

## Space Weather Highlights 25 – 31 July 2005

SWO PRF 1561  
02 August 2005

Solar activity ranged from very low to high levels this period. Very low levels were observed on 25 and 26 July, but quickly rose to moderate by 27 July. At 27/0502 UTC, an M3.7 was observed on the east limb with an associated Type II (1588 km/s) and Type IV radio sweeps, and a 800 sfu Tenflare. This event was correlated with an asymmetric, full-halo CME off the east limb observed by LASCO imagery. This event heralded the return of old Region 786 which was numbered Region 792 (N12, L=056, class/area, Dac/440 on 30 July) on 28 July. At 28/2208 UTC, the region produced an M4.8 x-ray event with an associated Type II radio sweep and a fast, narrow, partial halo CME centered on the east limb. The largest event of the period occurred at 30/0635 UTC when Region 792 produced an X1.3/2b event. The event had a long decay time and was associated with Type II (1801 km/s) and Type IV radio sweeps, and a 2100 sfu Tenflare. The event was also associated with a fast, full halo CME with an estimated plane-of-sky speed in the range of 1700-1800 km/s on the LASCO C3 field of view, and was somewhat asymmetric towards the east. Just beyond the summary period, Region 792 produced a long duration M1.0/1f flare at 01/1351 UTC. Associated with this event was a Type IV radio sweep, a 290 sfu Tenflare, and a weak CME. No other significant activity occurred.

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 300 km/s midday on 25 July to a high of near 600 km/s early on 29 July. The period began with the wind speed very slow at near 300 km/s and the Bz component of the IMF not varying much beyond +/- 3 nT. These conditions persisted through midday on 27 July. At about 1100 UTC on 27 July, wind speed, density, and temperature all increased, indicating the passage of a co-rotating interaction region in advance of a coronal hole wind stream. By late on 27 July, the IMF Bz rotated north and south through +10 and -14 nT for about 9 hours, and did not vary much beyond +/- 5 nT through the end of the summary period. By midday on 28 July, wind speed reached about 600 km/s and remained steady at this speed through early on 29 July. For the remainder of the summary period, wind speed gradually decayed, and ended the period near 500 km/s.

A greater than 10 MeV proton event began at 27/2300 UTC. There appeared to be multiple sources for this event. Prior to its start, the greater than 10 MeV proton levels had been gradually increasing, probably due to one or more back-sided CMEs from old Region 786, now numbered Region 792. Additional particles contributing to this event appear to have originated from the M3.7 x-ray event and associated CME observed early on 27 July. A maximum of 41 pfu was reached at 29/1715 UTC, and the event finally ended at 01/1040 UTC.

The greater than 2 MeV electron flux at geosynchronous orbit reached high levels on 25, 26, 30, and 31 July.

The geomagnetic field ranged from quiet to major storm levels. Quiet levels prevailed through early on 27 July when activity increased to unsettled to minor storm levels due to the onset of a co-rotating interaction region followed by a coronal hole wind stream. These conditions persisted through midday on 30 July. Isolated major storm periods were observed at the higher latitudes midday on 28 and 29 July. Thereafter, through the end of the summary period, geomagnetic conditions were mostly quiet to unsettled.

## Space Weather Outlook 03 August - 29 August 2005

Solar activity is expected to be at moderate levels with a chance for isolated major flares through about 10 August when Region 792 is due to rotate around the west limb. Activity levels are expected to be mostly very low to low through about 24 August. Thereafter, and through the end of the forecast period, levels are expected to increase to low to moderate when old Region 792 is due to return.

A greater than 10 MeV proton event is possible with major flare activity from Region 792 until its departure from the solar disk on about 10 August.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at high levels on 07 – 12 August, 17 – 22 August, and 26 – 27 August.

The geomagnetic field is expected to range from quiet to major storm levels. Unsettled to active levels are expected on 04 August due to the arrival of a glancing blow from the M1.0 activity that occurred on 01 August. A recurrent high speed coronal hole wind stream is expected to produce active to major storm levels on 16 – 18 August. Another coronal hole wind stream is expected to cause unsettled to active levels on 24 – 25 August. 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
25 July	84	23	130	A6.3	0	0	0	0	0	0	0	0
26 July	87	29	160	A8.9	0	0	0	0	0	0	0	0
27 July	91	19	130	B1.7	2	1	0	0	0	0	0	0
28 July	96	29	340	B1.8	1	2	0	1	0	0	0	0
29 July	104	69	540	B1.8	1	0	0	0	0	0	0	0
30 July	105	62	580	B2.6	2	0	1	1	1	2	0	0
31 July	110	110	660	B2.2	2	1	0	2	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
	25 July	2.5E+6	1.8E+4	4.7E+3		2.0E+8
26 July	2.5E+6	3.9E+4	5.5E+3		9.2E+7	
27 July	2.9E+6	4.1E+5	6.0E+3		7.6E+6	
28 July	1.2E+7	2.2E+6	6.7E+3		2.4E+6	
29 July	2.6E+7	2.8E+6	6.0E+3		1.4E+7	
30 July	2.9E+7	2.3E+6	4.9E+3		7.2E+7	
31 July	2.4E+7	1.5E+6	4.6E+3		8.4E+7	

**Daily Geomagnetic Data**

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	25 July	3	2-1-1-0-1-0-1-2	2	1-1-1-0-0-1-1-1	6
26 July	4	1-1-1-1-1-1-1-2	4	1-1-2-2-0-1-1-1	6	1-1-2-1-2-2-2-2
27 July	15	3-2-2-1-3-2-4-5	14	1-3-3-3-3-2-3-4	17	2-2-3-2-3-3-4-5
28 July	18	3-5-3-2-4-2-2-3	27	3-4-3-4-6-4-2-3	28	3-5-4-4-5-3-3-4
29 July	14	3-3-3-2-3-3-3-3	29	3-4-3-6-4-5-3-2	19	3-4-3-4-3-4-3-3
30 July	11	4-3-3-3-1-1-1-2	17	3-4-5-4-1-1-2-1	16	4-4-4-3-1-1-2-2
31 July	10	2-2-2-1-3-1-2-4	8	2-2-2-1-3-2-2-2	9	2-3-2-1-3-2-2-3

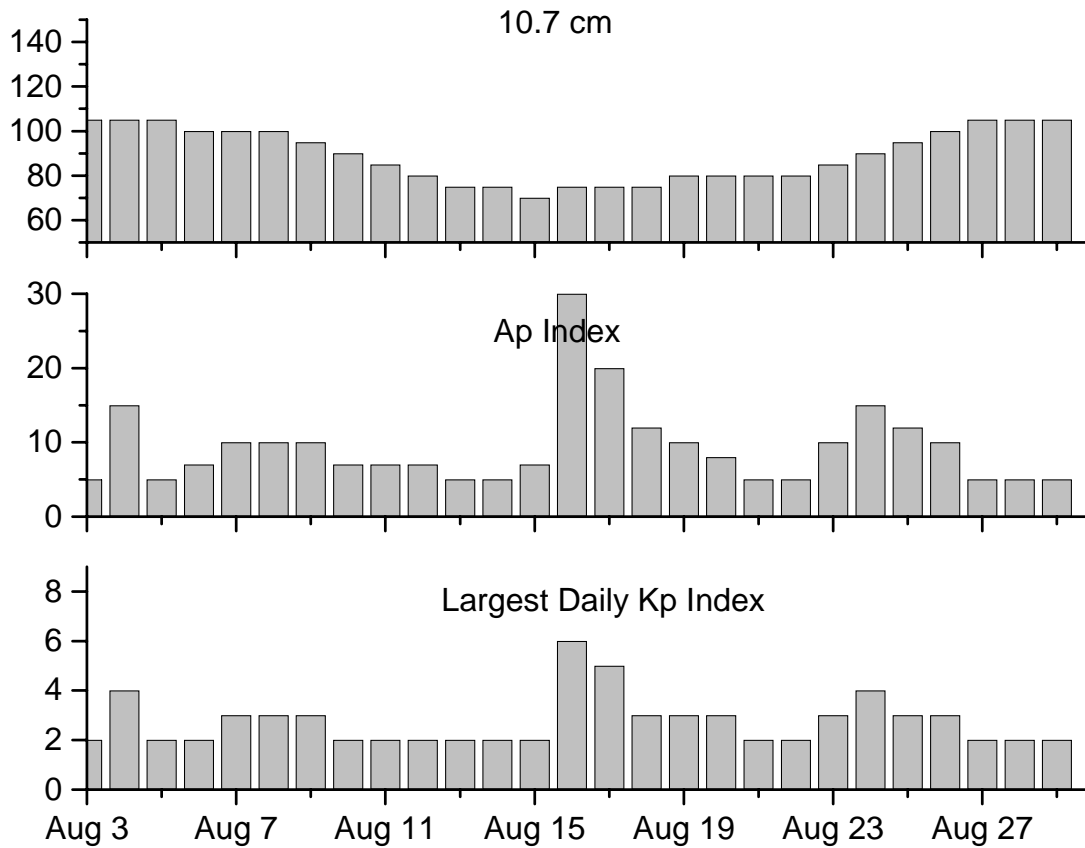


### *Alerts and Warnings Issued*

<u>Date &amp; Time of Issue</u>	<u>Type of Alert or Warning</u>	<u>Date &amp; Time of Event UTC</u>
25 Jul 0514	ALERT: Electron 2MeV Integral Flux > 1000pfu	25 Jul 0500
26 Jul 1045	ALERT: Electron 2MeV Integral Flux > 1000pfu	26 Jul 1005
27 Jul 0457	ALERT: Type IV Radio Emission	27 Jul 0446
27 Jul 0506	ALERT: Type II Radio Emission	27 Jul 0442
27 Jul 0556	SUMMARY: 10cm Radio Burst	27 Jul 0444
27 Jul 0809	ALERT: Geomagnetic K = 4	27 Jul 0559
27 Jul 0813	CANCEL ALERT: Geomagnetic K = 4	27 Jul 0809
27 Jul 0816	ALERT: Geomagnetic K = 4	27 Jul 0759
27 Jul 2047	WARNING: Geomagnetic K = 4	27 Jul 2048 -28 Jul 1500
27 Jul 2051	ALERT: Geomagnetic K = 4	27 Jul 2050
27 Jul 2256	WARNING: Proton 10MeV Integral Flux > 10pfu	27 Jul 2305 – 28 Jul 1600
27 Jul 2314	ALERT: Proton Event 10MeV Integral Flux > 10pfu	27 Jul 2300
28 Jul 0336	ALERT: Geomagnetic K = 5	28 Jul 0333
28 Jul 1558	EXT WARNING: Proton 10MeV Integral Flux > 10pfu	27 Jul 2305 -28 Jul 2359
28 Jul 2243	EXT WARNING: Proton 10MeV Integral Flux > 10pfu	27 Jul 2305 -29 Jul 2359
28 Jul 2250	ALERT: Geomagnetic K = 4	28 Jul 2239
28 Jul 2253	WARNING: Geomagnetic K= 4	28 Jul 2255 -29 Jul 1500
29 Jul 0031	ALERT: Type II Radio Emission	28 Jul 0626
29 Jul 0035	ALERT: Type II Radio Emission	28 Jul 2153
29 Jul 0051	CONTD ALERT: Proton Event 10MeV Integral Flux > 10pfu	27 Jul 2300
29 Jul 0102	CONTD ALERT: Proton Event 10MeV Integral Flux > 10pfu	27 Jul 2300
29 Jul 1455	EXT WARNING: Geomagnetic K = 4	28 Jul 2255 - 29 Jul 2359
29 Jul 2355	EXT WARNING: Proton 10MeV Integral Flux > 10pfu	27 Jul 2305 - 30 Jul 2359
29 Jul 2358	EXT WARNING: Geomagnetic K = 4	28 Jul 2255 - 30 Jul 1500
30 Jul 0045	CONTD ALERT: Proton Event 10MeV Integral Flux > 10pfu	27 Jul 2300
30 Jul 0104	CONTD ALERT: Proton Event 10MeV Integral Flux > 10pfu	27 Jul 2300
30 Jul 0627	ALERT: X-Ray Flux > M5	30 Jul 0626
30 Jul 0631	ALERT: X-Ray Flux > M5	30 Jul 0626
30 Jul 0656	ALERT: X-Ray Flux > M5	30 Jul 0626
30 Jul 0704	SUMMARY: X-ray Event > X1	30 Jul 0617
30 Jul 0713	ALERT: Type II Radio Emission	30 Jul 0626
30 Jul 0740	ALERT: Type IV Radio Emission	30 Jul 0634
30 Jul 0813	SUMMARY: 10cm Radio Burst	30 Jul 0619
30 Jul 0854	WARNING: Geomagnetic K = 5	30 Jul 0854 - 1500
30 Jul 0900	ALERT: Geomagnetic K = 5	30 Jul 0859
30 Jul 1130	ALERT: Electron 2MeV Integral Flux > 1000pfu	30 Jul 1110
30 Jul 2129	WATCH: Geomagnetic A ≥ 20	01 Aug
31 Jul 0040	EXT WARNING: Proton 10MeV Integral Flux > 10pfu	27 Jul 2305 - 31 Jul 2359
31 Jul 0055	CONTD ALERT: Proton Event 10MeV Integral Flux > 10pfu	27 Jul 2300
31 Jul 0103	CONTD ALERT: Proton Event 10MeV Integral Flux > 10pfu	27 Jul 2300
31 Jul 1038	ALERT: Electron 2MeV Integral Flux > 1000pfu	31 Jul 1020
31 Jul 2316	EXT WARNING: Proton 10MeV Integral Flux > 10pfu	27 Jul 2305 - 01 Aug 0600



### 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
03 Aug	105	5	2	17 Aug	75	20	5
04	105	15	4	18	75	12	3
05	105	5	2	19	80	10	3
06	100	7	2	20	80	8	3
07	100	10	3	21	80	5	2
08	100	10	3	22	80	5	2
09	95	10	3	23	85	10	3
10 Aug	90	7	2	24	90	15	4
11	85	7	2	25	95	12	3
12	80	7	2	26	100	10	3
13	75	5	2	27	105	5	2
14	75	5	2	28	105	5	2
15	70	7	2	29	105	5	2
16	75	30	6				



### *Energetic Events*

Date	Time		X-ray		Optical Information			Peak		Sweep Freq		
	Begin	Max	Max	Class	Flux	Imp/ Brtns	Location Lat CMD	Rgn #	Radio Flux		Intensity	
									245	2695	II	IV
27 Jul	0433	0502	0530	M3.7	.079			792	310		3	
28 Jul	0001	0030	0054	M1.0	.024			792				
28 Jul	2139	2208	2224	M4.8	.081	Sf	N08E84	792	58	60	1	
30 Jul	0617	0635	0701	X1.3	.230	2b	N12E61	792	1000	2100	3	2
31 Jul	1215	1224	1233	M1.1	.008			792		51		

### *Flare List*

Date	Time			Optical X-ray Class.	Imp / Brtns	Location Lat CMD	Rgn
	Begin	Max	End				
25 July	2229	2234	2239	B1.9			791
	2322	2328	2333	B3.4			791
26 July	0127	0136	0141	B2.8			791
	0249	0253	0258	B1.3			
	0449	0503	0510	B1.8			
	0814	0835	0851	B5.4			
	1915	1919	1924	B1.6			
27 July	0433	0502	0530	M3.7			792
	1030	1102	1234	C1.7			
	2239	2300	2315	C4.5			792
28 July	0001	0030	0054	M1.0			792
	0530	0538	0602	B4.6			792
	0613	0637	0652	C2.8			792
	1021	1027	1031	B9.2			792
	1404	1413	1417	B5.3			792
	1533	1538	1542	B5.1			792
	1803	1815	1822	B3.8			792
	1824	1829	1833	B4.8			792
	1844	1849	1856	B3.6			792
	2040	2045	2048	B5.4			792
	2151	2200	2221	M4.8	Sf	N08E84	792
29 July	0910	0913	0916	B3.5			
	0932	0935	0938	B4.4			792
	1146	1151	1156	B3.4			792
	1208	1212	1217	B6.0			792
	1342	1424	1517	B7.6			792
	1723	1732	1739	C3.4			792
30 July	0507	0517	0605	C9.4	1n	N12E54	792
	0608	0625	0940	X1.3	2b	N12E61	792
	1352	1353	1355		2f	N13E54	792
	1649	1700	1724	C8.9	Sf	N14E57	792
	2116	2128	2138	B6.5			792



**Flare List**

Date	Time			Optical	Imp / Brtns	Location Lat CMD	Rgn
	Begin	Max	End	X-ray Class.			
31 July	0428	0434	0444	B5.2			792
	0536	0540	0543		Sf	N12W51	791
	0647	0704	0710	C1.4			
	0838	0841	0846	B9.5			792
	0920	0922	0938	C7.0	Sf	N14W51	791
	1215	1224	1233	M1.1			792
	1809	1813	1819	B3.9			
	1836	1840	1853	B4.4			792
	1920	1924	1931	B6.3			792
	2050	2054	2101	B4.4			792
2319	2324	2327	B3.6			792	

**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

*Region 791*

23 Jul	N13E50	151	0090	06	Dai	010	B										
24 Jul	N13E36	151	0110	07	Dao	008	B										
25 Jul	N13E22	152	0130	07	Dao	013	B										
26 Jul	N13E09	152	0160	08	Dai	019	B										
27 Jul	N13W06	154	0130	08	Cso	009	B										
28 Jul	N14W20	155	0120	03	Hsx	002	A										
29 Jul	N14W33	154	0080	05	Cao	006	B										
30 Jul	N14W48	156	0070	04	Cso	004	B										
31 Jul	N12W62	157	0040	02	Cao	002	B	1			2						
								1	0	0	2	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 154

*Region 792*

27 Jul	N13E90	058						1	1								
28 Jul	N12E78	057	0220	09	Dso	007	B	1	2		1						
29 Jul	N11E66	055	0430	11	Ekc	028	Bg	1									
30 Jul	N12E52	056	0440	09	Dac	019	Bgd	2		1	1	1	2				
31 Jul	N12E38	057	0420	09	Dkc	040	Bgd		1								
								5	4	1	2	1	2	0	0		

Still on Disk.

Absolute heliographic longitude: 057



### *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	4		
<i>Region 793</i>																	
29 Jul	N14E11	110	0030	04	Dso	005	B										
30 Jul	N14W01	109	0070	09	Dso	009	B										
31 Jul	N13W16	111	0080	08	Dao	014	B										
								0	0	0	0	0	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 109																	
<i>Region 794</i>																	
31 Jul	S11E73	022	0060	03	Hax	002	A										
								0	0	0	0	0	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 022																	
<i>Region 795</i>																	
31 Jul	N15E77	018	0060	02	Hax	002	A										
								0	0	0	0	0	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 018																	



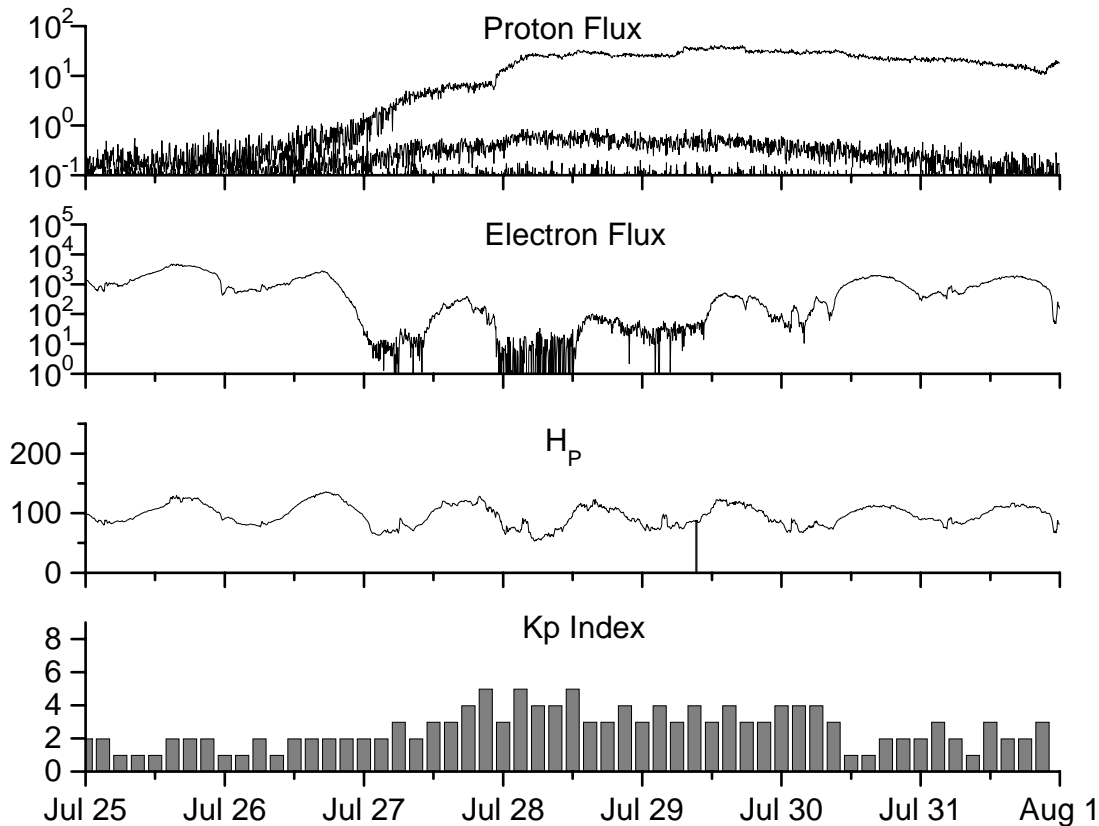
**Recent Solar Indices (preliminary)  
of the observed monthly mean values**

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>									
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	57.3	34.7	102.4	100.3	22	14.7
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	
July	71.0	39.9	0.56			96.6		16	

**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 25 July 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.

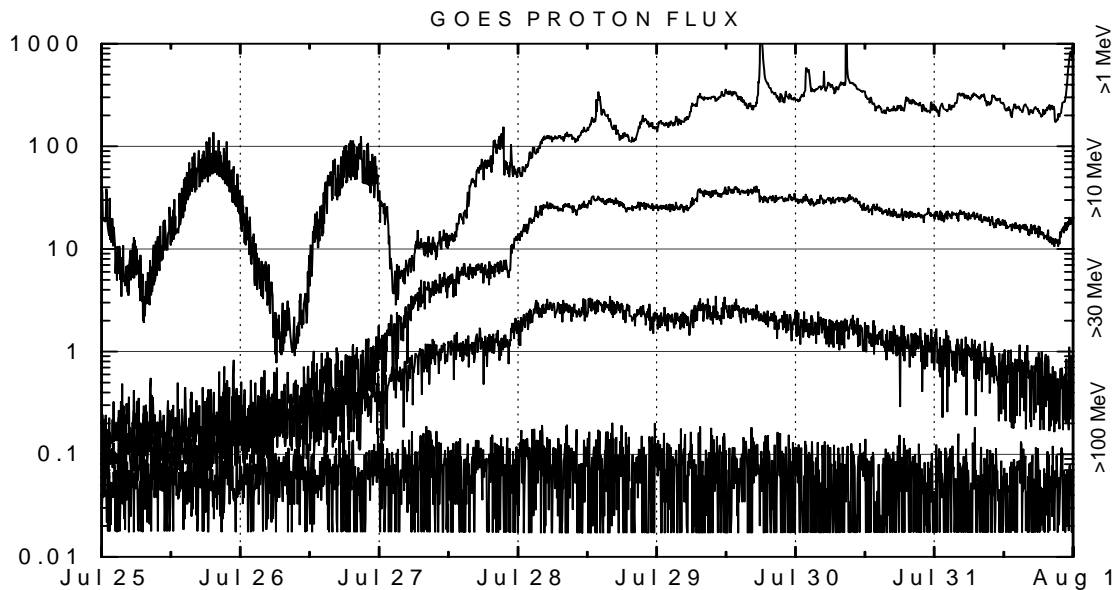
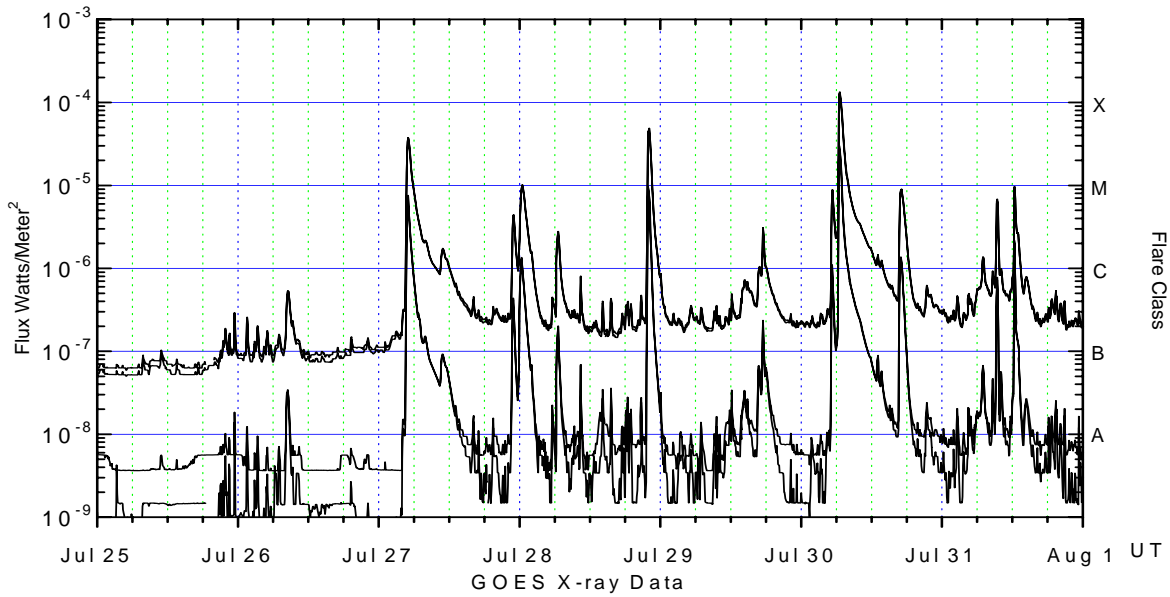
*Electrons* plot contains the five-minute averaged integral electron flux (electrons/cm<sup>2</sup>-sec -sr) with energies greater than 2 MeV at GOES-12 (W75).

*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*

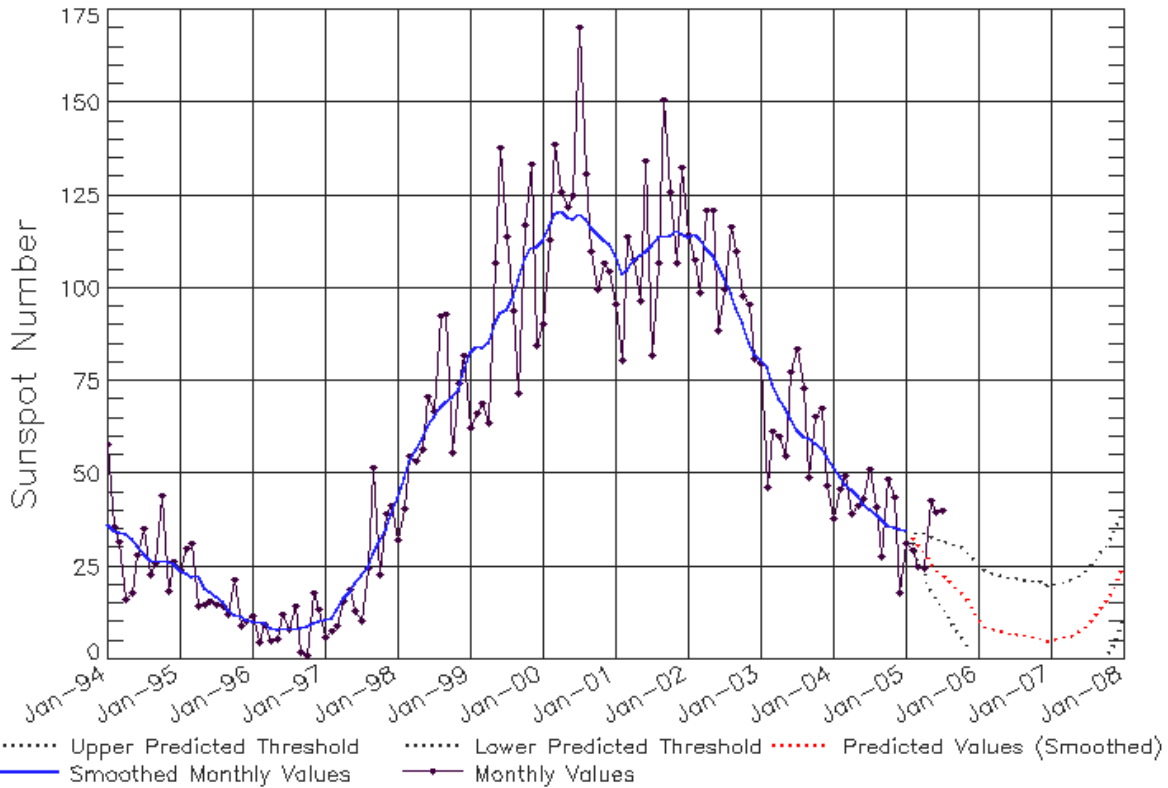
X-ray plot contains five-minute averaged x-ray flux (watts/m<sup>2</sup>) as measured by GOES 12 (W75) and GOES 10 (W135) in two wavelength bands, .05 - .4 and .1 - .8 nm. The letters A, B, C, M and X refer to x-ray event levels for the .1 - .8 nm band.

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 31 Jul 05



Updated 2005 Aug 2

NOAA/SEC Boulder, CO USA

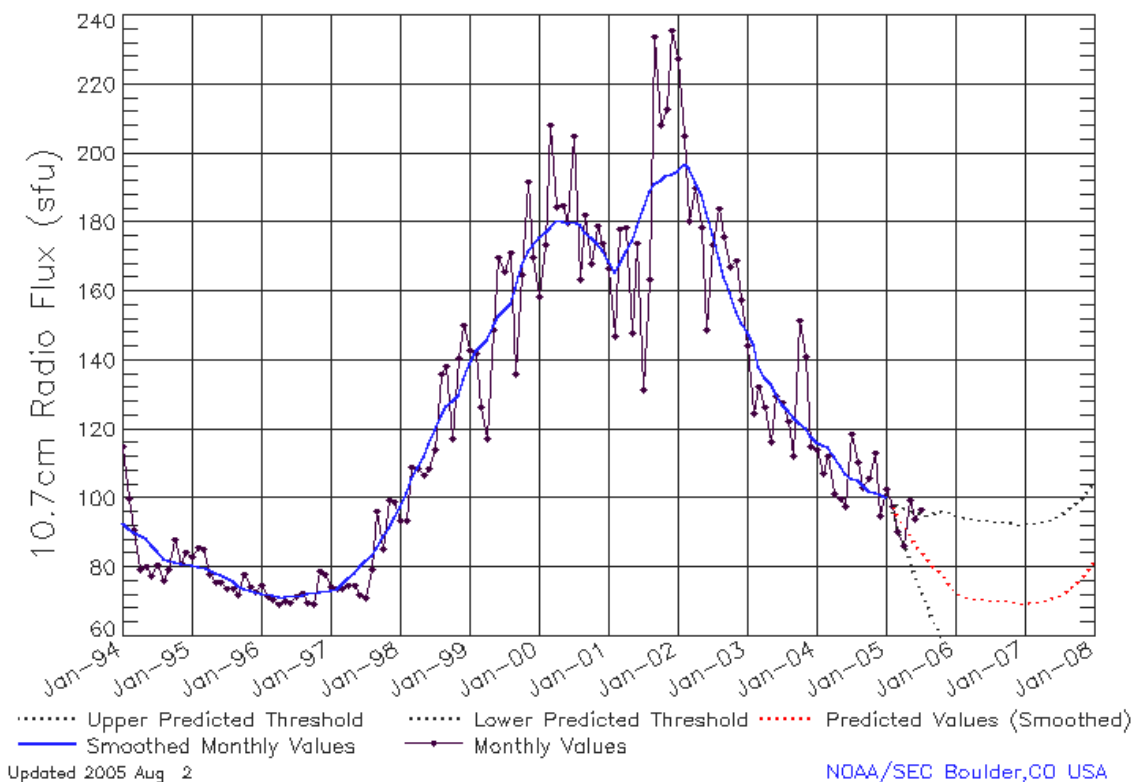
## SEC Prediction of Smoothed Sunspot Number

	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 (***)	<b>31</b> (1)	<b>29</b> (3)	<b>27</b> (5)	<b>24</b> (7)	<b>22</b> (8)	<b>21</b> (9)	<b>19</b> (10)	<b>18</b> (11)	<b>16</b> (12)	<b>14</b> (13)	<b>12</b> (14)
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 Jul 05



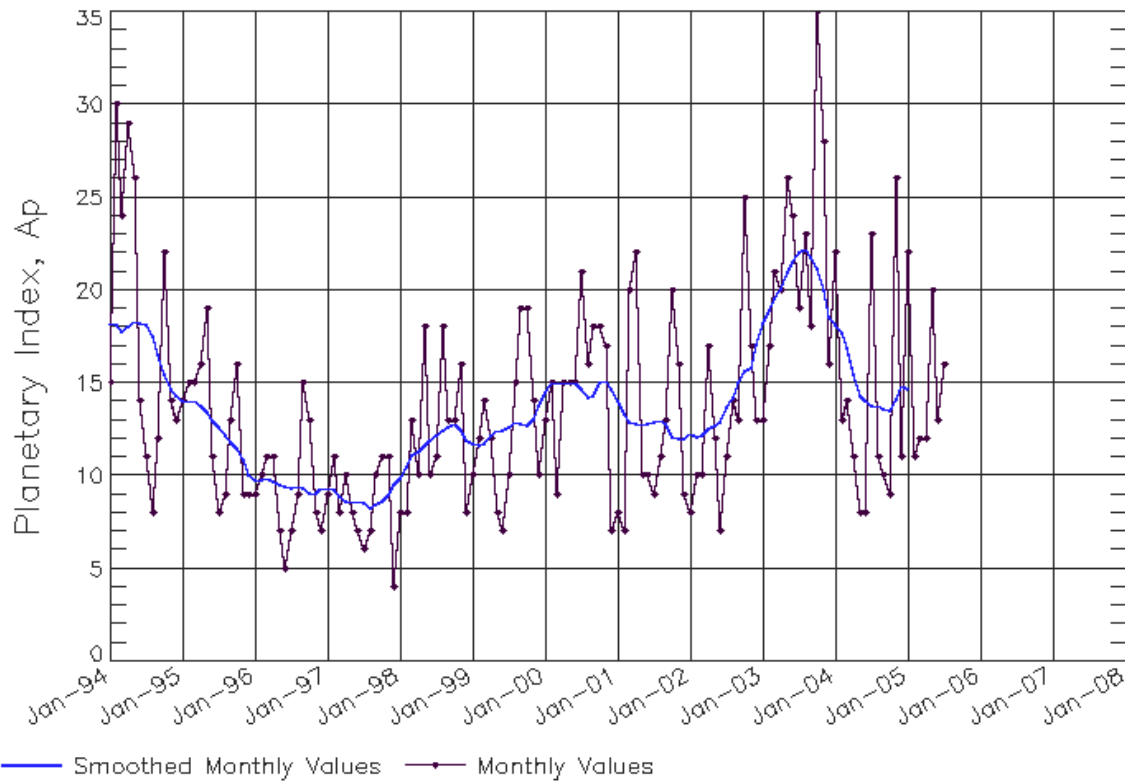
## SEC Prediction of Smoothed F10.7cm Radio Flux

	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 (***)	<b>96</b> (1)	<b>93</b> (3)	<b>91</b> (5)	<b>88</b> (7)	<b>85</b> (9)	<b>83</b> (11)	<b>81</b> (13)	<b>79</b> (15)	<b>77</b> (17)	<b>76</b> (19)	<b>73</b> (21)
2006	<b>72</b> (22)	<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 Jul 05



Updated 2005 Aug 2

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