

Space Weather Highlights **02 - 08 Aug 2004**

SWO PRF 1510
10 Aug 2004

Solar activity levels ranged from very low to low. The summary period began with low levels on 02 August as Region 655 (S09, L=176, class/area, Eso/190 on 04 August) produced an isolated C3.9 X-ray flare at 02/1754 UTC. Activity levels decayed to very low on 03 – 07 August as only B-class flares were observed from Region 655 and new Region 656 (S12, L=081, class/area, Eao/290 on 08 August). By 08 August, activity levels rose to low as Region 656 produced two minor C-class flares, the largest a C2.7/Sf at 08/1724 UTC. A backside, full halo CME was observed by LASCO imagery beginning at 08/0854 UTC.

Solar wind data were available from the NASA Advanced Composition Explorer (ACE) spacecraft during most of the summary period. The period began on 02 August with solar wind speed near 450 km/s and trending downward. By 07 August, wind speed had decayed to near 350 km/s. During this period, the IMF Bz did not vary much beyond +/- 5 nT. By 07/1000 UTC, wind speed began a gradual increase and ended the day near 500 km/s. The IMF Bz responded with a southward turning to -14 nT for about two hours followed by a period of four hours of Bz that oscillated between +/- 10 nT. By the end of the summary period, speed had decreased to near 425 km/s and the IMF Bz did not vary much beyond +1 to -5 nT.

There were no greater than 10 MeV proton events at geosynchronous orbit during the summary period.

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

The geomagnetic field ranged from quiet to minor storm levels. The period began with activity at quiet to unsettled levels. The field remained quiescent through 07/0900 UTC after which levels rose to active to minor storm levels as a recurrent coronal hole high speed stream began to influence the geomagnetic field. Active conditions persisted through 07/1800 UTC. Thereafter, the activity declined to quiet to unsettled conditions, and remained so through the end of the summary period.

Space Weather Outlook **11 August - 06 September 2004**

Solar activity is expected to range from very low to low. Activity levels are expected to increase to low to moderate after 12 August when old Region 652 (L=348) is due to return.

A greater than 10 MeV proton event is possible after the return of old Region 652.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to remain below event threshold for the forecast period.

The geomagnetic field is expected to range from quiet to unsettled levels for most of the forecast period. Activity levels are expected to increase to unsettled to active due to a recurrent coronal holes on 24 – 25 August and on 05 – 06 September.



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 August	85	39	270	A6.6	1	0	0	0	0	0	0	0	0
03 August	88	52	260	A8.5	0	0	0	3	0	0	0	0	0
04 August	85	62	220	A7.0	0	0	0	0	0	0	0	0	0
05 August	89	36	170	B1.0	0	0	0	0	0	0	0	0	0
06 August	91	52	280	B1.1	0	0	0	0	0	0	0	0	0
07 August	95	71	560	B1.2	0	0	0	0	0	0	0	0	0
08 August	105	77	490	B2.3	2	0	0	3	0	0	0	0	0

Daily Particle Data

Date	Proton Fluence (protons/cm ² -day-sr)			Electron Fluence (electrons/cm ² -day-sr)		
	>1MeV	>10MeV	>100MeV	>.6MeV	>2MeV	>4MeV
	02 August	1.3E+7	1.0E+5	4.7E+3		9.6E+8
03 August	4.3E+6	1.6E+4	4.2E+3		3.7E+8	
04 August	8.0E+6	1.4E+4	4.5E+3		1.0E+9	
05 August	6.3E+6	1.4E+4	4.3E+3		4.1E+8	
06 August	3.6E+6	1.3E+4	4.3E+3		2.7E+7	
07 August	8.5E+5	1.3E+4	4.3E+3		5.1E+6	
08 August	2.6E+5	1.4E+4	4.9E+3		2.7E+6	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	02 August	5	1-1-2-2-1-0-1-3	9	1-2-4-4-0-0-1-2	8
03 August	2	1-2-0-0-1-0-0-1	2	2-2-0-0-0-0-0-1	5	2-2-1-1-2-2-1-2
04 August	2	0-0-1-1-2-1-1-0	2	0-0-0-0-2-2-0-0	4	1-0-0-1-2-2-2-1
05 August	5	0-0-0-1-2-1-3-3	7	0-0-0-3-4-1-1-2	7	1-1-0-2-2-2-3-3
06 August	3	2-0-0-0-1-1-2-2	4	2-1-1-0-1-0-2-2	7	3-1-1-1-2-2-3-3
07 August	11	2-3-4-3-2-1-1-2	32	2-3-6-5-6-3-2-1	20	3-3-5-4-4-3-2-3
08 August	2	2-1-1-0-1-1-0-0	2	1-2-1-0-1-0-1-0	5	2-2-1-0-2-2-2-2

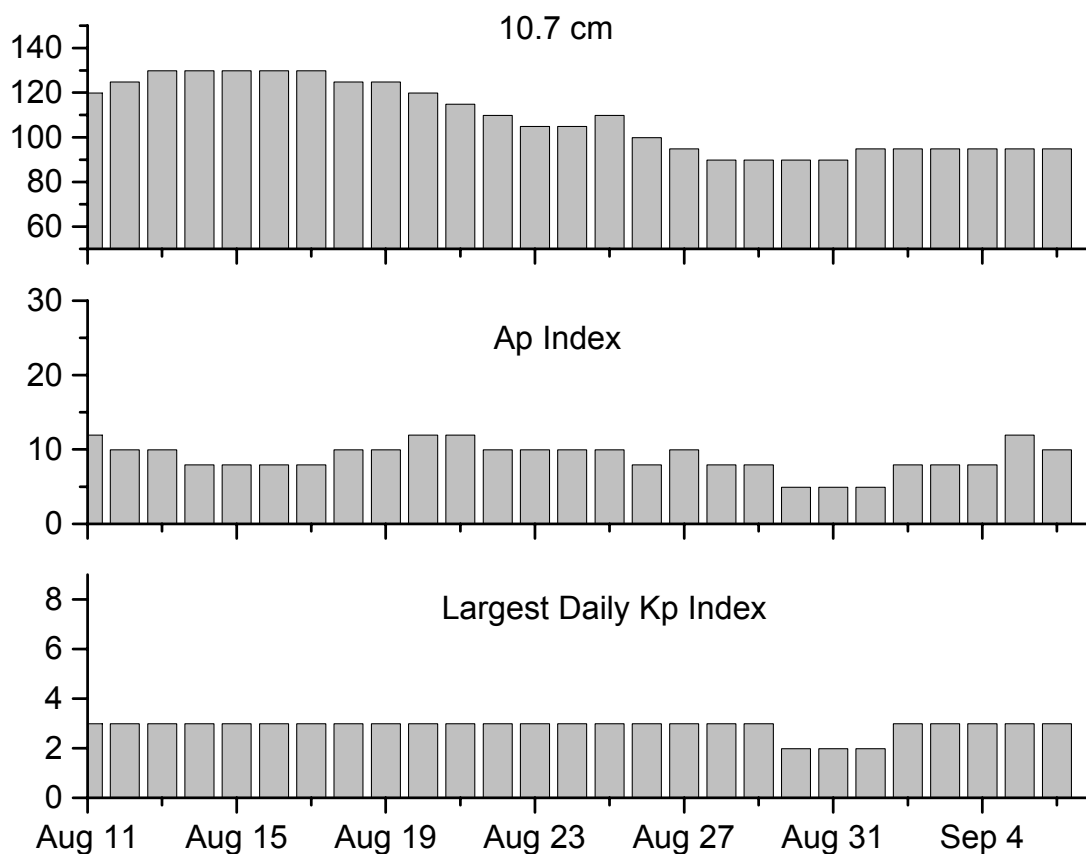


Alerts and Warnings Issued

<u>Date & Time of Issue</u>	<u>Type of Alert or Warning</u>	<u>Date & Time of Event UT</u>
02 Aug 0034	1 – 245 MHz Radio Noise Storm	01 Aug
02 Aug 0458	ALERT: Electron 2MeV Integral Flux > 1000pfu	02 Aug 0500
02 Aug 0854	ALERT: Geomagnetic K= 4	02 Aug 0854
02 Aug 0907	WARNING: Geomagnetic K= 4	02 Aug 0910 - 1600
02 Aug 1154	ALERT: Geomagnetic K= 4	02 Aug 1150
03 Aug 0528	ALERT: Electron 2MeV Integral Flux > 1000pfu	03 Aug 0500
04 Aug 0246	4 – 245 MHz Radio Bursts	03 Aug
04 Aug 0520	ALERT: Electron 2MeV Integral Flux > 1000pfu	04 Aug 0500
05 Aug 0020	4 – 245 MHz Radio Bursts	04 Aug
05 Aug 0520	ALERT: Electron 2MeV Integral Flux > 1000pfu	05 Aug 0500
07 Aug 0824	WARNING: Geomagnetic K= 4	07 Aug 0823 - 1500
07 Aug 0825	ALERT: Geomagnetic K= 4	07 Aug 0825
07 Aug 0833	ALERT: Geomagnetic K= 5	07 Aug 0832
07 Aug 1446	EXTENDED WARNING: Geomagnetic K= 4	07 Aug 0823 - 2359



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 Aug	120	12	3	25 Aug	110	10	3
12	125	10	3	26	100	8	3
13	130	10	3	27	95	10	3
14	130	8	3	28	90	8	3
15	130	8	3	29	90	8	3
16	130	8	3	30	90	5	2
17	130	8	3	31	90	5	2
18	125	10	3	01 Sep	95	5	2
19	125	10	3	02	95	8	3
20	120	12	3	03	95	8	3
21	115	12	3	04	95	8	3
22	110	10	3	05	95	12	3
23	105	10	3	06	95	10	3
24	105	10	3				



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			X-ray Class.	Imp / Brtns	Optical	Rgn
	Begin	Max	End			Location Lat CMD	
02 August	0452	0456	0500	B1.3			
	0813	0818	0826	B1.9			
	0834	0838	0846	B2.6			654
	0920	0951	1011	B7.0			655
	1454	1501	1512	B2.2			655
	1739	1754	1800	C3.9			655
03 August	0203	0207	0221	B1.2			
	0413	0420	0430	B2.3			655
	0534	0534	0541	B3.0	Sf	S11E25	655
	0604	0607	0610	B1.9			655
	0659	0701	0706		Sf	S10E25	655
	0827	0828	0832	B9.1	Sf	S10E23	655
	0855	0923	0944	B9.6			655
	1152	1159	1205	B3.9			655
	1246	1249	1258	B2.6			655
	1347	1352	1400	B3.8			655
04 August	1526	1530	1534	B2.8			655
	0151	0204	0206	B2.0			655
	0340	0343	0346	B1.1			
	0710	0721	0729	B2.0			655
05 August	2044	2048	2052	B2.8			
	2040	2108	2114	B3.3			655
06 August	2249	2256	2301	B3.7			656
07 August	0242	0246	0252	B4.6			656
	0457	0502	0512	B2.4			656
	0604	0607	0610	B1.7			
	0902	0906	0908	B2.7			655
	0924	0927	0930	B2.2			656
	0940	0946	0950	B5.1			656
	1019	1023	1026	B3.3			656
	1147	1151	1153	B2.7			656
	2152	2156	2200	B2.0			
	08 August	0035	0042	0049	B2.8		
0950		0956	1003	B3.8			656
1426		1433	1506	B5.7			656
1524		1528	1534	B7.6			656
1613		1613	1616	B9.5	Sf	S10E50	656
1706		1708	1734	C2.7	Sf	S13E50	656



Flare List-continued

Date	Time			X-ray Class.	Imp / Brtns	Optical	Rgn
	Begin	Max	End			Location Lat CMD	
08 August	1945	1947	1949	B8.9	Sf	S11E45	656
	2243	2246	2249	B7.9			656
	2305	2309	2313	C1.0			656

Region Summary

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

Region 654

25 Jul	N08E52	260	0030	05	Cao	007	B											
26 Jul	N07E38	260	0090	07	Dao	012	B											
27 Jul	N07E25	260	0130	08	Dso	008	B											
28 Jul	N08E11	261	0110	09	Dao	007	B											1
29 Jul	N08W02	261	0120	09	Dso	008	B											
30 Jul	N08W15	261	0120	10	Dso	012	Bg											
31 Jul	N08W28	260	0100	10	Dao	014	Bg											
01 Aug	N08W41	260	0080	11	Eso	007	B											
02 Aug	N08W56	262	0100	11	Eao	006	B											
03 Aug	N07W71	264	0060	08	Dao	005	B											
04 Aug	N07W86	265	0030	06	Bxo	003	B											
																		0 0 0 1 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude:261

Region 655

30 Jul	S09E71	175	0110	02	Hax	001	A											
31 Jul	S09E57	175	0170	09	Dao	005	B											
01 Aug	S09E44	175	0180	12	Eao	013	B											
02 Aug	S09E33	173	0170	12	Eao	013	B											1
03 Aug	S09E16	177	0200	14	Eac	027	Bg											3
04 Aug	S09E03	176	0190	15	Eso	039	B											
05 Aug	S09W09	174	0170	15	Eai	026	B											
06 Aug	S09W25	177	0160	15	Eai	020	B											
07 Aug	S10W38	177	0230	16	Fsi	022	B											
08 Aug	S10W54	178	0150	14	Eai	015	B											
																		1 0 0 3 0 0 0 0

Still on Disk.

Absolute heliographic longitude:176



Region Summary - continued.

Date	Location		Sunspot Characteristics				Flares							
	(° 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 656

06 Aug	S12E69	083	0040	02	Hsx	001	A										
07 Aug	S13E58	081	0250	09	Dko	007	B										
08 Aug	S12E45	081	0290	11	Eao	020	Bg	2				3					
								2	0	0	0	3	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude:081

Region 657

06 Aug	N10E82	074	0080	02	Hax	001	A										
07 Aug	N11E65	074	0060	02	Hax	001	A										
08 Aug	N11E51	075	0040	02	Hax	001	A										
								0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude:075

Region 658

07 Aug	S06E50	089	0020	01	Hsx	001	A										
08 Aug	S05E38	088	0010	01	Axx	001	A										
								0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude:088

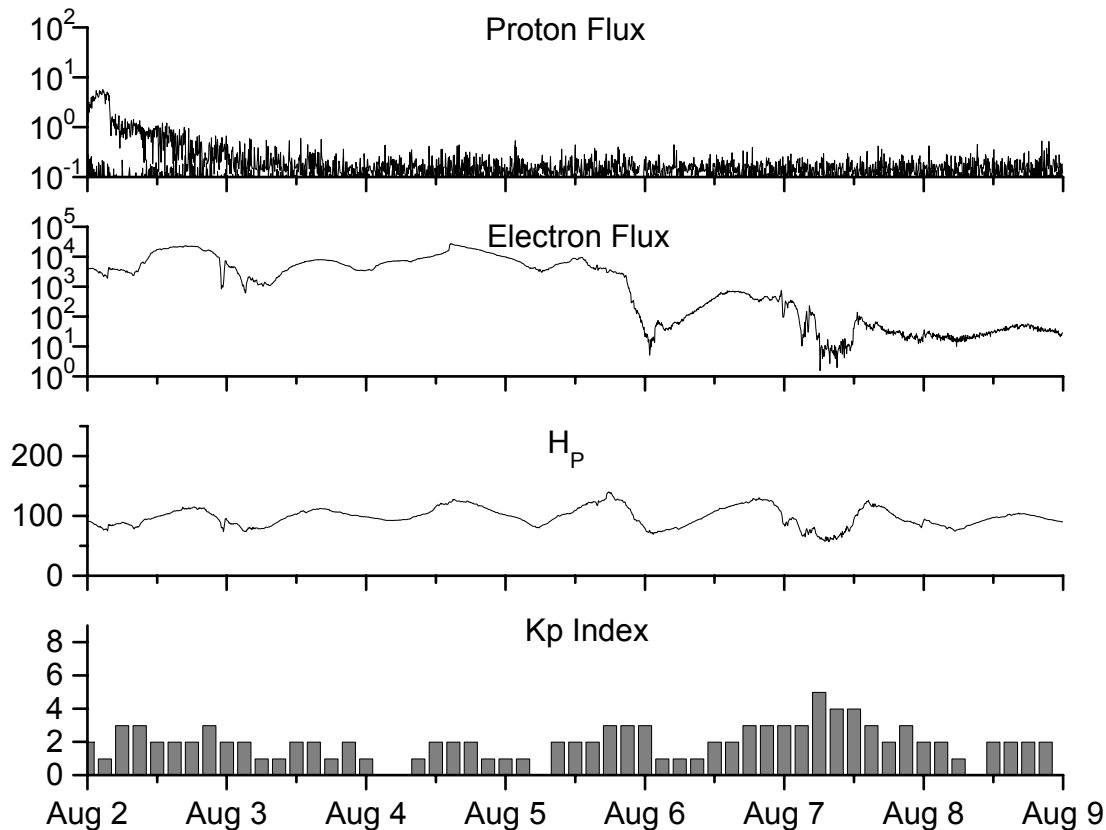


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

Month	Sunspot Numbers			Radio Flux		Geomagnetic			
	Observed values SWO	Ratio RI	Ratio RI/SWO	Smooth values SWO	Smooth values RI	*Penticton 10.7 cm	Smooth Value	Planetary Ap	Smooth Value
2002									
August	191.0	116.4	0.61	169.2	98.7	183.9	169.5	16	14.2
September	206.4	109.6	0.53	163.4	94.6	175.8	164.1	14	15.0
October	153.9	97.5	0.63	158.8	90.5	167.0	159.4	23	15.6
November	159.8	95.5	0.60	150.9	85.2	168.7	154.8	16	16.3
December	147.9	80.8	0.55	144.6	82.1	158.6	150.9	13	17.0
2003									
January	149.3	79.7	0.53	141.7	81.0	144.0	149.2	13	18.2
February	87.0	46.0	0.53	136.4	78.5	124.5	144.7	17	18.9
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	136.3	20	20.0
May	89.6	55.2	0.62	118.3	67.8	129.3	135.0	26	21.0
June	118.4	77.4	0.65	113.6	65.2	129.4	132.6	24	21.8
July	132.8	85.0	0.64	106.9	62.0	127.8	129.5	20	22.3
August	114.3	72.7	0.64	102.8	60.3	122.1	127.5	23	22.4
September	82.6	48.8	0.59	100.7	59.8	112.3	126.0	19	21.9
October	118.9	65.6	0.55	96.6	58.4	153.1	124.1	32	21.1
November	118.9	67.2	0.57	93.6	57.0	153.1	121.8	31	20.0
December	75.4	47.0	0.62	91.4	55.0	115.1	119.4	18	18.6
2004									
January	62.3	37.2	0.60	87.9	52.1	114.1	117.7	20	18.0
February	75.6	46.0	0.61			107.0		13	
March	81.0	48.9	0.60			112.2		12	
April	59.3	39.3	0.66			101.3		10	
May	77.3	41.5	0.54			99.7		9	
June	78.9	43.2	0.55			99.7		9	
July	87.8	51.0	0.58			118.6		21	

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 August 2004*

Protons plot contains the five-minute averaged integral proton flux (protons/cm²-sec-sr) as measured by GOES-11 (W98) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

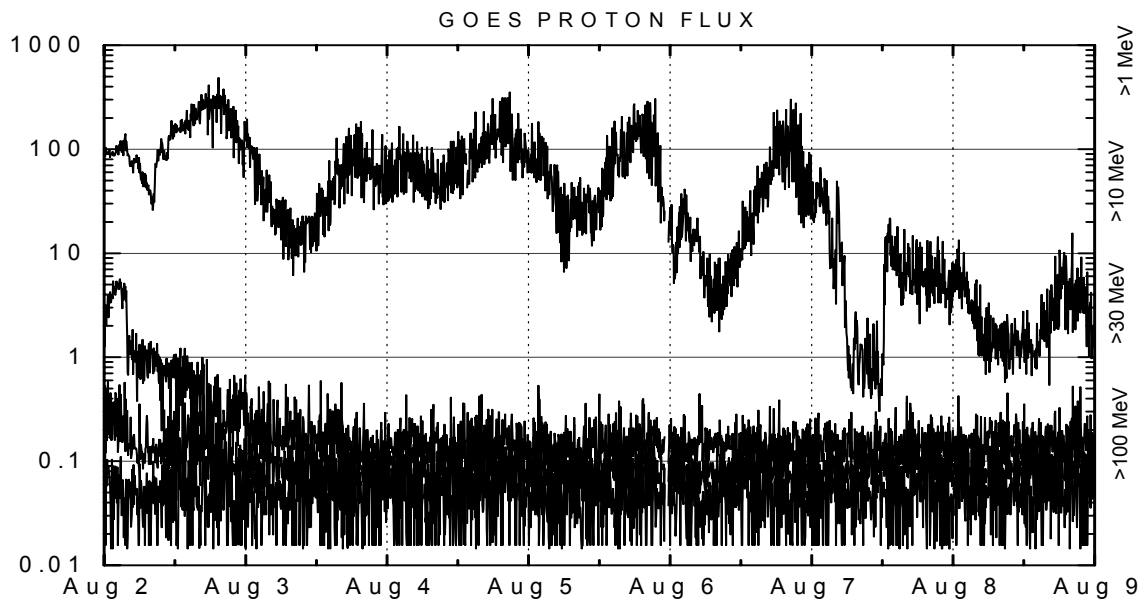
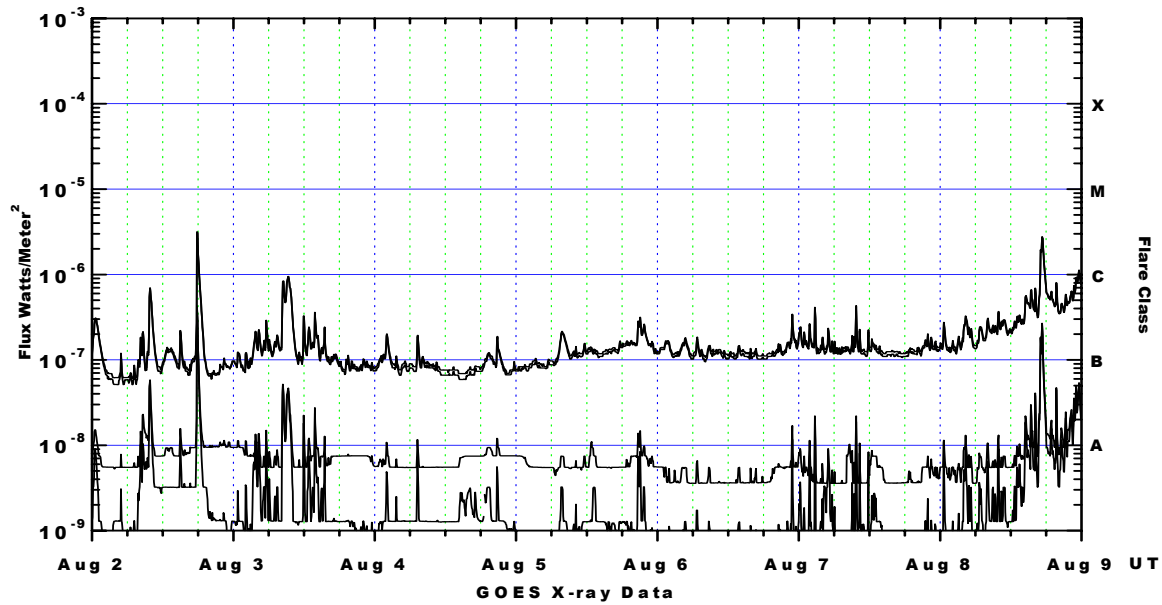
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec-sr) with energies greater than 2 MeV at GOES-12 (W75).

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 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_p are "global" parameters that are applicable to a first order approximation over large areas. H_p 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

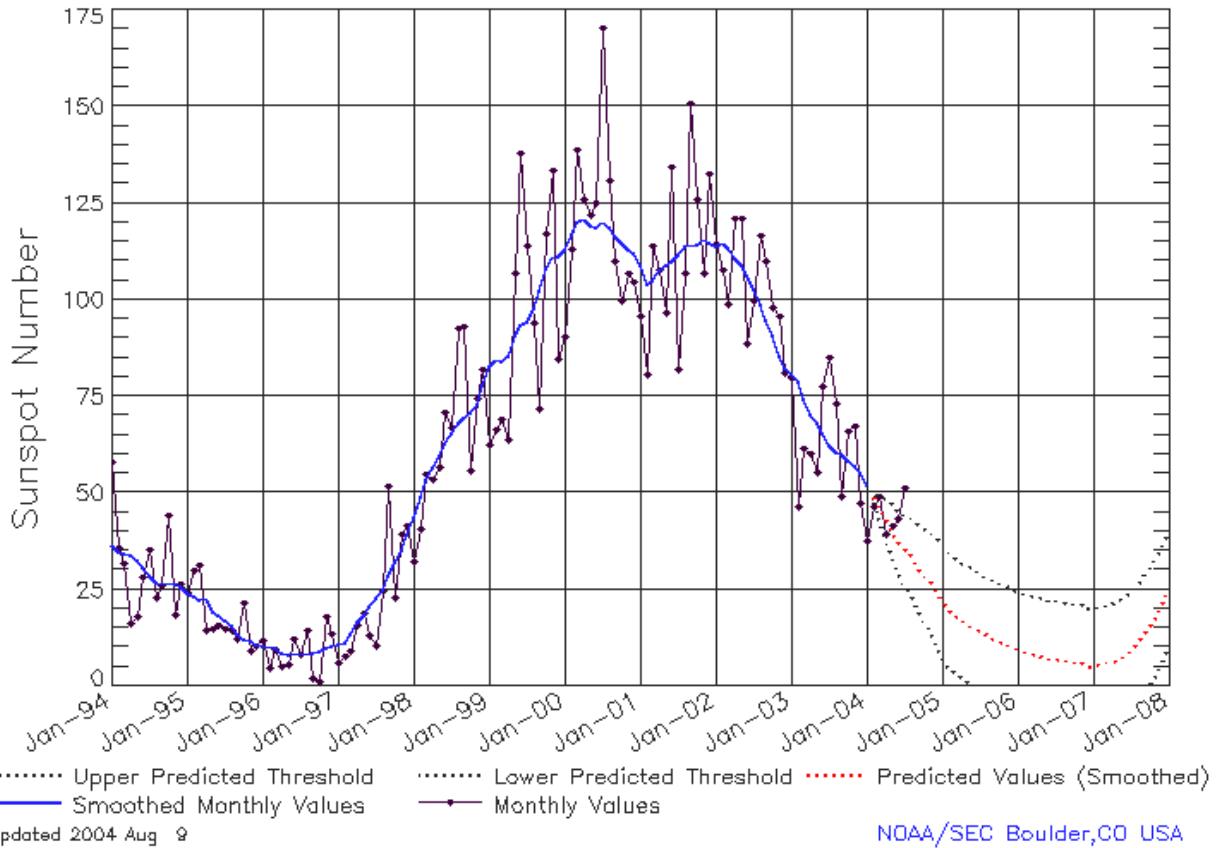
X-ray plot contains five-minute averaged x-ray flux (watts/m²) as measured by GOES 12 (W75) and GOES 10 (W135) in two wavelength bands, .05 - .4 and .1 - .8 nm. The letters A, B, C, M and X refer to x-ray event levels for the .1 - .8 nm band.

Proton plot contains the five-minute averaged integral proton flux (protons/cm²-sec-sr) as measured by GOES-11 (W98) 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 Jul 04



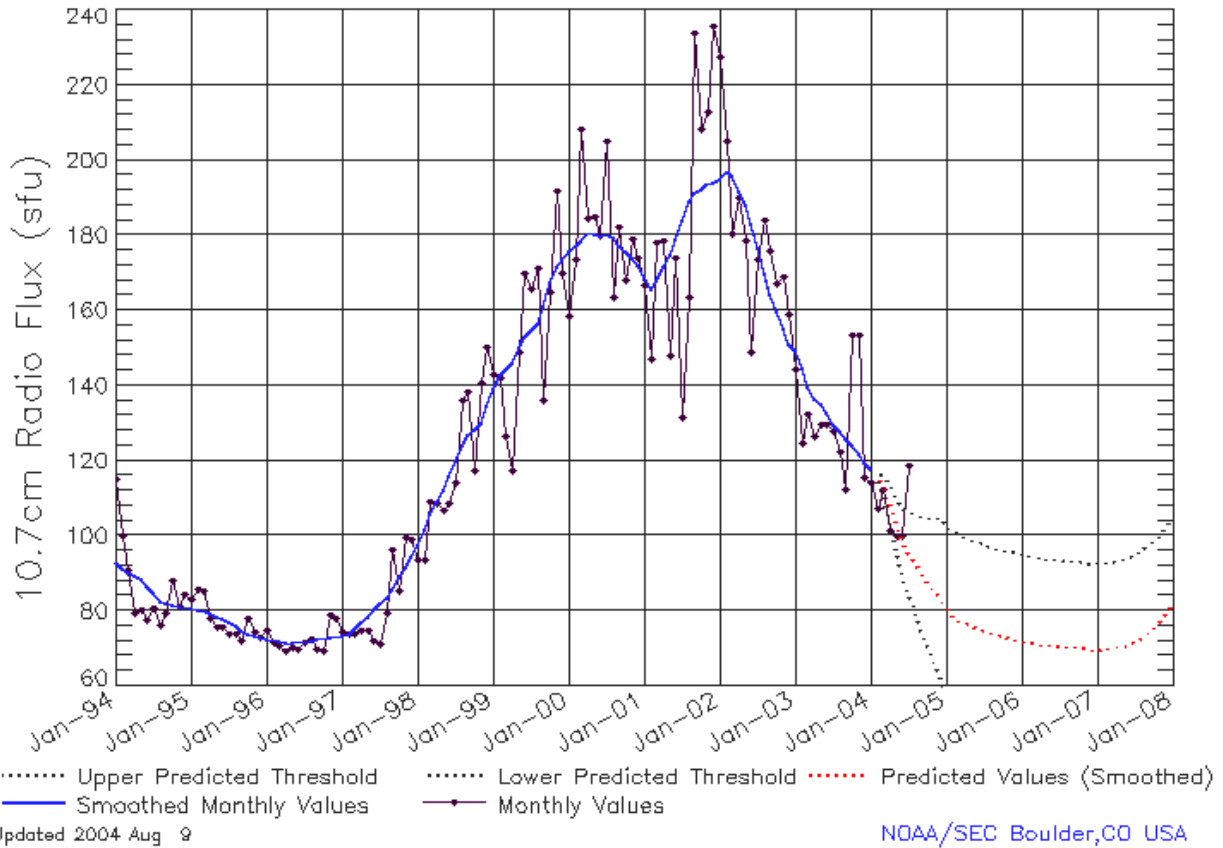
SEC Prediction of Smoothed Sunspot Number

	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 (***)	97 (***)	102 (***)	108 (***)	111 (***)	111 (***)
2000	113 (***)	117 (***)	120 (***)	121 (***)	119 (***)	119 (***)	120 (***)	119 (***)	116 (***)	114 (***)	113 (***)	112 (***)
2001	109 (***)	104 (***)	105 (***)	108 (***)	109 (***)	110 (***)	112 (***)	114 (***)	114 (***)	114 (***)	116 (***)	115 (***)
2002	114 (***)	115 (***)	113 (***)	110 (***)	109 (***)	106 (***)	103 (***)	99 (***)	95 (***)	91 (***)	85 (***)	82 (***)
2003	81 (***)	79 (***)	74 (***)	70 (***)	68 (***)	65 (***)	62 (***)	60 (***)	60 (***)	58 (***)	57 (***)	55 (***)
2004	52 (***)	49 (1)	46 (3)	43 (5)	40 (7)	37 (8)	35 (9)	34 (10)	31 (11)	29 (12)	27 (13)	25 (14)
2005	22 (15)	20 (15)	18 (15)	17 (15)	16 (15)	15 (15)	14 (15)	13 (15)	12 (15)	12 (15)	11 (15)	10 (15)
2006	10 (15)	9 (15)	8 (15)	8 (15)	8 (15)	7 (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 Jul 04



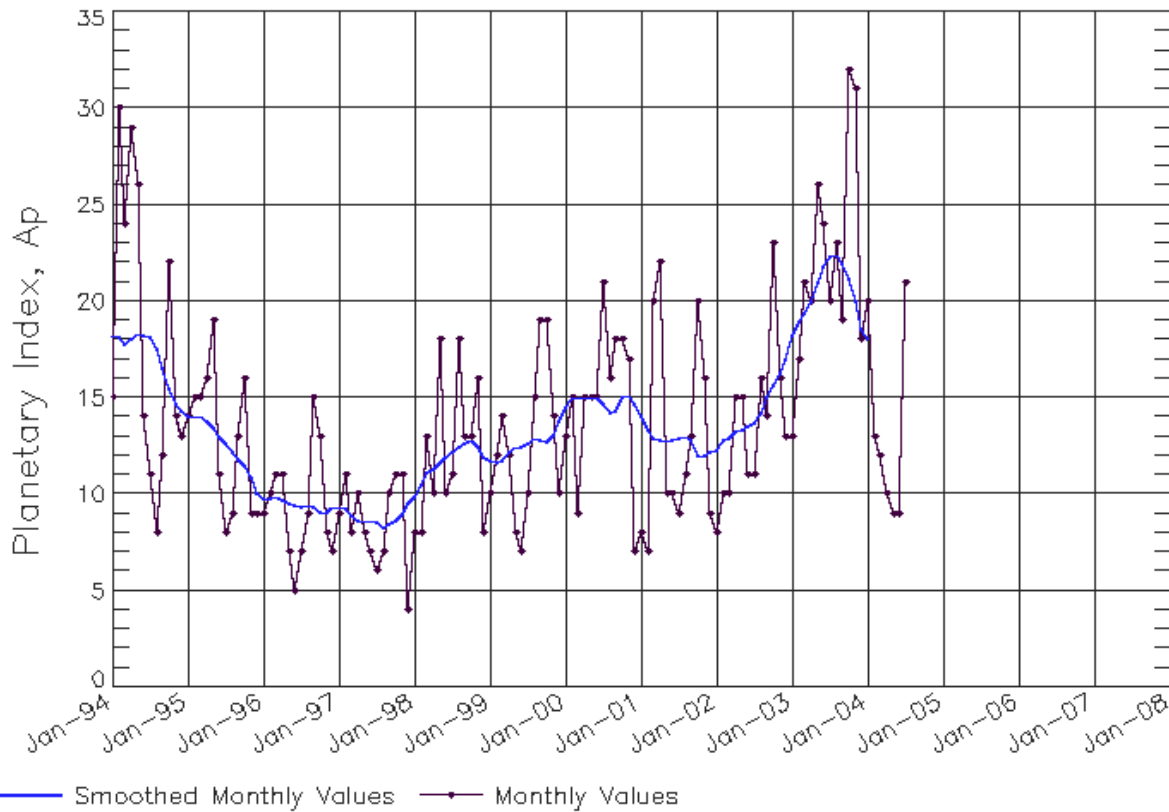
SEC Prediction of Smoothed F10.7cm Radio Flux

	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	175 (***)	176 (***)	178 (***)	181 (***)	180 (***)	180 (***)	180 (***)	180 (***)	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 (***)	155 (***)	151 (***)
2003	149 (***)	145 (***)	140 (***)	136 (***)	135 (***)	133 (***)	130 (***)	128 (***)	126 (***)	124 (***)	122 (***)	119 (***)
2004	118 (***)	116 (1)	113 (3)	109 (5)	103 (7)	98 (9)	95 (11)	93 (13)	90 (15)	88 (17)	86 (19)	84 (21)
2005	81 (22)	78 (23)	78 (23)	77 (23)	76 (23)	75 (23)	75 (23)	74 (23)	74 (23)	73 (23)	73 (23)	73 (23)
2006	72 (23)	72 (23)	71 (23)	71 (23)	71 (23)	71 (23)	71 (23)	71 (23)	70 (23)	70 (23)	70 (23)	70 (23)
2007	70 (23)	70 (23)	70 (23)	70 (23)	71 (23)	71 (23)	72 (23)	73 (23)	74 (23)	76 (23)	77 (23)	79 (23)



ISES Solar Cycle Ap Progression

Data Through 31 Jul 04



Updated 2004 Aug 9

NOAA/SEC Boulder, CO USA

