

**Space Weather Highlights**  
**27 June - 03 July 2005**

**SWO PRF 1557**  
**05 July 2005**

Solar activity ranged from very low to low. The largest flare of the period was produced by Region 786 (N12, L=056, class/area, Dao/370 on 02 July), which rotated onto the disk on 01 July. The event was a C5.3 X-ray flare observed at 01/0502 UTC with an associated Type II (607 km/s) radio sweep and a small, narrow CME off the east limb. The largest group on the disk was Region 783 (S03, L=101, class/area, Ekc/600 on 03 July), but it has been stable and quiet since first appearing on 29 June. New Region 785 (S18, L=125, class/area, Dai/130 on 03 July) was the most active region during the period producing five low-level C-class flares, all on 02 July. The remainder of the disk and limb was 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 low of near 400 km/s to a high of 630 km/s. The period started out with the wind speed in decline from a coronal hole high speed stream. Wind speed did not vary much from 400 km/s until the onset of another coronal hole high speed stream mid-day on 01 July. By early on 02 July, wind speed had increased to approximately 630 km/s and slowly declined to 480 km/s by the end of the period.

No greater than 10 MeV proton events were observed.

The greater than 2 MeV electron flux at geosynchronous orbit reached high levels from 27 - 30 June.

The geomagnetic field ranged from mostly quiet to active levels. The IMF Bz was very weak from the beginning of the period to midday on the 1st, not varying much beyond +/- 3 nT. During this period, the geomagnetic field was quiet, with an isolated unsettled period late on 30 June. By midday on 01 July, solar wind data indicated the onset of a co-rotating interaction region followed by a high speed stream from a coronal hole. The Bz component of the IMF responded with north/south oscillations of between +/- 13 nT, while the geomagnetic field recorded unsettled to active conditions through mid-day on 03 July. By about 02/0900 UTC, wind speed indicated a slow decay and the IMF Bz relaxed, and did not vary much beyond +/- 5 nT. The geomagnetic field ended the period at quiet levels.

**Space Weather Outlook**  
**06 July 2005 - 01 August 2005**

Solar activity is expected to be at very low to low levels with a chance for isolated M-class activity from Regions 783 through 11 July and 786 through 14 July. From 14 to 22 July, very low to low levels are expected. Isolated M-class activity is possible after 22 July due to the return of old Regions 783 (S03, L=150) and 786 (N12, L=057).

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 06 - 19 July, 23 - 27 July, and 31 July - 01 August.

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 active levels on 10 - 11 July, 13 - 14 July, and 28 - 30 July, while unsettled to major storm levels are possible from 20 - 22 July. 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
27 June	77	11	60	A8.0	1	0	0	1	0	0	0	0
28 June	80	20	90	A5.7	0	0	0	0	0	0	0	0
29 June	88	57	180	A8.6	0	0	0	0	0	0	0	0
30 June	103	96	400	B1.5	0	0	0	0	0	0	0	0
01 July	115	122	630	B2.0	2	0	0	0	0	0	0	0
02 July	124	168	1400	B3.1	6	0	0	7	0	0	0	0
03 July	130	179	1460	B3.7	4	0	0	3	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)		
	>1 MeV	>10 MeV	>100 MeV	>.6 MeV	>2MeV	>4 MeV
	27 June	1.9E+6	1.5E+4	3.6E+3		2.3E+8
28 June	1.8E+6	1.4E+4	3.0E+3		2.3E+8	
29 June	1.6E+6	1.6E+4	3.3E+3		1.8E+8	
30 June	1.5E+6	1.5E+4	3.2E+3		9.1E+7	
01 July	7.1E+5	1.4E+4	3.3E+3		5.2E+6	
02 July	6.5E+5	1.5E+4	3.1E+3		1.7E+6	
03 July	4.7E+5	1.5E+4	3.3E+3		2.6E+7	

**Daily Geomagnetic Data**

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	27 June	3	1-0-0-0-1-1-2-2	3	2-1-0-1-2-1-1-0	4
28 June	3	1-1-1-0-2-0-0-0	3	1-1-1-0-1-1-1-1	5	1-1-1-1-2-2-2-2
29 June	4	1-1-1-2-1-1-1-1	5	1-2-1-2-2-1-1-1	6	2-1-1-2-2-2-2-2
30 June	4	1-1-1-1-1-1-2-2	8	2-2-1-4-2-2-1-1	8	1-1-1-2-2-3-2-3
01 July	12	2-1-1-1-2-3-4-4	12	3-2-2-1-2-4-3-3	16	2-2-2-1-3-4-4-4
02 July	12	4-2-2-2-2-2-3-3	14	4-3-2-3-4-2-2-2	13	4-3-2-2-2-2-3-3
03 July	9	4-2-2-2-2-1-2-2	14	3-3-3-4-4-2-1-1	11	4-3-2-3-3-2-2-2

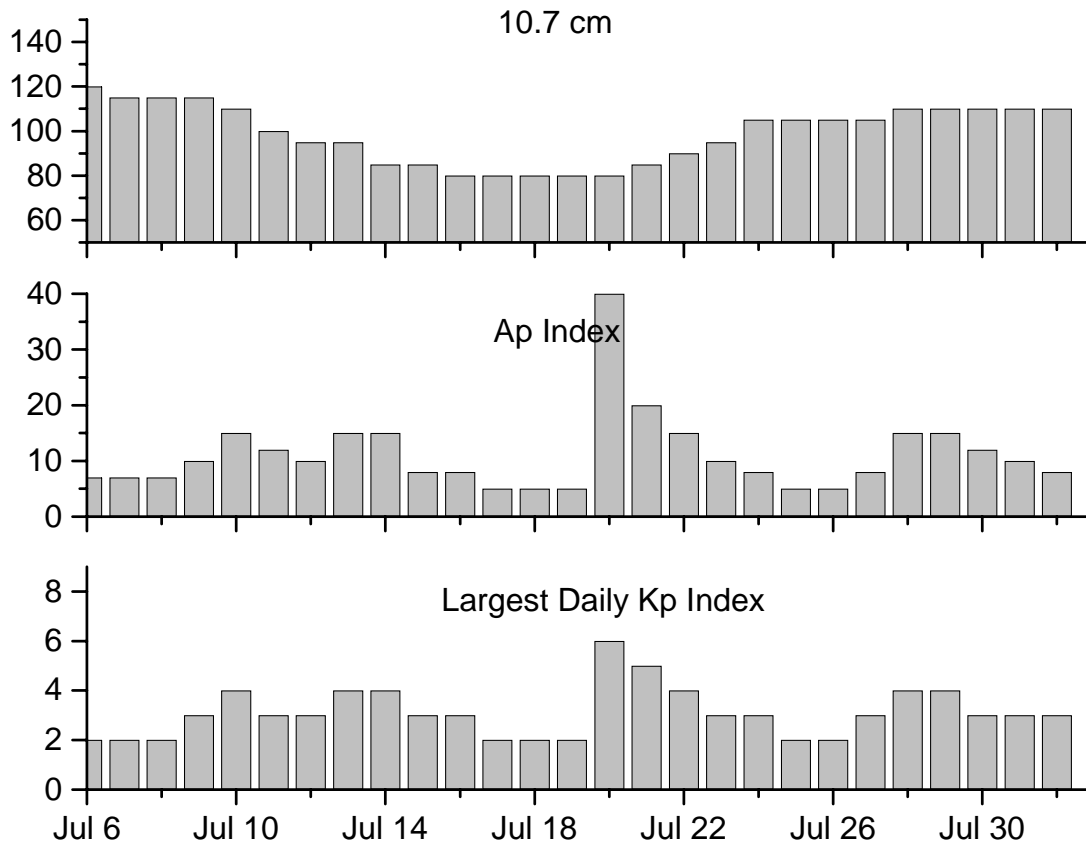


### *Alerts and Warnings Issued*

<u>Date &amp; Time of Issue</u>	<u>Type of Alert or Warning</u>	<u>Date &amp; Time of Event UTC</u>
27 Jun 0531	ALERT: Electron 2MeV Integral Flux > 1000pfu	27 Jun 0500
28 Jun 0715	ALERT: Electron 2MeV Integral Flux > 1000pfu	28 Jun 0716
29 Jun 0746	ALERT: Electron 2MeV Integral Flux > 1000pfu	29 Jun 0725
30 Jun 0745	ALERT: Electron 2MeV Integral Flux > 1000pfu	30 Jun 0720
01 Jul 0530	ALERT: Type II Radio Emission	01 Jul 0501
01 Jul 1621	WARNING: Geomagnetic K = 4	01 Jul 1621 -02 Jul 1500
01 Jul 1623	ALERT: Geomagnetic K = 4	01 Jul 1623
01 Jul 1721	ALERT: Geomagnetic K = 5	01 Jul 1720
02 Jul 0021	1 - 245 MHz Radio Burst	01 Jul
02 Jul 2302	WARNING: Geomagnetic K = 4 expected	01 Jul 2304 -03 Jul 1500
02 Jul 2304	ALERT: Geomagnetic K = 4	02 Jul 2306
03 Jul 0038	2 - 245 MHz Radio Bursts	02 Jul



## 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
06 Jul	120	7	2	20 Jul	80	40	6
07	115	7	2	21	85	20	5
08	115	7	2	22	90	15	4
09	115	10	3	23	95	10	3
10	110	15	4	24	105	8	3
11	100	12	3	25	105	5	2
12	95	10	3	26	105	5	2
13	95	15	4	27	105	8	3
14	85	15	4	28	110	15	4
15	85	8	3	29	110	15	4
16	80	8	3	30	110	12	3
17	80	5	2	31	110	10	3
18	80	5	2	01 Aug	110	8	3
19	80	5	2				



### *Energetic Events*

Date	Time		X-ray	Optical Information			Peak		Sweep Freq	
	Begin	Max	Integ	Imp/	Location	Rgn	Radio Flux		Intensity	
			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.			
27 June	0129	0132	0136	B1.4			
	0356	0400	0405	B1.6			
	0804	0814	0831	B1.3			
	0832	0835	0837	B1.8			
	0843	0848	0851	C2.8			
	1006	1014	1017	B3.5			
	1125	1133	1137	B1.7			
	1153	1156	1158	B1.0			
	1354	1402	1405	B7.6			
	1448	1452	1455	B1.5			
	1805	1806	1810	B3.9	Sf	N13E83	
	1901	1908	1910	B3.0			
	1952	1955	1957	B1.1			
	2143	2221	2236	B1.8			781
28 June	0513	0517	0520	B1.0			781
	1018	1023	1026	B1.5			781
	1030	1035	1038	B1.1			
	1110	1116	1121	B2.9			781
29 June	1534	1537	1540	B1.7			
	0052	0059	0106	B1.3			781
	0130	0133	0138	B1.0			
	0239	0244	0249	B1.3			
30 June	0734	0738	0743	B1.8			781
	0712	0716	0718	B3.3			783
	0837	0840	0843	B2.0			
	1916	1919	1921	B2.8			
01 July	2111	2114	2118	B2.6			
	2123	2127	2131	B4.9			783
	0457	0502	0507	C5.3			786
	0718	0723	0729	B3.4			783
	0958	1004	1009	B3.9			783
	1248	1256	1305	C1.2			782
	1425	1429	1431	B4.5			783
	1436	1454	1514	B5.7			
1611	1616	1618	B3.3			783	
1854	1858	1902	B9.6			783	



**Flare List - continued.**

Date	Time			Optical	Imp / Brtns	Location Lat CMD	Rgn
	Begin	Max	End	X-ray Class.			
02 July	0037	0039	0042		Sf	N12E78	786
	0113	0114	0119		Sf	N12E77	786
	0207	0208	0213		Sf	N12E77	786
	0311	0314	0333	C3.5	Sf	S18E05	785
	0626	0639	0704	C2.7	Sf	S18E04	785
	0919	0929	0937	C2.0			785
	1157	1201	1206	B7.0			785
	1220	1224	1227	B9.1			785
	1240	1241	1244	C2.8	Sf	S18E00	785
	1609	1614	1616	C1.2			786
	1646	1654	1704	B6.9			785
	1901	1902	1905	C1.3	Sf	S17W05	785
	1916	1920	1925	B9.6			785
	1936	1940	1942	B8.7			786
	03 July	0450	0457	0519	C4.7	Sf	S09W39
0737		0743	0748	B8.1			
0953		0955	0958	C1.6	Sf	S19W32	782
1207		1227	1241	C1.0			782
1346		1358	1406	B8.1			789
1908		1911	1914	B6.0			
2106		2109	2124	C1.2	Sf	S10W46	787
2305		2309	2311	B6.7			782

**Region Summary**

Date	Location		Sunspot Characteristics					Flares									
	Helio		Area (10 <sup>6</sup> hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical						
	(° Lat ° CMD)	Lon						C	M	X	S	1	2	3	4		
<i>Region 780</i>																	
17 Jun	S07E66	250	0040	01	Cso	002	B	2									
18 Jun	S08E52	251	0070	05	Dao	006	B	3				7					
19 Jun	S07E38	252	0040	04	Dso	007	B										
20 Jun	S07E24	253	0060	04	Dao	012	B										
21 Jun	S07E12	251	0090	06	Dai	020	B	1				1					
22 Jun	S08W01	251	0070	06	Dro	017	B	1				1					
23 Jun	S08W14	251	0030	08	Dao	009	B										
24 Jun	S08W30	254	0020	04	Bxo	004	B										
25 Jun	S07W43	254	0010	01	Axx	002	A	1				1					
26 Jun	S07W56	254															
27 Jun	S07W69	254	0000	00		000											
								8	0	0	10	0	0	0	0	0	

Crossed West Limb.

Absolute heliographic longitude:251



**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 781*

27 Jun	N16E76	108	0060	01	Hsx	001	A										
28 Jun	N15E65	106	0090	11	Eao	010	B										
29 Jun	N15E53	105	0080	08	Cao	005	B										
30 Jun	N14E37	108	0050	02	Hrx	004	A										
01 Jul	N14E24	108	0030	02	Hsx	002	A										
02 Jul	N13E10	108	0050	01	Hsx	001	A										
03 Jul	N13W03	108	0030	02	Hsx	002	A										
																	0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 108

*Region 782*

29 Jun	S17E09	149	0010	03	Bxo	003	B										
30 Jun	S17W04	149	0090	07	Dai	017	B										
01 Jul	S17W18	150	0160	09	Dao	014	B			1							
02 Jul	S18W32	150	0220	09	Dao	016	B										
03 Jul	S17W45	150	0230	09	Dao	014	B			2		1					
										3	0	0	1	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 149

*Region 783*

29 Jun	S01E59	099	0040	03	Cso	004	B										
30 Jun	S02E46	099	0170	06	Dso	016	B										
01 Jul	S03E33	099	0250	07	Dao	014	B										
02 Jul	S03E20	098	0500	08	Dki	030	Bg										
03 Jul	S03E04	101	0600	11	Ekc	031	Bg										
																	0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 101

*Region 784*

29 Jun	N16E70	088	0050	05	Bxo	005	B										
30 Jun	N16E57	088	0070	07	Dso	006	B										
01 Jul	N16E44	088	0050	09	Dso	004	B										
02 Jul	N18E30	088	0040	08	Cso	005	B										
03 Jul	N16E14	091	0020	04	Cso	004	B										
																	0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 091



**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 785*

30 Jun	S18E21	124	0020	03	Cao	003	B										
01 Jul	S19E07	125	0010	04	Bxo	006	B										
02 Jul	S19W06	124	0070	06	Dsi	017	B	5				4					
03 Jul	S18W20	125	0130	07	Dai	012	B										
								5	0	0	4	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 124

*Region 786*

01 Jul	N13E76	056	0120	08	Cso	005	B	1									
02 Jul	N12E62	056	0370	08	Dao	011	Bg	1			3						
03 Jul	N12E48	057	0310	07	Dai	026	Bg										
								2	0	0	3	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 057

*Region 787*

01 Jul	S09W22	154	0010	06	Bxo	007	B										
02 Jul	S11W34	152	0030	06	Dso	007	B										
03 Jul	S10W48	153	0040	07	Dro	007	B	2			2						
								2	0	0	2	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 154

*Region 788*

02 Jul	S06E70	048	0120	01	Hax	001	A										
03 Jul	S05E58	047	0100	09	Cao	003	B										
								0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 047



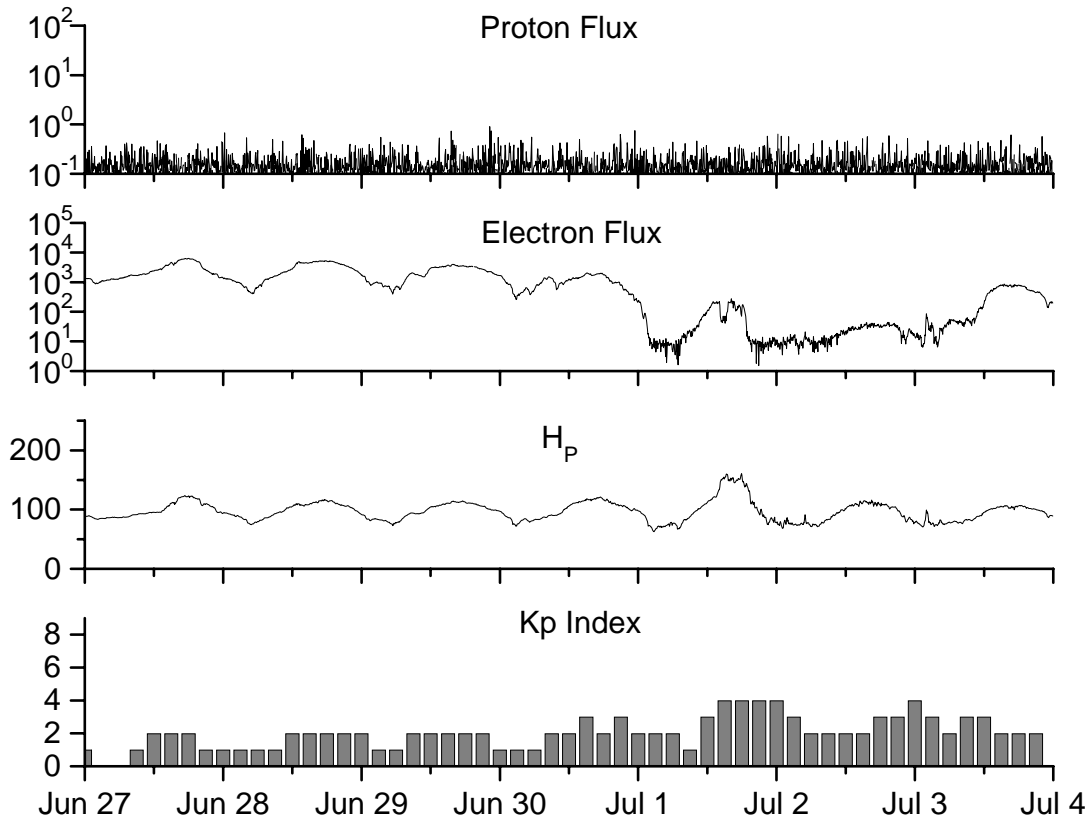


**Recent Solar Indices (preliminary)  
of the observed monthly mean values**

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>									
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	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
<b>2005</b>									
January	52.0	31.3	0.60			102.4		22	
February	45.4	29.1	0.64			97.3		11	
March	41.0	24.8	0.60			90.0		12	
April	41.5	24.4	0.59			85.9		12	
May	65.4	42.6	0.65			99.5		20	
June	59.8	39.6	0.66			93.7		13	

**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 June 2005*

*Protons* plot contains the five-minute averaged integral proton flux (protons/cm<sup>2</sup>-sec -sr) as measured by GOES-11 (W115) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

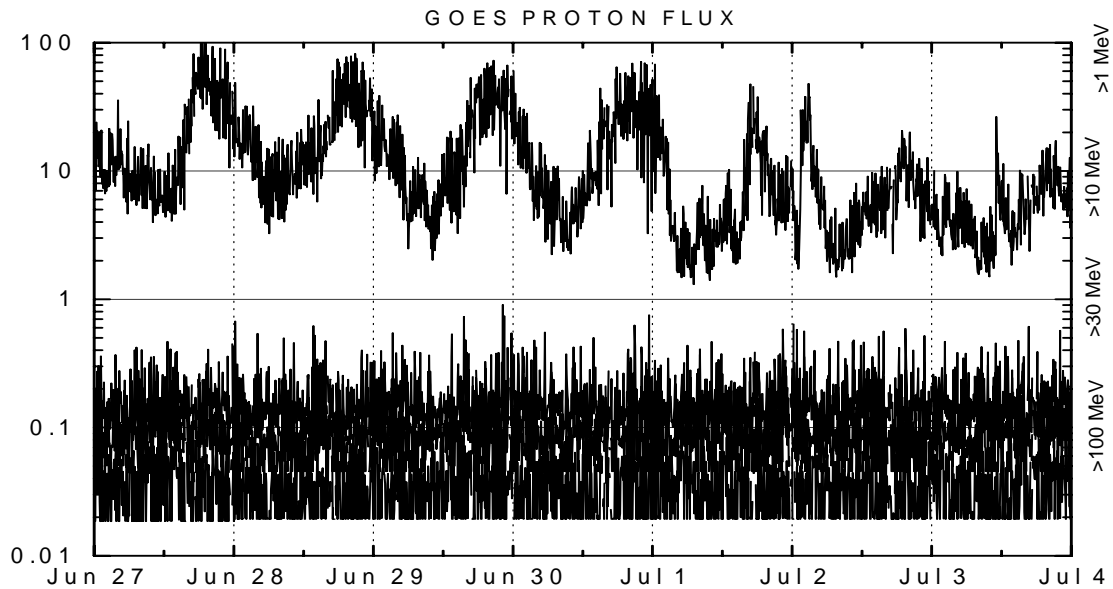
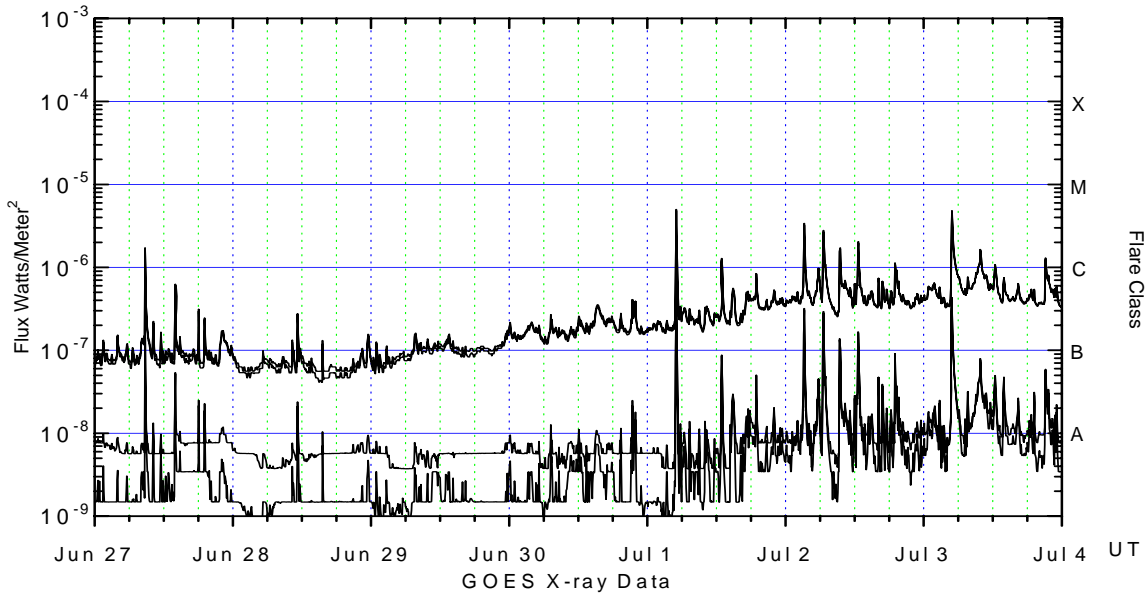
*Electrons* plot contains the five-minute averaged integral electron flux (electrons/cm<sup>2</sup>-sec -sr) with energies greater than 2 MeV at GOES-12 (W75).

*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*

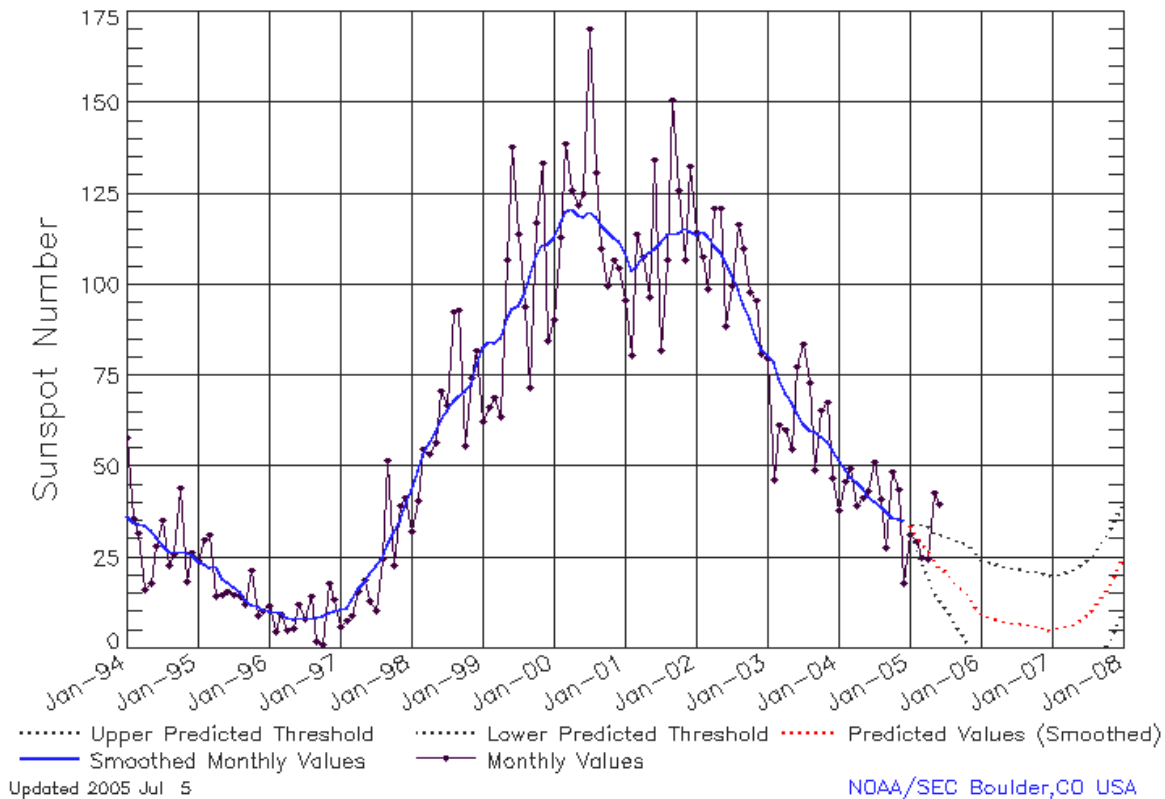
X-ray plot contains five-minute averaged x-ray flux (watts/m<sup>2</sup>) as measured by GOES 12 (W75) and GOES 10 (W135) in two wavelength bands, .05 - .4 and .1 - .8 nm. The letters A, B, C, M and X refer to x-ray event levels for the .1 - .8 nm band.

Proton plot contains the five-minute averaged integral proton flux (protons/cm<sup>2</sup>-sec-sr) as measured by GOES-11 (W115) 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 30 Jun 05



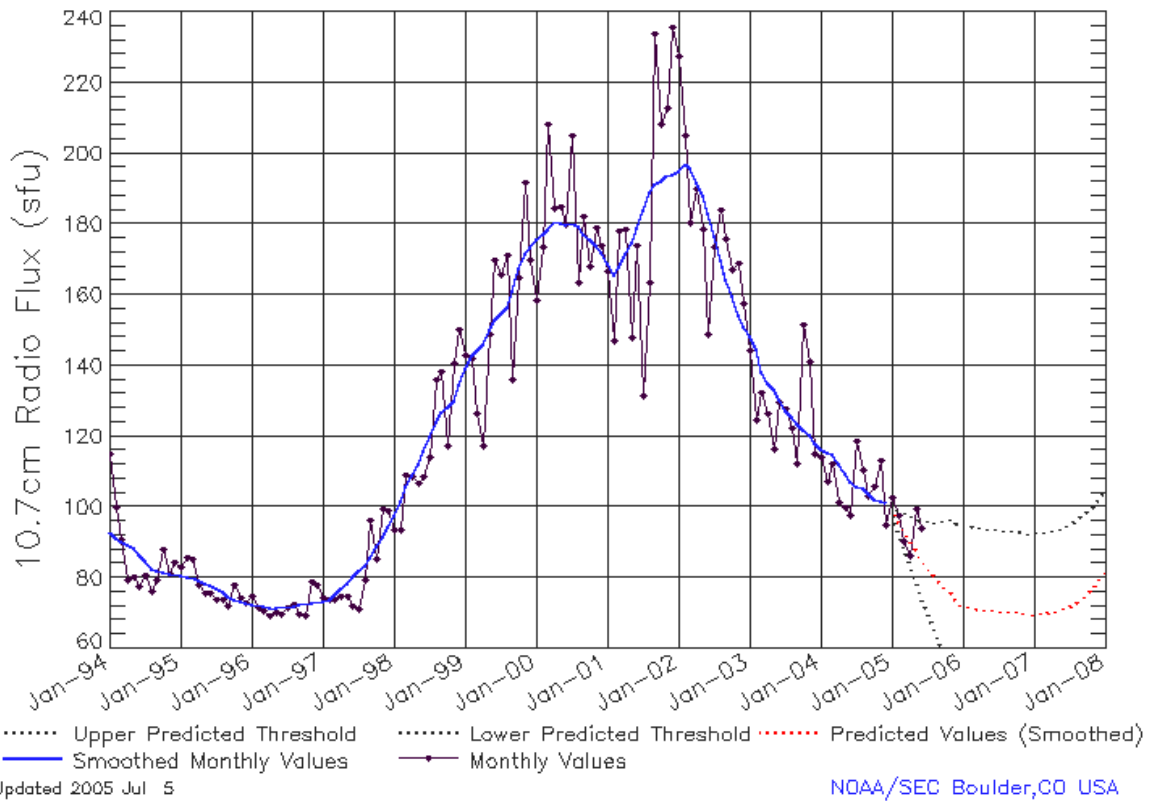
## SEC Prediction of Smoothed Sunspot Number

	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	<b>34</b>	<b>31</b>	<b>29</b>	<b>27</b>	<b>24</b>	<b>22</b>	<b>21</b>	<b>19</b>	<b>18</b>	<b>16</b>	<b>14</b>	<b>12</b>
	(1)	(3)	(5)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
2006	<b>10</b>	<b>9</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>6</b>	<b>6</b>	<b>5</b>
	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)
2007	<b>5</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>10</b>	<b>11</b>	<b>13</b>	<b>16</b>	<b>18</b>	<b>21</b>
	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)



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

Data Through 30 Jun 05



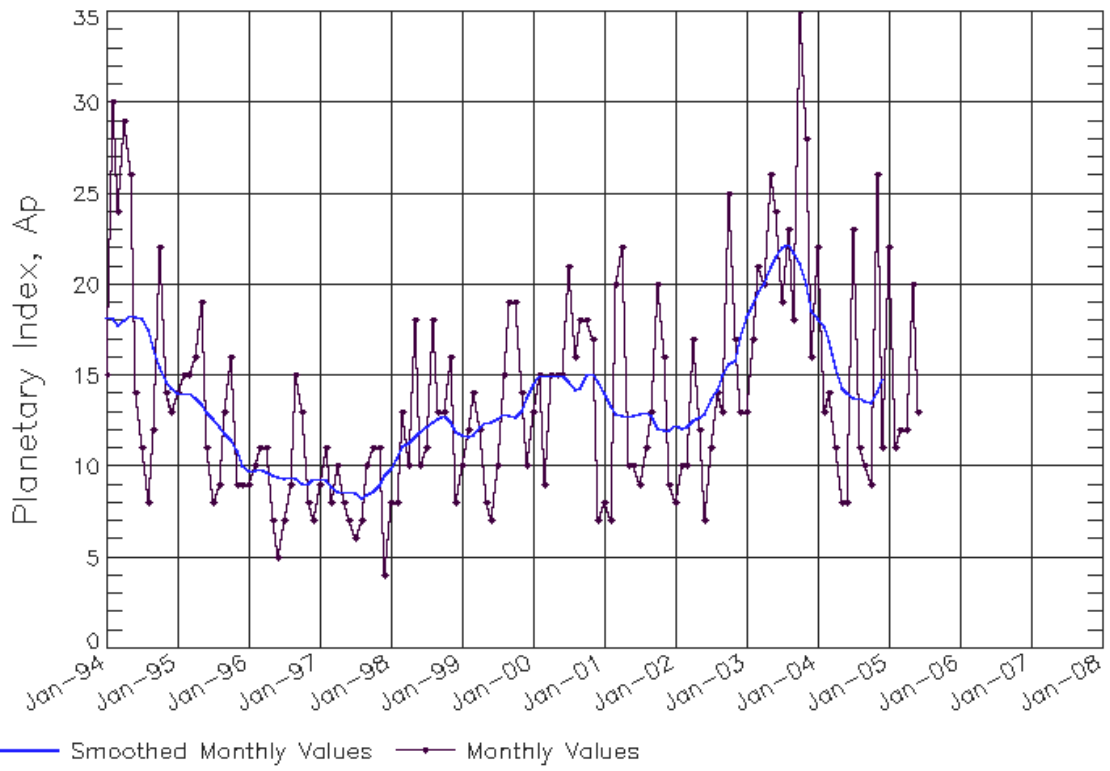
### SEC Prediction of Smoothed F10.7cm Radio Flux

	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	<b>99</b> (1)	<b>96</b> (3)	<b>93</b> (5)	<b>91</b> (7)	<b>88</b> (9)	<b>85</b> (11)	<b>83</b> (13)	<b>81</b> (15)	<b>79</b> (17)	<b>77</b> (19)	<b>76</b> (21)	<b>73</b> (22)
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 30 Jun 05



Updated 2005 Jul 5

NOAA/SEC Boulder, CO USA

