Space Weather Highlights **SWPC PRF 1727**
28 September - 05 October 2008 **07 October 2008**

Solar activity was very low. No flares were detected. The visible solar disk remained spotless through most of the period, however, Region 1003 (S23, L=222, class/area Axx/010 on 04 Oct) was numbered on 04 October. This region quickly decayed to spotless plage on 05 October.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at high levels 03 - 05 October.

The geomagnetic field was at quiet levels 29 September through the end of the day on 30 September with solar wind speed values measured at the ACE spacecraft around 350 km/s. Activity levels increased to quiet to unsettled conditions through 01 October. This increase was due to a Co-rotating Interaction Region (CIR) with solar wind velocities near 500 km/s and the Interplanetary Magnetic Field (IMF) Bz component ranging between +/- 7 nT. Geomagnetic field activity increased to quiet to active conditions on 02 October as a coronal hole high speed stream rotated into a geoeffective position. Quiet to active conditions were observed through early 04 October when the geomagnetic activity increased to unsettled to minor storm levels. Solar wind speed values during this period also increased to around 750 km/s with the IMF Bz ranging between +/- 8 nT. Soon after the peak of the geomagnetic activity, levels slowly declined to quiet to unsettled for the remainder of 04 October, then mostly quiet conditions on 05 October. Wind velocities also began gradually decreasing, and ended the period below 500 km/s.

Space Weather Outlook
08 October - 03 November 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 08 - 11 October, 13 - 15 October, and 30 October - 03 November.

The geomagnetic field is expected to be at quiet levels on 08 - 10 October. A coronal hole high speed stream is expected to become geoeffective on 11 - 13 October increasing activity to quiet to unsettled levels with active conditions possible on 12 October. For 14 - 27 October activity levels are expected to decrease to quiet conditions. Another coronal hole high speed stream is expected to become geoeffective on 28 - 31 October increasing activity to quiet to unsettled levels with active conditions expected on 28 - 29 October. Quiet conditions are expected 01 - 03 November as the coronal hole rotates out of a geoeffective position.

Daily Solar Data

Date	Radio Flux 10.7 cm	Sun spot No.	Sunspot Area (10^{-6} hemi.)	X-ray Background	Flares: X-ray Flux C	M	X	Flares: Optical S	1	2	3	4
29 September	67	0	0	<A1.0	0	0	0	0	0	0	0	0
30 September	66	0	0	<A1.0	0	0	0	0	0	0	0	0
01 October	66	0	0	<A1.0	0	0	0	0	0	0	0	0
02 October	66	0	0	<A1.0	0	0	0	0	0	0	0	0
03 October	67	0	0	<A1.0	0	0	0	0	0	0	0	0
04 October	67	12	10	<A1.0	0	0	0	0	0	0	0	0
05 October	67	0	0	<A1.0	0	0	0	0	0	0	0	0

Daily Particle Data

Date	Proton Fluence (protons/cm^2-day-sr) >1 MeV	>10 MeV	>100 MeV	Electron Fluence (electrons/cm^2-day-sr) >.6 MeV	>2MeV	>4 MeV
29 September	3.5E+5	1.9E+4	4.4E+3		1.7E+6	
30 September	7.8E+5	1.9E+4	4.0E+3		1.9E+6	
01 October	6.0E+5	1.8E+4	3.9E+3		1.2E+6	
02 October	2.5E+6	1.8E+4	3.9E+3		2.5E+6	
03 October	4.2E+6	1.8E+4	3.5E+3		1.6E+8	
04 October	1.4E+6	1.8E+4	3.6E+3		2.5E+8	
05 October	1.1E+6	1.8E+4	3.9E+3		3.0E+8	

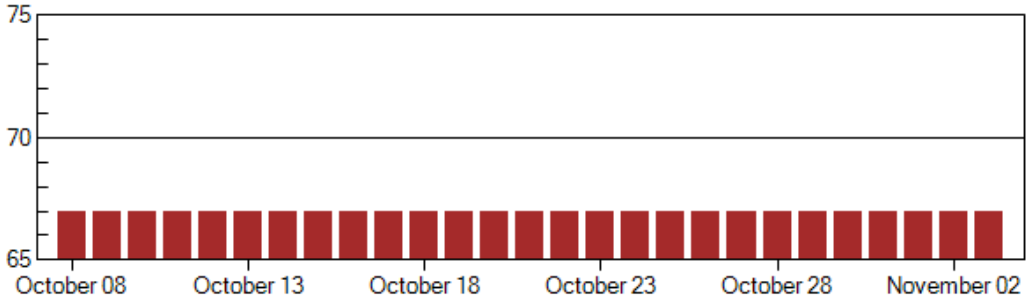
Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg A	K-indices	High Latitude College A	K-indices	Estimated Planetary A	K-indices
29 September	2	0-1-1-1-1-0-0-0	3	0-0-2-3-1-0-0-0	2	0-0-2-1-1-0-0-1
30 September	3	0-0-0-0-2-1-2-2	1	0-0-0-0-0-1-1-1	4	0-0-0-0-1-2-1-3
01 October	7	2-1-2-2-2-2-2-2	8	2-1-3-1-3-2-2-1	6	1-1-2-1-2-2-2-2
02 October	11	2-2-2-3-3-2-3-3	26	2-2-2-6-6-3-2-2	12	2-2-2-4-4-2-3-2
03 October	10	3-2-2-3-2-2-2-3	32	3-2-5-6-6-3-2-2	13	3-3-3-3-3-2-2-3
04 October	8	2-4-2-2-2-1-1-1	17	3-4-2-5-4-1-1-2	11	3-5-2-2-2-2-1-2
05 October	3	0-1-2-0-1-2-1-1	4	1-1-2-1-2-0-1-1	4	1-2-2-1-1-1-0-1

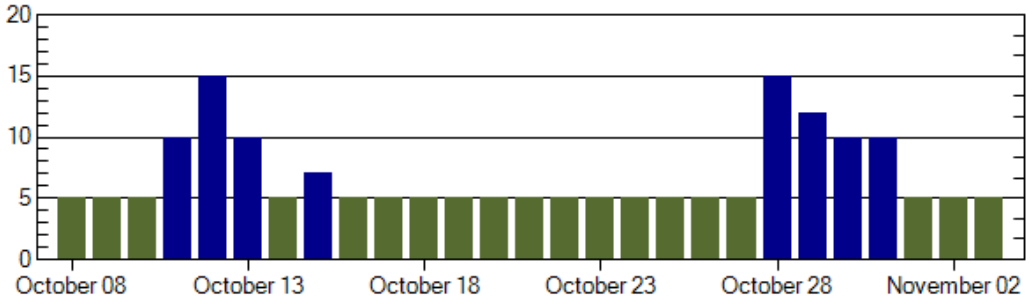
Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
01 Oct 1529	WARNING: Geomagnetic K = 4	01 Oct 1530 - 2359
01 Oct 1949	WATCH: Geomagnetic A=20	02 Oct
01 Oct 2309	EXTENDED WARNING: Geomagnetic K = 4	01 Oct 1530 - 02/1600
02 Oct 1055	ALERT: Geomagnetic K = 4	02 Oct 1054
02 Oct 1538	EXTENDED WARNING: Geomagnetic K = 4	01 Oct 1530 - 02/2359
03 Oct 0824	WARNING: Geomagnetic K = 4	03 Oct 0825 - 1600
03 Oct 0825	ALERT: Geomagnetic K = 4	03 Oct 0825
03 Oct 1120	ALERT: Electron 2MeV Integral Flux ≥1000pfu	03 Oct 1100
03 Oct 2137	WARNING: Geomagnetic K = 4	03 Oct 2145 - 04/1600
04 Oct 0404	ALERT: Geomagnetic K = 4	03 Oct 0403
04 Oct 0409	WARNING: Geomagnetic K = 5	04 Oct 0408 - 1600
04 Oct 0410	ALERT: Geomagnetic K = 5	04 Oct 0410
04 Oct 0441	SUMMARY: Geomagnetic Sudden Impulse	04 Oct 0440
04 Oct 0848	ALERT: Electron 2MeV Integral Flux ≥1000pfu	04 Oct 0815
05 Oct 0502	ALERT: Electron 2MeV Integral Flux ≥1000pfu	05 Oct

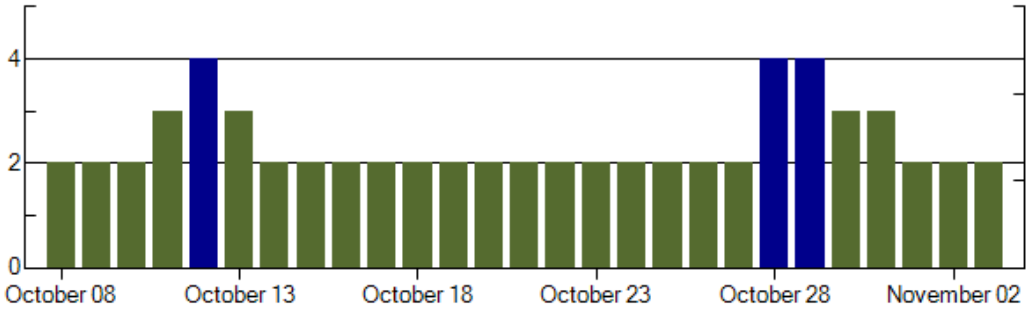
Twenty-seven Day Outlook



10.7 cm



Ap Index



Largest Daily Kp Index

Date	Radio Flux 10.7 cm	Planetary A Index	Largest Kp Index	Date	Radio Flux 10.7 cm	Planetary A Index	Largest Kp Index
08 Oct	67	5	2	22 Oct	67	5	2
09	67	5	2	23	67	5	2
10	67	5	2	24	67	5	2
11	67	10	3	25	67	5	2
12	67	15	4	26	67	5	2
13	67	10	3	27	67	5	2
14	67	5	2	28	67	15	4
15	67	7	2	29	67	12	4
16	67	5	2	30	67	10	3
17	67	5	2	31	67	10	3
18	67	5	2	01 Nov	67	5	2
19	67	5	2	02	67	5	2
20	67	5	2	03	67	5	2
21	67	5	2				

Energetic Events

Date	Time Begin	Time Max	Time ½ Max	X-ray Class	X-ray Integ Flux	Optical Information Imp/ Brtns	Optical Information Location Lat CMD	Optical Information Rgn #	Peak Radio Flux 245	Peak Radio Flux 2695	Sweep Freq Intensity II	Sweep Freq Intensity IV
No Events Observed												

Flare List

Date	Time Begin	Time Max	Time End	Optical X-ray Class.	Optical Imp / Brtns	Optical Location Lat CMD	Optical Rgn
29 Sep	***No Flares Observed***						
30 Sep	***No Flares Observed***						
01 Oct	***No Flares Observed***						
02 Oct	***No Flares Observed***						
03 Oct	***No Flares Observed***						
04 Oct	***No Flares Observed***						
05 Oct	***No Flares Observed***						

Region Summary

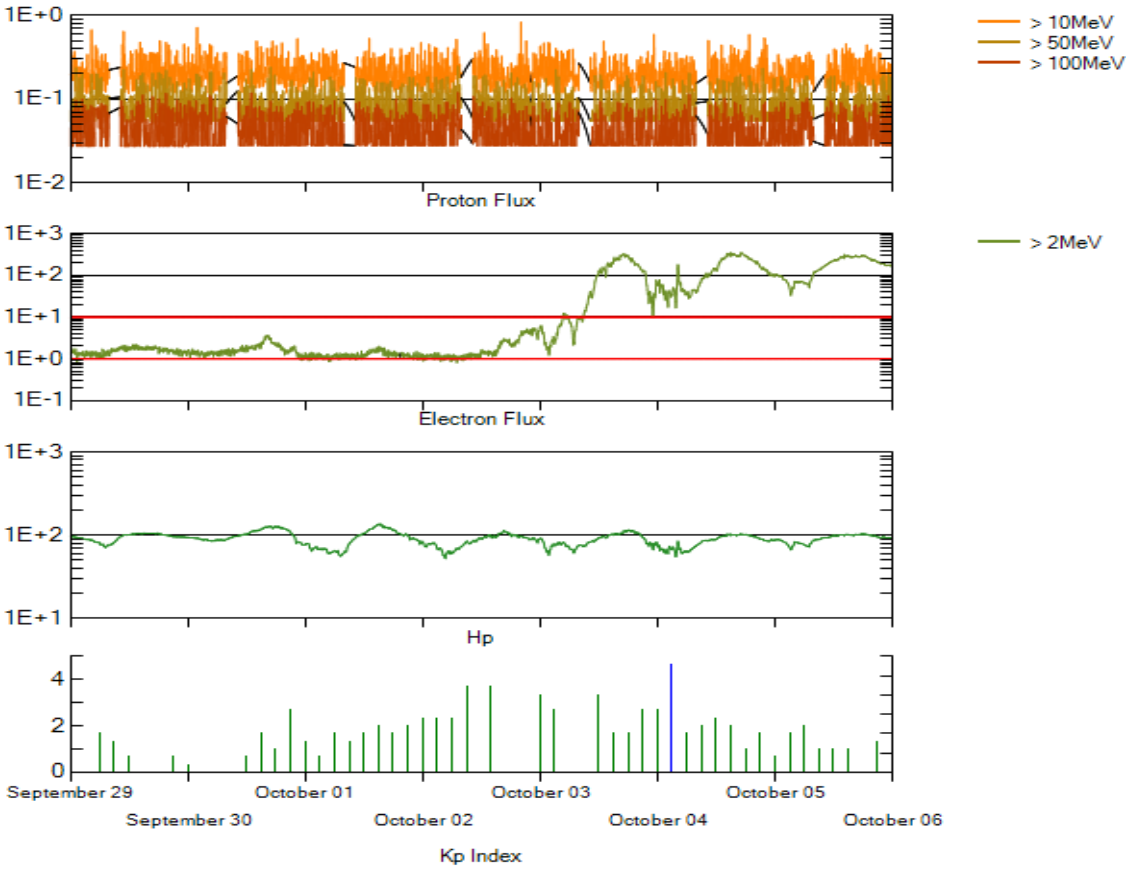
Date	Location (° Lat ° CMD)	Location Helio Lon	Sunspot Characteristics Area (10^{-6} hemi)	Sunspot Characteristics Extent (helio)	Sunspot Characteristics Spot Class	Sunspot Characteristics Spot Count	Sunspot Characteristics Mag Class	Flares X-ray C	Flares X-ray M	Flares X-ray X	Flares Optical S	Flares Optical 1	Flares Optical 2	Flares Optical 3	Flares Optical 4
	Region 1003														
04 Oct	S23E28	222	0010	01	Axx	002	A								
05 Oct	S23E15	222													
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 222

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

	Sunspot Numbers					Radio Flux		Geomagnetic	
	Observed values		Ratio	Smooth values		*Penticton	Smooth	Planetary	Smooth
Month	SEC	RI	RI/SEC	SEC	RI	10.7 cm	Value	Ap	Value
				2006					
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	5.9	3.6	71.2	69.6	9	7.6
March	15.9	9.3	0.58	5.3	3.3	72.9	69.5	10	7.4
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	
August	0.0	0.5	**			66.4		5	
September	1.5	1.1	0.73			67.1		5	

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.
**SEC sunspot number was less than RI value, so a ratio could not be done.



Weekly Geosynchronous Satellite Environment Summary
Week Beginning 29 September 2008

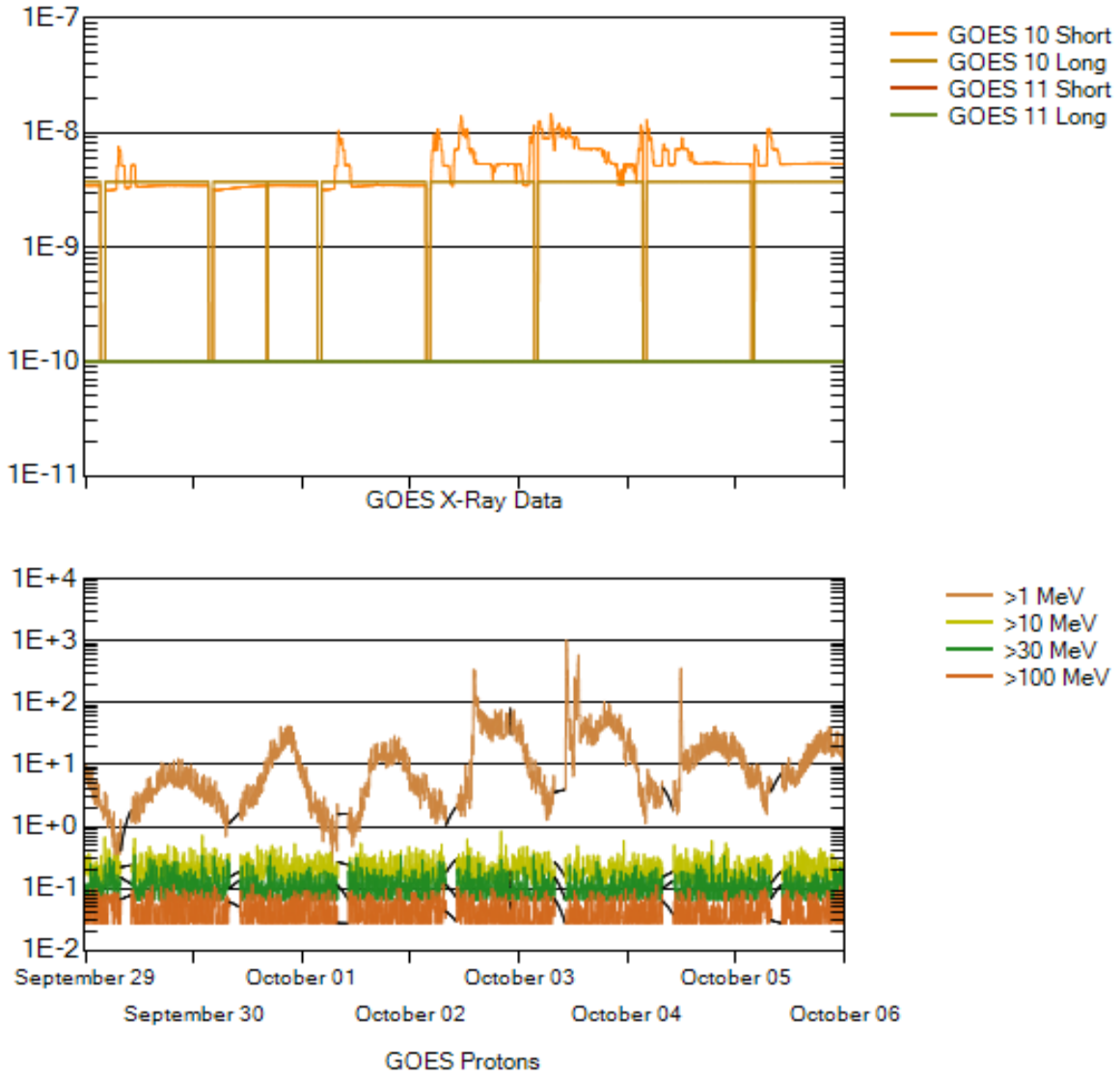
Protons plot contains the five-minute averaged integral proton flux (protons/cm^2 –sec –sr) as measured by GOES-11 (W135) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

Electrons plot contains the five-minute averaged integral electron flux (electrons/cm^2 –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.

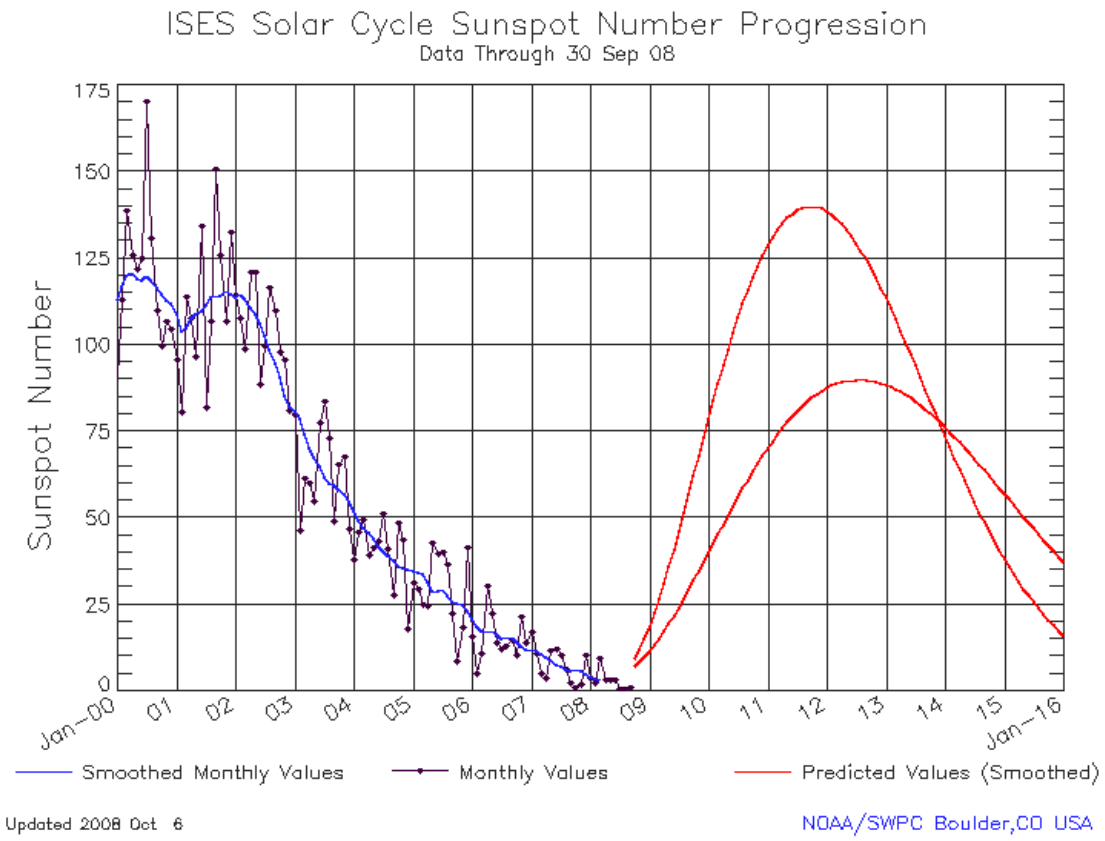
The data included here are those now available in real time at the SEC and are incomplete in that they do not include the full set of parameters and energy ranges known to cause satellite operating anomalies. The proton and electron fluxes and Kp are "global" parameters that are applicable to a first 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.

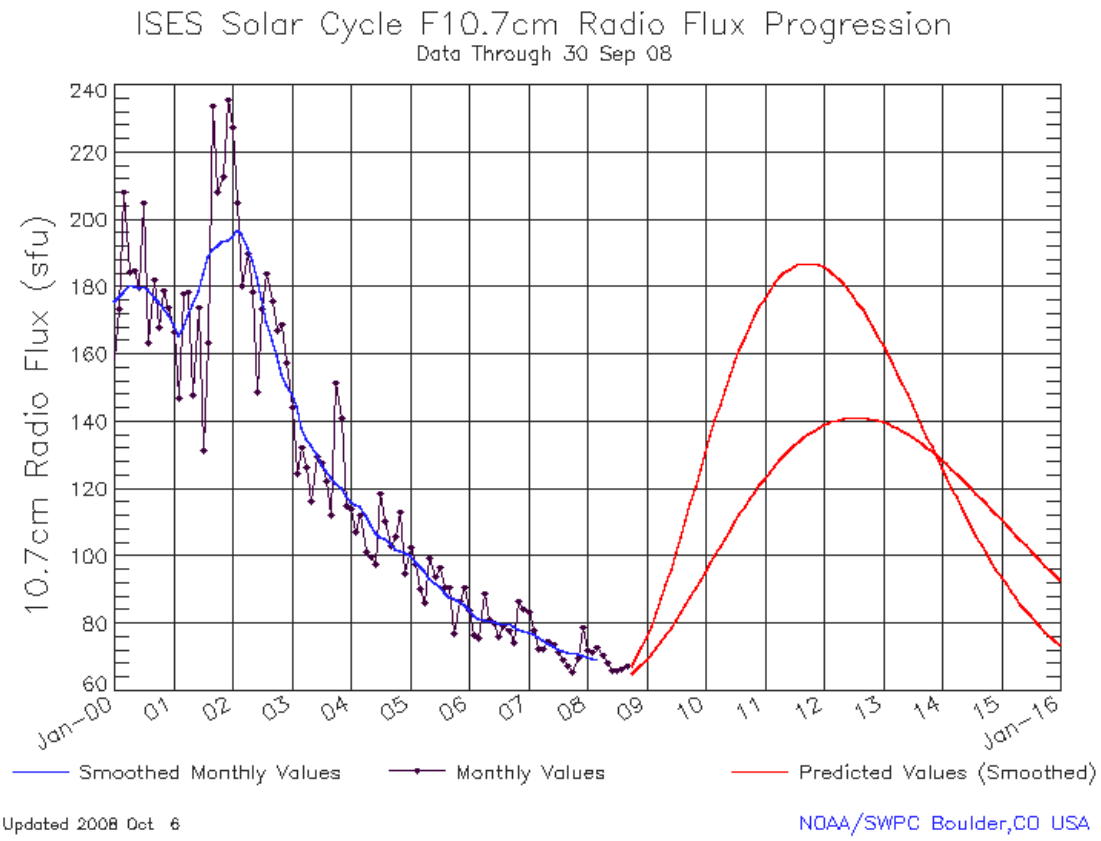
Proton plot contains the five-minute averaged integral proton flux (protons/cm^2 –sec-sr) as measured by GOES-11 (W135) for each of the energy thresholds: >1, >10, >30 and >100 MeV. P10 event threshold is 10 pfu (protons/cm^2-sec-sr) at greater than 10 MeV.



SEC Prediction of Smoothed Sunspot Number

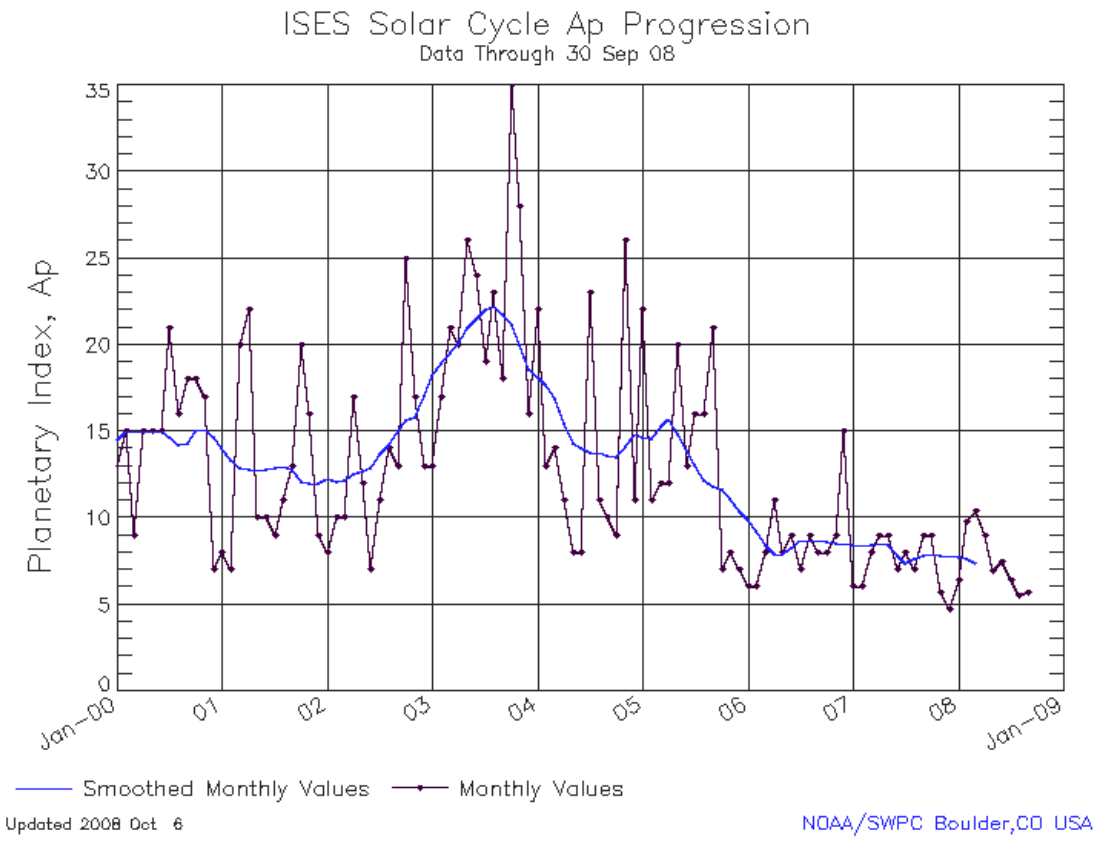
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Hi/Lo	Hi/Lo	Hi/Lo	Hi/Lo	Hi/Lo	Hi/Lo	Hi/Lo	Hi/Lo	Hi/Lo	Hi/Lo	Hi/Lo	Hi/Lo
2006	21	19	17	17	17	16	15	16	16	14	13	12
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)
2007	12	12	11	10	9	8	7	6	6	6	6	5
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)
2008	4	4	3	**4/3**	**4/4**	**5/4**	**6/5**	**7/5**	**9/6**	**11/7**	**13/8**	**16/10**
	(***)	(***)	(***)	(1)	(3)	(5)	(7)	(8)	(9)	(10)	(11)	(12)
2009	**20/11**	**24/14**	**28/16**	**31/17**	**36/20**	**41/22**	**46/24**	**52/27**	**57/29**	**62/32**	**68/35**	**73/37**
	(13)	(14)	(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*



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	70	**70/64**	**70/64**	**69/63**	**69/63**	**70/62**	**71/62**	**72/63**	**73/63**	**76/64**
	(***)	(***)	(***)	(1)	(3)	(5)	(7)	(9)	(11)	(13)	(15)	(17)
2009	**78/65**	**82/67**	**85/71**	**87/75**	**92/77**	**96/79**	**101/81**	**106/83**	**111/86**	**116/88**	**121/90**	**126/93**
	(19)	(21)	(22)	(23)	(23)	(23)	(23)	(23)	(23)	(23)	(23)	(23)
2010	**131/95**	**136/98**	**140/100**	**145/103**	**149/105**	**154/108**	**158/110**	**161/112**	**165/115**	**168/117**	**171/119**	**174/121**
	(23)	(23)	(23)	(23)	(23)	(23)	(23)	(23)	(23)	(23)	(23)	(23)
2011	**177/123**	**179/125**	**181/127**	**183/128**	**184/130**	**185/132**	**186/133**	**187/134**	**187/135**	**187/136**	**187/137**	**187/138**
	(23)	(23)	(23)	(23)	(23)	(23)	(23)	(23)	(23)	(23)	(23)	(23)
2012	**186/139**	**185/140**	**184/140**	**183/141**	**181/141**	**179/141**	**177/141**	**175/141**	**173/141**	**171/141**	**168/141**	**166/140**
	(23)	(23)	(23)	(23)	(23)	(23)	(23)	(23)	(23)	(23)	(23)	(23)
2013	**163/140**	**160/139**	**157/139**	**154/138**	**151/137**	**148/136**	**145/136**	**142/135**	**139/134**	**136/132**	**133/131**	**129/130**
	(23)	(23)	(23)	(23)	(23)	(23)	(23)	(23)	(23)	(23)	(23)	(23)
2014	**126/129**	**123/127**	**120/126**	**117/125**	**115/123**	**112/122**	**109/120**	**106/119**	**104/117**	**101/116**	**99/114**	**96/113**
	(23)	(23)	(23)	(23)	(23)	(23)	(23)	(23)	(23)	(23)	(23)	(23)
2015	**94/111**	**92/110**	**90/108**	**88/106**	**86/105**	**84/103**	**82/102**	**81/100**	**79/99**	**78/97**	**76/96**	**75/94**
	(23)	(23)	(23)	(23)	(23)	(23)	(23)	(23)	(23)	(23)	(23)	(23)


ISES Solar Cycle Ap Progression
Data Through 30 Sep 08
Planetary Index, Ap
35
30
25
20
15
10
5
0
Jan-00
01
02
03
04
05
06
07
08
Jan-09
Smoothed Monthly Values
Monthly Values
Updated 2008 Oct 6
NOAA/SWPC Boulder,CO USA

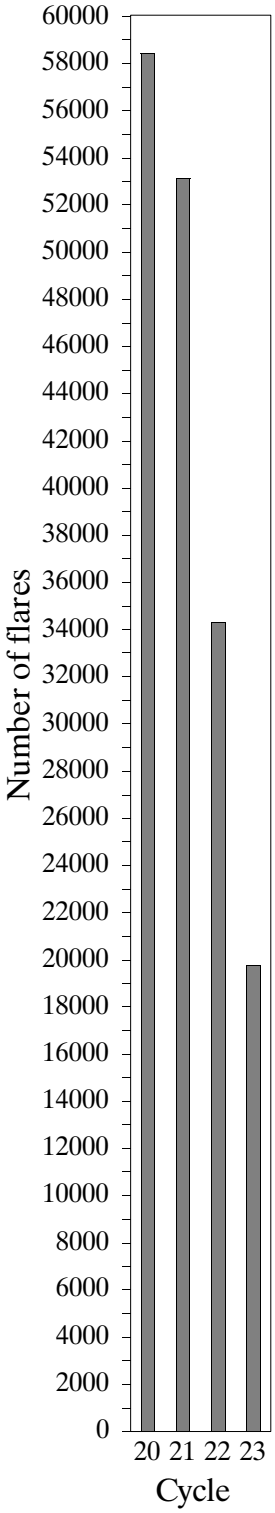
Optical Flares

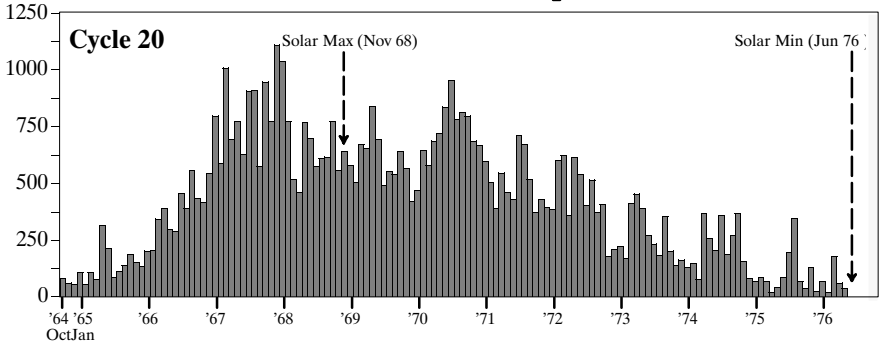
Space Environment Center

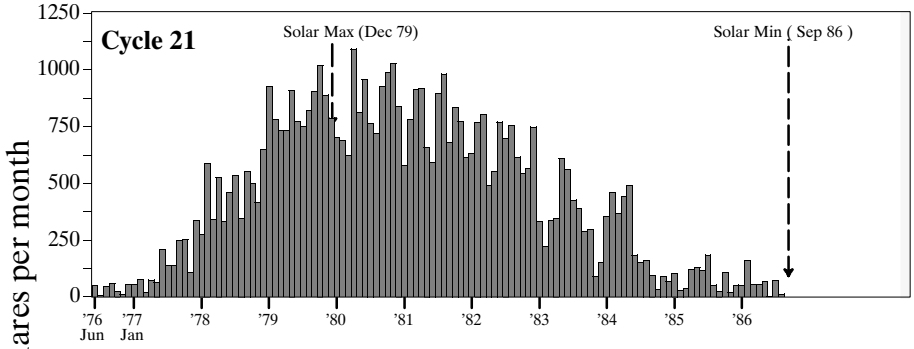
September 2008
(Month 144)

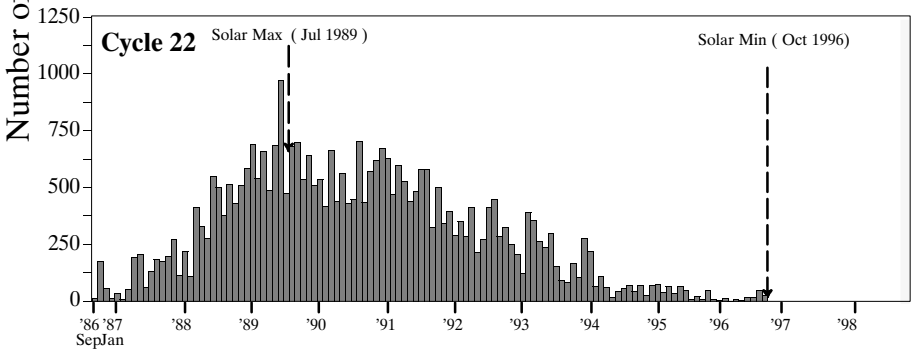
Preliminary data

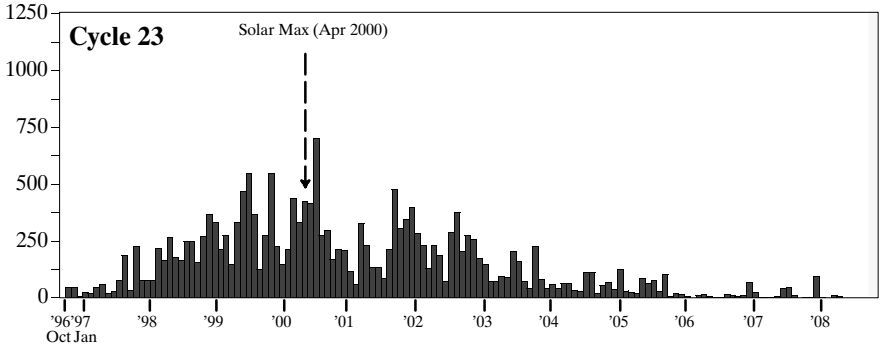
Comparison of Cycles
at current month in cycle











N.Cohen