

Space Weather Highlights
03 February - 09 February 2020

SWPC PRF 2319
10 February 2020

Solar activity was very low. The visible disk remained spotless and 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 was between normal to high levels. High levels were reached on 08-09 Feb in response to a negative polarity CH HSS. Normal to moderate levels were observed for the remainder of the summary period.

Geomagnetic field activity ranged from quiet to active levels. Active levels were observed on 06-07 Feb in response to the onset of a negative polarity CH HSS, with wind speeds reaching a max near 650 km/s on 07 Feb. As wind speeds declined, unsettled conditions were observed on 08-09 Feb. Another isolated period of unsettled was observed on 04 Feb in response to sustained southward Bz. The remainder of the summary period was quiet.

Space Weather Outlook
10 February - 07 March 2020

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 reach high levels over 10-14 Feb and 06-07 Mar in response to multiple CH HSSs. Normal to moderate levels are expected for the remainder of the outlook period.

Geomagnetic field activity is expected to range from quiet to G1 (Minor) geomagnetic storm levels. G1 (Minor) conditions are likely on 04 Mar in response to influence from a recurrent extension of the southern polar crown coronal hole. Active levels are likely on 11 Feb, 17 Feb, 26 Feb and 05 Mar; unsettled conditions are likely 12 Feb, 14 Feb, 18 Feb, 25 Feb and 27 Feb. These geomagnetic disturbances are anticipated from multiple, recurrent CH HSSs. The remainder of the outlook period is expected to be at quiet levels.



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		
03 February	72	0	0	A8.1	0	0	0	0	0	0	0	0	
04 February	70	0	0	A7.9	0	0	0	0	0	0	0	0	
05 February	71	0	0	A7.9	0	0	0	0	0	0	0	0	
06 February	71	0	0	A8.0	0	0	0	0	0	0	0	0	
07 February	71	0	0	A8.3	0	0	0	0	0	0	0	0	
08 February	72	0	0	A8.4	0	0	0	0	0	0	0	0	
09 February	71	0	0	A8.2	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
	03 February	3.8e+05	2.1e+04	3.9e+03	1.5e+07	
04 February	4.8e+05	2.1e+04	3.8e+03	1.4e+07		
05 February	1.9e+05	2.1e+04	3.7e+03	8.7e+06		
06 February	1.1e+06	2.1e+04	3.6e+03	2.2e+06		
07 February	1.1e+06	2.1e+04	3.9e+03	6.8e+07		
08 February	3.9e+05	2.1e+04	4.3e+03	1.4e+08		
09 February	2.7e+05	2.1e+04	4.0e+03	1.6e+08		

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	03 February	3	1-1-1-0-1-1-1-1	4	1-1-3-2-1-0-0-0	5
04 February	5	3-2-1-1-1-1-0-2	4	0-0-1-3-2-2-0-1	5	3-2-1-1-1-1-0-2
05 February	4	1-1-2-2-1-1-0-1	3	1-0-0-3-1-0-0-0	5	1-2-2-2-1-1-0-1
06 February	13	1-2-4-2-2-2-4-3	20	0-1-5-4-5-2-3-3	15	1-2-4-3-3-2-4-3
07 February	11	2-3-3-1-2-2-3-3	18	3-3-3-4-5-2-2-2	15	3-3-3-2-3-3-3-4
08 February	4	2-1-1-1-1-2-1-1	7	3-1-1-1-3-2-1-1	6	3-2-1-1-2-2-2-1
09 February	5	3-1-1-1-1-2-1-1	2	0-0-2-2-0-1-0-0	15	3-2-1-1-1-2-2-2

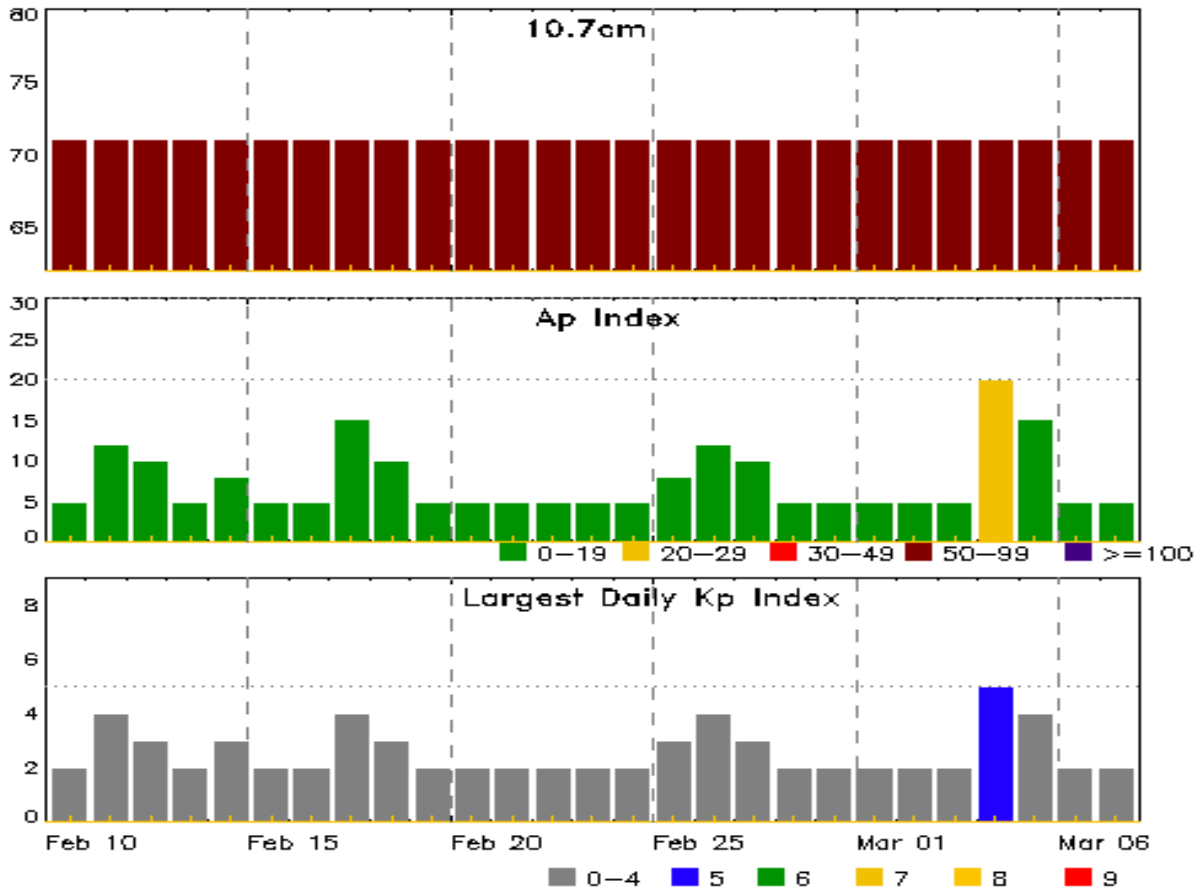


Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
06 Feb 0651	WARNING: Geomagnetic K = 4	06/0650 - 1200
06 Feb 0724	ALERT: Geomagnetic K = 4	06/0723
06 Feb 2019	WARNING: Geomagnetic K = 4	06/2019 - 07/0300
06 Feb 2021	ALERT: Geomagnetic K = 4	06/2021
06 Feb 2030	WARNING: Geomagnetic K = 5	06/2030 - 2359
07 Feb 0252	EXTENDED WARNING: Geomagnetic K = 4	06/2019 - 07/1800
07 Feb 2312	WARNING: Geomagnetic K = 4	07/2315 - 08/0900
08 Feb 0001	ALERT: Geomagnetic K = 4	07/2359
08 Feb 1400	ALERT: Electron 2MeV Integral Flux \geq 1000pfu	08/1335
09 Feb 1221	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	08/1335



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
10 Feb	71	5	2	24 Feb	71	5	2
11	71	12	4	25	71	8	3
12	71	10	3	26	71	12	4
13	71	5	2	27	71	10	3
14	71	8	3	28	71	5	2
15	71	5	2	29	71	5	2
16	71	5	2	01 Mar	71	5	2
17	71	15	4	02	71	5	2
18	71	10	3	03	71	5	2
19	71	5	2	04	71	20	5
20	71	5	2	05	71	15	4
21	71	5	2	06	71	5	2
22	71	5	2	07	71	5	2
23	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 #	245	2695	II

No Events Observed

Flare List

Date	Time			X-ray Class	Optical		
	Begin	Max	End		Imp/ Brtns	Location Lat CMD	Rgn #
07 Feb	0420	0421	0422	A1.1			



Region Summary

Date	Location		Sunspot Characteristics				Flares														
	Lat	CMD	Helio Lon	Area 10 ⁶ hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical									
									C	M	X	S	1	2	3	4					
Region 2757																					
24 Jan	N04E30		85	10	3	Bxo	2	B													
25 Jan	N03E14		87	20	3	Bxo	4	B						1							
26 Jan	N04W01		89	60	5	Cao	8	B					1								
27 Jan	N05W14		89	100	5	Cso	2	B													
28 Jan	N04W28		90	70	5	Hsx	1	A													
29 Jan	N04W42		91	60	3	Hsx	1	A													
30 Jan	N04W56		92	60	3	Hsx	1	A													
31 Jan	N04W70		93	20	1	Hrx	1	A													
01 Feb	N03W84		94	10	1	Axx	1	A													
02 Feb	N03W98		94	plage																	
													0	0	0	2	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 89



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	
2018										
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	
2019										
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		
2020										
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)

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.

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

Current

<ftp://ftp.swpc.noaa.gov/pub/warehouse> -- Online archive from 1997

<https://www.ngdc.noaa.gov/stp/satellite/goes-r.html> -- NCEI GOES data

textarchive

<https://www.swpc.noaa.gov/products/solar-cycle-progression> -- Solar Cycle

Progression web site

8 <https://www.swpc.noaa.gov/content/contact-us> -- Contact and Copyright information

https://www.swpc.noaa.gov/sites/default/files/images/u2/Usr_guide.pdf -- User

