

Space Weather Highlights
04 February - 10 February 2013

SWPC PRF 1954
11 February 2013

Solar activity was low. The largest flare of the period, a C8/1f with associated Type-II (estimated at 548 km/s) and Type-IV radio sweeps, originated from Region 1667 (N22, L=200, class/area Dso/100) on 06/0021 UTC. A CME with an earth-directed component was subsequently observed in LASCO C3 imagery at 06/0042 UTC. A long duration C2 flare associated with a 27 heliographic degree Hyder flare eruption centered near N23W06 at 09/0640 UTC was also observed. This event also produced a potentially earth-directed CME which was observed in LASCO C2 imagery at 09/0709 UTC. The largest active region of the period was Region 1665 (N10, L=242, class/area Hsx/170 on 04 February), but this region failed to produce any flare events. The most magnetically complex region was Region 1670 (N17, L=161, class/area Dsi/160 on 10 February), although still on the disk, this region has also failed to produce any flare events. In addition to the CMEs already described, several other were noted on LASCO and STEREO coronagraph imagery throughout the week. Most of these were associated with filament eruptions, but none deemed geoeffective.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at normal to moderate levels.

Geomagnetic field activity was predominately quiet with two periods of unsettled conditions (08/0600-0900 UTC and 08/1500-1800 UTC) prompted by the 08/0400 UTC arrival of the 06 Feb CME described above.

Space Weather Outlook
11 February - 09 March 2013

Solar activity is expected to be very low to low.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at normal to moderate levels for most of the week, possibly reaching high levels on 13 - 18 February in response to positive polarity coronal holes/high speed streams (CHs/HSSs) 93 and 94.

Geomagnetic field activity is expected to be predominately quiet, with isolated unsettled conditions on 12 Feb, when the Hyder flare CME mentioned earlier is expected to arrive. Quiet to unsettled conditions are expected to persist through 16 February due to CH HSS effects.



Daily Solar Data

Date	Radio Flux 10.7cm	Sun spot No.	Sunspot Area (10 ⁻⁶ hemi.)	X-ray Background Flux	Flares							
					X-ray			Optical				
					C	M	X	S	1	2	3	4
04 February	107	30	260	B1.9	2	0	0	2	0	0	0	0
05 February	105	41	210	B1.7	1	0	0	1	0	0	0	0
06 February	104	39	230	B1.8	3	0	0	1	1	0	0	0
07 February	103	58	270	B1.4	0	0	0	0	0	0	0	0
08 February	104	57	280	B1.7	0	0	0	1	0	0	0	0
09 February	108	58	300	B1.9	1	0	0	2	0	0	0	0
10 February	106	45	280	B1.6	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	>0.6 MeV	>2MeV	>4 MeV
04 February	5.8e+05	1.1e+04	2.7e+03		7.3e+06	
05 February	4.5e+05	1.2e+04	2.7e+03		5.5e+06	
06 February	5.0e+05	1.1e+04	2.7e+03		5.5e+06	
07 February	3.4e+05	2.0e+04	2.9e+03		9.2e+05	
08 February	2.3e+06	2.2e+04	2.7e+03		9.2e+05	
09 February	1.5e+06	1.5e+04	2.9e+03		1.1e+06	
10 February	1.1e+06	1.3e+04	2.8e+03		1.3e+06	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
04 February	3	0-1-1-0-2-2-2-0	3	0-0-1-0-2-1-2-0	4	1-0-1-0-1-2-2-0
05 February	2	1-1-2-1-1-0-0-0	3	1-1-2-2-1-0-0-0	2	1-1-1-0-0-0-0-0
06 February	2	1-0-0-0-2-0-1-1	0	0-0-0-0-0-0-0-0	2	1-0-0-0-0-0-1-1
07 February	7	2-2-3-2-2-2-1-1	16	0-0-4-5-5-1-1-0	6	1-1-2-2-2-1-1-1
08 February	8	2-1-3-2-3-2-1-1	15	0-0-4-4-5-3-1-1	7	2-2-3-2-3-2-1-1
09 February	3	2-2-1-1-0-1-1-0	2	0-1-1-1-0-0-1-0	3	2-2-1-1-0-0-1-0
10 February	3	1-1-1-0-1-1-1-1	5	0-0-4-2-0-1-0-0	4	1-1-1-1-0-0-1-1

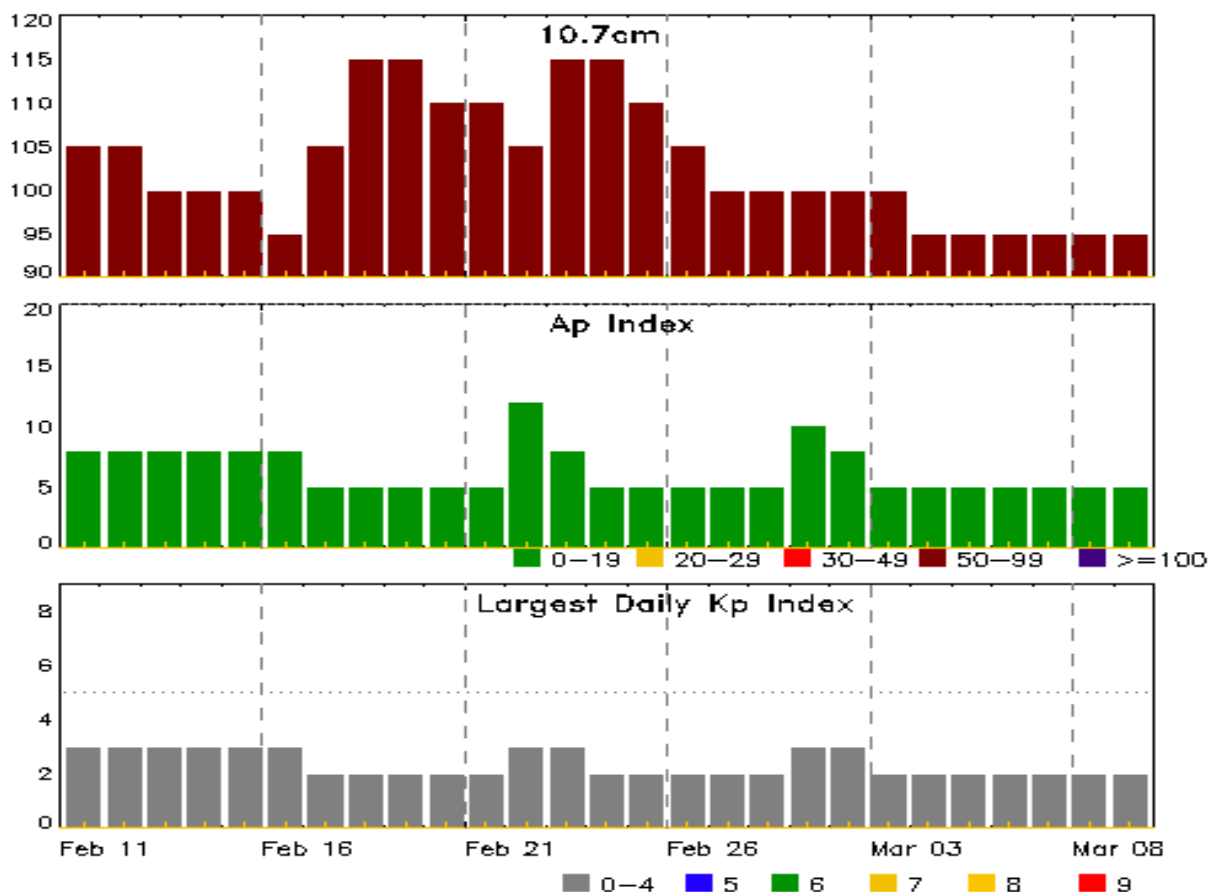


Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
04 Feb 1710	ALERT: Type II Radio Emission	04/1502
06 Feb 0111	ALERT: Type II Radio Emission	06/0013
06 Feb 0113	ALERT: Type IV Radio Emission	06/0017
07 Feb 1721	WATCH: Geomagnetic Storm Category G1 predicted	



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
11 Feb	105	8	3	25 Feb	110	5	2
12	105	8	3	26	105	5	2
13	100	8	3	27	100	5	2
14	100	8	3	28	100	5	2
15	100	8	3	01 Mar	100	10	3
16	95	8	3	02	100	8	3
17	105	5	2	03	100	5	2
18	115	5	2	04	95	5	2
19	115	5	2	05	95	5	2
20	110	5	2	06	95	5	2
21	110	5	2	07	95	5	2
22	105	12	3	08	95	5	2
23	115	8	3	09	95	5	2
24	115	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		
	Begin	Max	End		Imp/ Brtns	Location Lat CMD	Rgn #
04 Feb	0506	0510	0513	B4.7			
04 Feb	1122	1126	1137	B3.4			1669
04 Feb	1453	1459	1503	C2.0	SF	N09E71	1669
04 Feb	2035	2042	2047	C1.9	SF	N07E71	1669
05 Feb	0607	0612	0615	B6.6			1669
05 Feb	0812	0819	0822	C6.3	SF	N09E63	1669
05 Feb	1027	1031	1033	B7.8			1669
06 Feb	0004	0021	0041	C8.7	1F	N22E19	1667
06 Feb	0222	0316	0425	C1.3			
06 Feb	0553	0558	0602	C1.0	SF	N09E51	1669
06 Feb	1755	1758	1801	B3.0			1669
07 Feb	0239	0248	0306	B6.6			1667
08 Feb	0052	0110	0120	B4.0			1667
08 Feb	0841	0850	0922	B4.5			1670
08 Feb	1503	1508	1515	B4.7	SF	N19E18	1670
09 Feb	0530	0640	0726	C2.4			
09 Feb	0614	0624	0649		SF	N20W09	
09 Feb	1925	1929	1935	B5.5	SF	N25W32	1667
09 Feb	2348	2353	0003	B4.2			1667
10 Feb	0605	0609	0612	B2.7			1667



Region Summary

Date	Location	Sunspot Characteristics						Flares							
	Lat CMD	Helio	Area 10 ⁻⁶ hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical				
		Lon						C	M	X	S	1	2	3	4
Region 1662															
23 Jan	N26E64	319	60	1	Hsx	1	A								
24 Jan	N33E54	316	60	2	Hsx	1	A								
25 Jan	N28E41	316	50	2	Hsx	1	A								
26 Jan	N28E28	317	50	2	Hsx	1	A								
27 Jan	N28E14	317	50	2	Hsx	2	A								
28 Jan	N27E01	317	60	1	Hsx	1	A								
29 Jan	N28W12	317	70	2	Hsx	1	A								
30 Jan	N27W25	317	50	1	Hsx	1	A								
31 Jan	N27W39	317	50	1	Hsx	1	A								
01 Feb	N27W51	317	60	1	Hsx	1	A								
02 Feb	N27W65	317	40	2	Hsx	1	A								
03 Feb	N27W79	318	20	2	Hsx	2	A								
								0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 317

Region 1663															
26 Jan	S10E46	299	10	3	Bxo	3	B								
27 Jan	S10E33	298	40	7	Dso	7	B								
28 Jan	S11E19	298	80	8	Dso	8	B								
29 Jan	S11E05	299	120	9	Dso	9	B								
30 Jan	S09W11	302	80	2	Hsx	1	A								
31 Jan	S09W24	302	50	4	Cso	2	B	1			1				
01 Feb	S10W36	302	50	6	Hsx	6	A								
02 Feb	S09W52	303	30	5	Cao	2	B								
03 Feb	S09W65	304	0	1	Axx	1	A								
04 Feb	S09W79	304	plage												
								1	0	0	1	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 299



Region Summary - continued

Date	Location	Sunspot Characteristics						Flares							
	Lat CMD	Helio	Area 10 ⁻⁶ hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical				
		Lon						C	M	X	S	1	2	3	4
<i>Region 1665</i>															
29 Jan	N12E61	243	220	2	Hax	1	A								
30 Jan	N11E49	242	180	3	Dso	2	B								
31 Jan	N11E37	242	150	2	Hax	3	A								
01 Feb	N12E23	242	120	4	Cao	4	B					2			
02 Feb	N10E09	242	140	6	Cao	6	B	1							
03 Feb	N10W04	242	190	4	Cso	5	B	1							
04 Feb	N10W18	242	170	3	Hsx	2	A								
05 Feb	N10W31	242	120	2	Hsx	1	A								
06 Feb	N12W44	245	120	2	Hsx	1	A								
07 Feb	N12W58	244	120	2	Hsx	1	A								
08 Feb	N13W72	244	120	2	Hsx	1	A								
09 Feb	N11W81	241	80	2	Hsx	1	A								
10 Feb	N10W93	239	60	2	Hsx	1	A								
								2	0	0	2	0	0	0	0

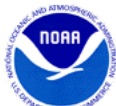
Still on Disk.

Absolute heliographic longitude: 242

Region 1666															
29 Jan	S23E61	244	10	1	Axx	1	A								
30 Jan	S24E48	244	10	1	Hsx	1	A								
31 Jan	S24E34	244	10	1	Hrx	1	A								
01 Feb	S24E22	243	0		Hrx	1	A								
02 Feb	S24E08	244	plage												
03 Feb	S24W06	245	plage												
04 Feb	S24W20	245	plage												
05 Feb	S24W34	245	plage												
06 Feb	S24W48	248	plage												
07 Feb	S24W62	248	plage												
08 Feb	S24W76	249	plage												
09 Feb	S20W89	249	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 245



Region Summary - continued

Date	Location	Sunspot Characteristics						Flares							
	Lat CMD	Helio	Area 10 ⁻⁶ hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical				
		Lon						C	M	X	S	1	2	3	4
Region 1667															
01 Feb	N24E62	204	30	2	Cao	3	B					1			
02 Feb	N23E49	202	140	9	Dao	5	B	1				1			
03 Feb	N22E42	197	160	5	Dsi	14	B	3				8			
04 Feb	N22E28	197	90	6	Dso	8	B								
05 Feb	N22E14	197	80	6	Dso	6	B								
06 Feb	N22E01	200	100	6	Dso	6	B	1					1		
07 Feb	N22W13	199	100	6	Dso	6	B								
08 Feb	N23W25	197	80	6	Cso	4	B								
09 Feb	N23W37	197	70	6	Cso	2	B					1			
10 Feb	N22W50	197	60	1	Hsx	1	A								
								5	0	0	11	1	0	0	0

Still on Disk.

Absolute heliographic longitude: 200

Region 1668

03 Feb	N12W16	255	30	4	Dao	7	B								
04 Feb	N12W30	255	plage												
05 Feb	N12W44	255	plage												
06 Feb	N12W58	258	plage												
07 Feb	N12W72	258	plage												
08 Feb	N12W86	259	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 255

Region 1669

05 Feb	N08E52	159	10	4	Bxo	4	B	1			1				
06 Feb	N08E38	162	10	1	Axx	2	A	1			1				
07 Feb	N08E24	162	20	8	Cro	6	B								
08 Feb	N07E11	162	10	1	Axx	2	A								
09 Feb	N07W02	162	plage												
10 Feb	N07W17	164	plage												
								4	0	0	2	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 162



Region Summary - continued

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

Region 1670

07 Feb	N18E25	161	30	4	Dro	5	B								
08 Feb	N19E12	161	70	5	Dao	10	B				1				
09 Feb	N19W01	161	150	8	Dsi	25	BG								
10 Feb	N17W14	161	160	7	Dsi	13	BG								
								0	0	0	1	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 161

Region 1671

0 0 0 0 0 0 0 0

Still on Disk.

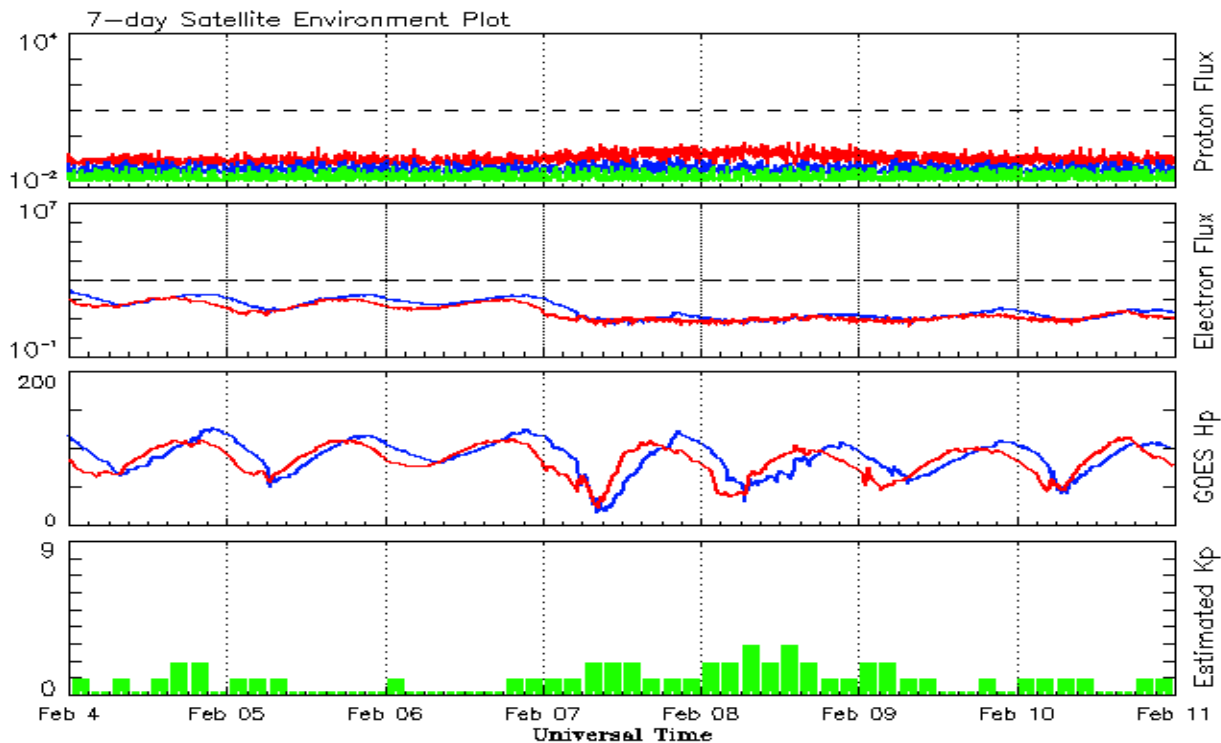
Absolute heliographic longitude:

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
2011									
February	53.2	29.6	0.55	50.6	33.4	94.5	92.7	6	6.8
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
2012									
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			115.7		7	
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	
2013									
January	99.8	62.9	0.63			127.1		4	

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 04 February 2013*

The proton flux plot contains the five-minute averaged integral proton flux (protons/cm²-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.

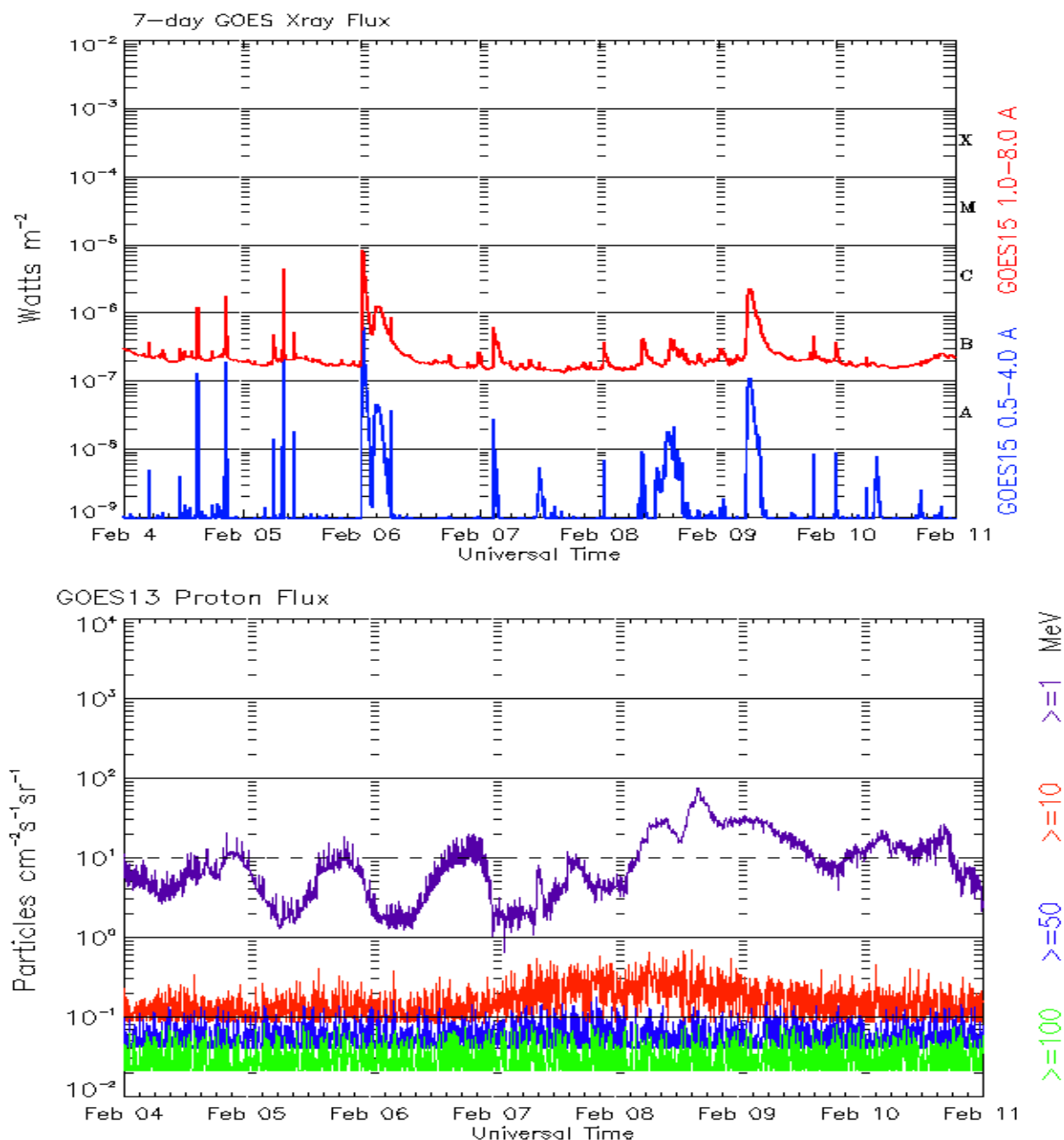
The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV by the SWPC Primary GOES satellite.

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 04 February 2013*

The x-ray plots contains five-minute averages x-ray flux (Watt/m²) 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/cm² -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

The Weekly has been published continuously since 1951 and is available online since 1997.

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