

**Space Weather Highlights**  
**10 February - 16 February 2020**

**SWPC PRF 2320**  
**17 February 2020**

Solar activity was very low throughout the period. No active regions with sunspots were observed and no earth-directed CMEs were detected.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit reached high levels on 10-11 Feb and reached moderate levels on 12-16 Feb.

Geomagnetic field activity was generally quiet with isolated periods of unsettled activity.

**Space Weather Outlook**  
**17 February - 14 March 2020**

Solar activity is expected to be very low 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 reach high levels on 05-09 Mar with normal to moderate levels expected for the remainder of the period.

Geomagnetic field activity is expected to reach G1 (Minor) geomagnetic storm levels on 04 Mar with active levels expected on 26 Feb and 05 Mar due to multiple, recurrent CH HSSs. Generally quiet and quiet to unsettled conditions are expected to prevail for the remainder of the outlook period.



### *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
10 February	70	0	0	A0.0	0	0	0	0	0	0	0	0
11 February	71	0	0	A0.0	0	0	0	0	0	0	0	0
12 February	72	0	0	A0.0	0	0	0	0	0	0	0	0
13 February	71	0	0	A0.0	0	0	0	0	0	0	0	0
14 February	71	0	0	A0.0	0	0	0	0	0	0	0	0
15 February	71	0	0	A0.0	0	0	0	0	0	0	0	0
16 February	71	0	0	A0.0	0	0	0	0	0	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	>2MeV	
	10 February	1.0e+05	4.6e+04	1.2e+08
11 February	1.3e+05	4.6e+04	5.6e+07	
12 February	1.5e+05	4.6e+04	2.9e+07	
13 February	1.7e+05	4.7e+04	3.0e+07	
14 February	4.3e+05	4.6e+04	3.4e+07	
15 February	5.4e+05	4.6e+04	3.0e+07	
16 February	2.3e+05	4.7e+04	1.0e+07	

### *Daily Geomagnetic Data*

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	10 February	4	1-1-2-1-1-1-1-2	7	1-0-3-4-1-0-1-1	5
11 February	6	2-3-2-1-1-1-1-1	2	1-2-1-1-0-0-0-0	6	3-3-2-1-0-0-1-1
12 February	4	2-2-1-1-1-0-1-1	5	0-0-1-4-2-0-0-0	4	2-2-1-2-1-0-0-1
13 February	1	0-0-0-1-0-1-0-1	1	0-0-1-1-0-0-1-0	3	0-1-1-1-0-1-1-2
14 February	3	2-2-0-0-0-1-0-1	0	0-0-0-0-0-0-0-0	3	2-1-0-0-0-0-0-1
15 February	4	0-1-1-2-2-1-1-1	8	0-0-0-3-5-1-0-0	5	1-0-0-2-3-1-1-1
16 February	2	2-0-0-1-1-1-1-0	1	1-0-0-1-0-0-0-0	9	2-1-0-1-1-0-1-0



### *Alerts and Warnings Issued*

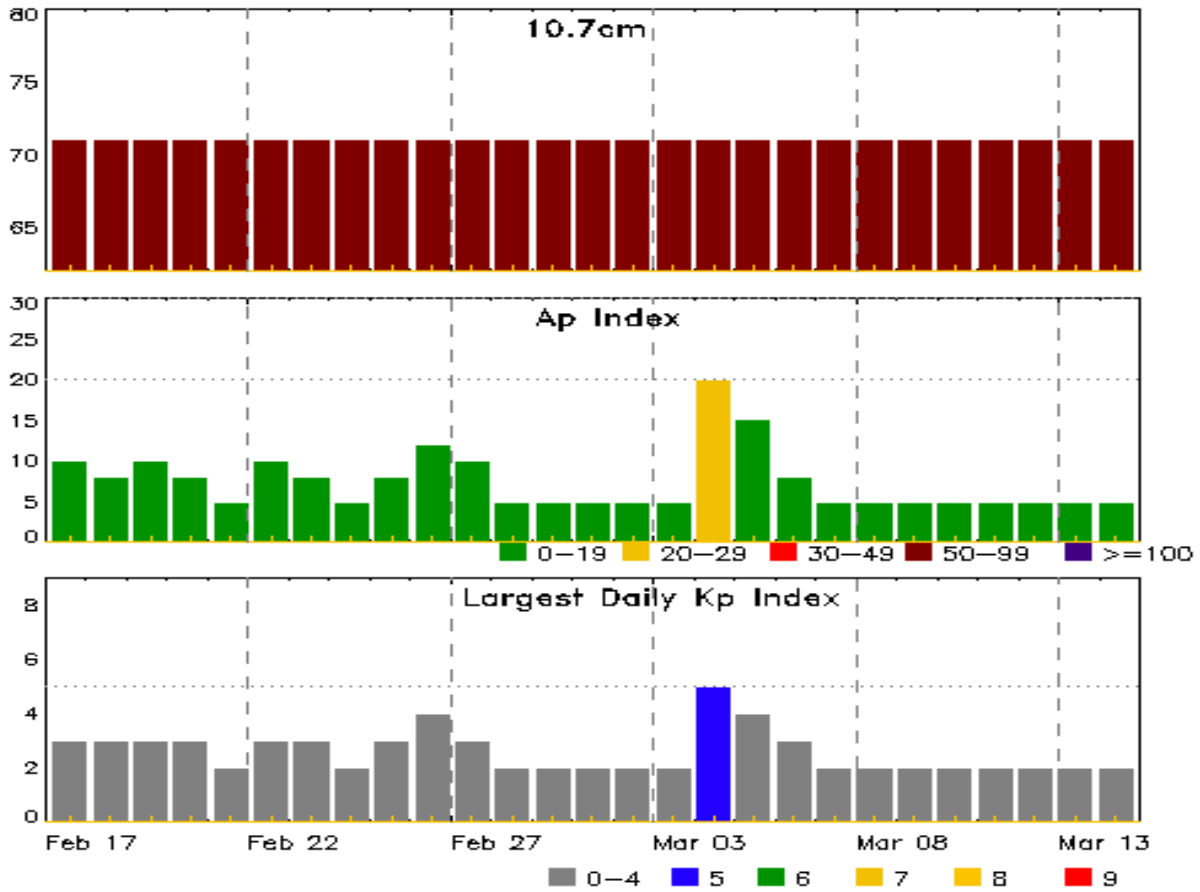
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<b>Date &amp; Time of Issue UTC</b>	<b>Type of Alert or Warning</b>	<b>Date &amp; Time of Event UTC</b>
10 Feb 1036	CONTINUED ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	08/1335
11 Feb 1333	CONTINUED ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	08/1335

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## 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
17 Feb	71	10	3	02 Mar	71	5	2
18	71	8	3	03	71	5	2
19	71	10	3	04	71	20	5
20	71	8	3	05	71	15	4
21	71	5	2	06	71	8	3
22	71	10	3	07	71	5	2
23	71	8	3	08	71	5	2
24	71	5	2	09	71	5	2
25	71	8	3	10	71	5	2
26	71	12	4	11	71	5	2
27	71	10	3	12	71	5	2
28	71	5	2	13	71	5	2
29	71	5	2	14	71	5	2
01 Mar	71	5	2				



### ***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 <sup>-6</sup> 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	
<b>2018</b>										
February	16.0	6.4	0.40	13.7	7.6	72.0	73.3	7	9.1	
March	6.0	1.5	0.25	11.5	5.9	68.4	71.9	8	8.6	
April	7.0	5.3	0.76	9.6	4.7	70.0	70.6	7	8.0	
May	15.0	7.9	0.53	9.2	4.5	70.9	70.2	8	7.6	
June	19.7	9.4	0.48	9.1	4.3	72.5	70.0	7	7.4	
July	1.3	1.0	0.77	9.4	4.2	69.7	70.0	6	7.3	
August	10.0	5.2	0.53	9.0	4.0	69.1	70.0	10	7.3	
September	5.7	2.0	0.35	8.7	3.9	68.3	70.1	9	7.3	
October	6.9	2.9	0.42	9.2	4.1	69.5	70.3	7	7.1	
November	7.3	2.9	0.48	9.5	4.0	68.9	70.4	6	7.0	
December	5.6	1.9	0.34	9.3	3.6	70.0	70.3	7	6.9	
<b>2019</b>										
January	16.0	4.6	0.29	9.0	3.2	71.6	70.0	6	6.8	
February		0.5		8.7	3.0	70.6	69.8	7	6.7	
March	14.8	5.6	0.39	8.3	2.8	71.5	69.7	6	6.6	
April	11.5	5.5	0.48	7.9	2.6	72.4	69.6	6	6.7	
May	18.1	5.9	0.34	7.4	2.3	71.3	69.6	7	6.7	
June	11.6	0.7	0.06	7.3	2.2	68.1	69.6	5	6.5	
July	1.6	0.5	0.31	7.0	2.1	67.1	69.7	6	6.3	
August	2.5	0.3	0.16			67.0		7		
September	2.6	0.7	0.27			68.1		10		
October	1.8	0.2	0.11			67.4		8		
November	1.1	0.3	0.27			70.2		4		
December	7.2	1.0	0.14			70.9		4		
<b>2020</b>										
January	9.2	3.8	0.41			72.3		5		

**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.



## ***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.

<https://www.swpc.noaa.gov/products/weekly-highlights-and-27-day-forecast> --

Current

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