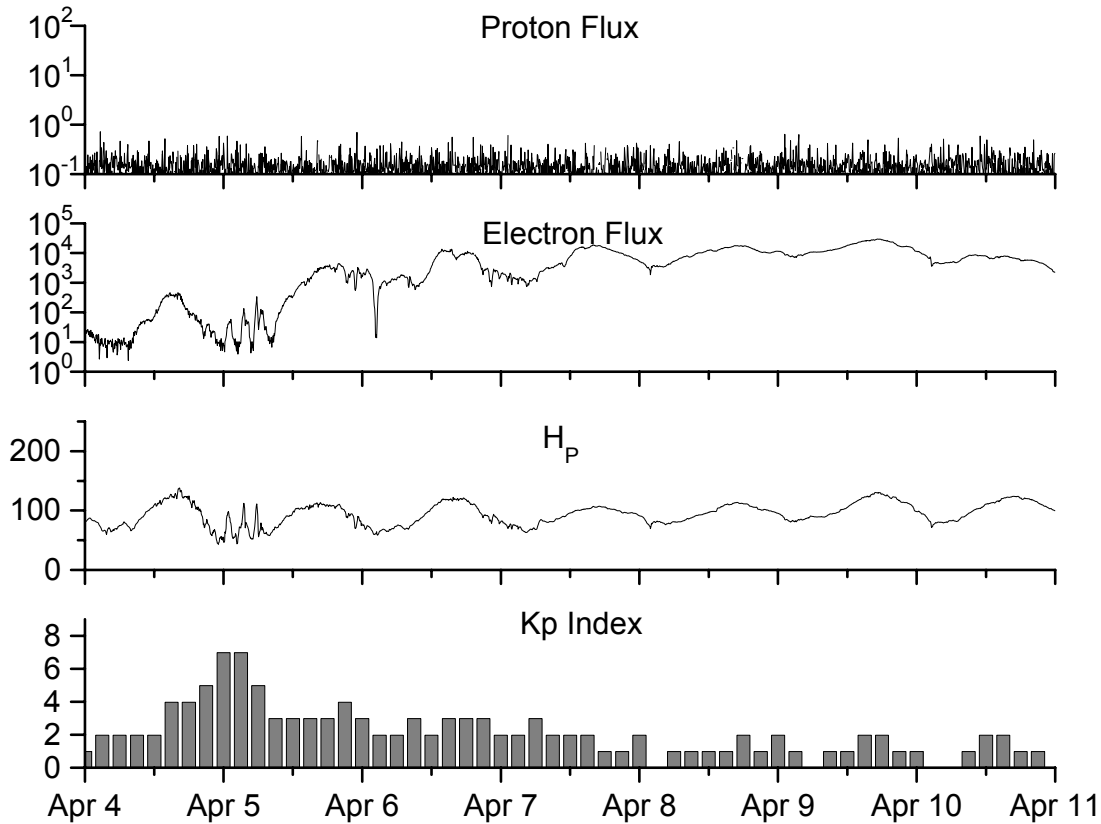
**Recent Solar Indices (preliminary)  
of the observed monthly mean values**

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
<b>2003</b>									
March	119.7	61.1	0.51	128.1	74.2	132.2	139.5	21	19.4
April	119.7	60.0	0.50	121.5	70.3	126.3	135.0	20	20.1
May	89.6	55.2	0.62	118.3	67.8	129.3	133.1	26	21.0
June	118.4	77.4	0.65	113.6	65.2	129.4	130.2	24	21.5
July	132.8	85.0	0.64	106.9	62.0	127.8	127.2	19	22.0
August	114.3	72.7	0.64	102.8	60.3	122.1	125.2	23	22.2
September	82.6	48.8	0.59	100.7	59.8	112.3	123.7	18	21.8
October	118.9	65.5	0.55	96.6	58.4	153.1	121.8	35	21.1
November	118.9	67.3	0.57	93.6	57.0	153.1	120.1	28	20.0
December	75.4	46.5	0.62	91.4	55.0	115.1	118.0	16	18.6
<b>2004</b>									
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			103.1		10	
October	77.9	48.4	0.62			105.7		9	
November	70.5	43.7	0.62			113.2		26	
December	34.7	17.9	0.52			94.6		11	
<b>2005</b>									
January	52.0	31.3	0.60			102.4		22	
February	45.4	29.1	0.64			97.3		11	

**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 04 April 2005*

*Protons* plot contains the five-minute averaged integral proton flux (protons/cm<sup>2</sup>-sec -sr) as measured by GOES-11 (W112) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

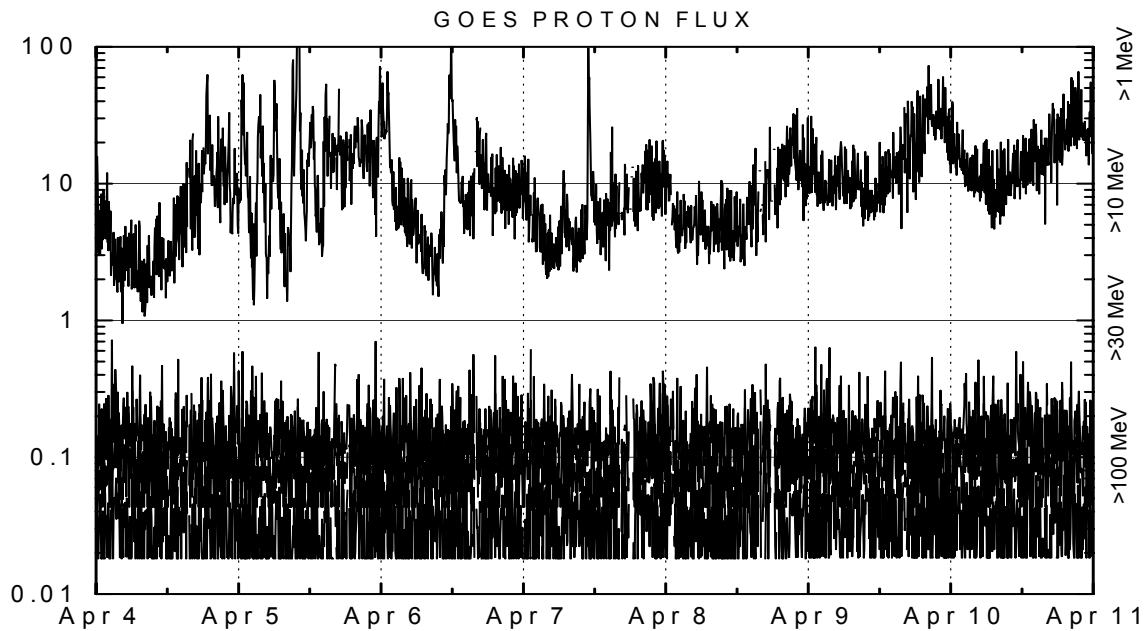
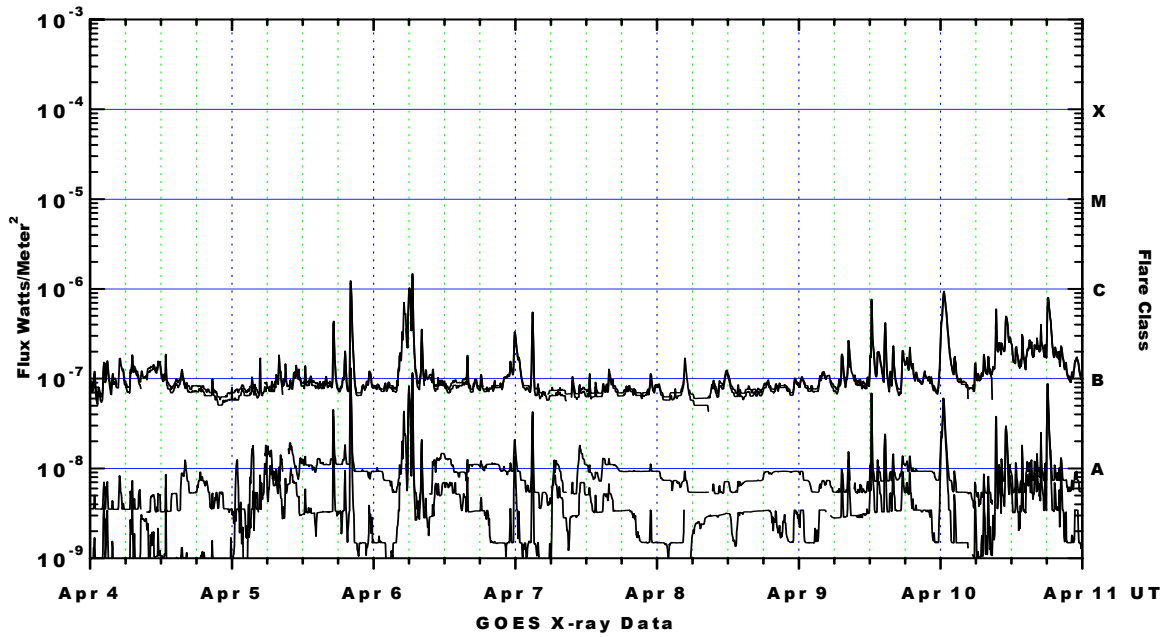
*Electrons* plot contains the five-minute averaged integral electron flux (electrons/cm<sup>2</sup>-sec -sr) with energies greater than 2 MeV at GOES-12 (W75).

*H<sub>p</sub>* 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<sub>p</sub>* 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<sub>p</sub> 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<sub>p</sub> 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*

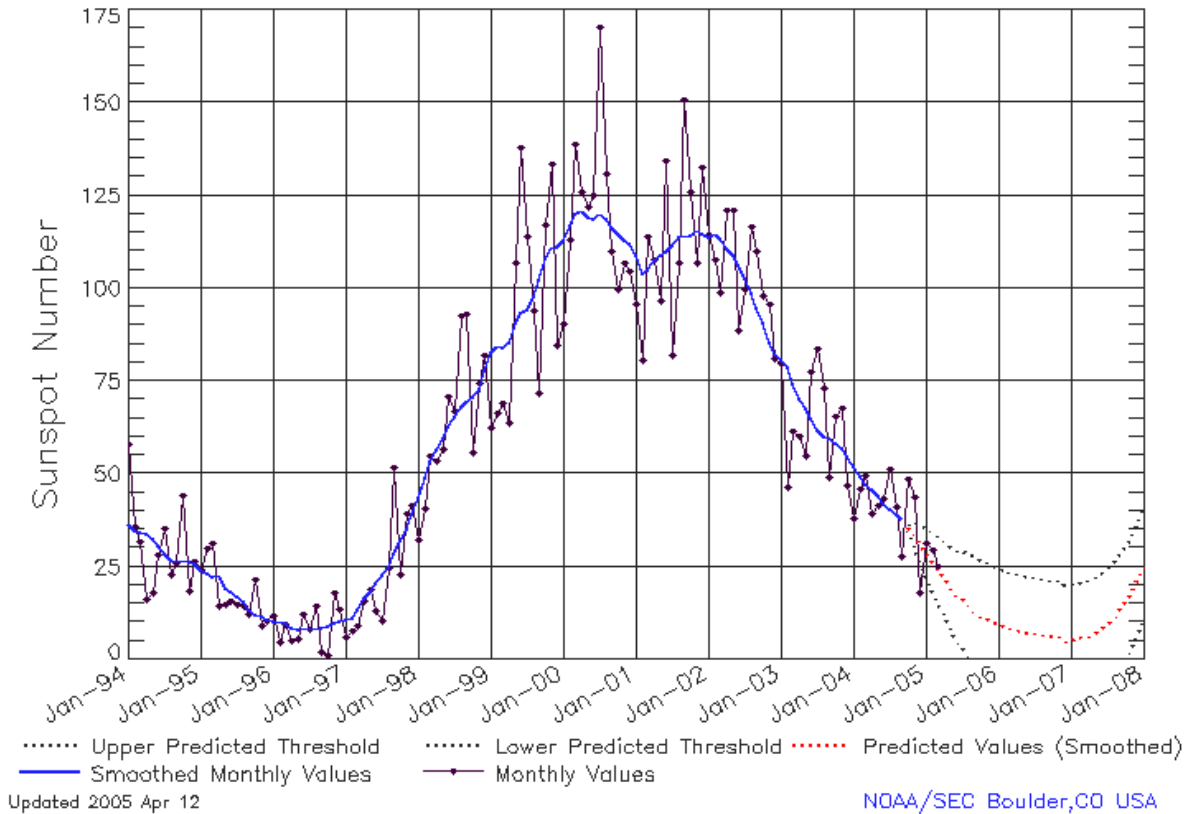
X-ray plot contains five-minute averaged x-ray flux (watts/m<sup>2</sup>) as measured by GOES 12 (W75) and GOES 10 (W135) in two wavelength bands, .05 - .4 and .1 - .8 nm. The letters A, B, C, M and X refer to x-ray event levels for the .1 - .8 nm band.

Proton plot contains the five-minute averaged integral proton flux (protons/cm<sup>2</sup>-sec-sr) as measured by GOES-11 (W112) for each of the energy thresholds: >1, >10, >30 and >100 MeV. P10 event threshold is 10 pfu (protons/cm<sup>2</sup>-sec-sr) at greater than 10 MeV.



# ISES Solar Cycle Sunspot Number Progression

Data Through 31 Mar 05



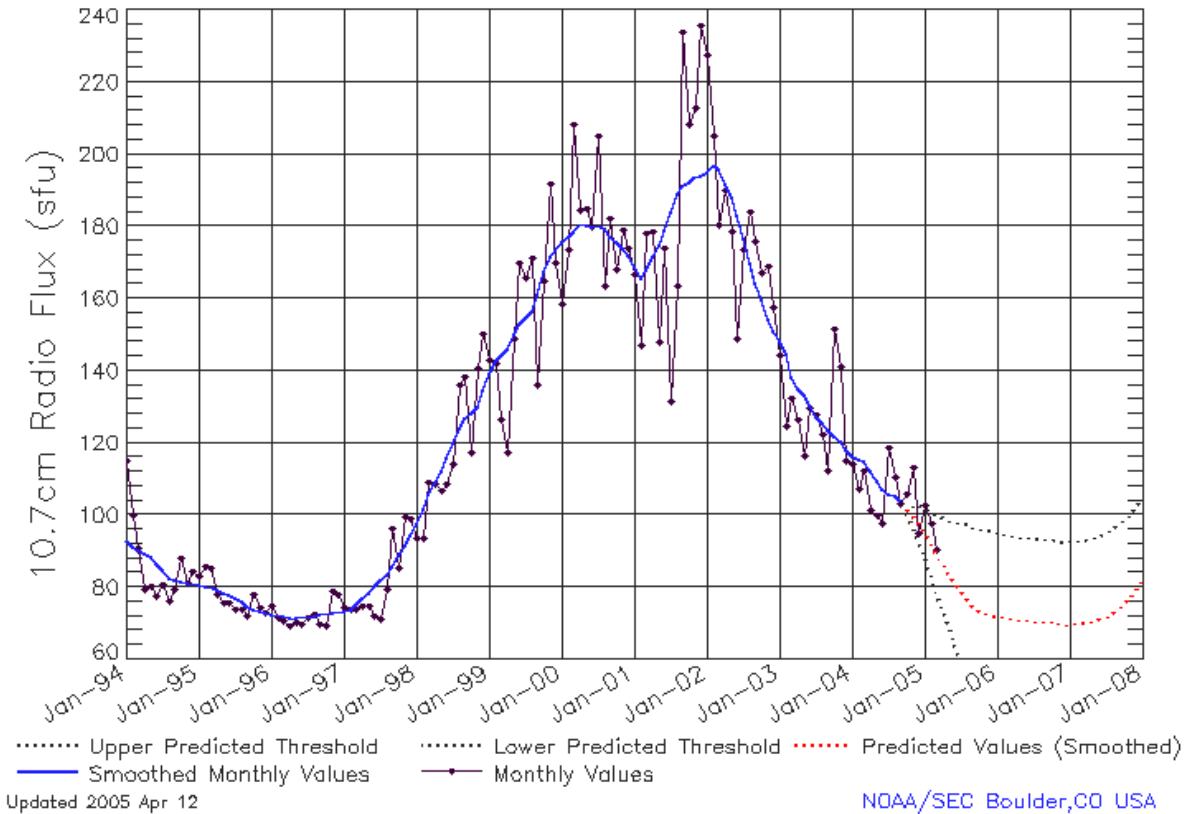
## SEC Prediction of Smoothed Sunspot Number

	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 (***)	<b>36</b> (1)	<b>34</b> (3)	<b>31</b> (5)
2005	<b>29</b> (7)	<b>26</b> (8)	<b>24</b> (9)	<b>22</b> (10)	<b>19</b> (11)	<b>18</b> (12)	<b>16</b> (13)	<b>15</b> (14)	<b>12</b> (15)	<b>12</b> (15)	<b>11</b> (15)	<b>10</b> (15)
2006	<b>10</b> (15)	<b>9</b> (15)	<b>8</b> (15)	<b>8</b> (15)	<b>8</b> (15)	<b>7</b> (15)	<b>7</b> (15)	<b>7</b> (15)	<b>7</b> (15)	<b>6</b> (15)	<b>6</b> (15)	<b>5</b> (15)
2007	<b>5</b> (15)	<b>6</b> (15)	<b>6</b> (15)	<b>6</b> (15)	<b>7</b> (15)	<b>8</b> (15)	<b>10</b> (15)	<b>11</b> (15)	<b>13</b> (15)	<b>16</b> (15)	<b>18</b> (15)	<b>21</b> (15)



## ISES Solar Cycle F10.7cm Radio Flux Progression

Data Through 31 Mar 05



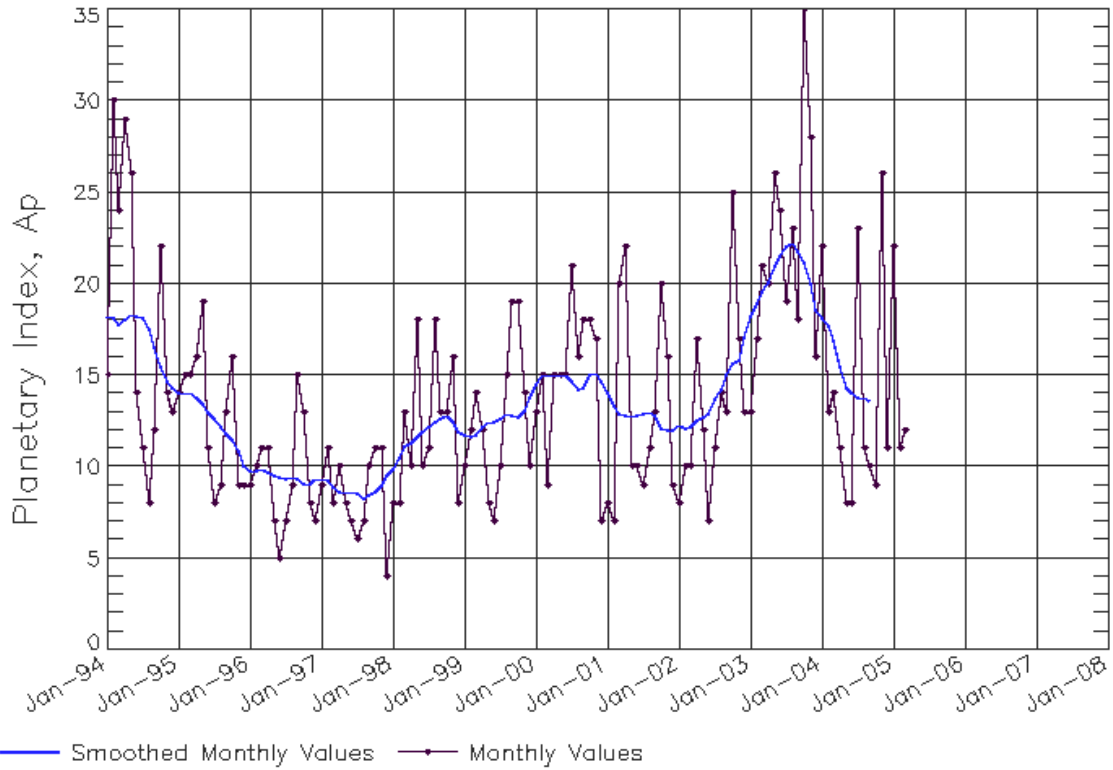
### SEC Prediction of Smoothed F10.7cm Radio Flux

	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 (***)	<b>102</b> (1)	<b>100</b> (3)	<b>98</b> (5)
2005	<b>95</b> (7)	<b>92</b> (9)	<b>89</b> (11)	<b>87</b> (13)	<b>84</b> (15)	<b>81</b> (17)	<b>79</b> (19)	<b>76</b> (21)	<b>75</b> (22)	<b>73</b> (23)	<b>73</b> (23)	<b>73</b> (23)
2006	<b>72</b> (23)	<b>72</b> (23)	<b>71</b> (23)	<b>71</b> (23)	<b>71</b> (23)	<b>71</b> (23)	<b>71</b> (23)	<b>71</b> (23)	<b>70</b> (23)	<b>70</b> (23)	<b>70</b> (23)	<b>70</b> (23)
2007	<b>70</b> (23)	<b>70</b> (23)	<b>70</b> (23)	<b>70</b> (23)	<b>71</b> (23)	<b>71</b> (23)	<b>72</b> (23)	<b>73</b> (23)	<b>74</b> (23)	<b>76</b> (23)	<b>77</b> (23)	<b>79</b> (23)



# ISES Solar Cycle Ap Progression

Data Through 31 Mar 05



Updated 2005 Apr 12

NOAA/SEC Boulder, CO USA

