Space Weather Highlights **SWPC PRF 2365**
21 December - 27 December 2020 **28 December 2020**

Solar activity was at very low levels from 21-27 Dec. The largest flare observed was a B7.3 from Region 2795 (S18, L=318, class/area Dao/200 on 24 Dec) on 24 Dec. No Earth-directed CMEs were observed.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at moderate to high levels on 24-27 Dec due to CH HSS influence. Normal to moderate levels were observed on 21-23 Dec.

Geomagnetic field activity reached active levels on 21 and 23 Dec, and unsettled levels on 22, 24-25 Dec, all due to positive polarity CH HSS influences. Quiet levels were observed on 26-27 Dec.

Space Weather Outlook
28 December - 23 January 2021

Solar activity is expected to be at very low levels throughout the period with a slight chance for low levels on 28 Dec - 04 Jan, and 17-23 Jan due to the flare potential from Region 2795 (S18, L=318, class/area Dao/200 on 24 Dec).

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at moderate to high levels on 28-29 Dec and 20-23 Jan due to recurrent CH HSS influences. Normal to moderate levels are expected for the remainder of the outlook period.

Geomagnetic field activity is expected to be at unsettled to active levels on 5-6 Jan and 18-20 Jan, and quiet to unsettled levels on 29 Dec, 3 Jan, and 21 Jan, all due to recurrent CH HSS influences. Mostly quiet levels are expected on the remaining days in the outlook period.

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
21 December	80	11	170	A7.0	0	0	0	0	0	0	0	0
22 December	86	11	170	A9.2	0	0	0	0	0	0	0	0
23 December	86	27	220	B1.0	0	0	0	0	0	0	0	0
24 December	87	25	350	A7.6	0	0	0	0	0	0	0	0
25 December	88	30	400	A9.8	0	0	0	0	0	0	0	0
26 December	88	31	390	A9.1	0	0	0	0	0	0	0	0
27 December	88	26	360	A8.3	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
21 December	1.2e+06	4.4e+04	1.7e+06
22 December	3.0e+05	4.3e+04	1.9e+06
23 December	2.3e+05	4.4e+04	1.4e+07
24 December	3.8e+05	4.4e+04	4.0e+07
25 December	2.2e+05	4.5e+04	4.9e+07
26 December	2.4e+05	4.5e+04	4.2e+07
27 December	9.6e+05	4.5e+04	4.3e+07

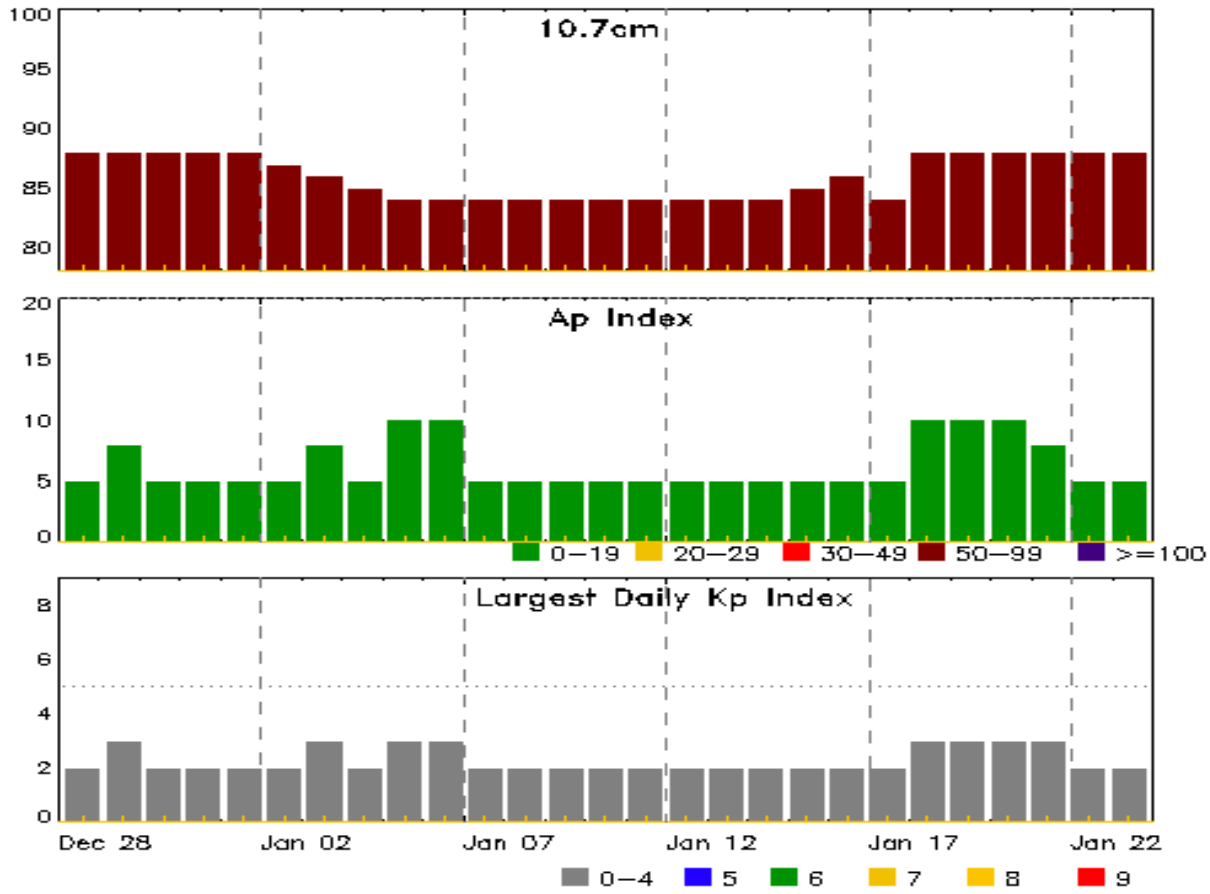
Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
21 December	8	2-3-1-2-2-1-2-3	11	0-1-2-5-1-0-1-4	12	2-3-2-2-2-1-2-4
22 December	11	3-3-2-3-2-2-3-2	17	3-2-3-5-4-3-1-1	13	3-3-3-3-2-3-3-2
23 December	11	3-4-3-3-1-1-1-1	18	2-2-3-5-5-2-2-1	12	3-4-3-3-2-1-2-2
24 December	7	1-2-2-2-2-3-1-1	20	1-2-3-5-5-4-2-1	10	1-3-2-2-3-3-1-2
25 December	4	2-2-1-1-2-1-0-0	4	1-1-1-1-3-2-0-0	5	3-2-1-1-2-1-0-0
26 December	3	0-2-1-0-1-2-1-1	0	0-0-0-0-0-1-0-0	4	0-2-1-0-1-1-2-2
27 December	4	2-1-1-1-1-1-1-1	2	0-0-1-0-2-1-1-1	7	2-2-1-2-2-1-1-2

Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
21 Dec 2220	WARNING: Geomagnetic K = 4	21/2220 - 22/0600
21 Dec 2314	ALERT: Geomagnetic K = 4	21/2311
21 Dec 2322	WARNING: Geomagnetic K = 5	21/2320 - 22/0300
22 Dec 0554	EXTENDED WARNING: Geomagnetic K = 4	21/2220 - 22/1500
22 Dec 1455	EXTENDED WARNING: Geomagnetic K = 4	21/2220 - 22/2100
22 Dec 1818	WATCH: Geomagnetic Storm Category G1 predicted	
22 Dec 2055	EXTENDED WARNING: Geomagnetic K = 4	21/2220 - 23/0600
23 Dec 0433	WARNING: Geomagnetic K = 5	23/0432 - 1200
23 Dec 0433	EXTENDED WARNING: Geomagnetic K = 4	21/2220 - 23/1800
24 Dec 1555	WARNING: Geomagnetic K = 4	24/1553 - 2359
24 Dec 1624	ALERT: Electron 2MeV Integral Flux >= 1000pfu	24/1605
24 Dec 2102	CANCELLATION: Geomagnetic Storm Category G1 predicted	
25 Dec 1327	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	24/1605
26 Dec 1657	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	24/1605
27 Dec 1331	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	24/1605

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
28 Dec	88	5	2	11 Jan	84	5	2
29	88	8	3	12	84	5	2
30	88	5	2	13	84	5	2
31	88	5	2	14	84	5	2
01 Jan	88	5	2	15	85	5	2
02	87	5	2	16	86	5	2
03	86	8	3	17	84	5	2
04	85	5	2	18	88	10	3
05	84	10	3	19	88	10	3
06	84	10	3	20	88	10	3
07	84	5	2	21	88	8	3
08	84	5	2	22	88	5	2
09	84	5	2	23	88	5	2
10	84	5	2				

Energetic Events

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

No Events Observed

Flare List

	Time				Optical		
Date	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
21 Dec	0743	0750	0756	B1.2			2793
22 Dec	0742	0754	0805	B1.7			2795
22 Dec	1004	1015	1025	B2.5			2795
22 Dec	1114	1121	1127	B2.5			2795
22 Dec	1131	1139	1144	B2.7			2795
22 Dec	1219	1227	1233	B1.5			2795
22 Dec	1556	1604	1609	B2.0			2795
23 Dec	0553	0608	0622	B3.2			2795
23 Dec	2146	2154	2200	B6.1			2795
24 Dec	0117	0127	0134	B6.0			
24 Dec	0218	0230	0241	B7.3			2795
24 Dec	0550	0559	0606	B2.2			
24 Dec	0808	0815	0820	B2.1			
24 Dec	2230	2240	2247	B1.7			2795
25 Dec	0357	0404	0418	B1.6			2795
25 Dec	0430	0450	0513	B2.4			2794
25 Dec	1427	1454	1515	B2.0			
26 Dec	1955	2001	2005	B1.4			2795
27 Dec	0224	0229	0234	B1.4			2795
27 Dec	1129	1137	1142	B3.4			2795
27 Dec	1500	1507	1511	B1.3			2795

Region Summary

	Location		Sunspot Characteristics					Flares							
		Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical				
Date	Lat CMD	Lon	10^{-6} hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4
			Region 2792												
12 Dec	S23E67	103	10	2	Bxo	3	B								
13 Dec	S22E52	105	10	1	Bxo	4	B								
14 Dec	S22E39	105	10	4	Bxo	3	B	1			1				
15 Dec	S22E26	103	10	6	Bxo	2	B								
16 Dec	S22E12	106	plage												
17 Dec	S22W02	107	plage												
18 Dec	S22W15	106	plage												
19 Dec	S22W29	107	plage												
20 Dec	S22W43	108	plage												
21 Dec	S22W57	109	plage												
22 Dec	S22W71	110	plage												
23 Dec	S22W85	111	plage												
								1	0	0	1	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 107

			Region 2793												
14 Dec	S16E60	84	10	1	Axx	2	A								
15 Dec	S15E49	81	20	3	Cro	3	B				2				
16 Dec	S15E35	82	30	4	Cro	2	B								
17 Dec	S15E22	81	10	2	Bxo	2	B								
18 Dec	S15E08	83	plage												
19 Dec	S15W06	84	plage												
20 Dec	S15W20	85	plage												
21 Dec	S15W34	86	plage												
22 Dec	S15W48	87	plage												
23 Dec	S15W62	88	plage												
24 Dec	S15W76	88	plage												
25 Dec	S15W90	89	plage												
								0	0	0	2	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 84

Region Summary - continued

	Location		Sunspot Characteristics					Flares							
		Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical				
Date	Lat CMD	Lon	10^{-6} hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4
			Region 2794												
20 Dec	S17E78	347	120	2	Hsx	1	A								
21 Dec	S16E68	344	170	2	Hsx	1	A								
22 Dec	S17E53	346	170	3	Hsx	1	A								
23 Dec	S16E40	346	180	3	Hsx	1	A								
24 Dec	S17E26	346	150	2	Hsx	1	A								
25 Dec	S16E14	345	220	3	Hsx	1	A								
26 Dec	S16E01	345	210	3	Hsx	1	A								
27 Dec	S16W12	345	210	3	Hsx	1	A								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 345

			Region 2795												
23 Dec	S17E67	319	40	9	Cro	6	B								
24 Dec	S18E54	318	200	9	Dao	4	B								
25 Dec	S17E41	318	180	10	Dao	9	B								
26 Dec	S17E29	317	180	9	Dao	10	B								
27 Dec	S17E15	318	150	9	Dso	5	B								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 318

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

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