

Solar activity was very low for most of the week, with only B-class flares observed. The majority of the B-class activity was split between Regions 1682 (S18, L=299, class/area=Dai/240 on 01 Mar) and 1683 (S16, L=202, class/area=Eai/210 on 02 Mar) both of which developed beta-gamma magnetic characteristics during the week. Activity increased to low levels on 02 Mar, when Region 1687 (N06, L=166, class/area=Cro/30 on 03 Mar) produced a C1 flare at 1511 UTC and again at 1847 UTC. All three of the regions mentioned remain on the visible disk at the time of this report.

A greater than 10 MeV proton enhancement was observed from a long duration B9 flare which occurred on 25 Feb at 1151 UTC and was attributed to old Region 1678 (N11, L=069) which had rotated around the West Limb two days earlier. The proton flux enhancement began on 27 Feb, reached a peak of 0.995 pfu at 28/0440 UTC, and returned to background levels early on 01 Mar.

The greater than 2 MeV electron flux at geosynchronous orbit was at low to moderate levels until 02 Mar when it rose to 3800 pfu in response to the arrival of a significant coronal hole high speed stream. Flux remained at high levels through the end of the period.

Geomagnetic field activity was quiet for most of the week. However, on 28 Feb around 15-17 UTC, a corotating interaction region (CIR) and subsequent high speed solar wind stream (HSS) became geoeffective. Solar wind speed which had been in the mid 300 km/s range began rising and eventually peaked at 675 km/s early on 02 Mar. Bt rose to 18 nT by 01/0817 UTC while Bz ranged from +14 to -16 nT. The Phi angle shifted from a positive (away) orientation to a negative (towards) orientation. The magnetosphere responded with unsettled levels late on 28 Feb. Geomagnetic activity quickly climbed to active levels for most of 01 Mar, punctuated by one period of minor storm levels during the 09-12 UTC synoptic period. This response was no doubt exacerbated by the favorable orientation described by the Russel-McPherron effect. Solar wind speed declined abruptly between 02/11-15 UTC, dropping from about 590 to around 480 km/s, then began a slow decline back to around 400 km/s by the end of the week. After an active first period on 02 Mar, the remainder of the week saw quiet to unsettled activity levels.

## **Space Weather Outlook**

### **04 March - 30 March 2013**

Solar activity is expected to be very low to low with a slight chance for an isolated M-class event. The threat of an M-class flare is most probable between 11 and 23 Mar with the return of old Region 1675.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to begin the period at high levels in response to the continued presence of a recurrent coronal hole high speed stream but decline to normal to moderate levels after 06 Mar. High levels are possible again in the last



day of the forecast period with the return of a recurrent coronal hole high speed stream.

Geomagnetic field activity is expected to be predominantly quiet to unsettled. Active periods are possible on 28 March with the return of a recurrent coronal hole high speed stream.



### ***Daily Solar Data***

Date	Radio Flux 10.7cm	Sun spot No.	Sunspot Area (10 <sup>-6</sup> hemi.)	X-ray Background Flux	Flares							
					X-ray			Optical				
					C	M	X	S	1	2	3	4
25 February	95	59	110	B2.2	0	0	0	0	0	0	0	0
26 February	99	49	250	B1.8	0	0	0	0	0	0	0	0
27 February	102	61	250	B2.0	0	0	0	1	0	0	0	0
28 February	106	63	370	B2.7	0	0	0	3	0	0	0	0
01 March	113	88	460	B2.7	0	0	0	2	0	0	0	0
02 March	111	90	510	B2.9	2	0	0	0	0	0	0	0
03 March	112	115	520	B2.7	0	0	0	0	0	0	0	0

### ***Daily Particle Data***

Date	Proton Fluence (protons/cm <sup>2</sup> -day -sr)			Electron Fluence (electrons/cm <sup>2</sup> -day -sr)		
	>1 MeV	>10 MeV	>100 MeV	>0.6 MeV	>2MeV	>4 MeV
25 February	2.0e+05	1.1e+04	2.7e+03		9.8e+06	
26 February	1.4e+05	1.3e+04	2.9e+03		2.1e+06	
27 February	7.1e+05	3.5e+04	3.1e+03		1.5e+06	
28 February	1.0e+06	2.4e+04	2.8e+03		8.4e+05	
01 March	7.7e+05	1.1e+04	2.7e+03		1.0e+06	
02 March	5.0e+05	1.2e+04	2.8e+03		9.9e+07	
03 March	2.5e+05	1.1e+04	2.7e+03		2.2e+08	

### ***Daily Geomagnetic Data***

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
25 February	3	0-0-0-0-1-2-2-1	2	0-0-0-1-2-0-0-1	3	0-0-0-1-1-1-1-2
26 February	4	0-2-1-1-2-2-1-1	6	0-0-1-2-4-2-1-0	5	1-2-1-2-1-1-2-1
27 February	4	0-1-2-1-2-1-1-1	1	0-0-1-2-0-0-0-0	4	1-1-1-1-1-1-0-1
28 February	8	2-1-2-1-3-1-2-3	6	0-0-3-3-2-1-1-1	7	2-1-2-1-2-1-2-3
01 March	23	4-4-3-4-4-3-3-4	64	5-4-7-7-5-6-4-1	27	4-4-3-5-4-4-4-4
02 March	14	4-3-3-2-2-2-3-3	17	3-4-4-2-3-4-2-2	12	4-3-2-1-2-2-3-3
03 March	6	2-2-1-2-2-2-1-1	10	3-3-1-4-2-2-1-1	7	3-3-2-2-1-2-1-2

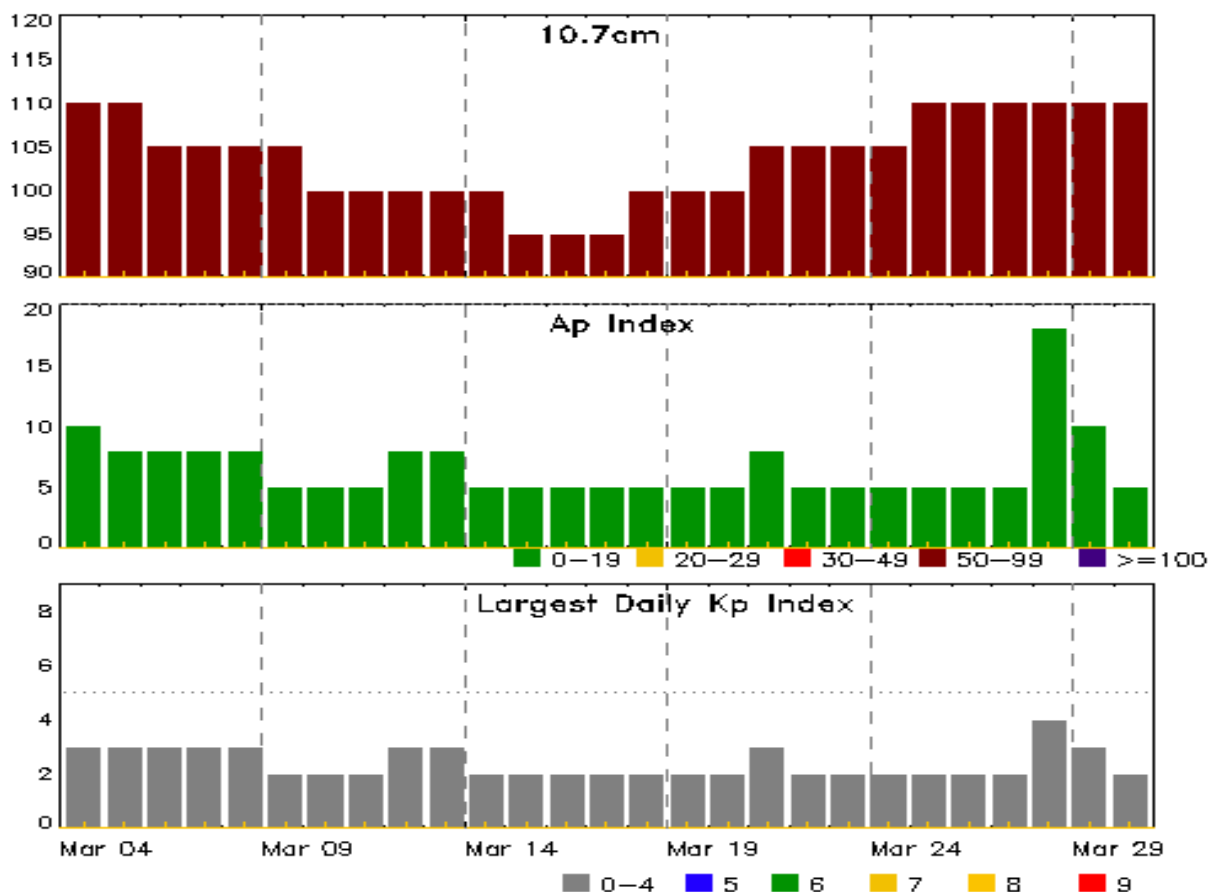


### *Alerts and Warnings Issued*

<b>Date &amp; Time of Issue UTC</b>	<b>Type of Alert or Warning</b>	<b>Date &amp; Time of Event UTC</b>
01 Mar 0235	WARNING: Geomagnetic K = 4	01/0233 - 1200
01 Mar 0242	ALERT: Geomagnetic K = 4	01/0242
01 Mar 0953	WATCH: Geomagnetic Storm Category G1 predicted	
01 Mar 0956	WARNING: Geomagnetic K = 5	01/0955 - 1600
01 Mar 0956	EXTENDED WARNING: Geomagnetic K = 4	01/0233 - 1900
01 Mar 1136	ALERT: Geomagnetic K = 5	01/1134
01 Mar 1837	EXTENDED WARNING: Geomagnetic K = 4	01/0233 - 02/0000
01 Mar 2355	EXTENDED WARNING: Geomagnetic K = 4	01/0233 - 02/1200
02 Mar 1056	ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	02/1040
03 Mar 0507	CONTINUED ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	02/1040



## Twenty-seven Day Outlook



Date	Radio Flux 10.7cm	Planetary A Index	Largest Kp Index	Date	Radio Flux 10.7cm	Planetary A Index	Largest Kp Index
04 Mar	110	10	3	18 Mar	100	5	2
05	110	8	3	19	100	5	2
06	105	8	3	20	100	5	2
07	105	8	3	21	105	8	3
08	105	8	3	22	105	5	2
09	105	5	2	23	105	5	2
10	100	5	2	24	105	5	2
11	100	5	2	25	110	5	2
12	100	8	3	26	110	5	2
13	100	8	3	27	110	5	2
14	100	5	2	28	110	18	4
15	95	5	2	29	110	10	3
16	95	5	2	30	110	5	2
17	95	5	2				



### ***Energetic Events***

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

**No Events Observed**

### ***Flare List***

Date	Time			X-ray Class	Optical		Rgn #
	Begin	Max	End		Imp/ Brtns	Location Lat CMD	
25 Feb	0515	1151	1540	B8.9			1678
26 Feb	0341	0345	0350	B3.5			1682
26 Feb	1442	1454	1505	B6.8			1673
26 Feb	1822	1827	1833	B5.6			
27 Feb	0029	0036	0042	B6.4			1681
27 Feb	0325	0332	0339	B8.3	SF	S19W05	1682
28 Feb	0702	0703	0708		SF	S19W21	1682
28 Feb	0824	0830	0834	B4.7	SF	S28E08	1680
28 Feb	1105	1109	1112	B5.9			1683
28 Feb	1431	1433	1440	B4.9	SF	S14E77	1683
28 Feb	1451	1458	1507	B5.4			1682
28 Feb	1517	1522	1529	B5.7			1683
28 Feb	1553	1601	1610	B7.9			1682
01 Mar	0605	0608	0612	B4.0			1683
01 Mar	1011	1014	1017	B6.8	SF	S20W34	1682
01 Mar	1207	1207	1215		SF	S14E63	1683
02 Mar	1148	1152	1214	B6.0			1681
02 Mar	1347	1405	1422	B8.9			
02 Mar	1459	1511	1526	C1.9			1687
02 Mar	1836	1847	1901	C1.6			1687
03 Mar	0042	0046	0050	B5.9			



## Region Summary

Date	Location		Sunspot Characteristics					Flares							
	Lat CMD	Helio	Area 10 <sup>-6</sup> hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical				
		Lon						C	M	X	S	1	2	3	4
<i>Region 1673</i>															
15 Feb	S11E67	13	40	2	Hsx	1	A				1				
16 Feb	S10E56	12	100	5	Cso	11	B								
17 Feb	S10E43	12	70	7	Cao	5	B								
18 Feb	S09E31	11	60	8	Cao	8	BG				2				
19 Feb	S11E17	10	90	8	Dac	24	B								
20 Feb	S11E04	10	80	8	Cao	16	B								
21 Feb	S11W10	12	10	6	Bxo	10	B								
22 Feb	S10W23	11	10	7	Bxo	9	B								
23 Feb	S10W36	12	10	6	Bxo	9	B								
24 Feb	S10W48	13	plage												
25 Feb	S10W62	12	plage												
26 Feb	S10W76	12	plage												
27 Feb	S10W90	13	plage												
								0	0	0	3	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 10

<b>Region 1675</b>															
16 Feb	N12E31	36	10	3	Bxo	9	B								
17 Feb	N12E18	37	50	6	Cso	13	BG	3	1		7				
18 Feb	N13E04	36	110	7	Cao	14	BG	1			1				
19 Feb	N12W09	37	60	9	Cso	3	B								
20 Feb	N12W23	38	50	3	Hsx	1	A								
21 Feb	N13W38	39	60	1	Hsx	1	A								
22 Feb	N12W52	40	70	1	Hsx	1	A								
23 Feb	N13W63	39	40	2	Hsx	1	A								
24 Feb	N12W76	38	40	6	Cso	2	B								
25 Feb	N13W90	38	0	1	Axx	1	A								
								4	1	0	8	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 36



### *Region Summary - continued*

Date	Location	Sunspot Characteristics						Flares							
	Lat CMD	Helio	Area 10 <sup>-6</sup> hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical				
		Lon						C	M	X	S	1	2	3	4
Region 1676															
16 Feb	S18E78	350	30	2	Hax	1	A								
17 Feb	S18E64	350	30	2	Hsx	2	A								
18 Feb	S17E50	352	80	2	Hsx	2	A								
19 Feb	S19E37	352	50	1	Hsx	1	A								
20 Feb	S19E26	348	50	3	Cso	2	B								
21 Feb	S19E13	348	50	1	Hsx	2	A								
22 Feb	S19E01	347	40	1	Hsx	3	A								
23 Feb	S13W20	348	40	1	Hax	2	A								
24 Feb	S13W23	345	20	5	Dso	3	B								
25 Feb	S18W39	347	10	1	Axx	1	A								
26 Feb	S18W53	349	plage												
27 Feb	S18W67	350	plage												
28 Feb	S18W81	351	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 347

<b>Region 1677</b>															
17 Feb	S27E65	350	10	2	Bxo	3	B								
18 Feb	S26E52	349	10	1	Axx	1	A								
19 Feb	S27E38	350	10	1	Axx	1	A								
20 Feb	S28E26	349	10	1	Axx	1	A								
21 Feb	S28E12	350	plage												
22 Feb	S28W02	351	plage												
23 Feb	S28W16	352	plage												
24 Feb	S28W30	353	plage												
25 Feb	S28W44	354	plage												
26 Feb	S28W58	354	plage												
27 Feb	S28W72	355	plage												
28 Feb	S28W86	356	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 351





### ***Region Summary - continued***

Date	Location		Sunspot Characteristics					Flares						
	Lat CMD	Helio	Area 10 <sup>-6</sup> hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical			
		Lon						C	M	X	S	1	2	3

#### ***Region 1679***

19 Feb	S14E44	345	10		Axx	1	A								
20 Feb	S14E30	344	10	1	Axx	1	A								
21 Feb	S13E19	342	plage												
22 Feb	S10E08	341	0	1	Axx	1	A								
23 Feb	S10W06	342	plage												
24 Feb	S10W20	343	plage												
25 Feb	S10W34	344	plage												
26 Feb	S10W48	344	plage												
27 Feb	S10W62	345	plage												
28 Feb	S10W76	346	plage												
01 Mar	S10W90	347	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 342

#### ***Region 1680***

25 Feb	S28E35	274	40	4	Dao	3	B								
26 Feb	S28E23	273	40	5	Dao	5	B								
27 Feb	S29E11	271	10	4	Bxo	4	B								
28 Feb	S28W00	270	20	4	Cro	3	B				1				
01 Mar	S29W13	270	10	2	Bxo	2	B								
02 Mar	S28W27	271	10	3	Bxo	3	B								
03 Mar	S28W41	272	plage												
								0	0	0	1	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 270

#### ***Region 1681***

25 Feb	N16E59	249	30	1	Hsx	1	A								
26 Feb	N16E46	249	40	2	Cso	3	B								
27 Feb	N17E33	249	40	3	Cso	3	B								
28 Feb	N17E20	249	20	2	Cro	2	B								
01 Mar	N17E06	251	10	1	Axx	2	A								
02 Mar	N17W07	251	10	1	Axx	2	A								
03 Mar	N17W21	252	10	1	Axx	2	A								
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 251



### ***Region Summary - continued***

Date	Location		Sunspot Characteristics					Flares							
	Lat CMD	Helio Lon	Area 10 <sup>6</sup> hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical				
								C	M	X	S	1	2	3	4

#### ***Region 1682***

25 Feb	S18E09	300	30	3	Dro	3	BG								
26 Feb	S18W03	299	170	6	Dac	11	BG								
27 Feb	S18W17	299	110	7	Dai	13	BG				1				
28 Feb	S18W30	299	180	8	Dai	15	BG				1				
01 Mar	S18W42	299	240	8	Dai	12	BG				1				
02 Mar	S18W56	300	240	9	Dao	5	B								
03 Mar	S18W68	298	200	10	Dao	3	B								
								0	0	0	3	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 299

#### ***Region 1683***

27 Feb	S17E79	203	90	2	Hsx	1	A								
28 Feb	S16E68	201	150	6	Dao	3	B				1				
01 Mar	S16E54	203	170	10	Dao	8	B				1				
02 Mar	S16E42	202	210	11	Eai	14	BG								
03 Mar	S16E30	200	200	12	Eai	14	B								
								0	0	0	2	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 200

#### ***Region 1684***

01 Mar	N18E13	244	10	2	Axx	2	A								
02 Mar	N17W01	245	10	6	Bxo	4	B								
03 Mar	N17W15	245	10	4	Bxo	3	B								
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 245

#### ***Region 1685***

01 Mar	S13E72	185	20	3	Hrx	2	A								
02 Mar	S16E61	183	30	9	Cro	2	B								
03 Mar	S15E46	184	20	6	Dro	3	B								
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 184



### ***Region Summary - continued***

Date	Location		Sunspot Characteristics					Flares							
	Lat CMD	Lon	Helio 10 <sup>6</sup> hemi.	Area (helio)	Extent Class	Spot Count	Spot Mag Class	X-ray			Optical				
								C	M	X	S	1	2	3	4

#### ***Region 1686***

03 Mar	S13W31	261	30	5	Dro	6	B								
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 261

#### ***Region 1687***

02 Mar	N06E77	167	plage					2							
03 Mar	N06E65	166	30	4	Cro	3	B								
								2	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 166

#### ***Region 1688***

03 Mar	S17E52	178	20	1	Hsx	1	A								
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 178

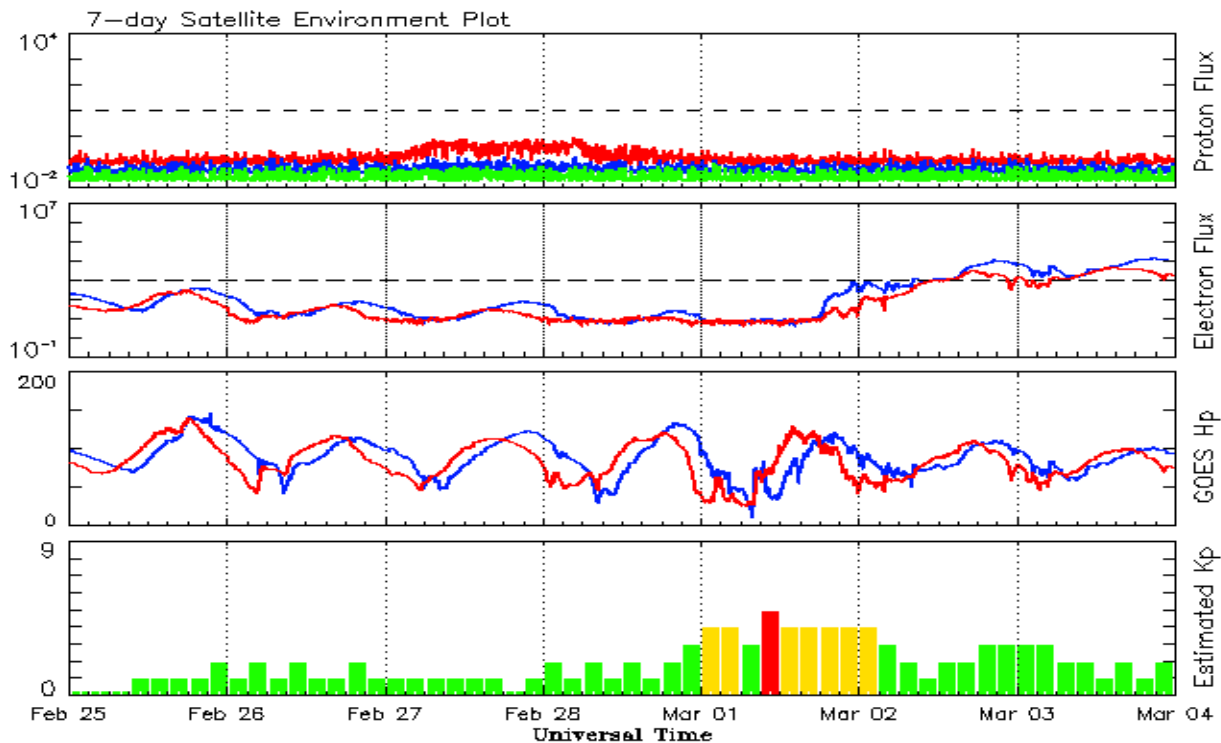


**Recent Solar Indices (preliminary)**  
**Observed monthly mean values**

Month	Sunspot Numbers					Radio Flux		Geomagnetic	
	Observed values		Ratio	Smooth values		Penticton	Smooth	Planetary	Smooth
	SEC	RI	RI/SEC	SEC	RI	10.7 cm	Value	Ap	Value
<b>2011</b>									
March	81.0	55.8	0.69	55.2	36.9	115.3	95.8	7	7.2
April	81.7	54.4	0.67	61.5	41.8	112.6	100.4	9	7.5
May	61.4	41.6	0.68	69.0	47.6	95.9	105.6	9	7.5
June	55.5	37.0	0.67	76.5	53.2	95.8	110.9	8	7.4
July	67.0	43.8	0.66	82.5	57.3	94.2	115.4	9	7.3
August	66.1	50.6	0.77	84.9	59.0	101.7	117.9	8	7.4
September	106.4	78.0	0.73	84.6	59.5	134.5	118.4	13	7.7
October	116.8	88.0	0.75	84.6	59.9	137.2	118.4	7	8.0
November	133.1	96.7	0.73	86.3	61.1	153.1	119.5	3	8.0
December	106.3	73.0	0.69	89.2	63.4	141.2	121.6	3	8.0
<b>2012</b>									
January	91.3	58.3	0.64	92.0	65.5	133.1	124.4	6	8.3
February	50.1	32.9	0.66	94.2	66.9	106.7	126.7	7	8.4
March	77.9	64.3	0.82	94.1	66.8	115.1	126.8	14	8.1
April	84.4	55.2	0.65	91.3	64.6	113.1	125.8	9	8.0
May	99.5	69.0	0.69	87.7	61.7	121.5	123.8	8	8.2
June	88.6	64.5	0.73	83.9	58.9	120.5	121.1	10	8.3
July	99.6	66.5	0.67	82.4	57.7	135.6	119.5	13	8.3
August	85.8	63.0	0.74	83.1	58.1	115.7	119.2	7	8.1
September	84.0	61.4	0.73			123.2		8	
October	73.5	53.3	0.73			123.3		9	
November	89.2	61.4	0.69			120.9		6	
December	60.4	40.8	0.68			108.4		3	
<b>2013</b>									
January	99.8	62.9	0.63			127.1		4	
February	60.0	38.0	0.63			104.4		5	

**Note:** Values are final except for the most recent 6 months which are considered preliminary.  
Cycle 24 started in Dec 2008 with an RI=1.7.





*Weekly Geosynchronous Satellite Environment Summary  
Week Beginning 25 February 2013*

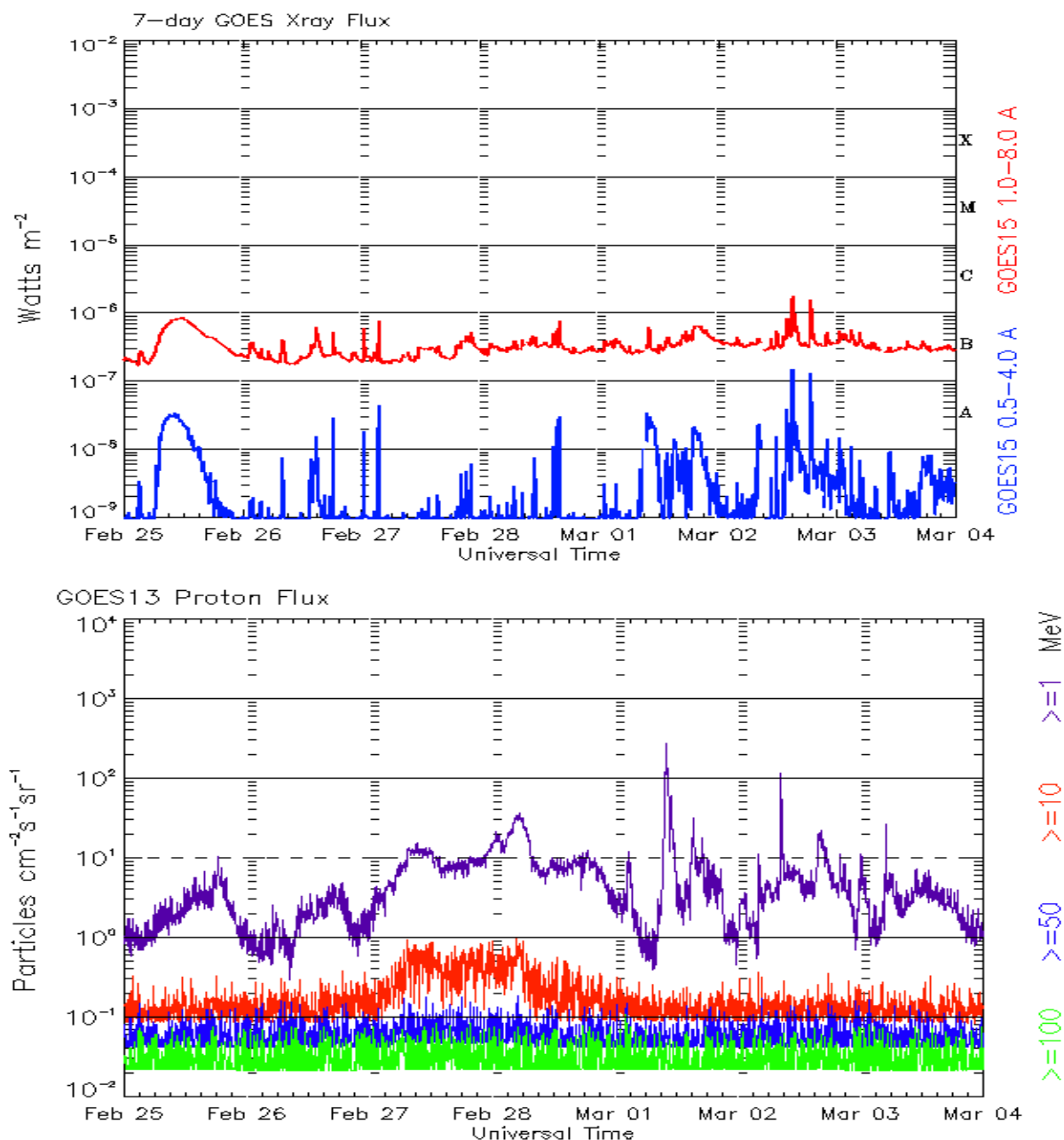
The proton flux plot contains the five-minute averaged integral proton flux (protons/cm<sup>2</sup>-sec -sr) as measured by the SWPC Primary GOES satellite, near West 75, for each of three energy thresholds: greater than 10, 50, and 100 MeV.

The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm<sup>2</sup>-sec -sr) with energies greater than 2 MeV by the SWPC Primary GOES satellite.

The Hp plot contains the five minute averaged Hp magnetic field component in nanoteslas (nT) as by the SWPC Primary GOES satellite. The Hp component is parallel to the spin axis of the satellite, which is nearly parallel to the Earth's rotation axis.

The Estimated 3-hour Planetary Kp-index is derived at the NOAA Space Weather Prediction Center using data from the following ground-based magnetometers: Boulder, Colorado; Chambon la Foret, France; Fredericksburg, Virginia; Fresno, California; Hartland, UK; Newport, Washington; Sitka, Alaska. These data are made available thanks to the cooperative efforts between SWPC and data providers around the world, which currently includes the U.S. Geological Survey, the British Geological Survey, and the Institut de Physique du Globe de Paris.

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.



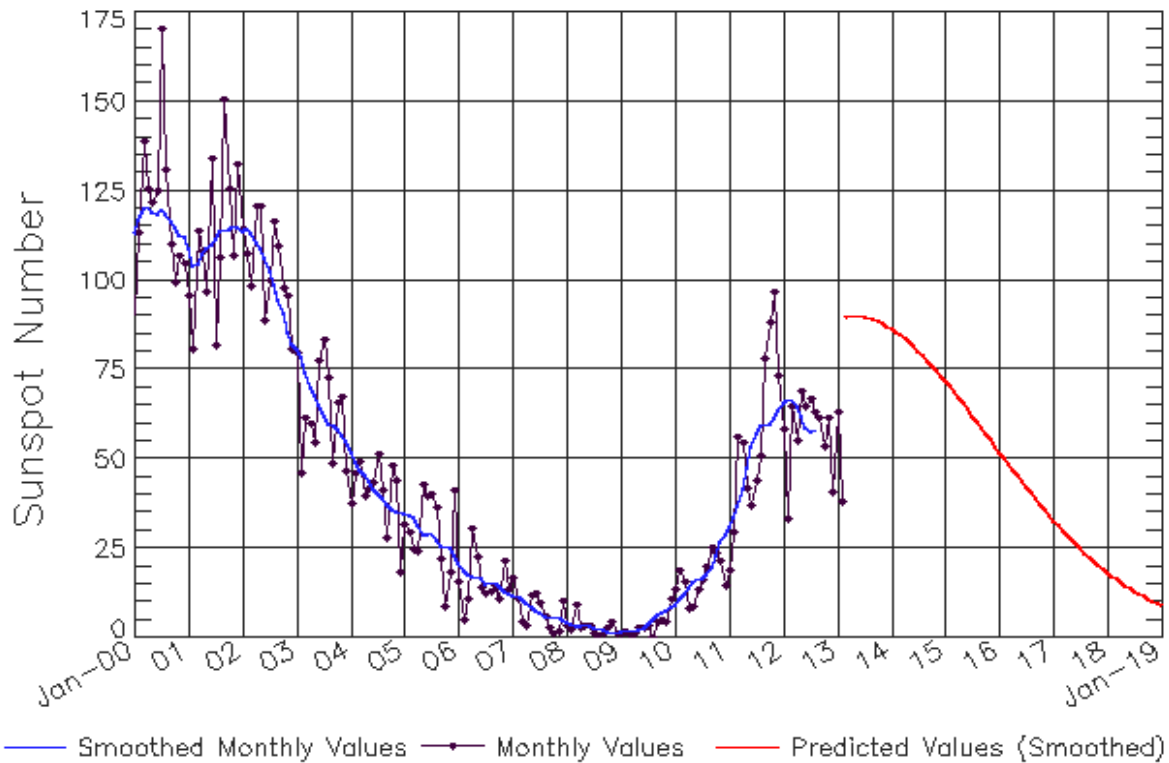
*Weekly GOES Satellite X-ray and Proton Plots  
Week Beginning 25 February 2013*

The x-ray plots contains five-minute averages x-ray flux (Watt/m<sup>2</sup>) as measure by the SWPC primary GOES X-ray satellite, usually at West 105 longitude, in two wavelength bands, 0.05 - 0.4 and 0.1 - 0.8 nm. The letters A, B, C, M and X refer to x-ray event levels for the 0.1 - 0.8 nm band.

The proton plot contains the five-minute averaged integral flux units (pfu = protons/cm<sup>2</sup> -sec -sr) as measured by the primary SWPC GOES Proton satellite for each of the energy thresholds: >1, >10, >30, and >100 MeV. The P10 event threshold is 10 pfu at greater than 10 MeV.

# ISES Solar Cycle Sunspot Number Progression

Observed data through Feb 2013

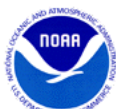


Updated 2013 Mar 4

NOAA/SWPC Boulder, CO USA

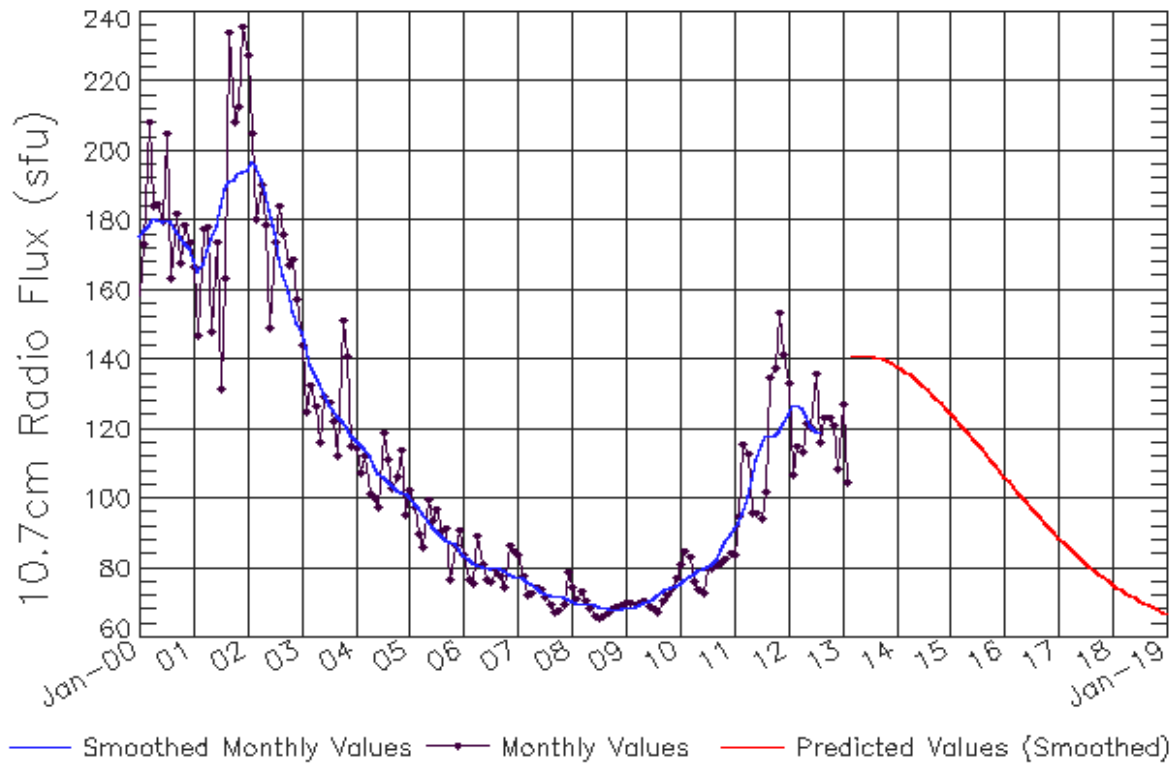
## Smoothed Sunspot Number Prediction

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2010	9 (***)	11 (***)	12 (***)	14 (***)	16 (***)	16 (***)	17 (***)	17 (***)	20 (***)	23 (***)	27 (***)	29 (***)
2011	31 (***)	33 (***)	37 (***)	42 (***)	48 (***)	53 (***)	57 (***)	59 (***)	60 (***)	60 (***)	61 (***)	63 (***)
2012	66 (***)	67 (***)	67 (***)	65 (***)	62 (***)	59 (***)	58 (***)	58 (***)	59 (1)	62 (2)	64 (3)	66 (5)
2013	68 (5)	70 (6)	73 (7)	75 (7)	78 (8)	81 (9)	84 (9)	87 (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)
2016	52 (10)	50 (10)	49 (10)	47 (10)	45 (10)	44 (10)	42 (10)	40 (10)	39 (10)	37 (10)	36 (10)	34 (10)
2017	33 (10)	31 (10)	30 (10)	29 (10)	27 (10)	26 (10)	25 (10)	24 (10)	23 (10)	21 (10)	20 (10)	19 (10)
2018	18 (10)	17 (10)	16 (10)	15 (10)	15 (10)	14 (10)	13 (10)	12 (10)	12 (10)	11 (10)	10 (10)	10 (10)
2019	9 (10)	8 (10)	8 (10)	7 (10)	7 (10)	6 (10)	6 (10)	6 (10)	5 (10)	5 (10)	4 (10)	4 (10)



# ISES Solar Cycle F10.7cm Radio Flux Progression

Observed data through Feb 2013



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NOAA/SWPC Boulder, CO USA

## Smoothed F10.7cm Radio Flux Prediction

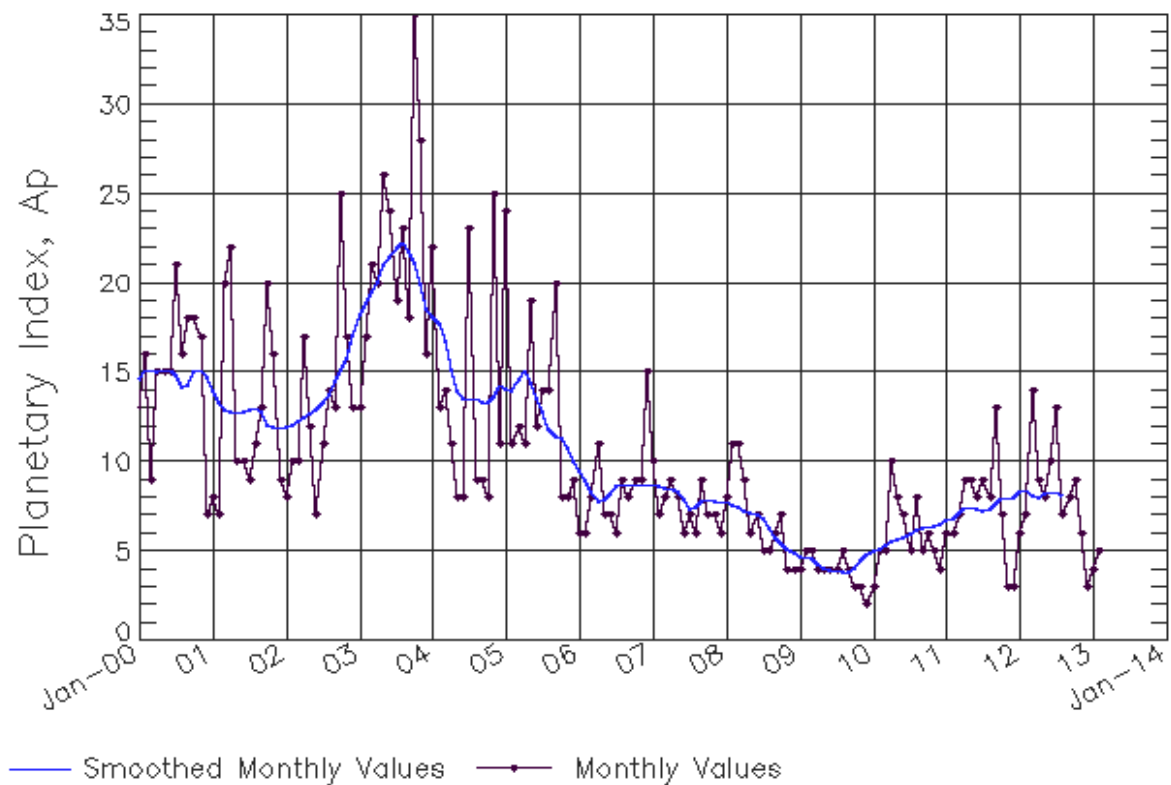
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2010	76 (***)	77 (***)	78 (***)	78 (***)	79 (***)	80 (***)	80 (***)	81 (***)	82 (***)	85 (***)	88 (***)	90 (***)
2011	91 (***)	93 (***)	96 (***)	100 (***)	106 (***)	111 (***)	115 (***)	118 (***)	118 (***)	118 (***)	120 (***)	122 (***)
2012	124 (***)	127 (***)	127 (***)	126 (***)	124 (***)	121 (***)	120 (***)	119 (***)	120 (1)	122 (1)	124 (2)	126 (3)
2013	127 (4)	129 (4)	130 (5)	132 (6)	133 (7)	135 (8)	137 (8)	139 (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)
2016	106 (9)	105 (9)	103 (9)	102 (9)	100 (9)	99 (9)	97 (9)	96 (9)	94 (9)	93 (9)	92 (9)	90 (9)
2017	89 (9)	88 (9)	86 (9)	85 (9)	84 (9)	83 (9)	82 (9)	80 (9)	79 (9)	78 (9)	77 (9)	76 (9)
2018	75 (9)	75 (9)	74 (9)	73 (9)	72 (9)	71 (9)	71 (9)	70 (9)	69 (9)	69 (9)	68 (9)	67 (9)
2019	67 (9)	66 (9)	66 (9)	65 (9)	65 (9)	65 (9)	64 (9)	64 (9)	63 (9)	63 (9)	63 (9)	63 (9)





# ISES Solar Cycle Ap Progression

Observed data through Feb 2013



Updated 2013 Mar 4

NOAA/SWPC Boulder, CO USA

*Solar Cycle Comparison charts are temporarily unavailable.*



## ***Preliminary Report and Forecast of Solar Geophysical Data (The Weekly)***

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**Notice:** The 27-day Outlook, Satellite Environment, X-ray and Proton plots have been redesigned. Comments and suggestions are welcome [SWPC.Webmaster@noaa.gov](mailto:SWPC.Webmaster@noaa.gov)

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