

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 normal levels.

Geomagnetic field activity was at quiet levels on 02 February. A sudden impulse of 10 nT was observed at the Boulder magnetometer at 2014 UTC on 03 February, following a discontinuity in the solar wind signature observed at the ACE satellite. Quiet to minor storm conditions, with major storm levels at high latitudes, were observed from late on 03 February to early on 04 February. During this period, solar wind signatures from the ACE satellite were consistent with a possible CME. Activity decreased to quiet conditions for the rest of the period. During the summary period, ACE solar wind velocities ranged from a high of 405 km/s at 04/0050 UTC to a low of 298 km/s at 06/1750 UTC. The Bz component of the IMF ranged primarily between -3.5 nT and +3.8nT. However, between 03/1912 UTC and 05/0155 UTC, Bz varied between -10 nT and +10 nT.

Space Weather Outlook
11 February - 09 March 2009

Solar activity is expected to be at very low levels.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at normal levels.

The geomagnetic field is expected to be at quiet levels 11-14 February. Activity is expected to increase to quiet to unsettled levels, with isolated active conditions, on 15 February due to a recurrent coronal hole high-speed stream (CH HSS). Activity is expected to decrease to quiet levels during 16-21 February as the HSS subsides. Activity is expected to increase to quiet to unsettled levels, with isolated active levels, on 22 February due to another CH HSS. Isolated minor to major storm conditions are possible at high latitudes during this period. Activity is expected to decrease to mostly quiet levels from 23 February - 09 March.



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 February	69	0	0	<A1.0	0	0	0	0	0	0	0	0	0
03 February	69	0	0	<A1.0	0	0	0	0	0	0	0	0	0
04 February	70	0	0	<A1.0	0	0	0	0	0	0	0	0	0
05 February	70	0	0	<A1.0	0	0	0	0	0	0	0	0	0
06 February	70	0	0	<A1.0	0	0	0	0	0	0	0	0	0
07 February	71	0	0	<A1.0	0	0	0	0	0	0	0	0	0
08 February	71	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
	02 February	9.3E+5	2.0E+4	4.2E+3		1.8E+5
03 February	1.3E+6	2.0E+4	4.4E+3		2.3E+5	
04 February	1.2E+6	2.0E+4	4.4E+3		3.9E+4	
05 February	2.9E+5	2.1E+4	4.4E+3		8.6E+4	
06 February	2.6E+5	2.0E+4	4.4E+3		4.5E+5	
07 February	2.8E+5	1.9E+4	4.3E+3		6.6E+5	
08 February	2.4E+5	1.9E+4	4.6E+3		5.6E+5	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	02 February	0	0-0-0-0-0-0-0-0	0	0-0-0-0-0-0-0-0	2
03 February	2	0-0-0-0-0-0-2-2	1	0-0-0-0-0-0-1-2	4	0-0-0-0-0-0-1-3
04 February	10	2-1-2-4-3-2-2-1	36	2-0-2-6-6-6-4-2	16	4-1-2-4-3-3-4-2
05 February	6	4-2-1-1-2-0-0-1	4	2-1-1-3-1-0-0-0	7	4-1-1-1-1-1-0-2
06 February	1	2-0-0-0-0-0-0-0	0	1-0-0-0-0-0-0-0	2	1-0-0-0-0-0-1-1
07 February	1	0-2-0-0-0-0-0-0	1	0-0-1-0-1-1-0-0	3	1-2-0-0-1-1-1-1
08 February	0	0-0-0-0-0-0-0-0	0	0-0-0-1-0-0-0-0	4	0-0-0-0-1-2-2-1

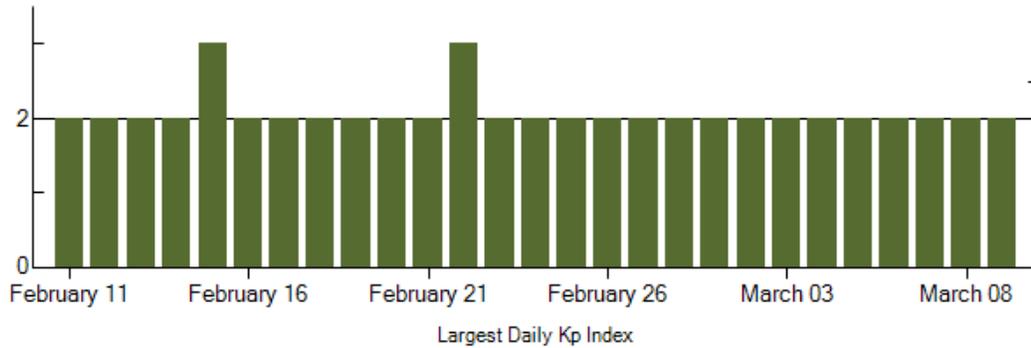
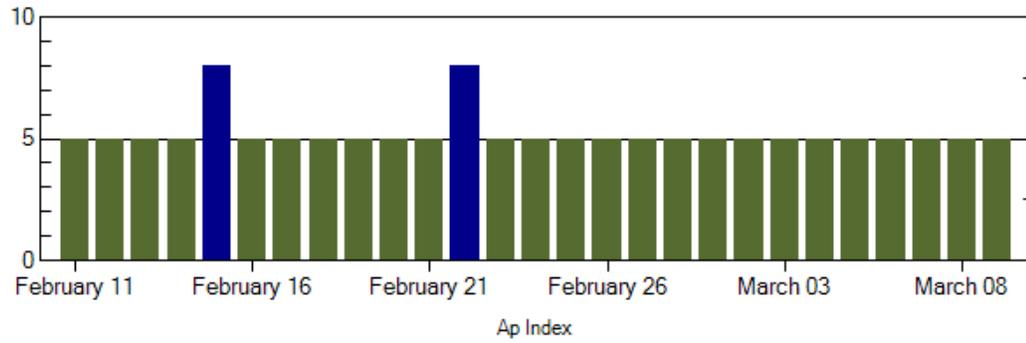
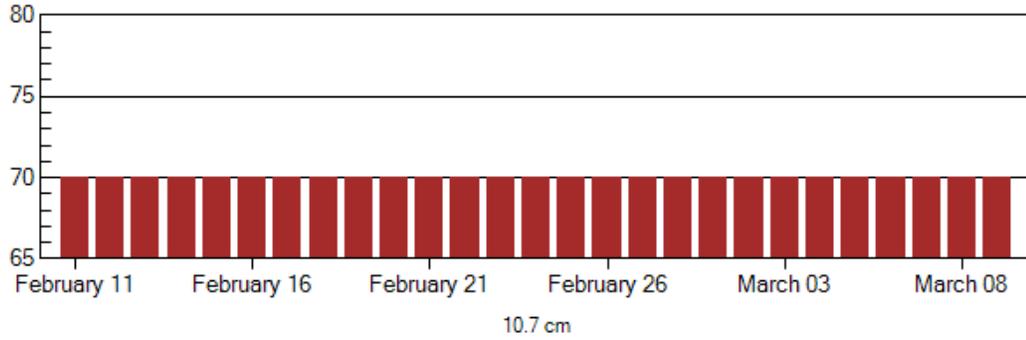


Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
03 Feb 2027	SUMMARY: Geomagnetic Sudden Impulse	03 Feb 2014
04 Feb 1049	ALERT: Geomagnetic K = 4	04 Feb 1048
04 Feb 1143	ALERT: Geomagnetic K = 5	04 Feb 1142
04 Feb 1427	WARNING: Geomagnetic K = 4	04 Feb 1427 - 2359
05 Feb 0204	ALERT: Geomagnetic K = 4	05 Feb 0202
08 Feb 0007	1-245 MHZ Radio Burst	07 Feb



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 Feb	70	5	2	25 Feb	70	5	2
12	70	5	2	26	70	5	2
13	70	5	2	27	70	5	2
14	70	5	2	28	70	5	2
15	70	8	3	01 Mar	70	5	2
16	70	5	2	02	70	5	2
17	70	5	2	03	70	5	2
18	70	5	2	04	70	5	2
19	70	5	2	05	70	5	2
20	70	5	2	06	70	5	2
21	70	5	2	07	70	5	2
22	70	8	3	08	70	5	2
23	70	5	2	09	70	5	2
24	70	5	2				



Energetic Events

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

No Events Observed

Flare List

Date	Time			X-ray Class.	Imp / Brtns	Optical Location Lat CMD	Rgn
	Begin	Max	End				
02 Feb	No Flares Observed						
03 Feb	No Flares Observed						
04 Feb	No Flares Observed						
05 Feb	No Flares Observed						
06 Feb	No Flares Observed						
07 Feb	No Flares Observed						
08 Feb	No Flares Observed						

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

No active regions.



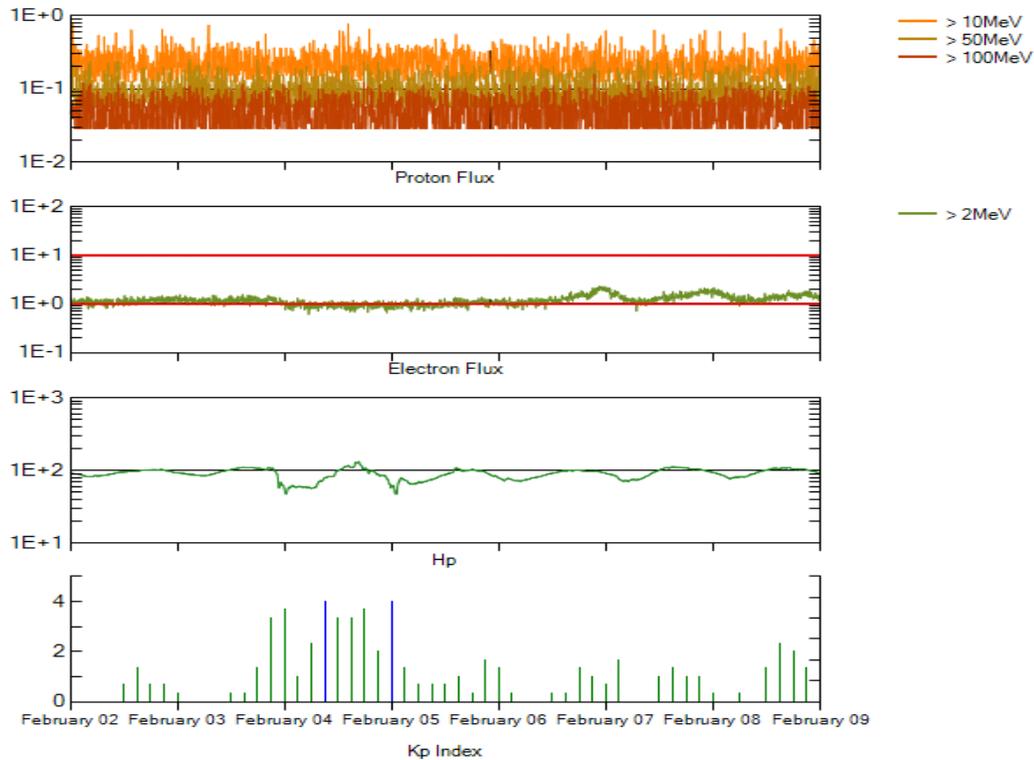
Recent Solar Indices (preliminary)
Of the observed monthly mean values

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
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	5.3	3.3	70.3	69.6	9	7.1
May	5.7	2.9	0.51	5.7	3.5	68.4	69.7	6	6.9
June	4.2	3.1	0.74	5.2	3.2	65.9	69.2	7	6.8
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	
October	5.2	2.9	0.56			68.3		6	
November	6.8	4.1	0.60			68.6		3	
December	1.3	0.8	0.62			69.2		2	

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 02 February 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.

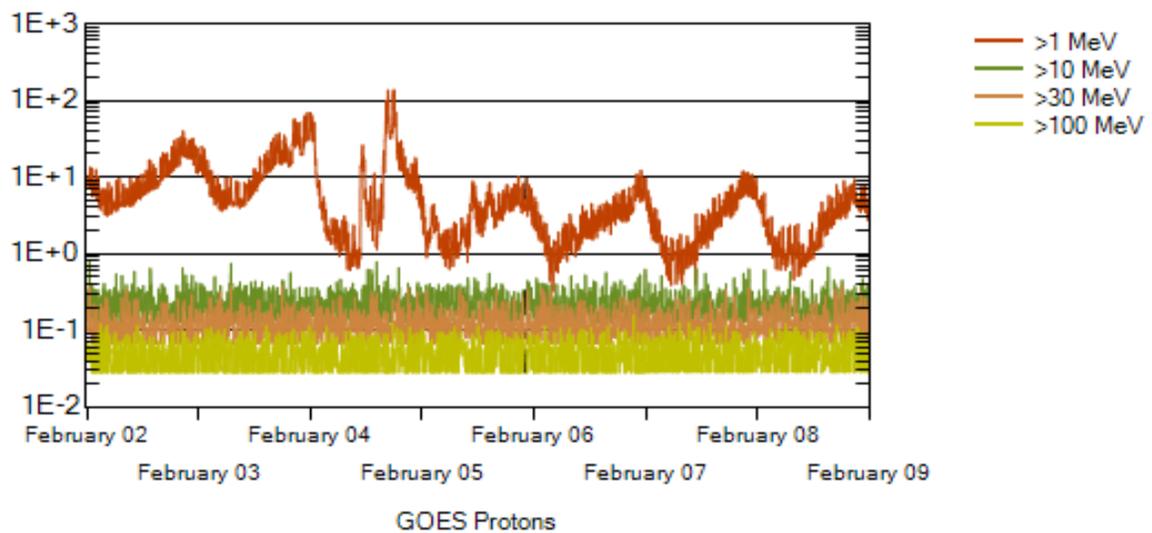
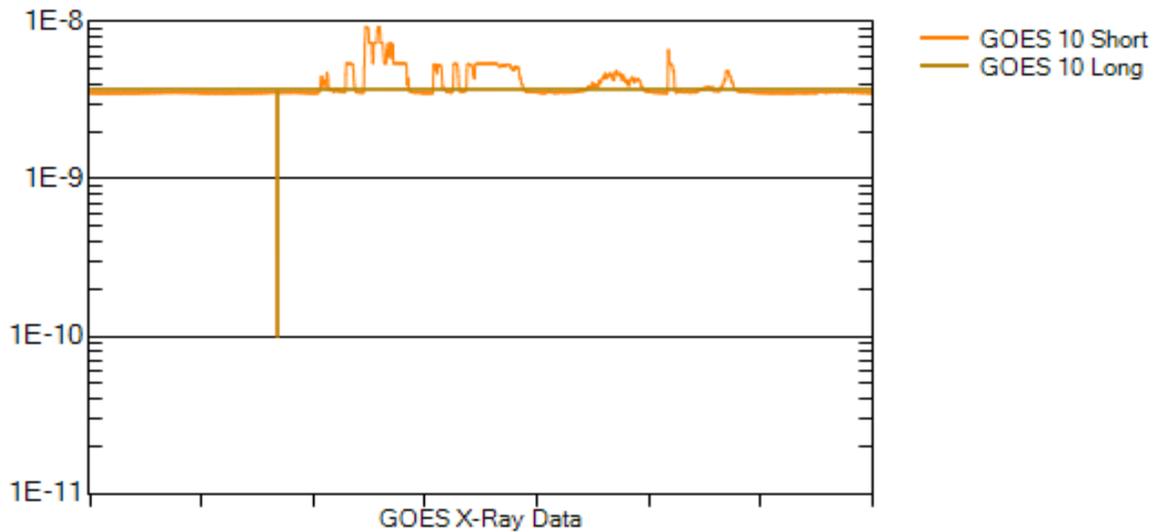
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV at GOES-11 (W135).

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

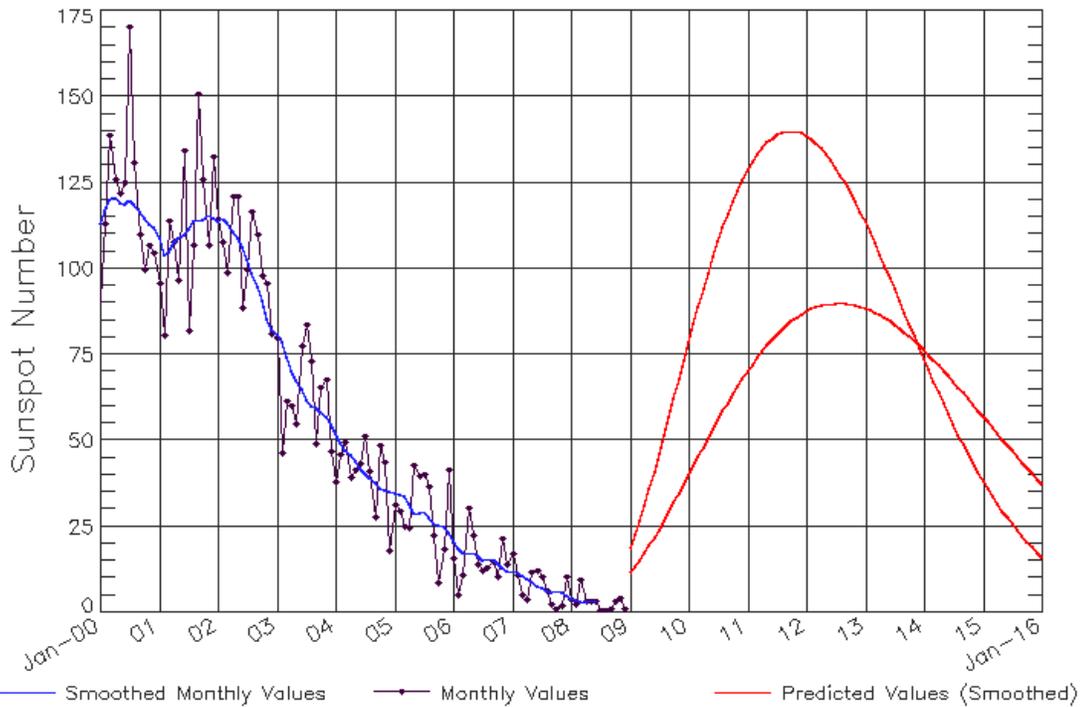
X-ray plot contains five-minute averaged x-ray flux (watts/m^2) as measured by GOES 10 (W060) and GOES 11 (W135) in two wavelength bands, .05 - .4 and .1 - .8 nm. The letters A, B, C, M and X refer to x-ray event levels for the .1 - .8 nm band.

Proton plot contains the five-minute averaged integral proton flux ($\text{protons/cm}^2\text{-sec-sr}$) as measured by GOES-11 (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 Dec 08



Updated 2009 Jan 3

NOAA/SWPC Boulder, CO USA

SEC Prediction of Smoothed Sunspot Number

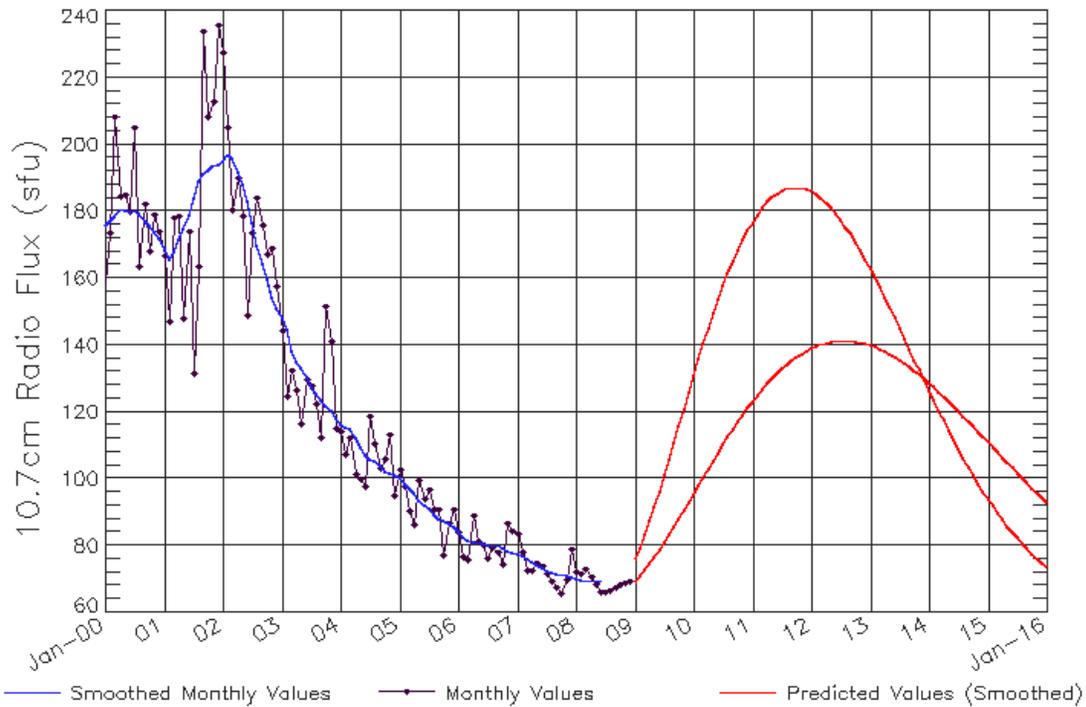
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Hi/Lo											
2006	21 (***)	19 (***)	17 (***)	17 (***)	17 (***)	16 (***)	15 (***)	16 (***)	16 (***)	14 (***)	13 (***)	12 (***)
2007	12 (***)	12 (***)	11 (***)	10 (***)	9 (***)	8 (***)	7 (***)	6 (***)	6 (***)	6 (***)	6 (***)	5 (***)
2008	4 (***)	4 (***)	3 (***)	3 (***)	4 (***)	3 (***)	3/3 (1)	5/4 (3)	7/5 (5)	8/5 (7)	11/7 (8)	14/8 (9)
2009	17/10 (10)	21/12 (11)	26/14 (12)	31/17 (13)	36/19 (14)	42/22 (15)	46/24 (15)	52/27 (15)	57/29 (15)	62/32 (15)	68/35 (15)	73/37 (15)
2010	79/40 (15)	84/43 (15)	89/45 (15)	94/48 (15)	99/51 (15)	103/53 (15)	108/56 (15)	112/59 (15)	116/61 (15)	119/63 (15)	123/66 (15)	126/68 (15)
2011	129/70 (15)	131/72 (15)	133/74 (15)	135/76 (15)	137/78 (15)	138/79 (15)	139/81 (15)	140/82 (15)	140/84 (15)	140/85 (15)	140/86 (15)	139/87 (15)
2012	139/88 (15)	138/88 (15)	136/89 (15)	135/89 (15)	133/90 (15)	131/90 (15)	129/90 (15)	127/90 (15)	125/90 (15)	122/90 (15)	119/89 (15)	116/89 (15)
2013	114/89 (15)	110/88 (15)	107/87 (15)	104/86 (15)	101/86 (15)	97/85 (15)	94/84 (15)	91/83 (15)	87/81 (15)	84/80 (15)	80/79 (15)	77/78 (15)
2014	74/76 (15)	70/75 (15)	67/73 (15)	64/72 (15)	61/70 (15)	58/69 (15)	55/67 (15)	52/65 (15)	49/64 (15)	46/62 (15)	44/60 (15)	41/59 (15)
2015	38/57 (15)	36/55 (15)	34/54 (15)	32/52 (15)	30/50 (15)	28/49 (15)	26/47 (15)	24/45 (15)	22/44 (15)	21/42 (15)	19/40 (15)	18/39 (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 Dec 08



Updated 2009 Jan 3

NOAA/SWPC Boulder, CO USA

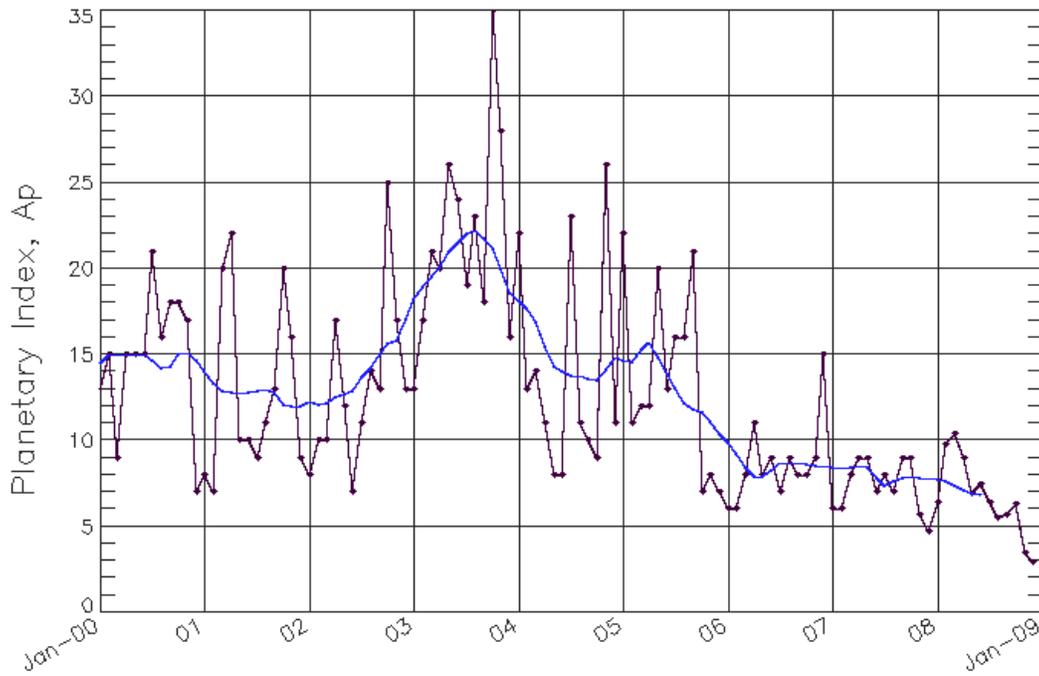
SEC Prediction of Smoothed F10.7cm Radio Flux

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Hi/Lo											
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 (***)	70 (***)	69 (***)	69/63 (1)	70/63 (3)	70/63 (5)	71/63 (7)	73/64 (9)	75/64 (11)
2009	78/66 (13)	81/67 (15)	85/68 (17)	89/70 (19)	93/72 (21)	97/76 (22)	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 Dec 08



— Smoothed Monthly Values — Monthly Values

Updated 2009 Jan 3

NOAA/SWPC Boulder, CO USA

