Space Weather Highlights
06 March - 12 March 2017

SWPC PRF 2167
13 March 2017

Solar activity was at very low levels throughout the reporting period. No CMEs observed in available SOHO LASCO imagery were determined to be Earth-directed.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at high levels on 06-08 Mar. Normal to high levels were observed on 09 Mar and moderate to high levels were observed on 10 Mar. On 11 Mar, a return to normal to high levels were observed, with moderate to high levels ending the period on 12 Mar. Sustained levels of electron flux was caused by continuous influence of a CH HSS throughout the reporting period.

Geomagnetic field activity ranged from quiet to G1 (Minor) levels during the reporting period due to a negative polarity, CH HSS that persisted throughout most of the week. On 06 Mar, quiet to G1 (Minor) levels represented a peak in geomagnetic activity caused by 650 km/s solar wind speeds, the highest levels observed from the CH HSS. A very gradual decline in solar wind speeds caused unsettled to active conditions on 07 Mar followed by quiet to active levels on 08-10 Mar. Quiet to unsettled conditions were observed on 11 Mar. An isolated period of active conditions, associated with a sustained period of southward Bz, was observed early on 12 Mar which quickly transitioned to quiet conditions for the rest of the day.

Space Weather Outlook
13 March - 08 April 2017

Solar activity is expected to be at very low levels throughout the outlook period.

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 on 13-17 Mar, 19-20 Mar, 24 Mar, and 29 Mar - 08 Apr due to influences from multiple, recurrent, CH HSSs. Normal to moderate levels are expected on 18 Mar, 21-23 Mar, and 25 Mar-28 Mar.

Geomagnetic field activity is expected to be at quiet to G2 (Moderate) levels over the next 27 days. Unsettled conditions are likely on 13-17 Mar, 19 Mar, 22 Mar, 24 Mar, 01 Apr, 03-05 Apr and 08 Apr. Active conditions are likely on 18 Mar, 23 Mar, 01 Apr, and 03-05 Apr. G1 (Minor) conditions are likely on 30-31 Mar and 02 Apr. G2 (Moderate) conditions are likely on 28-29 Mar. All enhancements in geomagnetic activity are due to the influences of multiple, anticipated, recurrent CH HSSs. Mostly quiet conditions are likely for the remaining days of the outlook period.

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
06 March	72	0	0	A1.6	0	0	0	0	0	0	0	0
07 March	72	0	0	A1.1	0	0	0	0	0	0	0	0
08 March	71	0	0	A1.2	0	0	0	0	0	0	0	0
09 March	71	0	0	A3.1	0	0	0	0	0	0	0	0
10 March	71	0	0	A1.5	0	0	0	0	0	0	0	0
11 March	70	0	0	A0.0	0	0	0	0	0	0	0	0
12 March	70	0	0	A0.0	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	>0.6 MeV	>2MeV	>4 MeV
06 March	5.0e+06	1.5e+04		3.6e+03	7.7e+08	
07 March	4.7e+06	1.5e+04		3.6e+03	1.0e+09	
08 March	3.0e+06	1.5e+04		3.7e+03	8.8e+08	
09 March	4.4e+06	1.6e+04		3.6e+03	8.7e+08	
10 March	3.4e+06	1.6e+04		3.6e+03	3.8e+08	
11 March	2.0e+06	1.6e+04		3.8e+03	5.0e+08	
12 March	1.5e+06	1.5e+04		3.7e+03	1.8e+08	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
06 March	16	3-3-2-3-3-3-4-3	36	4-2-2-6-6-5-4-3	25	4-3-2-4-4-4-5-4
07 March	13	3-3-4-3-2-2-2-2	33	3-5-4-5-5-5-3-3	16	3-3-4-3-3-3-3-3
08 March	9	3-1-1-2-2-2-3-3	16	3-1-1-4-5-2-2-3	12	3-1-1-2-3-2-3-4
09 March	10	3-3-2-3-2-2-2-2	32	3-2-5-6-5-5-2-1	15	4-3-2-3-3-2-3-2
10 March	14	3-3-4-4-3-1-1-1	22	2-2-4-6-5-2-0-1	12	2-3-4-4-3-1-1-2
11 March	4	0-0-1-1-1-1-1-3	4	1-1-1-1-0-1-2-2	6	1-1-2-1-0-1-2-3
12 March	7	3-3-2-1-2-1-1-0	12	2-3-3-1-5-2-0-1	18	3-4-2-1-2-1-1-1

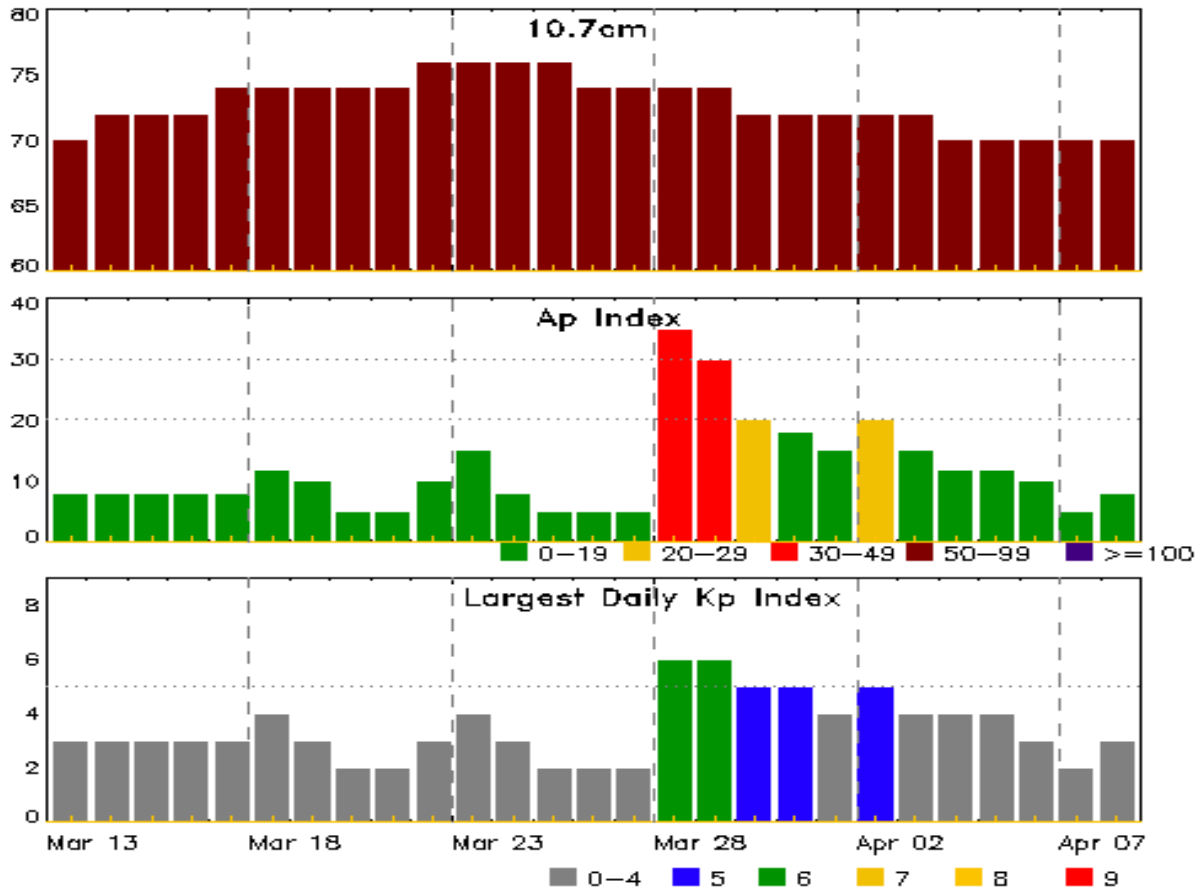
Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
06 Mar 0210	WARNING: Geomagnetic K = 4	06/0210 - 1200
06 Mar 0214	ALERT: Geomagnetic K = 4	06/0213
06 Mar 0500	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	02/0440
06 Mar 1324	WARNING: Geomagnetic K = 4	06/1325 - 1800
06 Mar 1454	ALERT: Geomagnetic K = 4	06/1453
06 Mar 1726	EXTENDED WARNING: Geomagnetic K = 4	06/1325 - 07/0600
06 Mar 1952	WARNING: Geomagnetic K = 5	06/1952 - 2359
06 Mar 2000	ALERT: Geomagnetic K = 5	06/2000
07 Mar 0503	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	02/0440
07 Mar 0542	EXTENDED WARNING: Geomagnetic K = 4	06/1325 - 07/1200
07 Mar 1145	EXTENDED WARNING: Geomagnetic K = 4	06/1325 - 07/1800
07 Mar 1755	EXTENDED WARNING: Geomagnetic K = 4	06/1325 - 07/2359
07 Mar 2352	EXTENDED WARNING: Geomagnetic K = 4	06/1325 - 08/0600
08 Mar 0500	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	02/0440
08 Mar 2044	WARNING: Geomagnetic K = 4	08/2044 - 2359
08 Mar 2326	EXTENDED WARNING: Geomagnetic K = 4	08/2044 - 09/0600
08 Mar 2352	ALERT: Geomagnetic K = 4	08/2351
09 Mar 0501	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	02/0440
09 Mar 0550	EXTENDED WARNING: Geomagnetic K = 4	08/2044 - 1200
09 Mar 1149	EXTENDED WARNING: Geomagnetic K = 4	08/2044 - 09/1800
09 Mar 1756	EXTENDED WARNING: Geomagnetic K = 4	08/2044 - 09/2359
10 Mar 0731	WARNING: Geomagnetic K = 4	10/0730 - 1300
10 Mar 0806	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	02/0440
10 Mar 0826	ALERT: Geomagnetic K = 4	10/0825
11 Mar 0517	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	02/0440

Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
12 Mar 0354	WARNING: Geomagnetic K = 4	12/0353 - 1300
12 Mar 0408	ALERT: Geomagnetic K = 4	12/0402
12 Mar 0846	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	02/0440

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
13 Mar	70	8	3	27 Mar	74	5	2
14	72	8	3	28	74	35	6
15	72	8	3	29	74	30	6
16	72	8	3	30	72	20	5
17	74	8	3	31	72	18	5
18	74	12	4	01 Apr	72	15	4
19	74	10	3	02	72	20	5
20	74	5	2	03	72	15	4
21	74	5	2	04	70	12	4
22	76	10	3	05	70	12	4
23	76	15	4	06	70	10	3
24	76	8	3	07	70	5	2
25	76	5	2	08	70	8	3
26	74	5	2				

Energetic Events

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

No Events Observed

Flare List

	Time				Optical		
Date	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
06 Mar	1158	1203	1210	B1.5			2641

Region Summary

	Location		Sunspot Characteristics					Flares							
		Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical				
Date	Lat CMD	Lon	10^{-6} hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4
			Region 2640												
26 Feb	N11E24	69	10	2	Bxo	2	B				1				
27 Feb	N09E11	69	20	4	Bxo	4	B								
28 Feb	N08W04	71	30	4	Axx	2	A								
01 Mar	N09W18	72	10	4	Axx	2	A								
02 Mar	N08W33	73	10		Axx	1	A								
03 Mar	N08W47	74	plage												
04 Mar	N08W61	75	plage												
05 Mar	N08W75	76	plage												
06 Mar	N08W89	77	plage												
								0	0	0	1	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 71

			Region 2641												
27 Feb	N15E46	34	40	5	Cro	5	B				2				
28 Feb	N15E26	41	100	11	Cao	6	B				3				
01 Mar	N14E19	35	60	5	Dro	7	B				2				
02 Mar	N15E04	36	30	5	Bxo	7	B								
03 Mar	N15W10	37	10	4	Bxo	3	B								
04 Mar	N15W24	38	plage												
05 Mar	N15W38	39	10	1	Axx	1	A								
06 Mar	N15W49	37	plage												
07 Mar	N15W63	37	plage												
08 Mar	N15W77	38	plage												
								0	0	0	7	0	0	0	0

Died on Disk.
Absolute heliographic longitude: 36

Region Summary - continued

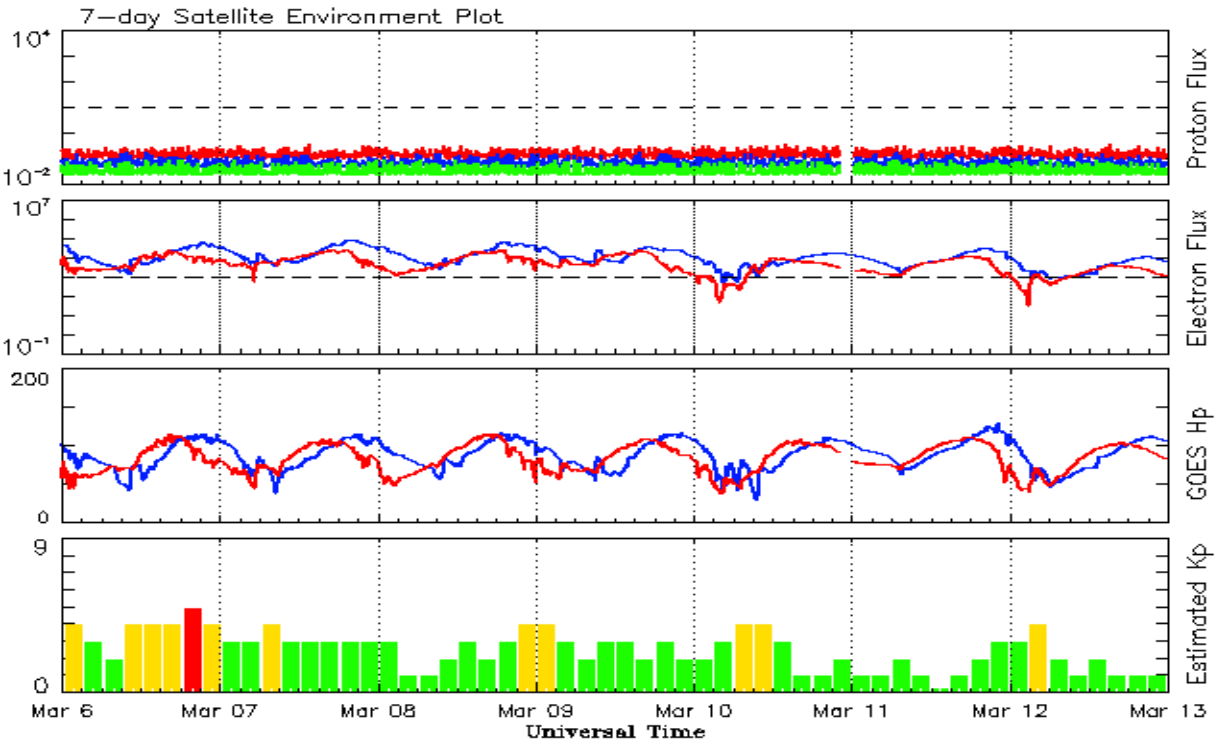
	Location		Sunspot Characteristics					Flares							
		Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical				
Date	Lat CMD	Lon	10^{-6} hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4
		Region 2642													
01 Mar	N14E11	43	40	5	Cro	5	B								
02 Mar	N15W03	43	20	5	Bxo	3	B								
03 Mar	N15W17	44	10	5	Bxo	2	B								
04 Mar	N15W31	45	plage												
05 Mar	N15W45	46	plage												
06 Mar	N15W59	47	plage												
07 Mar	N15W73	47	plage												
08 Mar	N15W87	48	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 43

Recent Solar Indices (preliminary)
Observed monthly mean values

	Sunspot Numbers					Radio Flux		Geomagnetic	
	Observed values		Ratio	Smooth values		Penticton	Smooth	Planetary	Smooth
Month	SEC	RI	RI/SEC	SEC	RI	10.7 cm	Value	Ap	Value
				2015					
March	61.7	32.7	0.62	84.2	49.3	126.0	131.2	17	12.0
April	72.5	45.2	0.75	80.5	47.3	129.2	127.3	12	12.4
May	83.0	53.3	0.71	77.5	45.7	120.1	123.3	9	12.7
June	77.3	39.9	0.53	73.1	43.3	123.2	119.5	14	13.0
July	68.4	39.5	0.58	68.2	41.0	107.0	116.0	10	13.1
August	61.6	38.6	0.63	65.5	39.8	106.2	113.3	16	13.1
September	72.5	47.2	0.65	64.0	39.5	102.1	110.8	16	12.8
October	59.5	38.2	0.62	61.8	38.6	104.1	107.9	15	12.5
November	61.8	37.3	0.61	59.0	36.7	109.6	105.3	13	12.5
December	54.1	34.8	0.64	55.1	34.7	112.8	102.5	15	12.5
				2016					
January	50.4	34.2	0.67	51.4	32.6	103.5	99.9	10	12.3
February	56.0	33.8	0.61	49.6	31.5	103.5	98.1	10	12.0
March	40.9	32.5	0.80	47.7	30.2	91.6	96.6	11	11.8
April	39.2	22.7	0.58	45.0	28.7	93.4	95.3	10	11.8
May	48.9	30.9	0.64	42.1	26.9	93.1	93.2	12	11.7
June	19.3	12.3	0.65	39.0	24.9	81.9	90.4	9	11.4
July	36.8	19.4	0.53	36.5	23.2	85.9	87.7	10	11.2
August	50.4	30.1	0.60	34.2	21.6	85.0	85.5	10	11.2
September	37.4	26.8	0.72			87.8		16	
October	30.0	20.2	0.67			86.1		16	
November	22.4	12.8	0.57			78.7		10	
December	17.6	11.3	0.64			75.1		10	
				2017					
January	28.1	15.5	0.55			77.4		10	
February	22.0	15.7	0.71			76.9		10	

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 06 March 2017

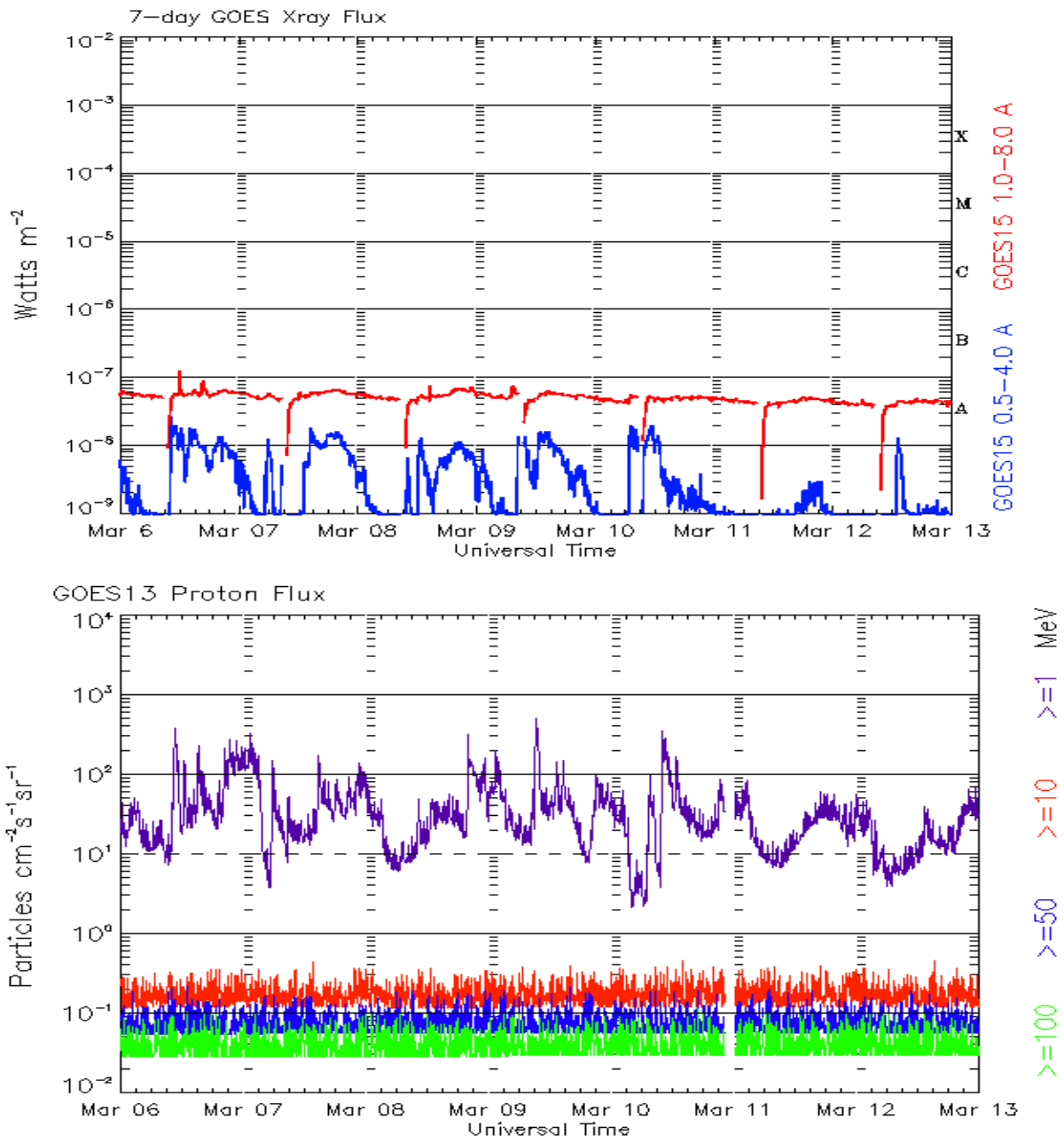
The proton flux plot contains the five-minute averaged integral proton flux (protons/cm^2-sec -sr) as measured by the SWPC Primary GOES satellite, near West 75, for each of three energy thresholds: greater than 10, 50, and 100 MeV.

The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm^2-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 06 March 2017

The x-ray plots contains five-minute averages x-ray flux (Watt/m^2) 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^2 -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.

http://spaceweather.gov/weekly/ -- Current and previous year
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