

Space Weather Highlights
19 February - 25 February 2018

SWPC PRF 2217
26 February 2018

Solar activity was very low throughout the summary period. No active regions were observed on the visible disk. No Earth-directed CMEs were observed in available coronagraph imagery.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit reached high levels from 19-26 Feb. A peak flux of 13,500 pfu was observed on 19/2030 UTC.

Geomagnetic field activity ranged from quiet to G1 (Minor) storm levels due to multiple negative coronal hole onsets. Quiet to G1 (Minor) storm levels on 19 Feb were associated with peak wind speeds of just about 550 km/s from a negative polarity CH HSS. The geomagnetic response declined along with solar wind speeds with quiet to unsettled conditions observed on 20 Feb and quiet levels on 21 Feb. A subsequent enhancement in solar wind speeds from another negative polarity CH HSS increased geomagnetic field activity to quiet to active levels on 22 Feb, and further to quiet to G1 (minor) storm levels on 23 Feb, which were also associated with peak wind speeds around 550 km/s. Activity dropped to quiet to unsettled on 24 Feb and completely quiet by 25 Feb as effects from the CH HSS waned.

Space Weather Outlook
26 February - 24 March 2018

Solar activity is expected to be very low throughout 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 high levels on 26-28 Feb and 18-24 Mar due to elevated wind speeds from multiple coronal holes. Moderate levels are anticipated on 15 Mar and the remainder of the forecast period is expected to be at normal levels.

Geomagnetic field activity is expected to reach G1 (Minor) geomagnetic storm levels on 26 Feb and 18 Mar. Active levels are expected on 14 Mar, 16-17 Mar, 21 Mar and 22 Mar. Unsettled levels are expected on 27 Feb, 15 Mar, and 23-24 Mar. Quiet conditions are expected for the remainder of the forecast period. All elevations in geomagnetic activity are anticipated due to multiple, recurrent CH HSSs.



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
19 February	69	0	0	A2.9	0	0	0	0	0	0	0	0
20 February	68	0	0	A2.4	0	0	0	0	0	0	0	0
21 February	68	0	0	A2.4	0	0	0	0	0	0	0	0
22 February	68	0	0	A2.2	0	0	0	0	0	0	0	0
23 February	68	0	0	A2.2	0	0	0	0	0	0	0	0
24 February	68	0	0	A2.1	0	0	0	0	0	0	0	0
25 February	67	0	0	A2.0	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
19 February	3.4e+06	1.6e+04	3.4e+03	3.2e+08		
20 February	1.7e+06	1.6e+04	3.7e+03	4.7e+08		
21 February	2.1e+06	1.7e+04	3.5e+03	3.0e+08		
22 February	2.2e+06	1.6e+04	3.6e+03	1.1e+08		
23 February	1.4e+06	1.6e+04	3.4e+03	3.9e+07		
24 February	5.0e+05	1.6e+04	3.5e+03	9.1e+07		
25 February	6.4e+05	1.5e+04	3.4e+03	1.1e+08		

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
19 February	11	4-3-2-1-2-2-3-2	23	3-4-2-4-5-4-4-1	17	5-4-2-2-2-2-4-3
20 February	3	3-0-0-1-1-1-1-0	4	2-0-0-2-2-2-0-0	5	3-1-0-1-1-1-1-0
21 February	3	0-0-2-2-1-0-1-0	4	0-0-0-4-1-0-1-0	4	0-0-1-2-1-1-1-1
22 February	9	2-1-1-2-2-3-3-3	13	0-1-0-4-4-4-3-1	11	2-1-1-2-2-3-4-4
23 February	11	2-3-3-4-1-2-2-1	21	1-2-4-6-3-3-3-2	16	2-4-3-5-2-2-3-2
24 February	6	3-3-2-2-1-0-0-0	11	3-3-4-3-3-0-0-0	9	3-3-3-2-2-0-1-1
25 February	2	0-0-1-0-0-1-1-1	2	0-0-0-0-0-2-1-1	3	1-0-1-0-0-2-2-2

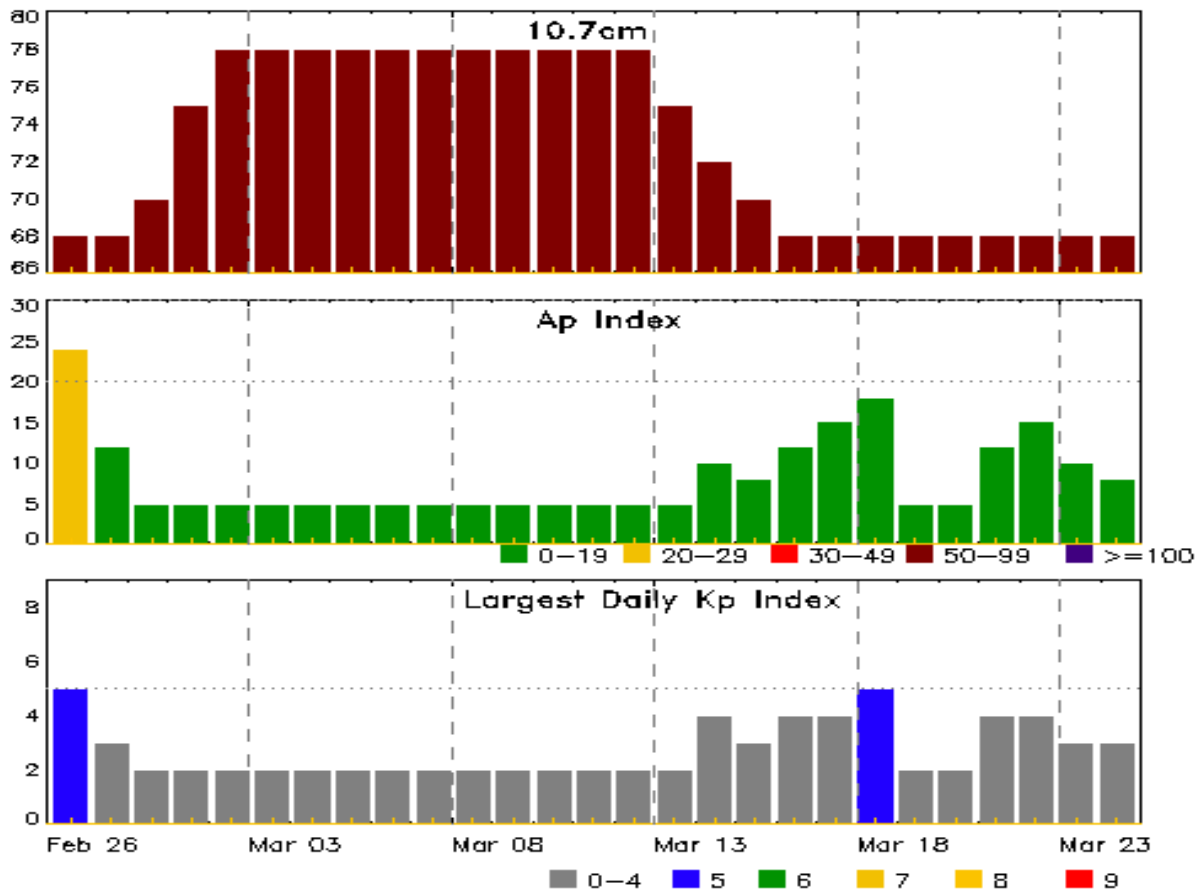


Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
19 Feb 0246	WARNING: Geomagnetic K = 5	19/0244 - 0900
19 Feb 0301	ALERT: Geomagnetic K = 5	19/0259
19 Feb 0417	EXTENDED WARNING: Geomagnetic K = 4	18/0124 - 19/1200
19 Feb 1306	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	18/1555
19 Feb 1908	WARNING: Geomagnetic K = 4	19/1908 - 20/0600
19 Feb 1915	ALERT: Geomagnetic K = 4	19/1910
20 Feb 0859	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	18/1555
21 Feb 0859	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	18/1555
22 Feb 1521	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	18/1555
22 Feb 1754	WARNING: Geomagnetic K = 4	22/1753 - 2300
22 Feb 1918	ALERT: Geomagnetic K = 4	22/1917
22 Feb 2055	EXTENDED WARNING: Geomagnetic K = 4	22/1753 - 23/0300
23 Feb 0411	WARNING: Geomagnetic K = 4	23/0410 - 1200
23 Feb 0510	ALERT: Geomagnetic K = 4	23/0508
23 Feb 1021	WARNING: Geomagnetic K = 5	23/1020 - 1500
23 Feb 1022	EXTENDED WARNING: Geomagnetic K = 4	23/0410 - 1500
23 Feb 1205	ALERT: Geomagnetic K = 5	23/1159
23 Feb 1421	EXTENDED WARNING: Geomagnetic K = 4	23/0410 - 24/0300
23 Feb 1921	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	18/1555
23 Feb 2309	WATCH: Geomagnetic Storm Category G1 predicted	
24 Feb 0255	EXTENDED WARNING: Geomagnetic K = 4	23/0410 - 24/1200
24 Feb 1430	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	18/1555
25 Feb 1335	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	18/1555



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
26 Feb	68	24	5	12 Mar	78	5	2
27	68	12	3	13	75	5	2
28	70	5	2	14	72	10	4
01 Mar	75	5	2	15	70	8	3
02	78	5	2	16	68	12	4
03	78	5	2	17	68	15	4
04	78	5	2	18	68	18	5
05	78	5	2	19	68	5	2
06	78	5	2	20	68	5	2
07	78	5	2	21	68	12	4
08	78	5	2	22	68	15	4
09	78	5	2	23	68	10	3
10	78	5	2	24	68	8	3
11	78	5	2				

Energetic Events

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

No Events Observed

Flare List

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

No Flares Observed



Region Summary

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

No Active Regions

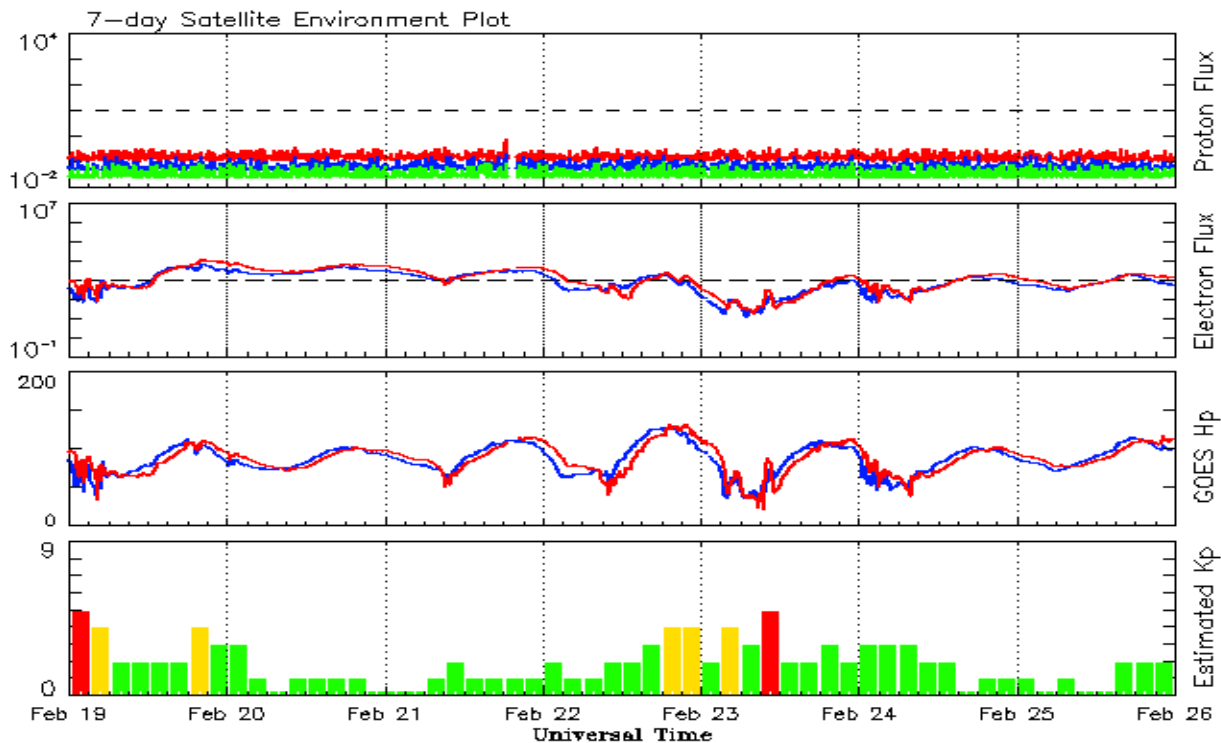


Recent Solar Indices (preliminary)
Observed monthly mean values

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
2016									
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	23.1	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	32.1	19.9	87.8	83.7	16	11.3
October	30.0	20.0	0.67	31.1	18.9	86.1	82.5	16	11.6
November	22.4	12.8	0.57	29.4	17.9	78.7	81.1	10	11.6
December	17.6	11.1	0.64	28.1	17.1	75.1	80.0	10	11.4
2017									
January	28.1	15.7	0.55	27.3	16.7	77.4	79.4	10	11.3
February	22.0	15.8	0.71	25.5	15.9	76.9	78.7	10	11.3
March	25.4	10.6	0.42	24.6	15.4	74.6	78.6	15	11.5
April	30.4	19.4	0.64	24.3	14.9	80.9	78.4	13	11.5
May	18.1	11.3	0.62	23.1	14.0	73.5	77.7	9	11.3
June	18.0	11.5	0.64	22.0	13.3	74.8	77.3	7	11.3
July	18.8	10.7	0.59	20.8	12.6	77.7	76.8	9	11.0
August	25.0	19.6	0.80			77.9		12	
September	42.2	26.2	0.62			92.0		19	
October	16.0	7.9	0.49			76.4		11	
November	7.7	3.4	0.44			72.1		11	
December	7.6	4.9	0.64			71.5		8	
2018									
January	7.8	4.0	0.51			70.0		6	

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 19 February 2018*

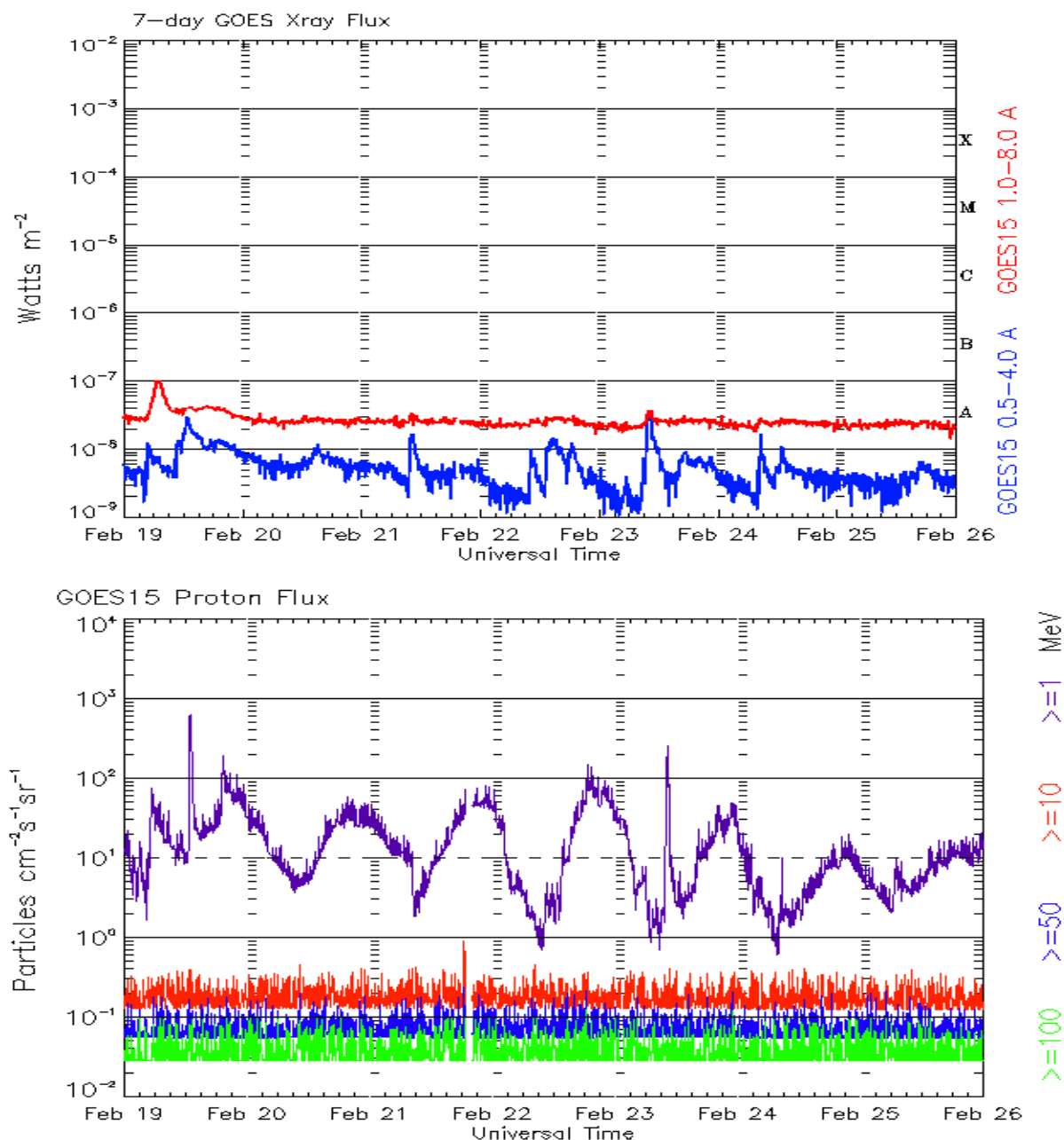
The proton flux plot contains the five-minute averaged integral proton flux (protons/cm²-sec -sr) as measured by the SWPC Primary GOES satellite, near West 75, for each of three energy thresholds: greater than 10, 50, and 100 MeV.

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. Hp 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 19 February 2018*

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 integral 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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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

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