

Space Weather Highlights
25 January - 31 January 2021

SWPC PRF 2370
01 February 2021

Solar activity was at very low levels. A few B-class x-ray events were observed from Regions 2799 (N22, L=021, class/area Dro/020 on 25 Jan) and 2800 (N19, L=306, class/area Bxo/010 on 27 Jan). 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 at normal to moderate levels on 25-26 Jan. High levels were reached on 27-31 Jan with a maximum flux of 5,068 pfu observed on 31/1540 UTC. High levels were due to HSS influence.

Geomagnetic field activity was at quiet to G1 (Minor) storm levels on 25 Jan, quiet to active levels on 26 Jan and quiet to unsettled levels on 27-28 Jan. This activity was due to influence from a geoeffective, negative polarity CH HSS. Quiet levels were observed on 29-31 Jan. During the highlight period, wind speeds peaked at about 605 km/s early on 26 Jan, total field reached 10 nT on 25 Jan and the Bz component reached -9 nT on 25 Jan.

Space Weather Outlook
01 February - 27 February 2021

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 01-10 Feb and 22-27 Feb, all due to HSS effects. Normal to moderate levels are expected on 11-21 Feb.

Geomagnetic field activity is expected to be at G1 (Minor) storm levels on 01 Feb and unsettled to active levels on 02-03 Feb, all due to negative polarity CH HSS influence. Quiet to unsettled levels are expected on 07-08 Feb due to positive polarity CH HSS influence. G1 (Minor) storm levels are anticipated on 21 Feb followed by unsettled to active levels on 22-23 Feb, all due to negative polarity CH HSS influence. Predominately quiet conditions are expected for 03-06 Feb, 09-20 Feb and 24-27 Feb.



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
25 January	77	26	40	A4.8	0	0	0	0	0	0	0	0
26 January	76	23	10	A2.9	0	0	0	0	0	0	0	0
27 January	76	26	20	A1.3	0	0	0	0	0	0	0	0
28 January	76	0	0	A1.6	0	0	0	1	0	0	0	0
29 January	76	0	0	A2.6	0	0	0	0	0	0	0	0
30 January	74	0	0	A1.9	0	0	0	0	0	0	0	0
31 January	73	0	0	A1.7	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	>2MeV	
	25 January	6.6e+05	4.4e+04	1.6e+06
26 January	9.1e+04	4.5e+04	2.1e+07	
27 January	6.0e+04	4.5e+04	1.1e+08	
28 January	5.3e+04	4.5e+04	1.6e+08	
29 January	6.1e+04	4.5e+04	1.7e+08	
30 January	6.6e+04	4.6e+04	1.7e+08	
31 January	3.9e+05	4.6e+04	2.1e+08	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	25 January	14	2-2-3-3-1-2-2-5	33	2-0-4-6-5-5-2-5	17
26 January	9	3-4-2-1-2-1-2-1	19	4-4-2-4-4-3-3-1	12	4-4-2-1-2-2-2-2
27 January	9	2-3-2-2-2-2-1-3	13	2-2-2-4-3-4-1-2	11	3-3-2-2-2-3-1-3
28 January	3	3-1-1-0-0-1-0-0	2	2-1-0-1-0-0-0-0	5	3-1-1-1-0-0-0-0
29 January	2	0-2-1-0-1-1-0-0	2	0-0-0-2-2-0-0-0	3	1-2-1-0-1-0-0-1
30 January	2	0-1-0-0-1-1-1-0	0	0-0-0-1-0-0-0-0	2	0-1-0-0-1-1-0-0
31 January	0	0-0-0-0-1-0-0-0	0	0-0-0-0-0-0-0-0	3	1-0-0-0-0-0-0-1

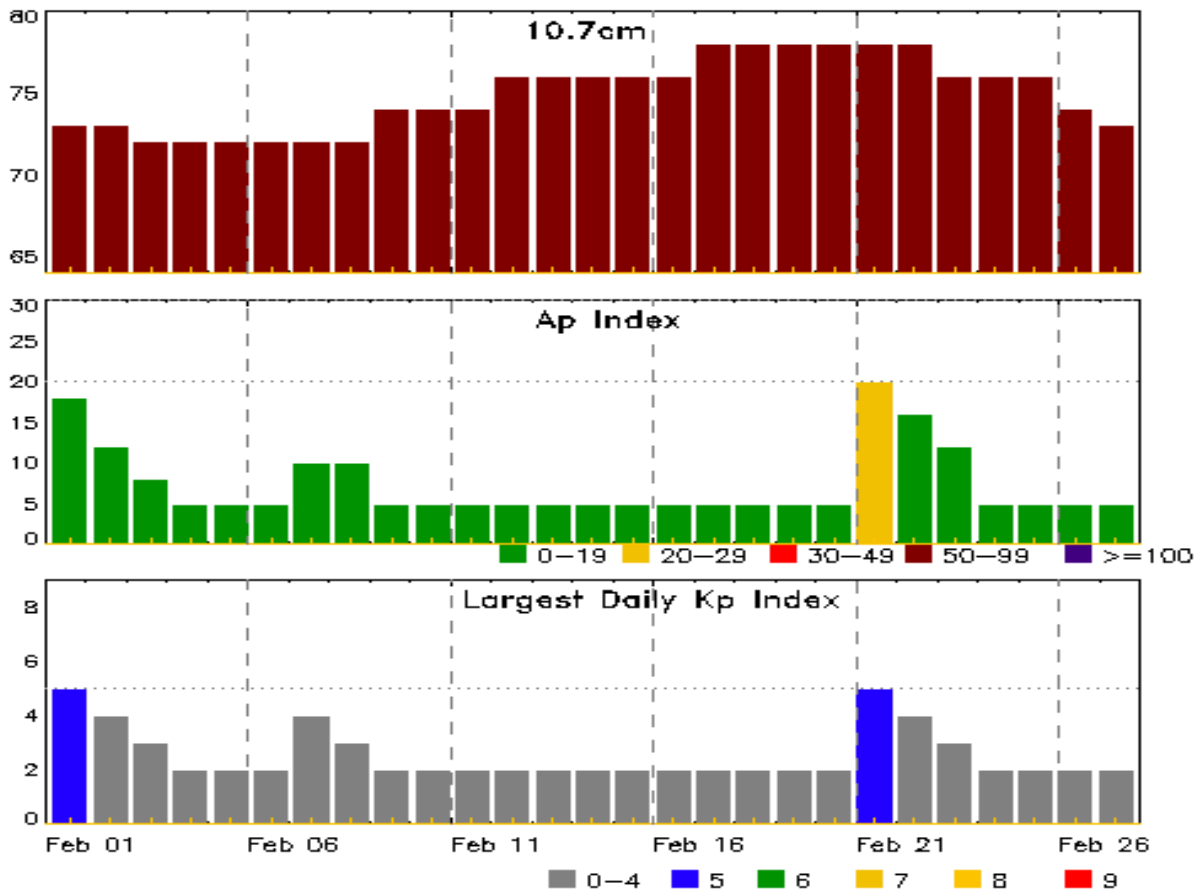


Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
25 Jan 0735	WARNING: Geomagnetic K = 4	25/0735 - 1200
25 Jan 0906	ALERT: Geomagnetic K = 4	25/0859
25 Jan 1155	EXTENDED WARNING: Geomagnetic K = 4	25/0735 - 1500
25 Jan 2129	WARNING: Geomagnetic K = 4	25/2130 - 26/0300
25 Jan 2143	ALERT: Geomagnetic K = 4	25/2143
25 Jan 2148	WARNING: Geomagnetic K = 5	25/2148 - 26/0300
25 Jan 2203	ALERT: Geomagnetic K = 5	25/2203
26 Jan 0244	EXTENDED WARNING: Geomagnetic K = 4	25/2130 - 26/0600
26 Jan 0412	WARNING: Geomagnetic K = 5	26/0411 - 0900
26 Jan 0555	EXTENDED WARNING: Geomagnetic K = 4	25/2130 - 26/1200
27 Jan 0449	WARNING: Geomagnetic K = 4	27/0448 - 0900
27 Jan 1237	ALERT: Electron 2MeV Integral Flux \geq 1000pfu	27/1220
27 Jan 2233	WARNING: Geomagnetic K = 4	27/2232 - 2359
28 Jan 0253	WARNING: Geomagnetic K = 4	28/0252 - 0559
28 Jan 0501	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	27/1220
29 Jan 0506	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	27/1220
29 Jan 2028	WATCH: Geomagnetic Storm Category G1 predicted	
30 Jan 0513	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	27/1220
31 Jan 0500	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	27/1220



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
01 Feb	73	18	5	15 Feb	76	5	2
02	73	12	4	16	76	5	2
03	72	8	3	17	78	5	2
04	72	5	2	18	78	5	2
05	72	5	2	19	78	5	2
06	72	5	2	20	78	5	2
07	72	10	4	21	78	20	5
08	72	10	3	22	78	16	4
09	74	5	2	23	76	12	3
10	74	5	2	24	76	5	2
11	74	5	2	25	76	5	2
12	76	5	2	26	74	5	2
13	76	5	2	27	73	5	2
14	76	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	Imp/ Brtns	Optical Location Lat CMD	Optical Rgn #
	Begin	Max	End				
25 Jan	0225	0240	0257	B1.5			2799
25 Jan	0631	0641	0648	B5.0			2799
25 Jan	0808	0819	0826	B2.2			2799
25 Jan	1120	1128	1132	B1.6			2799
26 Jan	2300	2308	2316	B1.3			2799
28 Jan	2258	2308	2316	B3.4	SF	N18W30	2800
29 Jan	0941	0955	1008	B2.5			2800
29 Jan	2005	2016	2027	B3.8			2800



Region Summary

Date	Location		Sunspot Characteristics				Flares																
	Lat CMD	Lon	Helio 10 ⁶ hemi.	Area	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical											
									C	M	X	S	1	2	3	4							
Region 2797																							
17 Jan	S18E76	340	90	4	Hsx	2	A																
18 Jan	S17E67	336	120	7	Cao	3	B																
19 Jan	S17E55	335	120	12	Cao	4	B																
20 Jan	S18E37	340	50	3	Hsx	2	A																
21 Jan	S18E22	341	70	2	Hax	2	A																
22 Jan	S18E09	341	70	1	Hax	2	A																
23 Jan	S17W04	341	50	2	Hax	2	A																
24 Jan	S17W16	340	50	2	Hax	2	A																
25 Jan	S18W29	340	20	2	Hrx	2	A																
26 Jan	S17W42	340	10	2	Axx	2	A																
27 Jan	S18W56	341	10	2	Axx	2	A																
28 Jan	S18W69	340	plage																				
29 Jan	S18W82	340	plage																				
													0	0	0	0	0	0	0	0	0		

Crossed West Limb.
 Absolute heliographic longitude: 341

Region 2798																							
19 Jan	S17E65	326	plage										1										
20 Jan	S17E46	331	60	5	Cao	3	B						1		2								
21 Jan	S16E34	329	40	7	Cao	4	B								4								
22 Jan	S16E18	332	20	3	Cro	5	B																
23 Jan	S16E05	332	10	1	Axx	1	A																
24 Jan	S16W09	333	plage												1								
25 Jan	S16W23	334	plage																				
26 Jan	S16W37	335	plage																				
27 Jan	S16W51	336	plage																				
28 Jan	S16W65	336	plage																				
29 Jan	S16W78	336	plage																				
													2	0	0	7	0	0	0	0	0		

Crossed West Limb.
 Absolute heliographic longitude: 332



Region Summary - continued

Date	Location		Sunspot Characteristics				Flares										
	Lat CMD	Lon	Helio 10 ⁻⁶ hemi.	Area	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical					
									C	M	X	S	1	2	3	4	
Region 2799																	
22 Jan	N21W30	20	10	3	Bxo	2	B										
23 Jan	N22W45	22	10	1	Axx	1	A										
24 Jan	N23W59	23	10	1	Axx	1	A										
25 Jan	N22W70	21	20	4	Dro	4	B										
26 Jan	N23W83	21	0	1	Axx	1	A										
27 Jan	N23W97	22	plage														
								0	0	0	0	0	0	0	0	0	

Crossed West Limb.
 Absolute heliographic longitude: 20

Region 2800																	
27 Jan	N19W20	305	10	3	Bxo	4	B										
28 Jan	N18W35	306	plage									1					
29 Jan	N18W48	306	plage														
30 Jan	N18W61	306	plage														
31 Jan	N18W74	306	plage														
								0	0	0	1	0	0	0	0	0	

Still on Disk.
 Absolute heliographic longitude: 305



Preliminary Report and Forecast of Solar Geophysical Data (The Weekly)

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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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