

Solar activity was very low. No flares were observed. 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 moderate levels during 27 - 30 July. Fluxes decreased to normal levels during the rest of the period.

Geomagnetic field activity was at quiet levels during 27 - 30 July. Activity increased to unsettled levels early on 31 July, but returned to quiet levels by midday. Quiet levels persisted during the rest of the period. ACE solar wind data indicated the unsettled conditions on 31 July were due to a coronal hole high-speed stream (CH HSS). Velocities increased from 329 to 431 km/sec during 31 July. Interplanetary magnetic field activity associated with the CH HSS included increased Bt (maximum 7 nT at 31/0614 UTC) and intermittent periods of southward Bz (minimum -7 nT at 21/0606 UTC).

Space Weather Outlook **05 – 31 August 2009**

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 be at high levels during 21 - 22 August. Normal to moderate flux levels are expected during the rest of the period.

Geomagnetic field activity is expected to be at quiet to unsettled levels during 05 - 06 August due to a coronal hole high-speed stream (CH HSS). Field activity is expected to decrease to quiet levels during 07 - 08 August. Activity is expected to increase to unsettled levels during 09 - 10 August as another CH HSS disturbs the field. Quiet conditions are expected during 11 - 17 August. Field activity is expected to increase to active levels on 18 August with a chance for minor storm levels due to a recurrent CH HSS. Activity is expected to decrease to unsettled levels on 19 August as the CH HSS subsides. Mostly quiet conditions are expected during 20 - 31 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
27 July	68	0	0	<A1.0	0	0	0	0	0	0	0	0
28 July	69	0	0	<A1.0	0	0	0	0	0	0	0	0
29 July	68	0	0	<A1.0	0	0	0	0	0	0	0	0
30 July	68	0	0	<A1.0	0	0	0	0	0	0	0	0
31 July	69	0	0	<A1.0	0	0	0	0	0	0	0	0
01 August	68	0	0	<A1.0	0	0	0	0	0	0	0	0
02 August	68	0	0	<A1.0	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
	27 July	2.2e+06	1.9e+04	4.3e+03		5.4e+07
28 July	1.7e+06	2.0e+04	4.5e+03		3.8e+07	
29 July	2.3e+06	2.0e+04	4.5e+03		4.1e+07	
30 July	3.4e+06	2.0e+04	4.7e+03		4.6e+07	
31 July	2.4e+06	2.0e+04	4.6e+03		9.3e+06	
01 August	2.7e+06	2.0e+04	4.6e+03		2.8e+06	
02 August	3.7e+06	2.0e+04	4.4e+03		3.8e+06	

Daily Geomagnetic Data

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



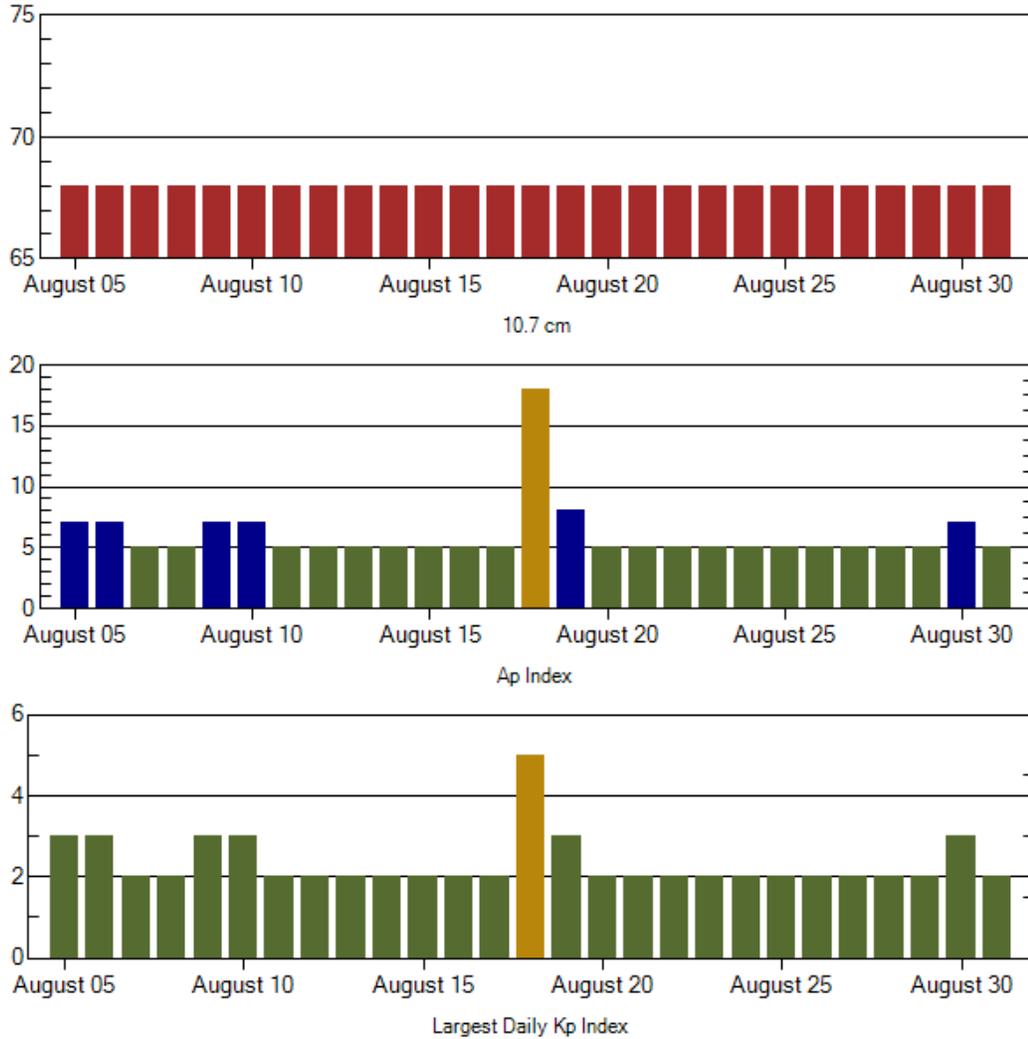
Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
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No Alerts Issued



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
05 Aug	68	7	3	19 Aug	68	8	3
06	68	7	3	20	68	5	2
07	68	5	2	21	68	5	2
08	68	5	2	22	68	5	2
09	68	7	3	23	68	5	2
10	68	7	3	24	68	5	2
11	68	5	2	25	68	5	2
12	68	5	2	26	68	5	2
13	68	5	2	27	68	5	2
14	68	5	2	28	68	5	2
15	68	5	2	29	68	5	2
16	68	5	2	30	68	7	3
17	68	5	2	31	68	5	2
18	68	18	5				



Energetic Events

Date	Time		X-ray		Optical Information			Peak		Sweep Freq
	Begin	Max	Max	Class	Flux	Imp/	Location	Radio Flux		Intensity
						Brtns	Lat CMD	245	2695	II
<i>No Events Observed</i>										

Flare List

Date	Time			X-ray Class.	Imp / Brtns	Optical		Rgn
	Begin	Max	End			Location	Lat CMD	
27 July	No Flares Observed							
28 July	No Flares Observed							
29 July	No Flares Observed							
30 July	No Flares Observed							
31 July	No Flares Observed							
01 August	No Flares Observed							
02 August	No Flares Observed							

Region Summary

Date	Location		Sunspot Characteristics				Flares								
	° Lat	° CMD	Helio Lon	Area (10 ⁻⁶ hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical			
									C	M	X	S	1	2	3
<i>No Active Regions</i>															



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

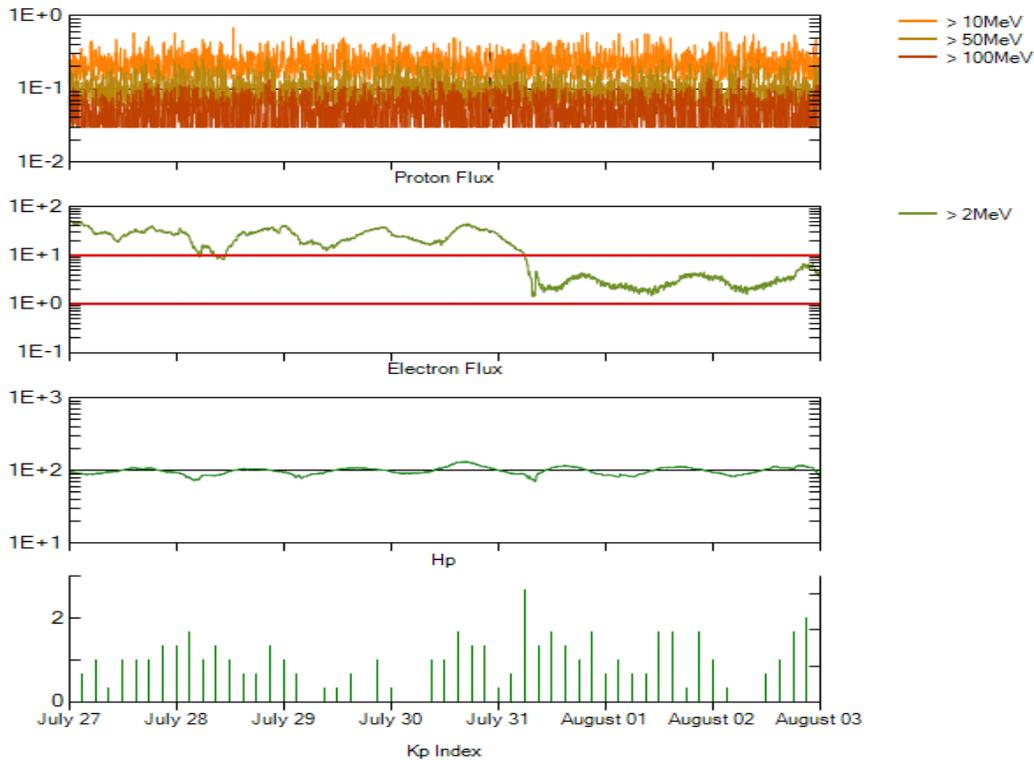
Month	Sunspot Numbers			Smooth values		Radio Flux		Geomagnetic	
	Observed SEC	values RI	Ratio RI/SEC	SEC	RI	*Penticton 10.7 cm	Smooth Value	Planetary Ap	Smooth Value
August	9.9	6.0	0.63	10.2	6.0	69.2	71.8	7	7.6
September	4.8	2.4	0.50	9.9	5.9	67.1	71.5	9	7.8
October	1.3	0.9	0.70	10.0	6.0	65.5	71.5	9	7.9
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	4.9	78.6	70.5	4	7.8
2008									
January	5.1	3.3	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	5.3	3.4	70.3	69.6	9	7.1
May	5.7	3.2	0.51	5.7	3.5	68.4	69.7	6	6.9
June	4.2	3.4	0.74	5.2	3.3	65.9	69.2	7	6.8
July	1.0	0.8	0.50	4.5	2.8	65.8	68.8	6	6.6
August	0.0	0.5	**	4.4	2.7	66.4	68.6	5	6.2
September	1.5	1.1	0.73	3.7	2.3	67.1	68.4	5	5.8
October	5.2	2.9	0.56	2.9	1.9	68.3	68.2	6	5.4
November	6.8	4.1	0.60	2.7	1.8	68.6	68.3	3	5.1
December	1.3	0.8	0.62	2.7	1.7	69.2	68.5	2	4.9
2009									
January	2.8	1.3	0.54	3.0	1.8	69.8	68.7	3	4.8
February	2.5	1.4	0.56			70.0		4	
March	0.7	0.7	1.00			69.2		4	
April	1.2	1.2	1.00			69.7		4	
May	3.9	2.9	0.74			70.6		4	
June	6.6	2.6	0.39			68.6		5	
July	5.0	3.5	0.70			68.3		5	

NOTE: All values are preliminary estimates except for RI Sunspot Numbers which are final values when available.

Cycle 23 started in May 1996 with an RI=8.0. Cycle 23 maximum was April 2000 with an RI=120.8.

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





*Weekly Geosynchronous Satellite Environment Summary
Week Beginning 27 July 2009*

GOES-11 designated Primary Electron Satellite and GOES-10 Secondary: December 1, 2008 the GOES-12 Electron sensor began experiencing periods of noise and sensor is unreliable.

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.

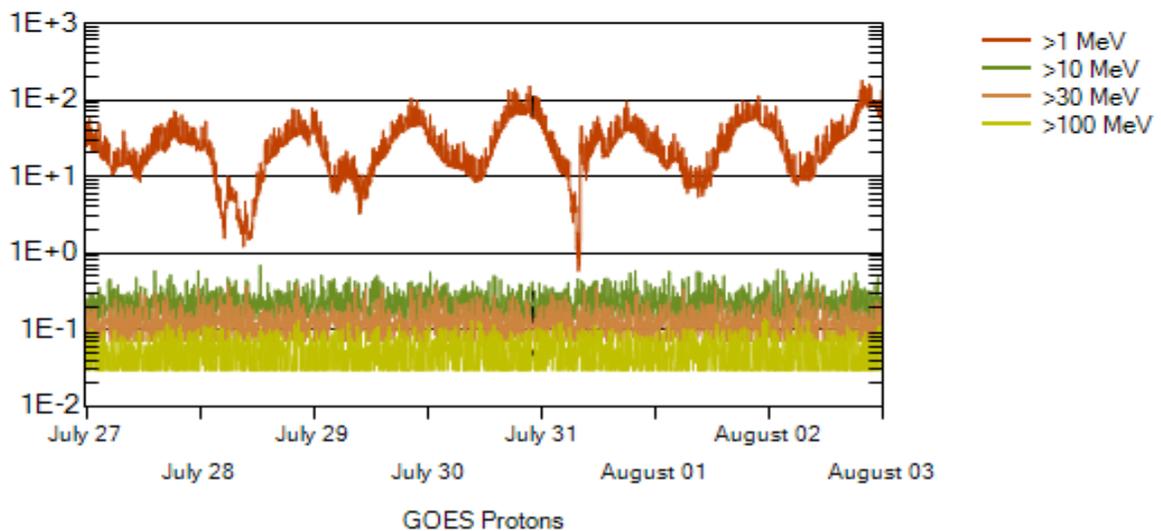
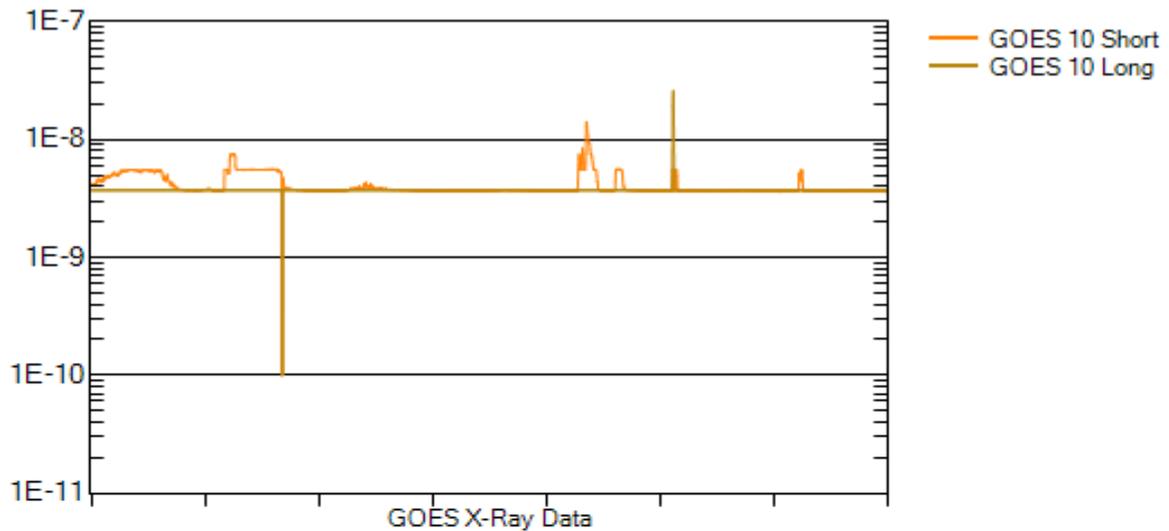
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV at GOES-11.

Hp plot contains the five minute averaged magnetic field H - component in nanoteslas (nT) as measured by GOES-11. 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 SWPC 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

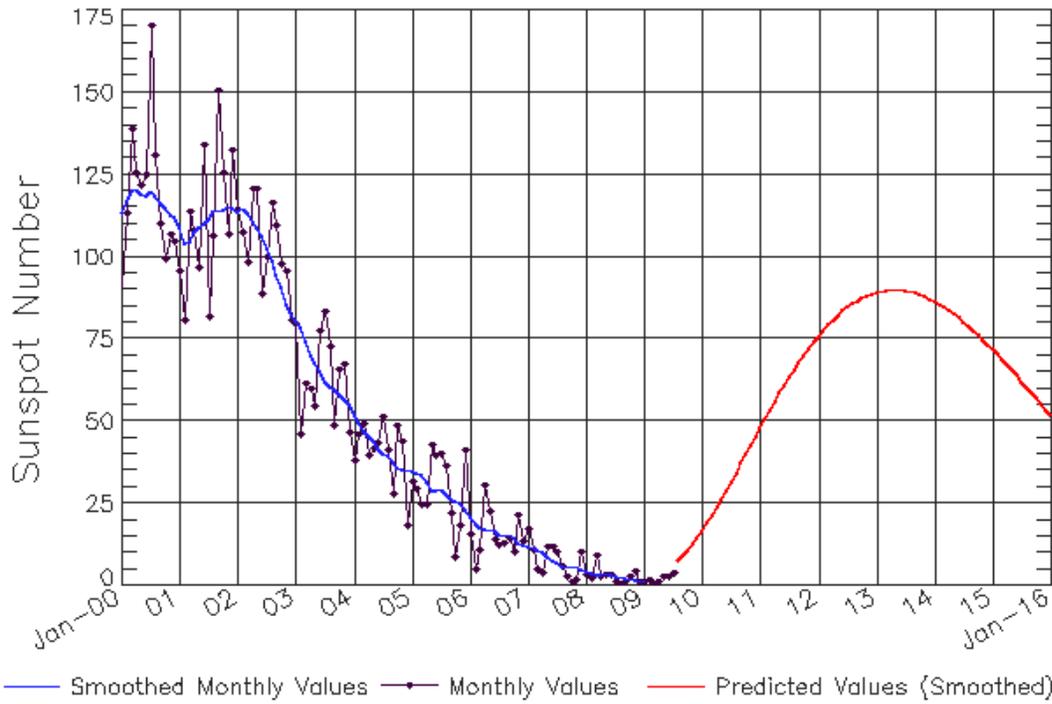
X-ray plot contains five-minute averaged x-ray flux (watts/m^2) as measured by GOES 10 (W060) and GOES 11 (W135) in two wavelength bands, .05 - .4 and .1 - .8 nm. The letters A, B, C, M and X refer to x-ray event levels for the .1 - .8 nm band.

Proton plot contains the five-minute averaged integral proton flux ($\text{protons/cm}^2\text{-sec-sr}$) as measured by GOES-11 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 Jul 09



Updated 2009 Aug 3

NOAA/SWPC Boulder, CO USA

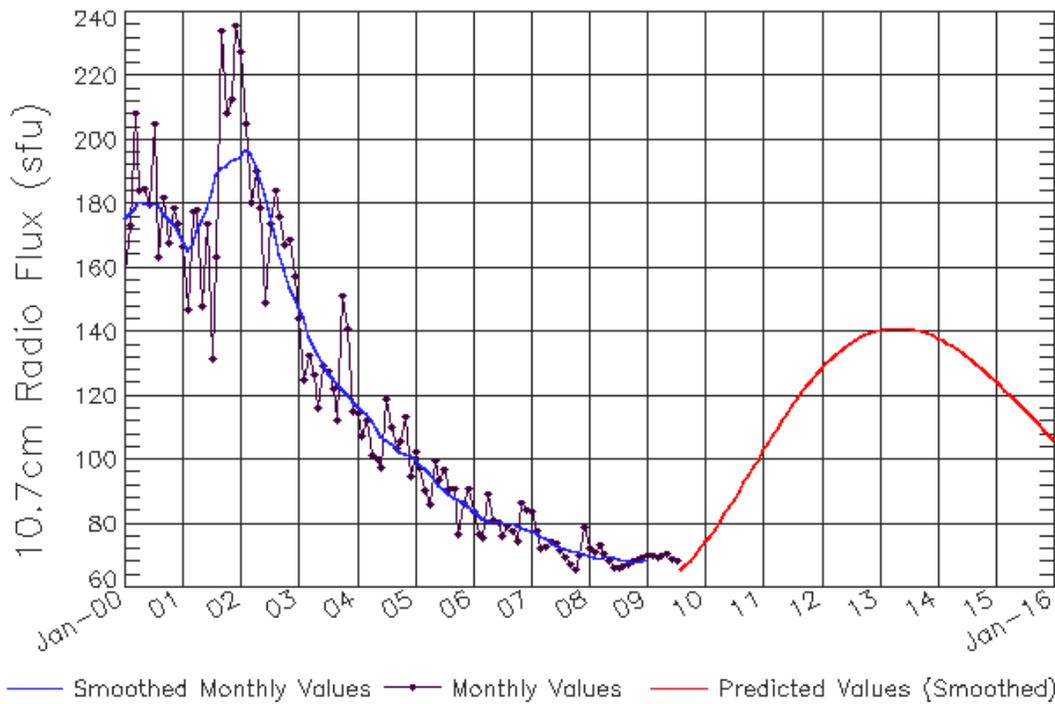
Smoothed Sunspot Number Prediction

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Hi/Lo											
2008	4 (***)	4 (***)	3 (***)	3 (***)	4 (***)	3 (***)	3 (***)	3 (***)	2 (***)	2 (***)	2 (***)	2 (***)
2009	2 (***)	2 (1)	3 (2)	3 (3)	4 (5)	5 (5)	6 (6)	8 (7)	9 (7)	11 (8)	13 (9)	15 (9)
2010	17 (10)	19 (10)	21 (10)	24 (10)	26 (10)	29 (10)	32 (10)	34 (10)	37 (10)	40 (10)	43 (10)	45 (10)
2011	48 (10)	51 (10)	53 (10)	56 (10)	59 (10)	61 (10)	63 (10)	66 (10)	68 (10)	70 (10)	72 (10)	74 (10)
2012	76 (10)	78 (10)	79 (10)	81 (10)	82 (10)	84 (10)	85 (10)	86 (10)	87 (10)	88 (10)	88 (10)	89 (10)
2013	89 (10)	90 (10)	90 (10)	90 (10)	90 (10)	90 (10)	90 (10)	89 (10)	89 (10)	89 (10)	88 (10)	87 (10)
2014	86 (10)	86 (10)	85 (10)	84 (10)	83 (10)	81 (10)	80 (10)	79 (10)	78 (10)	76 (10)	75 (10)	73 (10)
2015	72 (10)	70 (10)	69 (10)	67 (10)	65 (10)	64 (10)	62 (10)	60 (10)	59 (10)	57 (10)	55 (10)	54 (10)



ISES Solar Cycle F10.7cm Radio Flux Progression

Data Through Jul 09



Updated 2009 Aug 3

NOAA/SWPC Boulder, CO USA

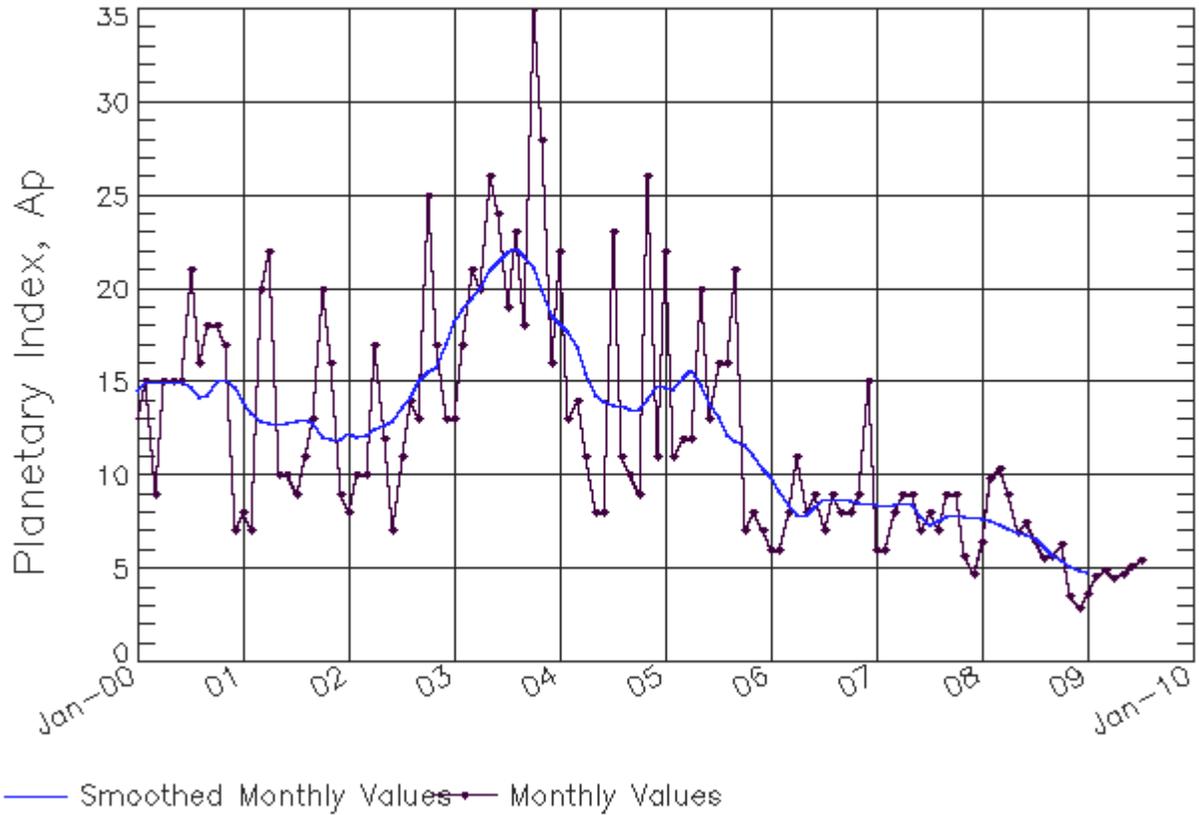
Smoothed F10.7cm Radio Flux Prediction

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Hi/Lo											
2008	70 (***)	70 (***)	70 (***)	70 (***)	70 (***)	69 (***)	69 (***)	69 (***)	68 (***)	68 (***)	68 (***)	69 (***)
2009	69 (***)	69 (1)	69 (1)	69 (2)	69 (3)	69 (4)	69 (4)	70 (5)	70 (6)	71 (7)	72 (8)	73 (8)
2010	75 (9)	76 (9)	78 (9)	81 (9)	83 (9)	85 (9)	88 (9)	90 (9)	93 (9)	95 (9)	98 (9)	100 (9)
2011	103 (9)	105 (9)	108 (9)	110 (9)	112 (9)	115 (9)	117 (9)	119 (9)	121 (9)	123 (9)	125 (9)	127 (9)
2012	128 (9)	130 (9)	132 (9)	133 (9)	134 (9)	135 (9)	136 (9)	137 (9)	138 (9)	139 (9)	140 (9)	140 (9)
2013	141 (9)	140 (9)	140 (9)	139 (9)	139 (9)							
2014	138 (9)	137 (9)	136 (9)	136 (9)	135 (9)	134 (9)	132 (9)	131 (9)	130 (9)	129 (9)	127 (9)	126 (9)
2015	125 (9)	123 (9)	122 (9)	120 (9)	119 (9)	117 (9)	116 (9)	114 (9)	113 (9)	111 (9)	110 (9)	108 (9)



ISES Solar Cycle Ap Progression

Data Through Jul 09



Updated 2009 Aug 3

NOAA/SWPC Boulder, CO USA

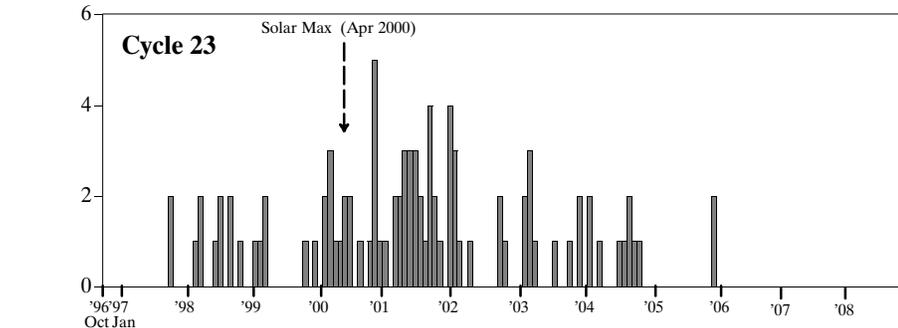
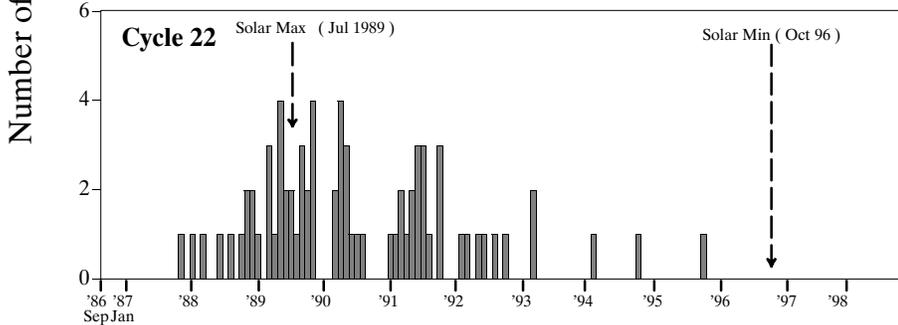
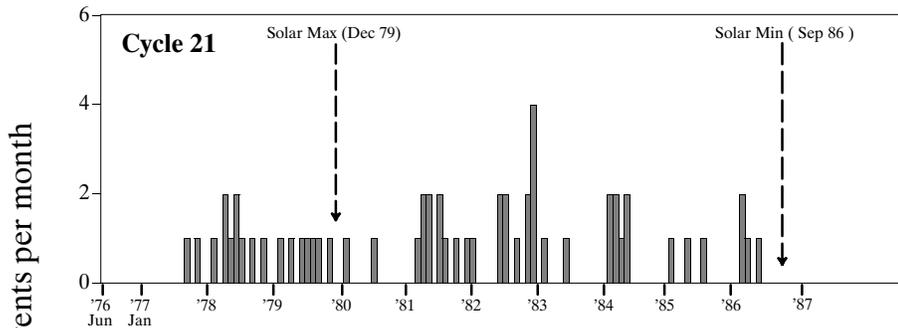
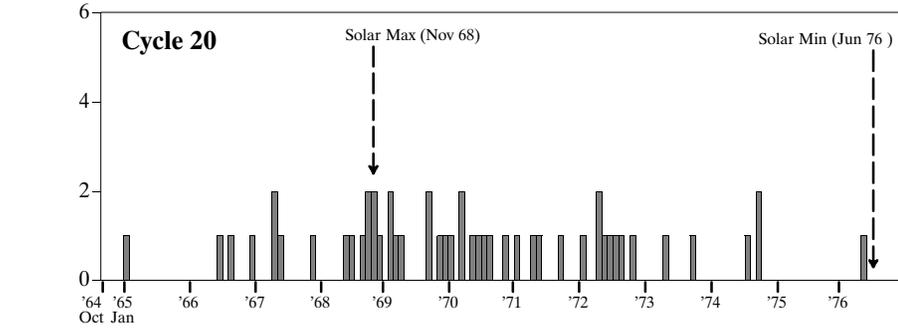
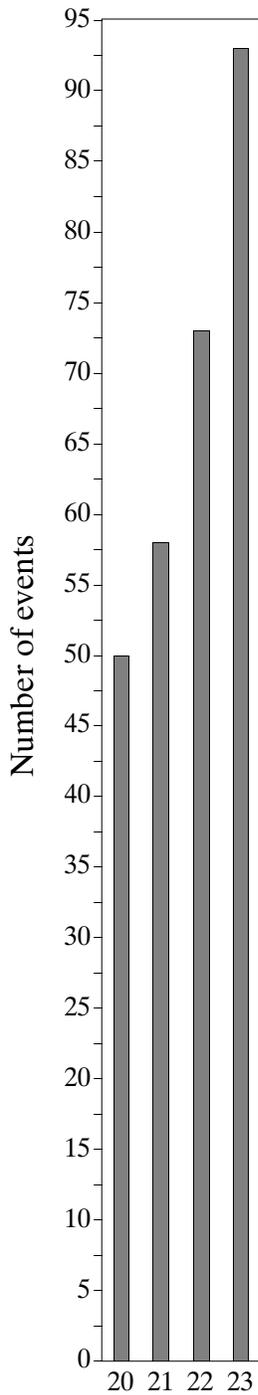




Proton Events



July 2009
(Month 154)



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/cm²*cm²*s*sr). 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.