

Space Weather Highlights
30 June – 06 July 2008

SEC PRF 1714
08 July 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 was at background levels.

Geomagnetic field activity began the period at quiet to unsettled levels on 30 June with solar wind speed values around 500 km/s at the ACE spacecraft. As solar wind speeds declined to just above 300 km/s (1200 UTC on 04 July) geomagnetic field activity decreased to quiet levels on 01 July through midday on 05 July. A solar sector boundary crossing was observed around 1200 UTC on 04 July. Midday on 05 July geomagnetic activity increased to quiet to unsettled levels due to a recurrent solar wind speed enhancement. Solar wind speed values reached a maximum of approximately 440 km/s at 0000 UTC on 06 July and the interplanetary magnetic field varying between +/- 8 nT. Wind speeds ended the period at around 350 km/s with the geomagnetic field returning to quiet levels on 06 July.

Space Weather Outlook
09 July – 04 August 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 13 – 16 July and again 19 – 21 July.

Geomagnetic field activity is expected to be at quiet levels on 09 July. A co-rotating interaction region is expected to influence the geomagnetic field on 10 July increasing activity levels to quiet to unsettled conditions. A recurrent coronal hole high speed stream is expected to become geoeffective beginning 11 July and persist through 13 July. During this timeframe the geomagnetic field is expected to be at unsettled to active levels with a chance for minor storm periods possible on 12 July. On 14 to 17 July activity levels are expected to decrease to quiet to unsettled levels as the coronal hole high speed stream rotates out of a geoeffective position. The geomagnetic field is expected to be at quiet levels 18 to 21 July. Another recurrent coronal hole high speed stream is expected 22 to 23 July increasing activity levels to quiet to unsettled levels with a chance for isolated active conditions possible on 23 July. On 24 July activity levels are expected to be at quiet to unsettled levels as the coronal hole high speed stream rotates out of a geoeffective position. Mostly quiet levels are expected 25 July through 04 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
30 June	67	0	0	<A1.0	0	0	0	0	0	0	0	0
01 July	66	0	0	<A1.0	0	0	0	0	0	0	0	0
02 July	66	0	0	<A1.0	0	0	0	0	0	0	0	0
03 July	66	0	0	<A1.0	0	0	0	0	0	0	0	0
04 July	65	0	0	<A1.0	0	0	0	0	0	0	0	0
05 July	66	0	0	<A1.0	0	0	0	0	0	0	0	0
06 July	66	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
	30 June	5.9E+5	1.8E+4	4.0E+3		1.8E+7
01 July	7.2E+5	1.7E+4	4.1E+3		3.1E+7	
02 July	8.5E+5	1.7E+4	4.0E+3		3.2E+7	
03 July	1.4E+6	1.8E+4	3.8E+3		3.8E+7	
04 July	1.8E+6	1.9E+4	4.2E+3		2.7E+7	
05 July	1.4E+6	1.8E+4	4.0E+3		6.6E+6	
06 July	8.3E+5	1.7E+4	4.3E+3		4.2E+6	

Daily Geomagnetic Data

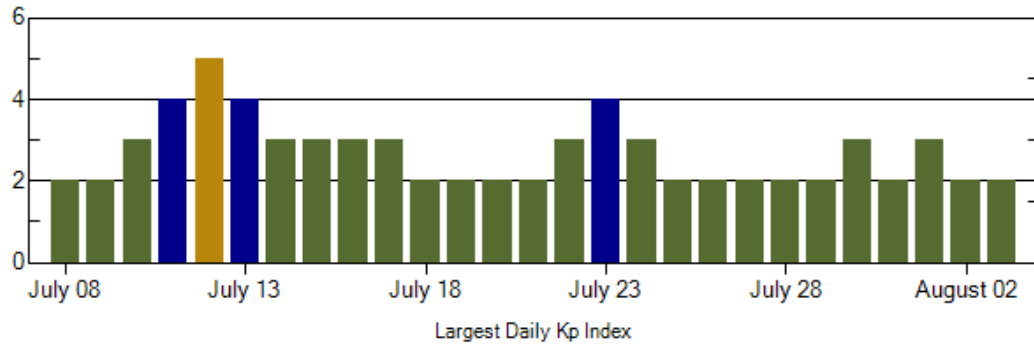
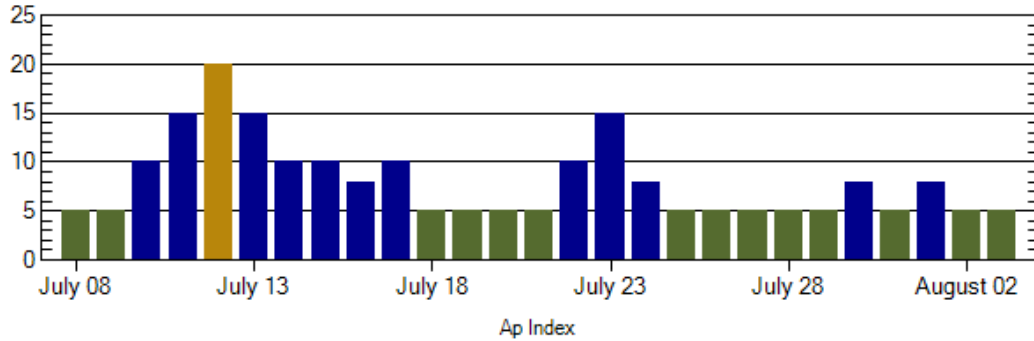
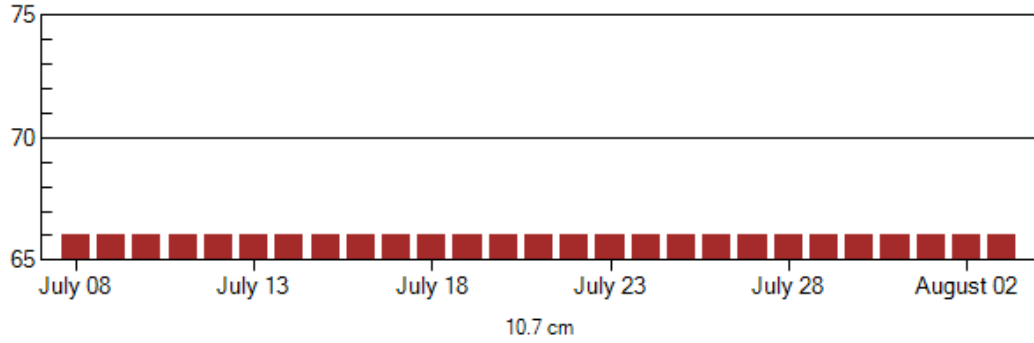
Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	30 June	5	1-2-2-1-1-1-2-1	4	1-2-2-0-2-1-1-1	6
01 July	4	2-1-2-1-2-0-0-1	7	2-1-2-2-4-1-0-0	5	2-2-2-1-2-1-0-2
02 July	1	1-1-0-0-0-0-0-0	1	1-1-0-0-0-0-1-0	3	2-1-0-0-1-0-1-1
03 July	3	1-1-0-0-1-2-1-1	1	1-1-0-0-0-0-0-0	4	1-1-0-0-1-2-1-1
04 July	3	0-1-0-0-1-2-2-1	2	0-1-0-0-1-2-1-1	4	1-1-0-1-2-2-1-2
05 July	7	2-1-0-2-3-2-2-2	14	2-2-0-5-4-2-2-1	7	2-1-0-2-2-2-2-2
06 July	5	2-2-2-0-1-1-2-1	3	2-1-2-0-1-0-1-0	4	2-1-2-0-1-1-1-1

Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
No Alerts or Warnings 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
09 July	66	5	2	23 July	66	15	4
10	66	10	3	24	66	8	3
11	66	15	4	25	66	5	2
12	66	20	5	26	66	5	2
13	66	15	4	27	66	5	2
14	66	10	3	28	66	5	2
15	66	10	3	29	66	5	2
16	66	8	3	30	66	8	3
17	66	10	3	31	66	5	2
18	66	5	2	01 August	66	8	3
19	66	5	2	02	66	5	2
20	66	5	2	03	66	5	2
21	66	5	2	04	66	5	2
22	66	10	3				



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	
30 Jun	<i>No Flares Observed</i>						
01 Jul	<i>No Flares Observed</i>						
02 Jul	<i>No Flares Observed</i>						
03 Jul	<i>No Flares Observed</i>						
04 Jul	<i>No Flares Observed</i>						
05 Jul	<i>No Flares Observed</i>						
06 Jul	<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 Regions Reported



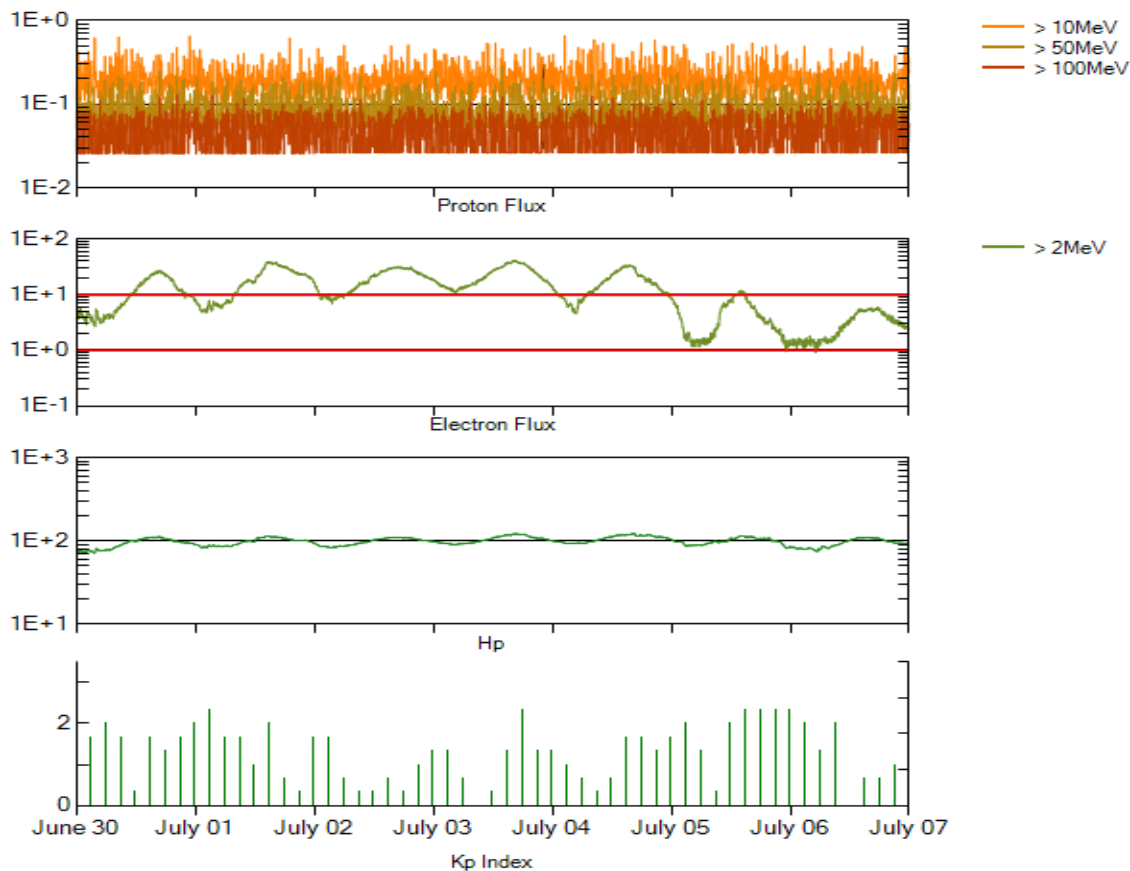
Recent Solar Indices (preliminary)
Of the observed monthly mean values

Month	Sunspot Numbers			Radio Flux		Geomagnetic			
	Observed values SEC	Ratio RI	Ratio RI/SEC	Smooth values SEC	Smooth values RI	*Penticton 10.7 cm	Smooth Value	Planetary Ap	Smooth Value
2006									
July	22.6	12.2	0.54	27.2	15.3	75.8	80.3	7	8.7
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			72.1		6	
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	

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 30 June 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.

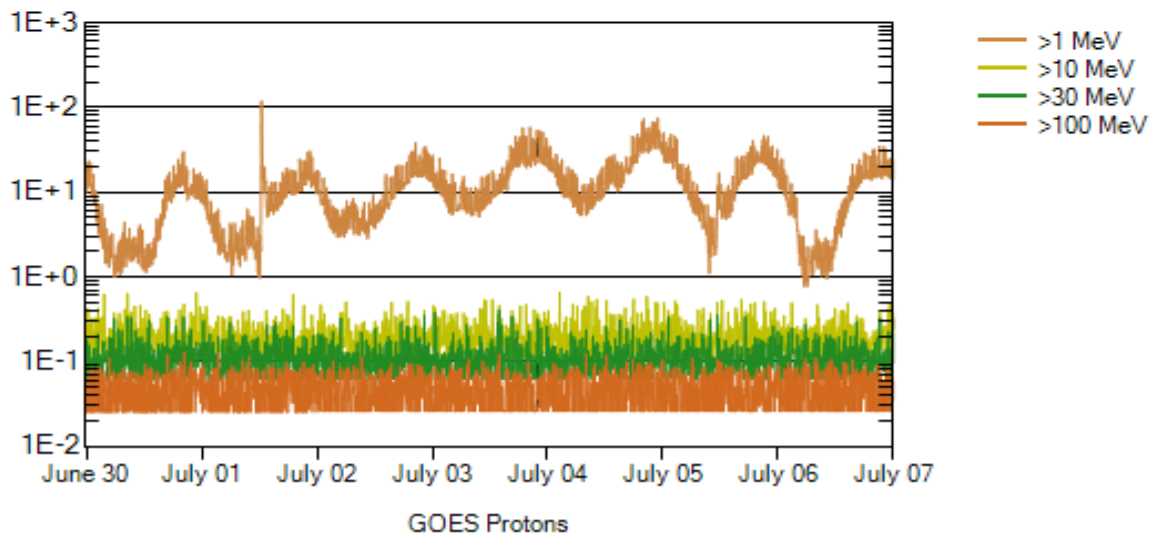
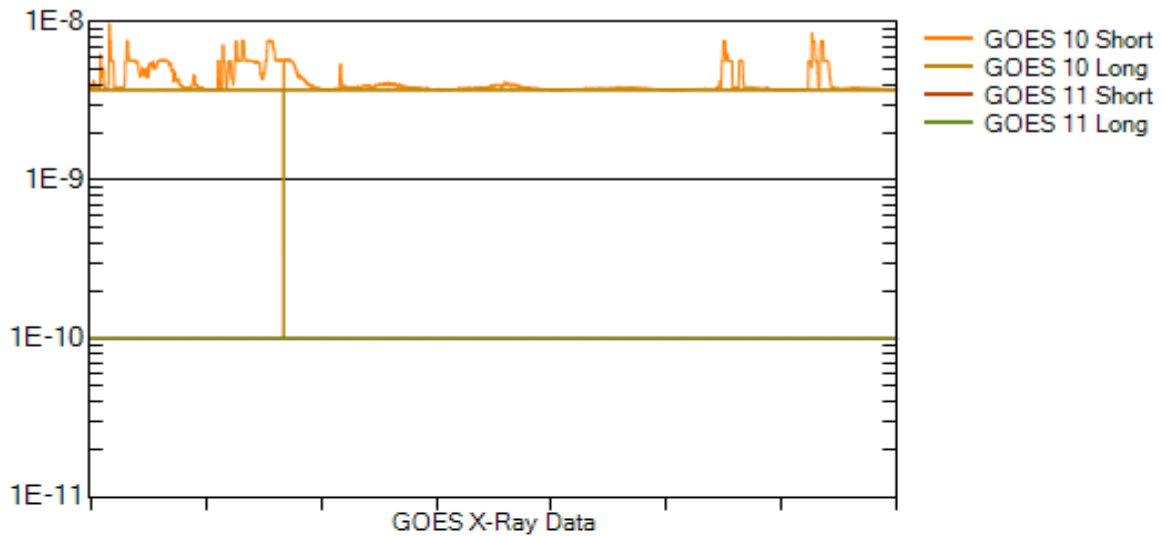
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV at GOES-12 (W075).

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

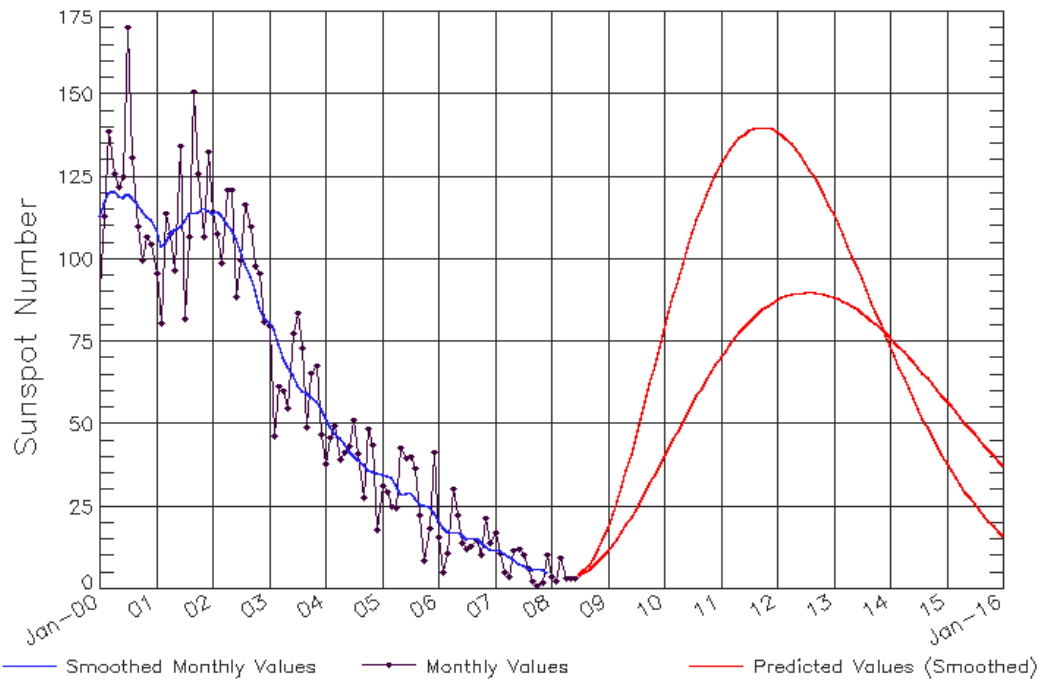
X-ray plot contains five-minute averaged x-ray flux (watts/m^2) as measured by GOES 10 (W060) and GOES 11 (W135) in two wavelength bands, .05 - .4 and .1 - .8 nm. The letters A, B, C, M and X refer to x-ray event levels for the .1 - .8 nm band.

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 30 Jun 08



Updated 2008 Jul 8

NOAA/SWPC Boulder, CO USA

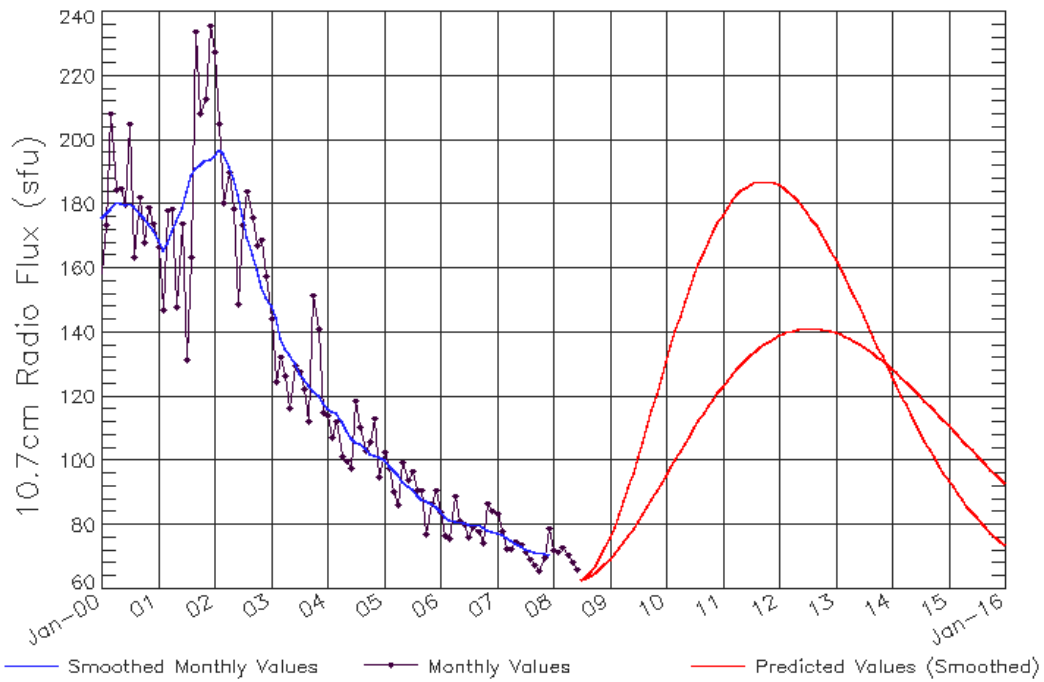
SEC Prediction of Smoothed Sunspot Number

	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 (1)	4/4 (3)	4/4 (5)	5/4 (7)	6/5 (8)	6/5 (9)	7/5 (10)	9/6 (11)	10/7 (12)	12/8 (13)	15/9 (14)	18/11 (15)
2009	19/12 (15)	23/13 (15)	27/15 (15)	31/17 (15)	36/20 (15)	41/22 (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 30 Jun 08



Updated 2008 Jul 8

NOAA/SWPC Boulder, CO USA

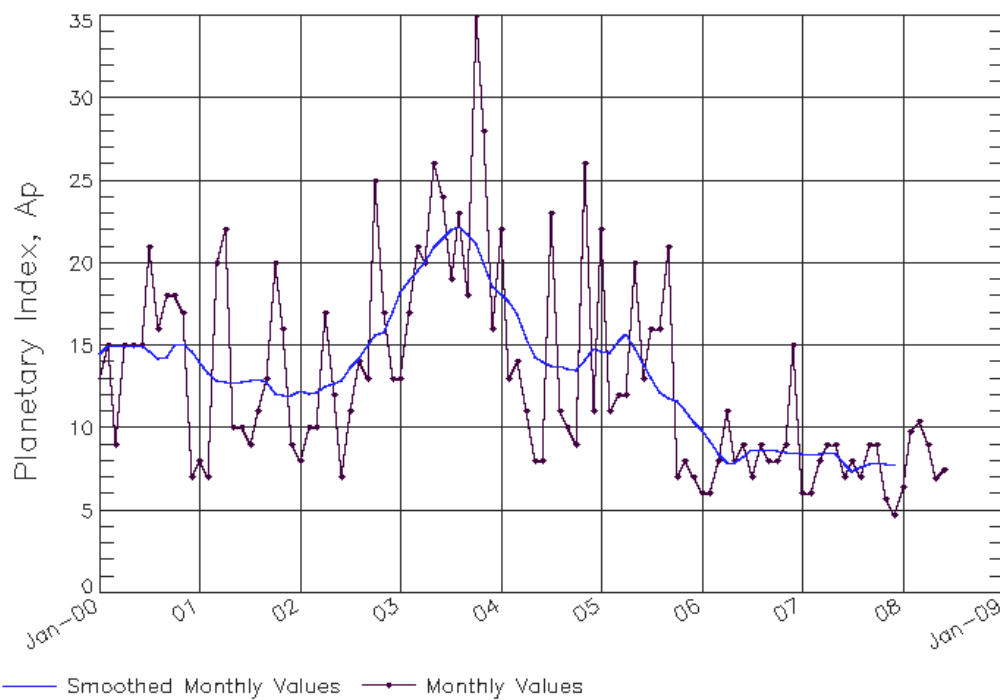
SEC Prediction of Smoothed F10.7cm Radio Flux

	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	70/64 (1)	69/64 (3)	69/63 (5)	69/63 (7)	69/63 (9)	69/63 (11)	69/62 (13)	69/62 (15)	70/62 (17)	71/62 (19)	73/62 (21)	75/66 (22)
2009	76/69 (23)	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 30 Jun 08



Updated 2008 Jul 8

NOAA/SWPC Boulder, CO USA

