

Space Weather Highlights
28 July - 03 August 2008

SEC PRF 1718
05 August 2008

Solar activity was very low. No flares were detected. The visible disk was spotless.

No proton events were observed at geosynchronous orbit.

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

Geomagnetic field activity began the summary period at unsettled to active levels due to a coronal hole high speed stream. Beginning at about 1200 UTC on 28 July activity decreased to quiet levels and remained at mostly quiet levels throughout the remainder of the period. Solar wind speed at the ACE spacecraft began the period at approximately 450 km/s and declined to end the period at around 350 km/s. The interplanetary magnetic field varied between +7 and -5 nT during the summary period.

Space Weather Outlook
06 August - 01 September 2008

Solar activity is expected to be very low.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to reach high levels during 10 - 23 August, with the exception of 18 August.

The geomagnetic field is expected to be mostly quiet for 06 - 07 August. An increase to mostly unsettled to active levels is expected for 08 - 09 August due to effects from a coronal hole high speed stream. Quiet to unsettled levels should prevail for 10 - 12 August as the high speed stream rotates out of a geoeffective position. The geomagnetic field is expected to be at quiet levels 13 - 17 August. Another coronal hole high speed stream is expected 18 - 20 August increasing activity levels to quiet to unsettled, with possible active periods on 19 August. For the remainder of the forecast period mostly quiet conditions are expected with a chance for unsettled periods on 28 August.



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	
28 July	66	0	0	<A1.0	0	0	0	0	0	0	0	0	0
29 July	67	0	0	<A1.0	0	0	0	0	0	0	0	0	0
30 July	67	0	0	<A1.0	0	0	0	0	0	0	0	0	0
31 July	66	0	0	<A1.0	0	0	0	0	0	0	0	0	0
01 August	66	0	0	<A1.0	0	0	0	0	0	0	0	0	0
02 August	66	0	0	<A1.0	0	0	0	0	0	0	0	0	0
03 August	66	0	0	<A1.0	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
28 July	1.2E+6	1.8E+4	4.3E+3		1.9E+7	
29 July	1.6E+6	1.9E+4	4.5E+3		3.1E+7	
30 July	1.4E+6	1.8E+4	4.3E+3		3.2E+7	
31 July	1.5E+6	1.9E+4	4.5E+3		3.4E+7	
01 August	1.4E+6	1.9E+4	4.1E+3		2.5E+7	
02 August	1.4E+6	1.9E+4	4.3E+3		2.7E+7	
03 August	1.7E+6	2.0E+4	4.2E+3		2.9E+7	

Daily Geomagnetic Data

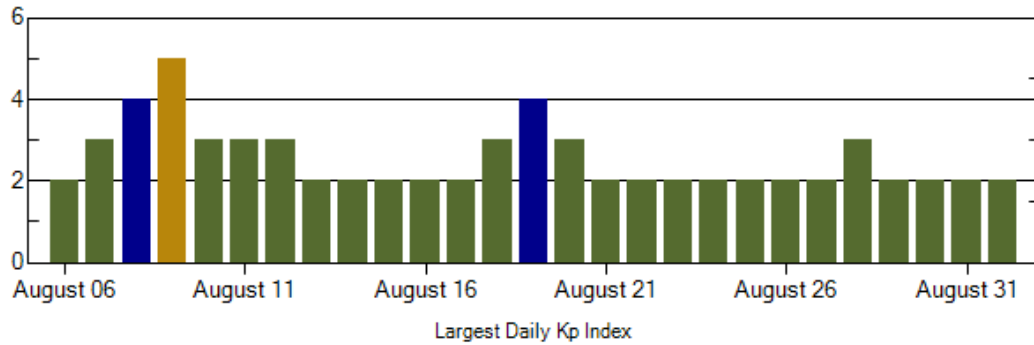
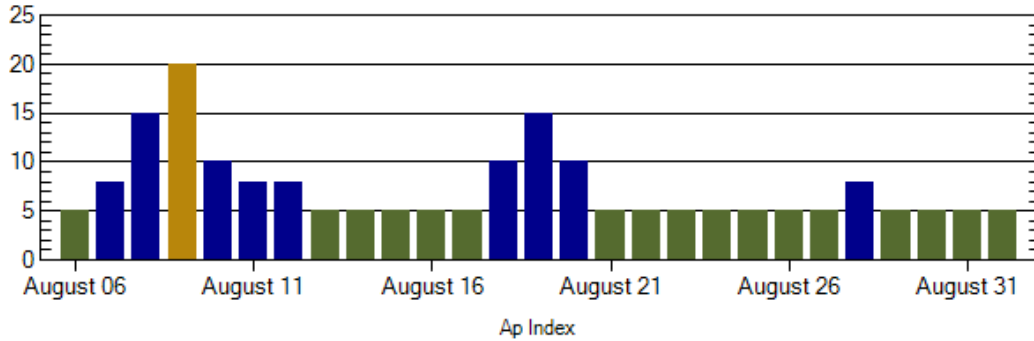
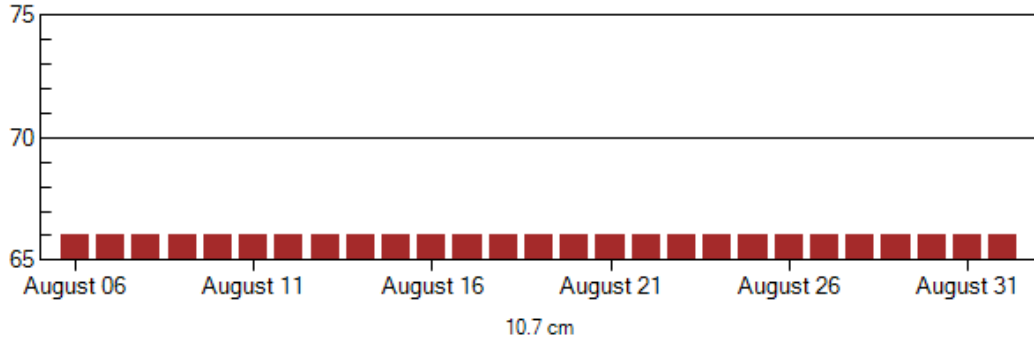
Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	28 July	6	3-3-2-1-1-1-0-1	9	2-3-3-3-2-2-1-1	7
29 July	2	0-0-0-1-1-1-1-1	2	0-0-0-1-1-1-1-1	3	0-1-0-1-0-1-1-1
30 July	4	1-3-1-1-0-0-1-1	2	1-2-1-0-0-0-1-0	5	1-3-1-1-1-0-1-2
31 July	4	0-1-1-1-1-1-3-1	3	0-1-1-3-0-0-1-0	4	1-1-0-2-1-1-1-1
01 August	2	1-0-0-0-1-1-2-1	1	0-1-0-0-0-1-0-0	3	1-0-0-0-1-2-1-2
02 August	2	1-0-0-1-0-0-1-2	1	0-0-0-0-0-0-1-1	3	1-0-0-0-1-1-1-2
03 August	3	1-0-0-1-1-1-2-2	2	1-1-0-0-0-1-2-0	4	1-0-0-0-1-1-1-2

Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
28 Jul 0827	WARNING: Geomagnetic K = 4	28 Jul 0827 - 1600



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 August	66	5	2	20 August	66	10	3
07	66	8	3	21	66	5	2
08	66	15	4	22	66	5	2
09	66	20	5	23	66	5	2
10	66	10	3	24	66	5	2
11	66	8	3	25	66	5	2
12	66	8	3	26	66	5	2
13	66	5	2	27	66	5	2
14	66	5	2	28	66	8	3
15	66	5	2	29	66	5	2
16	66	5	2	30	66	5	2
17	66	5	2	31	66	5	2
18	66	10	3	01 Sept	66	5	2
19	66	15	4				



Energetic Events

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

No Events Observed

Flare List

Date	Time			Optical	Imp / Brtns	Location	Rgn
	Begin	Max	End	X-ray Class.		Lat CMD	
28 Jul	<i>No Flares Observed</i>						
29 Jul	<i>No Flares Observed</i>						
30 Jul	<i>No Flares Observed</i>						
31 Jul	<i>No Flares Observed</i>						
01 Aug	<i>No Flares Observed</i>						
02 Aug	<i>No Flares Observed</i>						
03 Aug	<i>No Flares Observed</i>						

Region Summary

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

No active regions.



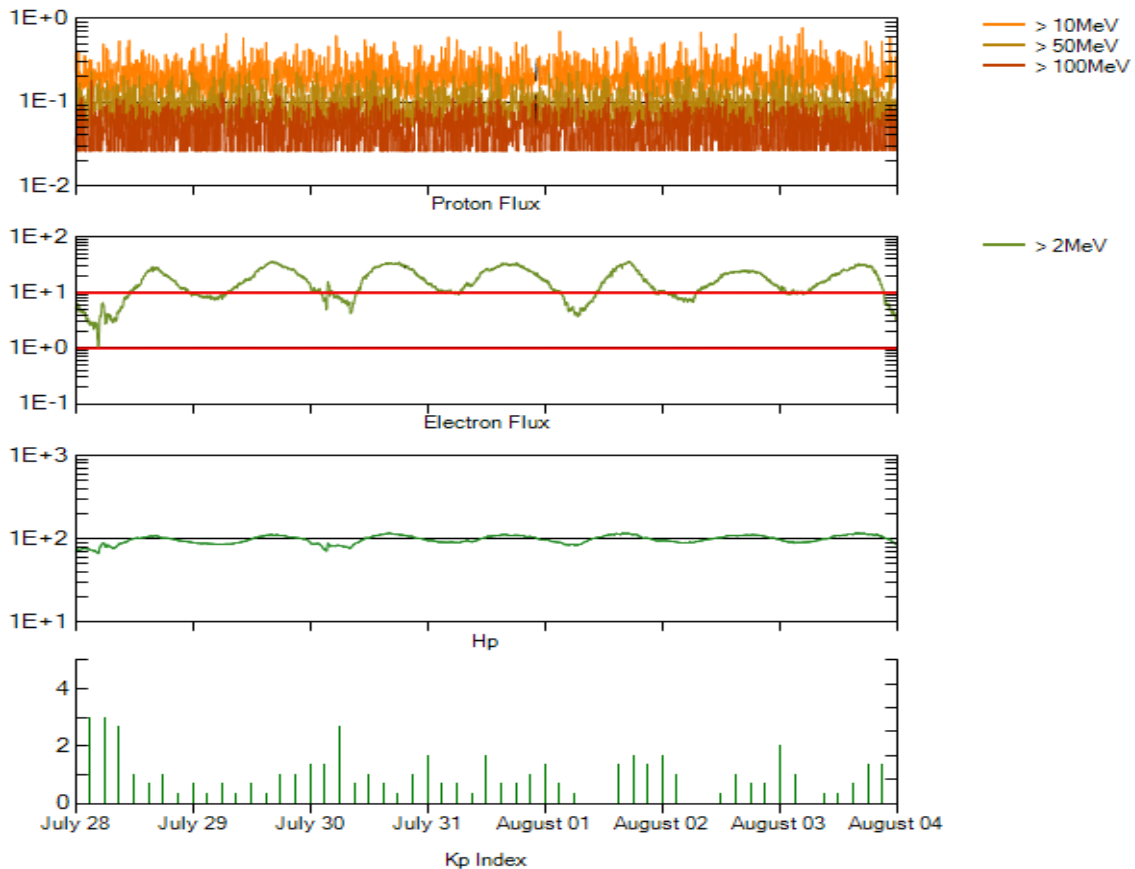
Recent Solar Indices (preliminary)
Of the observed monthly mean values

Month	Sunspot Numbers			Radio Flux		Geomagnetic			
	Observed SEC	values RI	Ratio RI/SEC	Smooth SEC	values RI	*Penticton 10.7 cm	Smooth Value	Planetary Ap	Smooth Value
2006									
August	22.8	12.9	0.57	27.6	15.6	79.0	80.3	9	8.7
September	25.2	14.5	0.58	27.7	15.6	77.8	80.2	8	8.7
October	15.7	10.4	0.66	25.2	14.2	74.3	79.4	8	8.6
November	31.5	21.5	0.68	22.3	12.7	86.4	78.5	9	8.5
December	22.2	13.6	0.61	20.7	12.1	84.3	77.9	15	8.5
2007									
January	26.6	16.9	0.64	19.7	12.0	83.5	77.5	6	8.4
February	17.2	10.6	0.62	18.9	11.6	77.8	76.9	6	8.4
March	9.7	4.8	0.49	17.5	10.8	72.3	76.0	8	8.4
April	6.9	3.7	0.54	16.0	9.9	72.4	75.2	9	8.5
May	19.4	11.7	0.60	14.2	8.7	74.5	74.2	9	8.4
June	20.0	12.0	0.60	12.8	7.7	73.7	73.2	7	7.8
July	15.6	10.0	0.64	11.6	7.0	71.6	72.5	8	7.4
August	9.9	6.2	0.63	10.2	6.1	69.2	71.8	7	7.6
September	4.8	2.4	0.50	9.9	5.9	67.1	71.5	9	7.8
October	1.3	0.9	0.70	10.0	6.1	65.5	71.5	9	7.9
November	2.5	1.7	0.68	9.4	5.7	69.7	71.1	5	7.8
December	16.2	10.1	0.62	8.1	5.0	78.6	70.5	4	7.8
2008									
January	5.1	3.4	0.67	6.9	4.2	72.1	70.0	6	7.7
February	3.8	2.1	0.55			71.2		9	
March	15.9	9.3	0.58			72.9		10	
April	4.9	2.9	0.59			70.3		9	
May	5.7	2.9	0.51			68.4		6	
June	4.2	3.1	0.74			65.9		7	
July	1.0	0.5	0.50			65.8		6	

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 28 July 2008*

Protons plot contains the five-minute averaged integral proton flux (protons/cm²-sec -sr) as measured by GOES-11 (W135) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

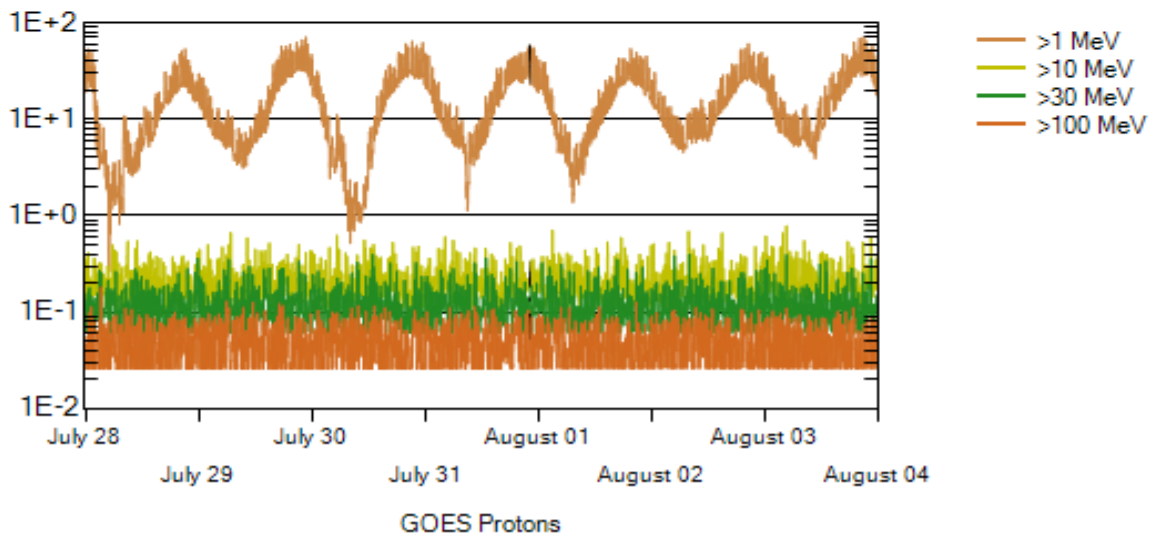
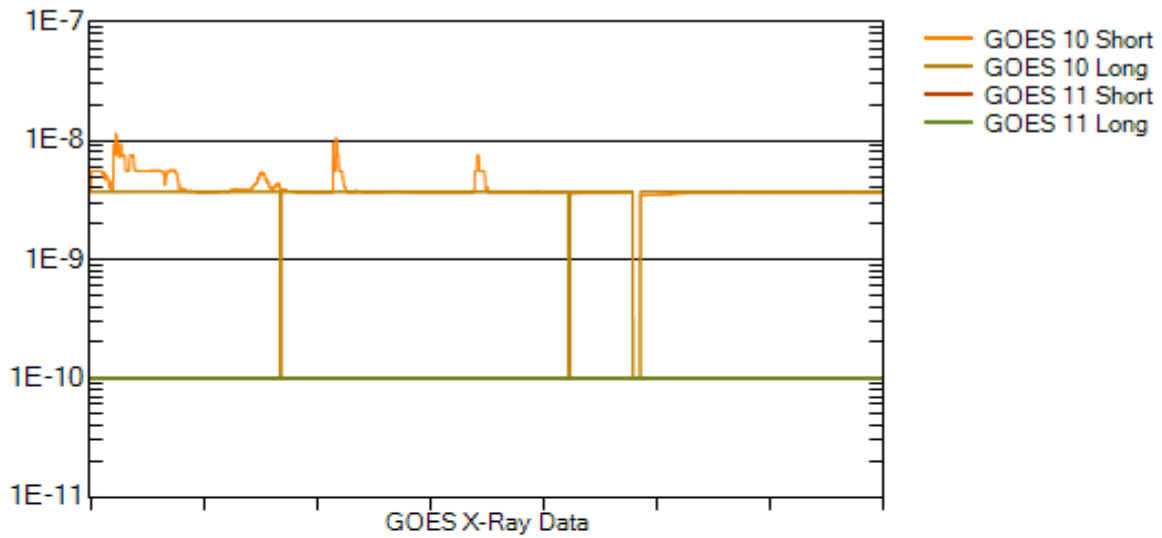
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV at GOES-12 (W075).

Hp 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.

Kp 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 Kp 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 Kp 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

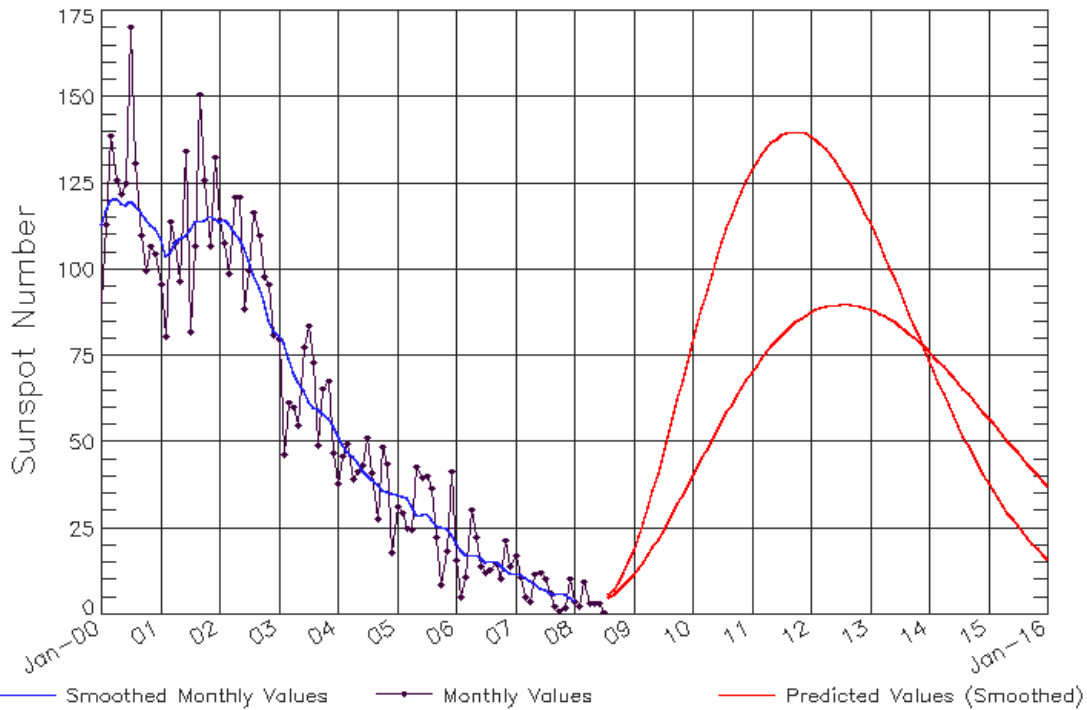
X-ray plot contains five-minute averaged x-ray flux (watts/m^2) as measured by GOES 10 (W060) and GOES 11 (W135) in two wavelength bands, .05 - .4 and .1 - .8 nm. The letters A, B, C, M and X refer to x-ray event levels for the .1 - .8 nm band.

Proton plot contains the five-minute averaged integral proton flux ($\text{protons/cm}^2\text{-sec-sr}$) as measured by GOES-11 (W135) for each of the energy thresholds: >1, >10, >30 and >100 MeV. P10 event threshold is 10 pfu ($\text{protons/cm}^2\text{-sec-sr}$) at greater than 10 MeV.



ISES Solar Cycle Sunspot Number Progression

Data Through 31 Jul 08



Updated 2008 Aug 4

NOAA/SWPC Boulder, CO USA

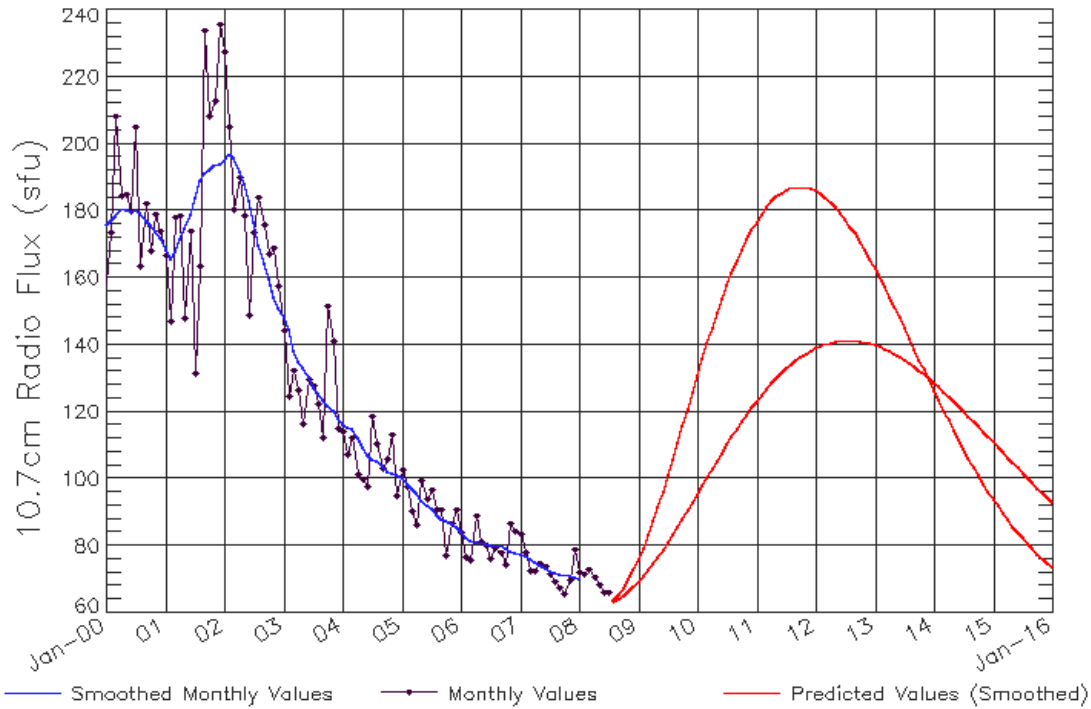
SEC Prediction of Smoothed Sunspot Number

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Hi/Lo	Hi/Lo	Hi/Lo	Hi/Lo	Hi/Lo	Hi/Lo	Hi/Lo	Hi/Lo	Hi/Lo	Hi/Lo	Hi/Lo	Hi/Lo
2006	21	19	17	17	17	16	15	16	16	14	13	12
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)
2007	12	12	11	10	9	8	7	6	6	6	6	5
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)
2008	4	4/4	4/4	5/4	5/5	6/5	7/5	8/6	10/7	12/8	14/9	17/10
	(***)	(1)	(3)	(5)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2009	21/12	23/13	27/15	31/17	36/20	41/22	46/24	52/27	57/29	62/32	68/35	73/37
	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)
2010	79/40	84/43	89/45	94/48	99/51	103/53	108/56	112/59	116/61	119/63	123/66	126/68
	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)
2011	129/70	131/72	133/74	135/76	137/78	138/79	139/81	140/82	140/84	140/85	140/86	139/87
	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)
2012	139/88	138/88	136/89	135/89	133/90	131/90	129/90	127/90	125/90	122/90	119/89	116/89
	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)
2013	114/89	110/88	107/87	104/86	101/86	97/85	94/84	91/83	87/81	84/80	80/79	77/78
	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)
2014	74/76	70/75	67/73	64/72	61/70	58/69	55/67	52/65	49/64	46/62	44/60	41/59
	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)
2015	38/57	36/55	34/54	32/52	30/50	28/49	26/47	24/45	22/44	21/42	19/40	18/39
	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)



Note: Hi is for the larger solar cycle prediction, Lo is for the smaller solar cycle prediction

ISES Solar Cycle F10.7cm Radio Flux Progression
Data Through 31 Jul 08



Updated 2008 Aug 4

NOAA/SWPC Boulder, CO USA

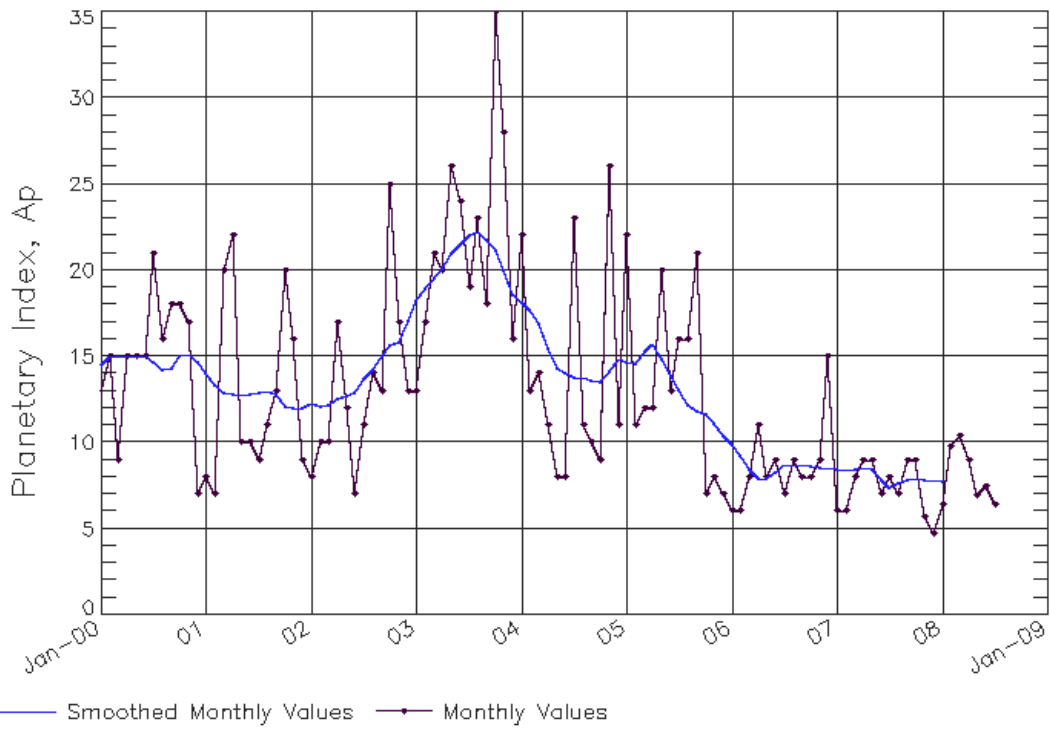
SEC Prediction of Smoothed F10.7cm Radio Flux

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Hi/Lo	Hi/Lo	Hi/Lo	Hi/Lo	Hi/Lo	Hi/Lo	Hi/Lo	Hi/Lo	Hi/Lo	Hi/Lo	Hi/Lo	Hi/Lo
2006	84 (***)	83 (***)	82 (***)	81 (***)	81 (***)	81 (***)	80 (***)	80 (***)	80 (***)	79 (***)	79 (***)	78 (***)
2007	78 (***)	77 (***)	76 (***)	75 (***)	74 (***)	73 (***)	73 (***)	72 (***)	72 (***)	72 (***)	71 (***)	71 (***)
2008	70 (***)	70/64 (1)	69/64 (3)	69/64 (5)	69/63 (7)	69/63 (9)	69/62 (11)	70/62 (13)	70/62 (15)	71/62 (17)	73/63 (19)	75/64 (21)
2009	78/68 (22)	79/71 (23)	83/73 (23)	87/75 (23)	92/77 (23)	96/79 (23)	101/81 (23)	106/83 (23)	111/86 (23)	116/88 (23)	121/90 (23)	126/93 (23)
2010	131/95 (23)	136/98 (23)	140/100 (23)	145/103 (23)	149/105 (23)	154/108 (23)	158/110 (23)	161/112 (23)	165/115 (23)	168/117 (23)	171/119 (23)	174/121 (23)
2011	177/123 (23)	179/125 (23)	181/127 (23)	183/128 (23)	184/130 (23)	185/132 (23)	186/133 (23)	187/134 (23)	187/135 (23)	187/136 (23)	187/137 (23)	187/138 (23)
2012	186/139 (23)	185/140 (23)	184/140 (23)	183/141 (23)	181/141 (23)	179/141 (23)	177/141 (23)	175/141 (23)	173/141 (23)	171/141 (23)	168/141 (23)	166/140 (23)
2013	163/140 (23)	160/139 (23)	157/139 (23)	154/138 (23)	151/137 (23)	148/136 (23)	145/136 (23)	142/135 (23)	139/134 (23)	136/132 (23)	133/131 (23)	129/130 (23)
2014	126/129 (23)	123/127 (23)	120/126 (23)	117/125 (23)	115/123 (23)	112/122 (23)	109/120 (23)	106/119 (23)	104/117 (23)	101/116 (23)	99/114 (23)	96/113 (23)
2015	94/111 (23)	92/110 (23)	90/108 (23)	88/106 (23)	86/105 (23)	84/103 (23)	82/102 (23)	81/100 (23)	79/99 (23)	78/97 (23)	76/96 (23)	75/94 (23)



ISES Solar Cycle Ap Progression

Data Through 31 Jul 08



Updated 2008 Aug 4

NOAA/SWPC Boulder, CO USA

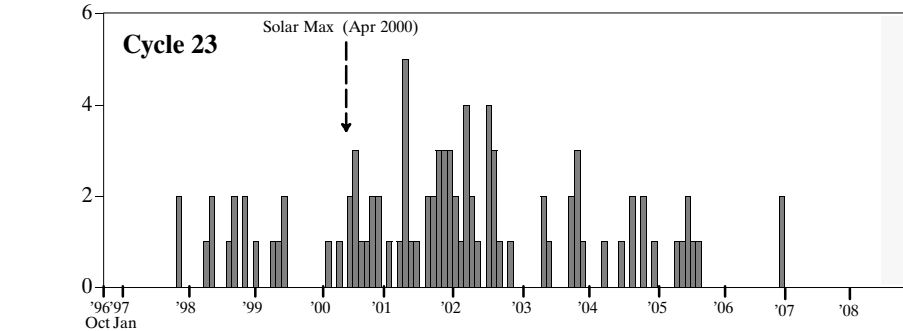
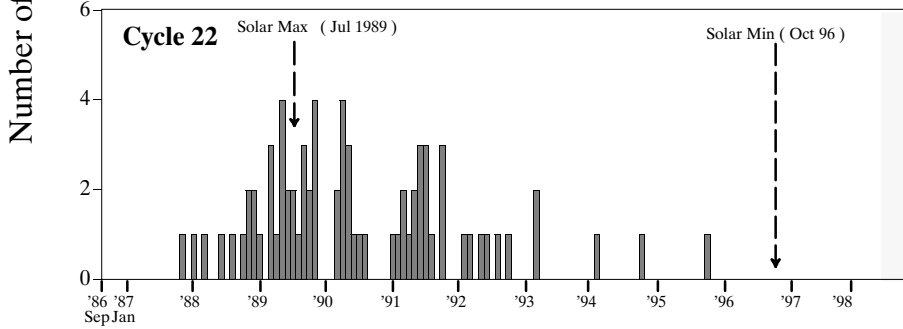
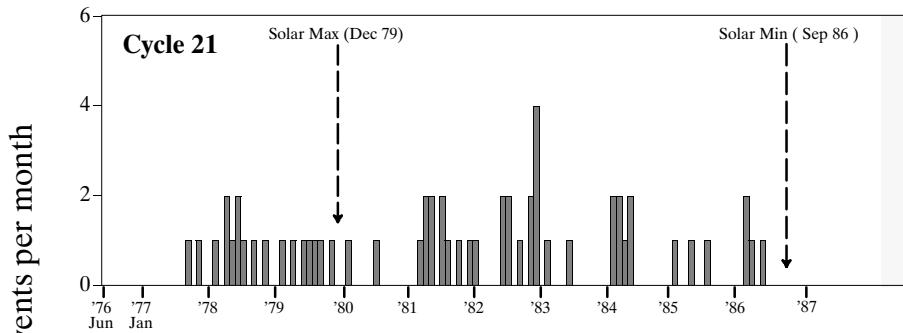
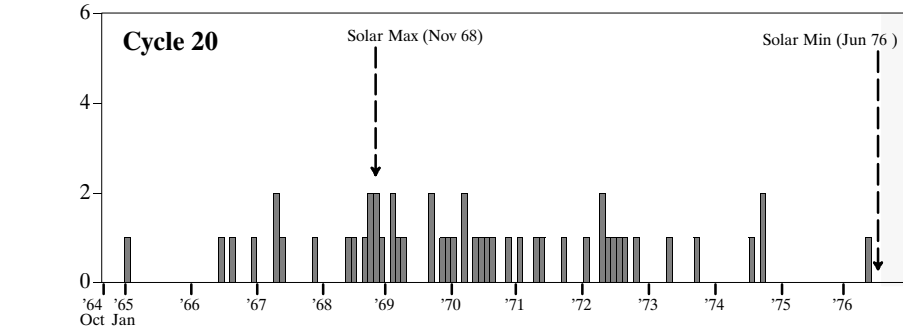
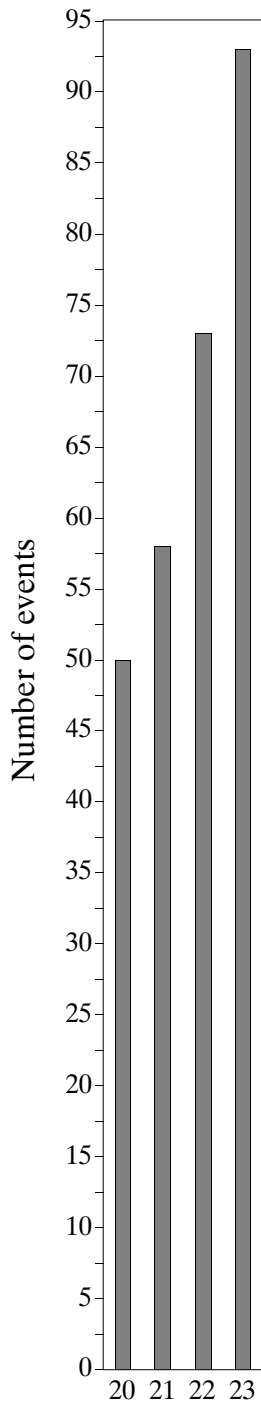




Proton Events



July 2008
(Month 142)



SEC defines Proton Events as periods (in excess of 15 minutes) when the geosynchronous >10MeV proton flux remains above 10 pfu (particle flux unit = 1p/cm²cm²s²sr). Events continue and are counted as a single event until fluxes remain below 10 pfu regardless of whether enhancements from new sources occur. Using different event criteria may result in different event totals.