

Space Weather Highlights
13 March - 19 March 2017

SWPC PRF 2168
20 March 2017

Solar activity was at very low levels with no observable spots on the solar disk. No Earth-directed CMEs were observed during the period.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at normal to moderate levels with high levels observed on 13-15 March. The largest flux value of the period was 8,800 pfu observed at 14/1655 UTC.

Geomagnetic field activity ranged from quiet to unsettled levels. Solar wind speed was at nominal levels between 300 km/s and 400 km/s through most of the period with total field near 5 nT. On 15-16 March, a slight increase in solar wind speed and total field was observed just after a solar sector boundary crossing at 15/0008 UTC. This was likely due to a weak connection to a positive polarity coronal hole high speed stream (CH HSS). Total field increased to 9 nT while solar wind speed increased to near 433 km/s. The geomagnetic field responded with isolated unsettled periods on 15 and 16 March.

Space Weather Outlook
20 March - 15 April 2017

Solar activity is expected to be at very low levels for the forecast period.

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 with high levels likely on 24 March and again from 29 March - 11 April due to recurrent CH HSS activity.

Geomagnetic field activity is expected to be at unsettled to active levels on 21-24 March and again from 28 March - 06 April. G1 (Minor) geomagnetic storm levels are likely on 23, 28-31 March and 02 April while G2 (Moderate) geomagnetic storm levels are likely on 28-29 March due to recurrent 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
13 March	70	0	0	A0.0	0	0	0	0	0	0	0	0
14 March	70	0	0	A0.0	0	0	0	0	0	0	0	0
15 March	70	0	0	A0.0	0	0	0	0	0	0	0	0
16 March	71	0	0	A0.0	0	0	0	0	0	0	0	0
17 March	71	0	0	A0.0	0	0	0	0	0	0	0	0
18 March	70	0	0	A0.0	0	0	0	0	0	0	0	0
19 March	71	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
	13 March	1.5e+06	1.5e+04	3.5e+03	1.4e+08	
14 March	1.3e+06	1.5e+04	3.6e+03	4.2e+08		
15 March	1.5e+06	1.5e+04	3.6e+03	1.1e+08		
16 March	1.2e+06	1.5e+04	3.4e+03	9.2e+06		
17 March	1.6e+06	1.5e+04	3.7e+03	1.9e+07		
18 March	1.4e+06	1.5e+04	3.8e+03	3.4e+07		
19 March	1.2e+06	1.6e+04	3.8e+03	3.9e+07		

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	13 March	2	0-2-1-0-1-1-1-0	2	0-1-2-1-0-0-0-0	3
14 March	3	1-2-0-0-2-1-1-1	2	0-0-0-1-2-2-0-0	5	1-2-0-0-2-2-1-1
15 March	5	1-1-2-1-1-1-1-3	6	0-1-3-2-2-1-1-2	7	1-2-2-2-1-1-1-3
16 March	5	3-2-0-1-2-1-1-1	3	2-1-0-0-2-1-2-0	6	3-2-0-1-1-0-1-1
17 March	3	0-2-1-0-1-1-1-1	2	1-0-1-1-0-1-0-0	4	1-2-1-0-0-0-1-2
18 March	1	1-0-0-0-0-1-0-0	1	1-0-0-0-0-0-1-1	2	1-0-0-0-0-0-1-1
19 March	2	0-0-1-1-0-1-0-1	0	0-0-1-0-0-0-0-0	2	0-0-1-1-0-0-0-1

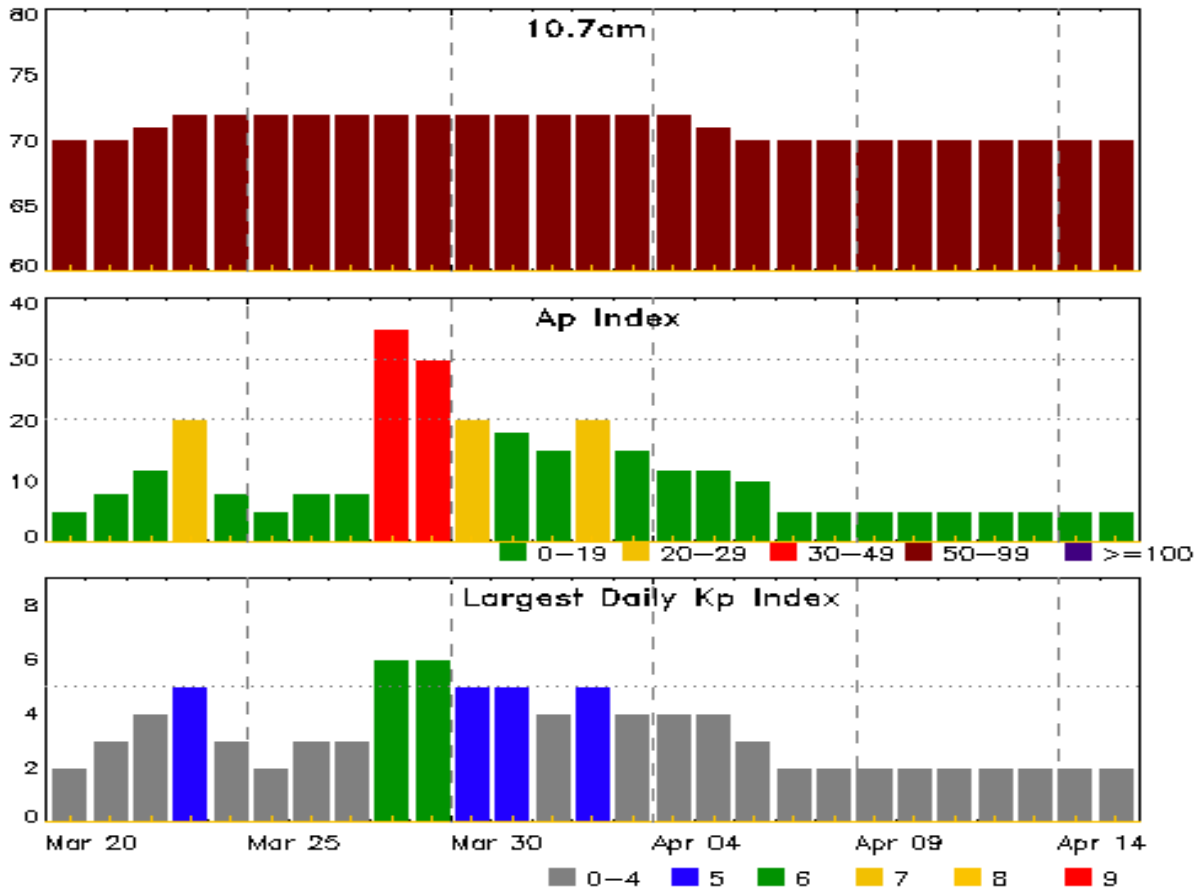


Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
13 Mar 1100	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	02/0440
14 Mar 0500	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	02/0440
15 Mar 0612	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 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
20 Mar	70	5	2	03 Apr	72	15	4
21	70	8	3	04	72	12	4
22	71	12	4	05	71	12	4
23	72	20	5	06	70	10	3
24	72	8	3	07	70	5	2
25	72	5	2	08	70	5	2
26	72	8	3	09	70	5	2
27	72	8	3	10	70	5	2
28	72	35	6	11	70	5	2
29	72	30	6	12	70	5	2
30	72	20	5	13	70	5	2
31	72	18	5	14	70	5	2
01 Apr	72	15	4	15	70	5	2
02	72	20	5				



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

No Events Observed

Flare List

Date	Time			X-ray Class	Optical			Rgn #
	Begin	Max	End		Imp/ Brtns	Location Lat CMD		

No Flares Observed



Region Summary

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

No Active Regions

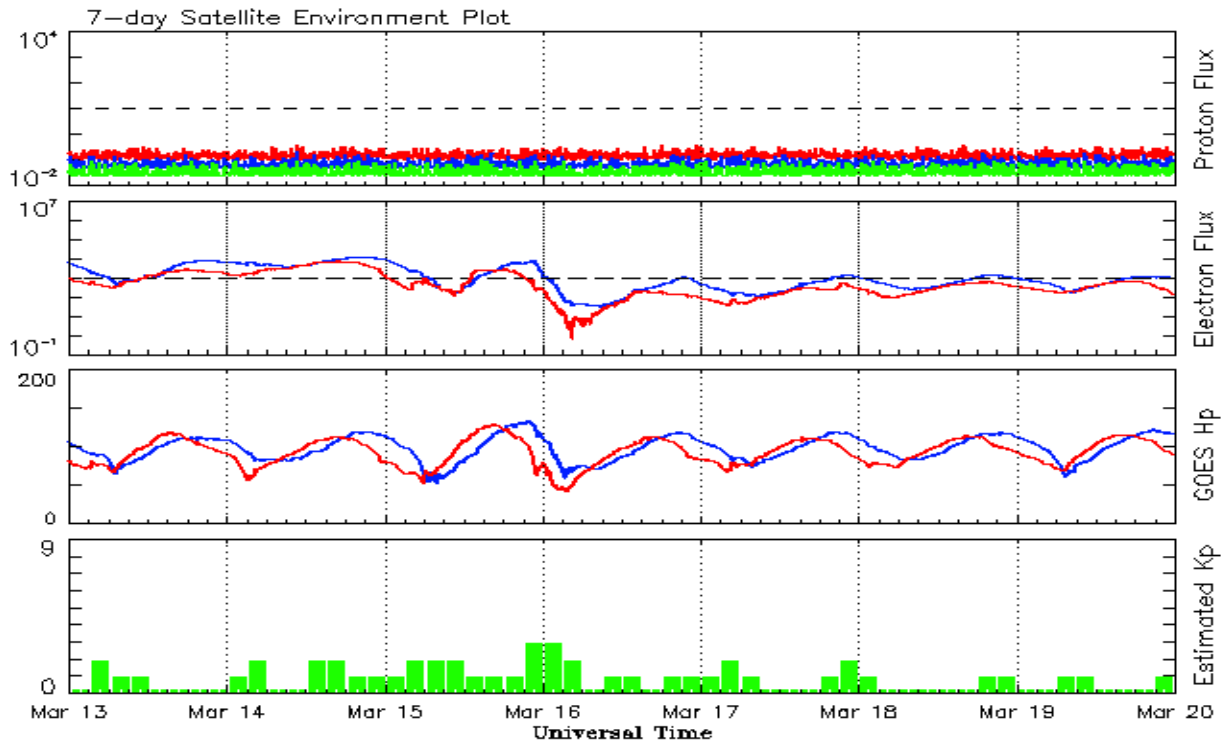


Recent Solar Indices (preliminary)
Observed monthly mean values

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
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 13 March 2017*

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.

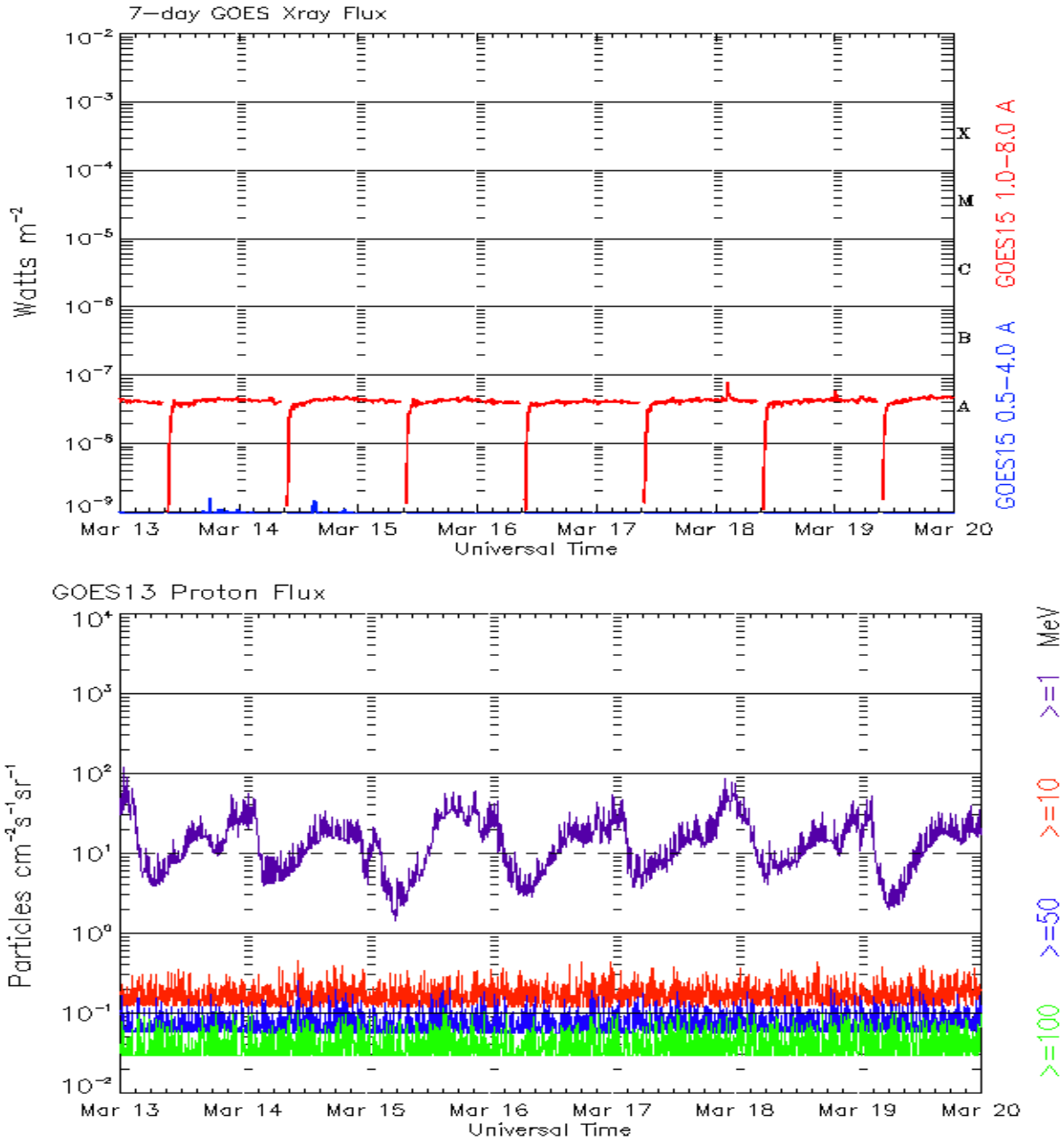
The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV by the SWPC Primary GOES satellite.

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 13 March 2017*

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 intergral 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)

Published every Monday by the Space Weather Prediction Center.

U.S. Department of Commerce
NOAA / National Weather Service
Space Weather Prediction Center
325 Broadway, Boulder CO 80305

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

<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 -- User Guide

