Space Weather Highlights **SWPC PRF 2419**
03 January - 09 January 2022 **10 January 2022**

Solar activity was at very low to low levels during the period. C-class activity was observed on 06-07 Jan from Region 2924 (S31, L=038, class/area Ehi/430 on 08 Jan). The largest of these events was a C2 flare observed at 07/2210 UTC. The remaining regions were unremarkable and quiet. Late on 09 Jan, Type II (575 km/s S.V.) and Type IV radio emissions were observed, most likely associated with CME activity at or behind the NE limb. No other activity was observed during the period.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit reached high levels on 08 Jan with a maximum flux of 2,655 pfu obseved at 08/1805 UTC. Moderate levels were observed on 03-07 Jan and 09 Jan.

Geomagnetic field activity ranged from quiet to GI (Minor) storm levels. Quiet to unsettled levels were observed on 03-04 Jan, with active periods on 04 Jan, due to positive polarity CH HSS influence. Quiet levels persisted on 05 Jan through late on 08 Jan. G1 (Minor) storm levels were observed late on 08 Jan due to negative polarity CH HSS influence. Quiet to unsettled levels were observed on 09 Jan as CH HSS influence slowly waned.

Space Weather Outlook
10 January - 05 February 2022

Solar activity is expected to be at very low to low levels through the outlook period. A slight chance to a chance for M-class flare activity (R1-R2, Minor to Moderate) is possible on 10-29 Jan due to the return of old Regions 2916 and 2918.

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 19-23 Jan due to recurrent CH HSS influence. Moderate levels are expected on 10-18 Jan, 24 -31 Jan and 01-05 Feb.

Geomagnetic field activity is expected to be at unsettled levels on 10, 16-18, 23-26, 28-30 Jan and 04-05 Feb with active levels expected on 17 Jan and 04 Feb, all due to recurrent CH HSS activity.

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 January	84	12	140	B1.4	0	0	0	0	0	0	0	0
04 January	86	12	30	B1.4	0	0	0	0	0	0	0	0
05 January	84	24	270	A8.8	0	0	0	0	0	0	0	0
06 January	94	35	270	B1.8	1	0	0	6	0	0	0	0
07 January	107	38	530	B3.2	2	0	0	3	0	0	0	0
08 January	102	31	530	B3.3	0	0	0	1	0	0	0	0
09 January	102	36	540	B2.7	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
03 January	4.0e+05	4.4e+04	1.5e+07
04 January	6.3e+04	4.5e+04	3.5e+07
05 January	6.8e+04	4.5e+04	4.1e+07
06 January	1.0e+05	4.5e+04	4.1e+07
07 January	1.2e+05	4.5e+04	4.0e+07
08 January	4.6e+06	4.6e+04	5.8e+07
09 January	1.4e+05	4.3e+04	1.5e+06

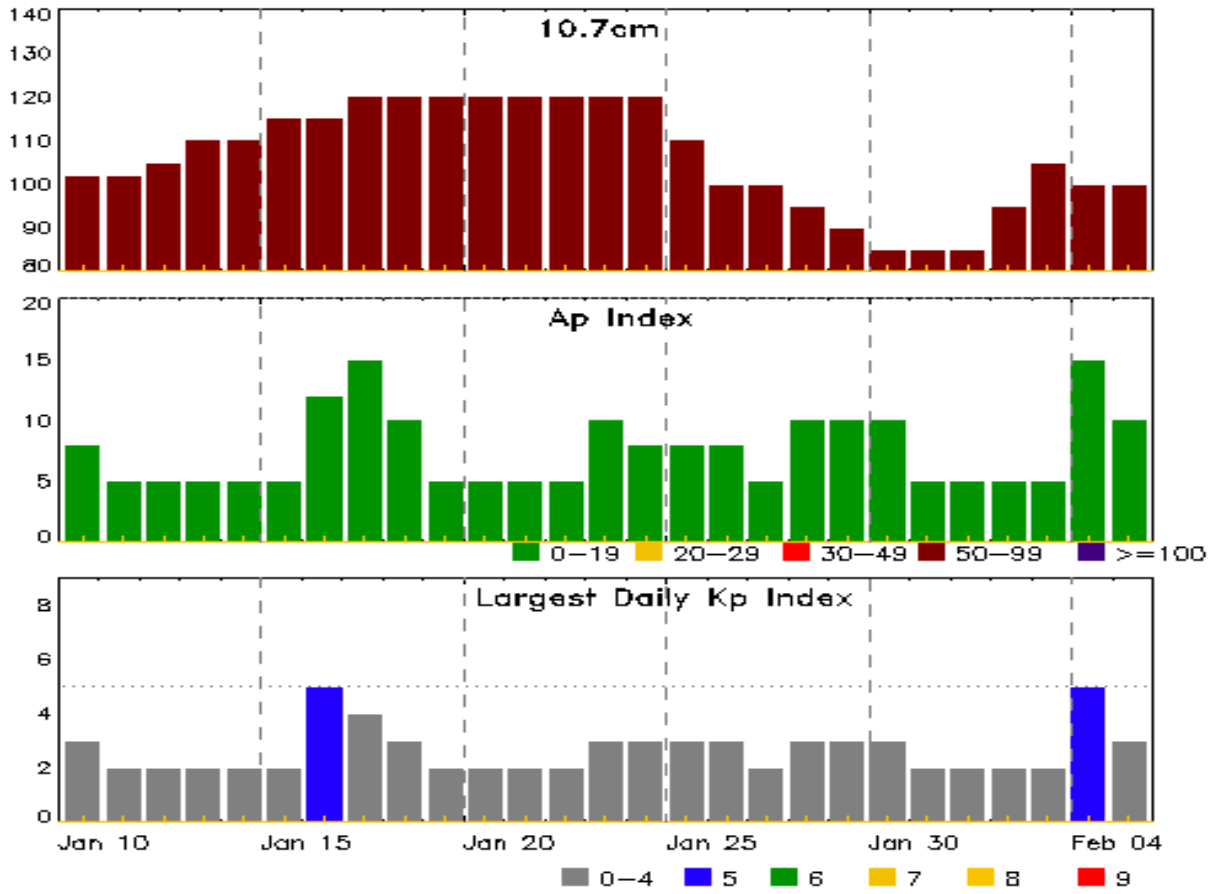
Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
03 January	9	1-3-3-3-2-2-1-1	14	2-3-4-5-1-1-1-1	12	2-4-4-3-2-2-1-2
04 January	5	2-2-1-2-1-2-1-0	5	1-2-1-3-3-0-0-0	6	3-3-1-2-1-0-0-1
05 January	3	0-2-0-1-1-2-1-0	1	0-0-0-0-1-1-0-0	3	1-2-0-0-1-2-0-0
06 January	2	0-1-0-0-1-2-1-0	0	0-0-0-0-0-0-0-0	2	0-0-0-0-0-0-1-0
07 January	1	0-0-0-0-1-2-0-0	0	0-0-0-0-0-0-0-0	2	0-0-0-0-0-0-0-0
08 January	9	0-0-1-1-2-2-4-4	4	0-0-1-0-2-1-3-2	14	0-0-1-1-1-2-5-5
09 January	7	2-2-2-1-2-2-2-2	12	4-2-2-2-4-2-2-1	18	3-3-2-1-2-1-2-3

Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
03 Jan 0509	ALERT: Geomagnetic K = 4	03/0505
03 Jan 0855	EXTENDED WARNING: Geomagnetic K = 4	02/2228 - 03/1800
08 Jan 1310	ALERT: Electron 2MeV Integral Flux >= 1000pfu	08/1245
08 Jan 2012	WARNING: Geomagnetic K = 4	08/2012 - 09/0300
08 Jan 2020	ALERT: Geomagnetic K = 4	08/2008
08 Jan 2023	WARNING: Geomagnetic K = 5	08/2022 - 2359
08 Jan 2035	ALERT: Geomagnetic K = 5	08/2028
08 Jan 2340	ALERT: Geomagnetic K = 5	08/2335
08 Jan 2342	EXTENDED WARNING: Geomagnetic K = 5	08/2022 - 09/0600
08 Jan 2343	EXTENDED WARNING: Geomagnetic K = 4	08/2012 - 09/0900
09 Jan 0855	EXTENDED WARNING: Geomagnetic K = 4	08/2012 - 09/1800

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 Jan	102	8	3	24 Jan	120	8	3
11	102	5	2	25	110	8	3
12	105	5	2	26	100	8	3
13	110	5	2	27	100	5	2
14	110	5	2	28	95	10	3
15	115	5	2	29	90	10	3
16	115	12	5	30	85	10	3
17	120	15	4	31	85	5	2
18	120	10	3	01 Feb	85	5	2
19	120	5	2	02	95	5	2
20	120	5	2	03	105	5	2
21	120	5	2	04	100	15	5
22	120	5	2	05	100	10	3
23	120	10	3				

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 #
03 Jan	0123	0129	0135	B3.1			2918
03 Jan	0159	0207	0212	B2.6			2918
03 Jan	0249	0257	0305	B1.8			2918
03 Jan	0514	0524	0529	B4.7			2918
03 Jan	1144	1158	1228	B3.4			
03 Jan	1509	1521	1538	B4.2			
04 Jan	0334	0349	0406	B4.4			2923
04 Jan	0527	0536	0543	B3.1			
04 Jan	0906	0914	0923	B2.7			2925
04 Jan	1627	1634	1638	B1.9			2925
04 Jan	1718	1721	1725	B2.1			2925
05 Jan	0247	0257	0306	B2.6			2925
05 Jan	0440	0453	0457	B2.3			
05 Jan	0510	0514	0522	B3.2			2925
05 Jan	0734	0745	0821	B2.0			2916
05 Jan	1644	1653	1704	B1.7			2925
06 Jan	0229	0231	0234		SF	S32E39	2924
06 Jan	0243	0251	0253		SF	S32E39	2924
06 Jan	0300	0323	0348	B3.4			
06 Jan	0911	0928	0930		SF	S32E39	2924
06 Jan	0939	0946	0950	B3.5	SF	S32E39	2924
06 Jan	1448	1448	1448		SF	S32E31	2924
06 Jan	1814	1820	1825	B3.8			
06 Jan	2239	2246	2254	C1.1			2924
06 Jan	B2315	2318	2319		SF	S29E25	2924
06 Jan	2338	2344	2349	B6.9			2924
07 Jan	0133	0141	0145	B6.6			2924
07 Jan	0347	0401	0427	B7.1			
07 Jan	0551	0600	0614	B5.4			2925
07 Jan	0804	0813	0820	C1.1			2924
07 Jan	0842	0846	0850	B5.2			

Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
07 Jan	0918	0923	0935	B4.0			
07 Jan	1028	1036	1047	B5.9			
07 Jan	1158	1205	1213	B4.4			
07 Jan	1428	1436	1446	B7.8			
07 Jan	1458	1501	1504		SF	S32E15	2924
07 Jan	1509	1518	1520		SF	S32E15	2924
07 Jan	1539	1539	1546		SF	S32E15	2924
07 Jan	1652	1659	1703	B6.8			2924
07 Jan	1845	1853	1901	B7.1			2924
07 Jan	2105	2108	2113	B9.2			
07 Jan	2201	2210	2214	C2.7			2924
08 Jan	0057	0103	0112	B8.5			2924
08 Jan	0206	0214	0220	B7.0			2924
08 Jan	2349	2358	0002	B6.2	SF	S37E02	2924
09 Jan	0507	0517	0527	B7.7			

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 2916												
21 Dec	S18E82	192	100	2	Hsx	1	A	1	2						
22 Dec	S17E69	192	240	9	Dso	3	B								
23 Dec	S16E55	193	190	7	Dso	7	B	1							
24 Dec	S18E42	193	400	7	Dhi	17	B								
25 Dec	S18E28	194	450	11	Ekc	21	BGD	1							
26 Dec	S18E14	194	430	12	Ekc	17	B				1				
27 Dec	S15E06	189	480	13	Ekc	21	B								
28 Dec	S15W08	190	480	13	Eki	18	B				1				
29 Dec	S17W22	191	420	12	Eac	14	B	1							
30 Dec	S16W36	192	640	12	Esi	14	BG								
31 Dec	S16W49	192	420	11	Ehi	8	BG				1				
01 Jan	S18W61	190	390	11	Ehi	4	BG								
02 Jan	S18W74	190	320	11	Eho	3	B								
03 Jan	S16W88	192	140	9	Dso	2	B								
								4	2	0	3	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 189

			Region 2919												
25 Dec	S11E59	163	20	1	Hsx	1	A								
26 Dec	S11E45	163	20	1	Hrx	1	A								
27 Dec	S11E40	155	10	1	Hrx	1	A								
28 Dec	S11E26	156	10	1	Hrx	1	A								
29 Dec	S11E12	157	20	1	Hrx	1	A								
30 Dec	S11W01	157	40	3	Hrx	1	A								
31 Dec	S12W15	158	10	1	Hrx	1	A								
01 Jan	S13W28	157	plage												
02 Jan	S13W42	158	plage												
03 Jan	S13W56	159	plage												
04 Jan	S13W70	160	plage												
05 Jan	S13W84	161	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 157

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 2922												
31 Dec	S17E24	119	30	3	Cso	2	B								
01 Jan	S17E11	118	20	2	Bxo	3	B								
02 Jan	S17W02	118	20	2	Bxo	2	B								
03 Jan	S17W16	120	plage												
04 Jan	S17W30	120	plage												
05 Jan	S17W44	121	plage												
06 Jan	S17W58	122	plage												
07 Jan	S17W72	122	plage												
08 Jan	S17W86	123	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 118

			Region 2923												
01 Jan	S30W63	192	20	5	Bxo	3	B								
02 Jan	S31W74	190	plage												
03 Jan	S31W88	191	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 192

			Region 2924												
04 Jan	S32E48	42	30	1	Cro	2	B								
05 Jan	S31E34	43	30	4	Cao	1	B								
06 Jan	S31E20	40	190	5	Dai	12	B	1			6				
07 Jan	S31E06	39	430	11	Ehi	14	B	2			3				
08 Jan	S31W01	38	430	12	Ehi	8	B				1				
09 Jan	S31W14	38	380	13	Eho	4	B								
								3	0	0	10	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 38

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 2925												
05 Jan	S34E69	8	240	3	Dso	3	B								
06 Jan	S34E55	9	80	3	Dso	3	B								
07 Jan	S34E41	9	100	3	Cso	4	B								
08 Jan	S32E31	6	100	2	Hsx	3	A								
09 Jan	S33E19	5	80	2	Hsx	1	A								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 5

			Region 2926												
09 Jan	N21W09	33	plage												
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 33

			Region 2927												
09 Jan	S20E66	318	80	2	Hsx	1	A								
								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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