

Solar activity ranged from very low to high levels during the period. Activity was at very low levels on 07 February. Activity increased to low levels on 08 February when Region 1153 (N15, L=175, class/area Dso/180 on 09 February) produced two C-class flares. The largest of these was a C1/Sf at 08/2112 UTC. Activity increased to moderate levels on 09 February when Region 1153 produced an M1/Sf flare at 09/0131 UTC. Activity decreased to low levels on 10 February, with four C-class flares observed from Region 1153. The largest of these was a C4 flare at 10/1234 UTC. Activity decreased to very low on 11 February. Activity increased to low levels on 12 February when Region 1159 (N19, L=034, class/area Cso/020 on 13 February) produced a C2 flare. A Type II radio sweep, was observed at 12/2036 UTC. Two CMEs, both lifting off the east limb, were observed on LASCO C3 imagery at 11/1642 UTC and at 11/2318 UTC. The later CME was associated with the Type II radio sweep. Activity reached high levels on 13 February when Region 1158 (S20, L=034, class/area Eac/120 on 13 February) emerged on the disk and produced an M6/1N flare at 13/1738 UTC. Associated with this event was a 130 sfu Tenflare and a Type II Radio Sweep (estimated velocity 1119 km/s). (NOTE: An X2 x-ray event was observed from Region 1158 at 15/0156 UTC; more details will be reported next week.)

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at high levels from 07 - 11 February. Normal to moderate levels were observed on 12 - 13 February.

Geomagnetic field activity was mostly quiet during the forecast period.

### **Space Weather Outlook** **16 February - 14 March 2011**

Solar activity is expected to be low to moderate with a slight chance for high activity from 16 - 20 February. Activity is expected to decrease to low levels by 21 February as Regions 1158 and 1159 rotate off the visible disk. An increase in activity is expected on 05 March when old Region 1158 (S20, L=14) rotates back onto the disk.

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 for 14 - 15 February. Normal to moderate levels are expected from 16 February - 04 March. High levels are expected from 05 - 10 March followed by a return to low to moderate levels for the remainder of the period (11 - 14 March).

Geomagnetic field activity is expected to be at unsettled to active levels with a chance for isolated minor storm periods from 16 - 19 February. The increase in activity is due to the combination of a recurrent coronal hole high speed stream (CH HSS) and a CME associated with an X2 x-ray event observed on 15 February. Predominantly quiet levels are expected for 20 - 28 February. Activity is expected to be quiet to unsettled with a chance for isolated active periods from 01 - 03 March due to a recurrent CH HSS. Mostly quiet conditions are expected for the



remainder of the period (04 - 14 March).



### *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
07 February	82	28	30	A5.6	0	0	0	0	0	0	0	0
08 February	90	71	120	B1.0	2	0	0	3	0	0	0	0
09 February	89	67	230	B1.4	1	1	0	1	0	0	0	0
10 February	91	38	40	B2.3	4	0	0	0	0	0	0	0
11 February	91	54	100	B1.6	0	0	0	0	0	0	0	0
12 February	96	63	90	B1.2	1	0	0	0	0	0	0	0
13 February	107	84	180	B4.4	4	1	0	3	1	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
	07 February	2.2e+05	1.4e+04	3.5e+03		3.6e+08
08 February	2.8e+05	1.4e+04	3.4e+03		5.1e+08	
09 February	1.8e+05	1.4e+04	3.5e+03		4.3e+08	
10 February	4.7e+05	1.4e+04	3.4e+03		3.1e+08	
11 February	4.8e+05	1.4e+04	3.3e+03		1.3e+08	
12 February	1.5e+05	1.4e+04	3.4e+03		2.4e+07	
13 February	6.4e+05	1.4e+04	3.4e+03		3.5e+07	

### *Daily Geomagnetic Data*

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	07 February	2	1-0-0-0-1-1-1-1	3	2-0-1-1-1-1-1-1	3
08 February	3	2-2-0-1-0-0-1-1	2	1-1-0-2-0-0-0-0	4	2-3-0-1-0-0-1-1
09 February	1	0-0-0-1-0-1-0-0	1	0-0-0-2-0-0-0-0	2	0-0-0-1-0-1-0-1
10 February	4	0-1-3-1-1-0-1-1	6	0-1-3-3-2-0-1-1	3	0-0-2-1-1-0-0-1
11 February	3	0-2-0-0-1-0-2-2	4	0-1-0-0-0-1-3-2	4	1-1-0-0-0-1-2-2
12 February	2	1-1-1-0-1-1-1-0	6	1-1-3-3-2-1-0-0	4	1-2-2-1-1-1-0-1
13 February	1	0-0-1-0-0-1-0-0	0	0-0-0-0-1-0-0-0	2	0-0-1-0-0-0-1-1

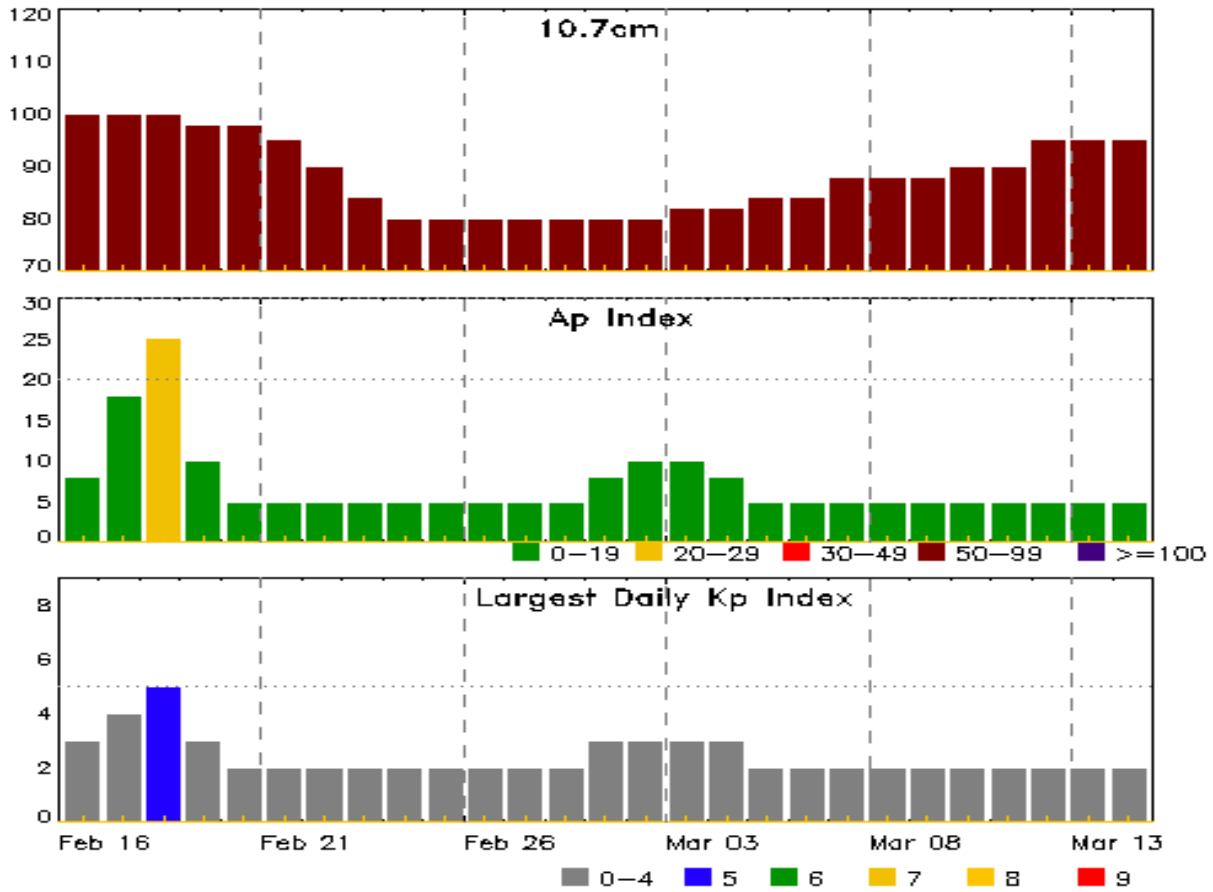


### *Alerts and Warnings Issued*

<b>Date &amp; Time of Issue UTC</b>	<b>Type of Alert or Warning</b>	<b>Date &amp; Time of Event UTC</b>
07 Feb 0500	CONTINUED ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	06/0935
08 Feb 0502	CONTINUED ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	06/0935
09 Feb 0500	CONTINUED ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	06/0935
10 Feb 0502	CONTINUED ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	06/0935
11 Feb 0636	CONTINUED ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	06/0935
11 Feb 2252	ALERT: Type II Radio Emission	11/2222
13 Feb 1737	ALERT: X-ray Flux exceeded M5	13/1735
13 Feb 1750	SUMMARY: X-ray Event exceeded M5	13/1728 - 1747
13 Feb 1809	ALERT: Type II Radio Emission	13/1735
13 Feb 1819	SUMMARY: 10cm Radio Burst	13/1735 - 1735



## 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
16 Feb	100	8	3	02 Mar	80	10	3
17	100	18	4	03	82	10	3
18	100	25	5	04	82	8	3
19	98	10	3	05	84	5	2
20	98	5	2	06	84	5	2
21	95	5	2	07	88	5	2
22	90	5	2	08	88	5	2
23	84	5	2	09	88	5	2
24	80	5	2	10	90	5	2
25	80	5	2	11	90	5	2
26	80	5	2	12	95	5	2
27	80	5	2	13	95	5	2
28	80	5	2	14	95	5	2
01 Mar	80	8	3				



### *Energetic Events*

Date	Time			X-ray	Optical Information			Peak		Sweep Freq		
	Begin	Max	Half Max	Class	Integ Flux	Imp/ Brtns	Location Lat CMD	Rgn #	Radio Flux 245	Radio Flux 2695	Intensity II	Intensity IV
09 Feb	0123	0131	0135	M1.9	0.006	SF	N17W72	1153				
13 Feb	1728	1738	1747	M6.6	0.040	1N	S20E04	1158	9900	210	1	2

### *Flare List*

Date	Time			X-ray Class	Optical			Rgn #
	Begin	Max	End		Imp/ Brtns	Location Lat CMD	Rgn #	
07 Feb	1017	1020	1022	B1.0			1153	
07 Feb	1331	1335	1337	B1.9			1153	
07 Feb	2124	2129	2139	B1.3			1153	
08 Feb	0155	0159	0201	B2.0			1153	
08 Feb	0648	0657	0708	B1.9			1153	
08 Feb	0817	0822	0826	B1.9			1153	
08 Feb	0910	0915	0917	B2.4			1150	
08 Feb	1028	1031	1035	B1.6			1153	
08 Feb	1134	1140	1144	B1.9			1153	
08 Feb	1444	1449	1452	B5.0	SF	N17W67	1153	
08 Feb	1846	1854	1856	C1.0	SF	N18W70	1153	
08 Feb	2106	2112	2114	C4.0	SF	N17W70	1153	
09 Feb	0008	0013	0019	C1.1			1153	
09 Feb	0123	0131	0135	M1.9	SF	N17W72	1153	
09 Feb	0542	0547	0554	B4.3			1157	
09 Feb	0723	0728	0730	B3.2			1153	
09 Feb	1015	1019	1023	B5.4			1153	
09 Feb	1619	1627	1634	B8.6			1153	
09 Feb	1859	1905	1908	B2.6			1153	
09 Feb	1957	2004	2011	B2.9			1157	
09 Feb	2207	2211	2213	B3.3			1153	
09 Feb	2254	2303	2313	B7.9			1153	
10 Feb	0000	0011	0016	B6.3			1153	
10 Feb	0329	0332	0336	B5.4			1153	
10 Feb	0439	0443	0448	B6.0			1153	
10 Feb	0620	0640	0646	C1.9			1153	
10 Feb	0655	0658	0702	C2.0			1153	
10 Feb	0924	0928	0933	B4.4			1153	
10 Feb	1228	1234	1240	C4.7			1153	
10 Feb	1333	1352	1405	C2.6			1153	



## *Flare List*

Date	Time			X-ray Class	Optical		Rgn #
	Begin	Max	End		Imp/ Brtns	Location Lat CMD	
10 Feb	1438	1442	1447	B6.7			1156
10 Feb	2049	2053	2057	B5.3			1156
11 Feb	0356	0401	0407	B3.1			
11 Feb	0758	0813	0836	B9.0			1153
11 Feb	2030	2157	2227	B5.0			
11 Feb	2131	2157	2222	B8.1			
11 Feb	2305	2312	2319	B9.6			
12 Feb	0008	0012	0016	B1.3			
12 Feb	0059	0110	0125	B8.6			
12 Feb	0239	0246	0254	B5.2			
12 Feb	0413	0421	0431	B3.8			
12 Feb	0642	0647	0703	B3.0			
12 Feb	1047	1051	1059	B2.3			
12 Feb	1146	1222	1311	B2.1			
12 Feb	1147	1154	1157	B1.0			
12 Feb	1430	1506	1521	C2.6			1159
12 Feb	1617	1620	1622	B1.2			
12 Feb	1726	1733	1741	B5.6			1160
12 Feb	1821	1826	1847	B4.7			
12 Feb	1913	1917	1921	B5.8			1160
12 Feb	1955	1958	2002	B1.7			
12 Feb	2023	2036	2050	B8.9			1160
13 Feb	0036	0042	0047	B8.5			1158
13 Feb	0327	0331	0337	B5.6			
13 Feb	0559	0610	0640	B3.2			1160
13 Feb	0725	0729	0732	C1.4			1160
13 Feb	1148	1153	1157	B5.4			
13 Feb	1229	1236	1246	C1.1			1158
13 Feb	1344	1356	1411	C4.7	SF	S20E07	1158
13 Feb	1434	1435	1439		SF	S19E05	1158
13 Feb	1728	1738	1747	M6.6	1N	S20E04	1158
13 Feb	1858	1904	1914		SF	S20E04	1158
13 Feb	2042	2045	2047	B4.8			
13 Feb	2117	2120	2122	C1.1			
13 Feb	2126	2129	2131	B5.1			



## Region Summary

Date	Location		Sunspot Characteristics				Flares										
	Lat CMD	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		
<b>Region 1150</b>																	
28 Jan	S22E62	184	10	3	Bxo	5	B					2					
29 Jan	S22E50	182	20	6	Bxo	6	B					1					
30 Jan	S21E37	182	50	8	Dao	12	B										
31 Jan	S20E24	183	70	7	Dao	11	B										
01 Feb	S22E11	183	80	8	Dsi	12	B										
02 Feb	S20W02	182	80	10	Dso	12	B										
03 Feb	S22W13	178	10	11	Bxo	6	B					1					
04 Feb	S20W30	187	30	3	Cro	5	B										
05 Feb	S20W46	187															
06 Feb	S22W51	178		1	Axx	1	A										
07 Feb	S23W63	178			Axx	1	A										
08 Feb	S23W77	179															
09 Feb	S23W91	180															
10 Feb	S23W0*	180															
										0	0	0	4	0	0	0	0

Died on Disk.

Absolute heliographic longitude: 182

<b>Region 1152</b>																	
03 Feb	S18E11	157	10	5	Bxo	6	B										
04 Feb	S18W01	155	30	5	Cro	6	B					1					
05 Feb	S18W14	154	15	4	Bxo	3	B					3					
06 Feb	S20W26	154	15	2	Bxo	5	B										
07 Feb	S20W35	154															
08 Feb	S20W49	151															
09 Feb	S20W63	152															
10 Feb	S20W77	152															
11 Feb	S20W91	153															
										0	0	0	4	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 155





### *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							
<b>Region 1153</b>																							
04 Feb	N15W18		172	30	5	Cro	4	B															
05 Feb	N15W31		172	10	4	Bxo	3	B					2										
06 Feb	N16W42		168	15	8	Bxo	5	B															
07 Feb	N15W56		171	30	5	Dro	7	B															
08 Feb	N15W71		171	80	5	Dko	8	B	2				3										
09 Feb	N15W88		175	180	9	Dso	6	BG	1	1			1										
10 Feb	N15W0*		177	180	9	Dso	6	BG	4														
									7	1	0		6	0	0	0	0	0					

Died on Disk.

Absolute heliographic longitude: 172

#### **Region 1154**

08 Feb	N08W51		152	10	1	Hrx	1	A														
09 Feb	N08W65		154																			
10 Feb	N08W79		154																			
11 Feb	N08W93		155																			
									0	0	0		0	0	0	0	0	0				

Crossed West Limb.

Absolute heliographic longitude: 152

#### **Region 1155**

08 Feb	N17E26		75	10	2	Cro	3	B														
									0	0	0		0	0	0	0	0	0				

Died on Disk.

Absolute heliographic longitude: 75

#### **Region 1156**

08 Feb	S19E43		63	10	4	Cro	6	B														
09 Feb	S14E23		64	20	5	Cro	11	B														
10 Feb	S14E09		66	20	5	Dro	11	B														
11 Feb	S21W06		68	40	7	Cro	5	B														
12 Feb	S21W22		70	10	4	Bxo	2	B														
13 Feb	S21W35		71		2	Axx	3	A														
									0	0	0		0	0	0	0	0	0				

Still on Disk.

Absolute heliographic longitude: 68



### *Region Summary - continued*

Date	Location		Sunspot Characteristics				Flares										
	Lat CMD	Lon	Helio 10 <sup>-6</sup> hemi.	Area	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical					
									C	M	X	S	1	2	3	4	
<b>Region 1157</b>																	
08 Feb	N22E36		64	10	1	Cro	3	B									
09 Feb	N22E22		69	20	5	Cso	7	B									
10 Feb	N22E08		67	20	5	Cro	7	B									
11 Feb	N18W04		65	10	5	Bxo	2	B									
12 Feb	N18W18		67	30	4	Cro	5	B									
13 Feb	N18W30		65	40	4	Dso	7	B									
									0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 65

<b>Region 1158</b>																	
11 Feb	S19E25		36	40	5	Cro	5	B									
12 Feb	S19E11		38	40	9	Dsi	12	B									
13 Feb	S20W03		34	120	10	Eac	31	BG	2	1		3	1				
									2	1	0	3	1	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 34

<b>Region 1159</b>																	
11 Feb	N18E26		35	10	1	Axx	2	A									
12 Feb	N19E09		39	10	2	Bxo	4	B	1								
13 Feb	N19W01		34	20	5	Cso	3	B									
									1	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 34

<b>Region 1160</b>																	
13 Feb	N16E74		322						1								
									1	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 322

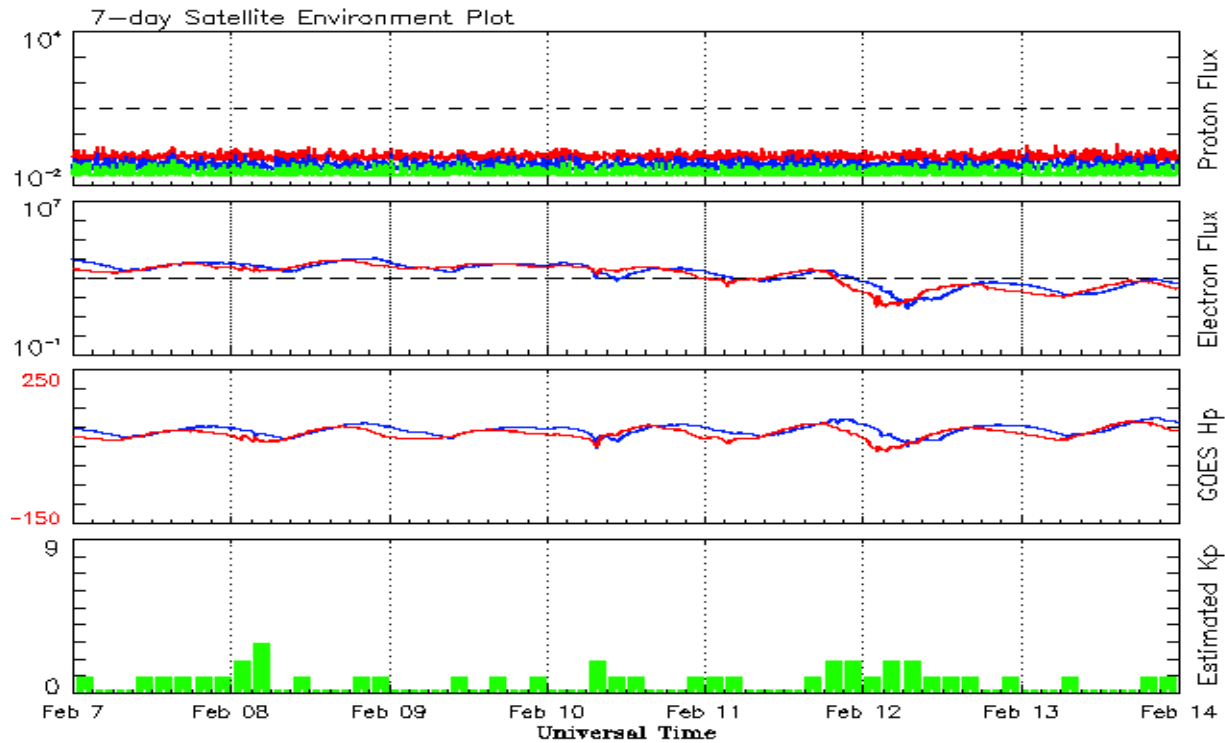


**Recent Solar Indices (preliminary)**  
**Observed monthly mean values**

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>2009</b>									
February	2.5	1.4	0.56	3.1	1.9	70.0	68.8	5	4.7
March	0.7	0.7	1.00	3.4	2.0	69.2	69.0	5	4.6
April	1.2	0.8	1.00	3.7	2.2	69.7	69.3	4	4.3
May	3.9	2.9	0.74	3.8	2.3	70.5	69.7	4	4.1
June	6.6	2.9	0.39	4.4	2.7	68.6	70.2	4	4.0
July	5.0	3.2	0.70	5.8	3.6	68.2	71.0	4	3.9
August	0.3	0.0	0.00	7.7	4.8	67.4	72.1	5	3.8
September	6.6	4.3	0.64	9.9	6.2	70.5	73.3	4	3.8
October	7.0	4.8	0.66	11.3	7.1	72.3	74.1	3	4.1
November	7.7	4.1	0.55	12.4	7.6	73.6	74.5	3	4.5
December	15.7	10.8	0.68	13.6	8.3	76.8	74.9	2	4.8
<b>2010</b>									
January	21.3	13.2	0.62	14.8	9.3	81.1	75.5	3	5.0
February	31.0	18.8	0.60	16.7	10.6	84.7	76.5	5	5.1
March	24.7	15.4	0.62	19.1	12.3	83.3	77.5	5	5.3
April	11.2	8.0	0.71	21.4	14.0	75.9	78.3	10	5.5
May	19.9	8.7	0.44	23.8	15.5	73.8	79.0	8	5.7
June	17.9	13.6	0.75	25.2	16.4	72.6	79.7	7	5.8
July	23.1	16.1	0.70	25.9	16.8	79.9	80.1	5	6.0
August	28.2	19.6	0.70			79.7		8	
September	35.6	25.2	0.71			81.1		5	
October	35.0	23.5	0.67			81.6		6	
November	36.1	21.6	0.60			82.5		5	
December	22.0	14.5	0.66			84.3		4	
<b>2011</b>									
January	32.1	19.0	0.59			83.7		6	

**Note:** Values are final except for the most recent 6 months which are considered preliminary. Cycle 23 started in May 1996 with an RI=8.0. Cycle 23 maximum was April 2000 with an RI=120.8. Solar minimum for Cycle 23 was December 2008.





*Weekly Geosynchronous Satellite Environment Summary  
Week Beginning 07 February 2011*

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.

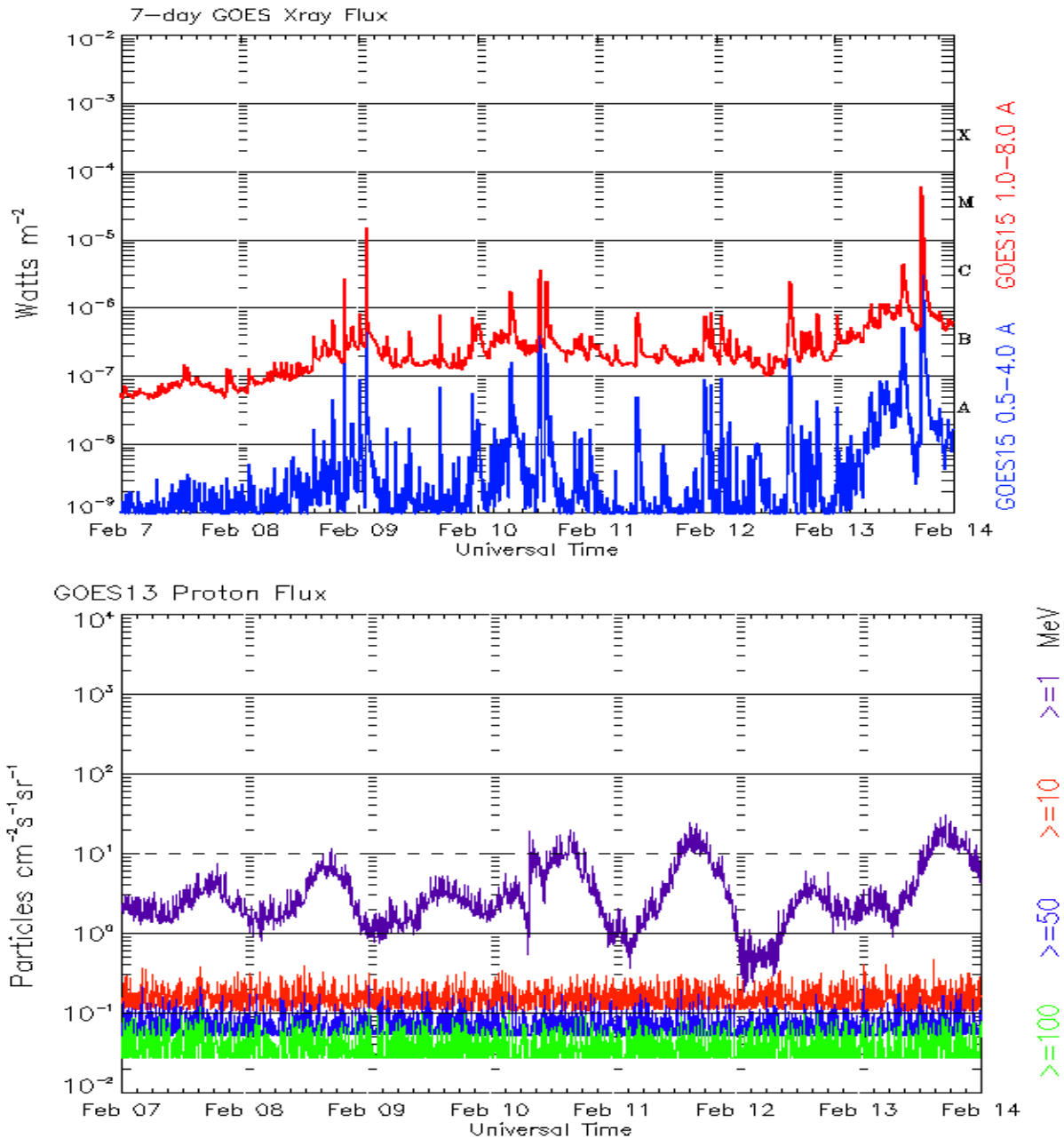
The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm<sup>2</sup>-sec -sr) with energies greater than 2 MeV by the SWPC Primary GOES satellite.

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.

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  
Week Beginning 07 February 2011*

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 intergral 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.



## ***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

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<http://spaceweather.gov/ftpmenu/warehouse.html> -- Online archive from 1997

<http://spaceweather.gov/ftpmenu/> -- Some content as ascii text

<http://spaceweather.gov/SolarCycle/> -- Solar Cycle Progression web site

<http://spaceweather.gov/contacts.html> -- Contact and Copyright information

[http://spaceweather.gov/weekly/Usr\\_guide.pdf](http://spaceweather.gov/weekly/Usr_guide.pdf) -- User Guide

