Space Weather Highlights **SWPC PRF 2363**
07 December - 13 December 2020 **14 December 2020**

Solar activity was reached low levels on 07 Dec due to a long-duration C7/1f flare observed at 07/1632 UTC from Region 2790 (S22, L=252, class/area=Hsx/80 on 10 Dec). The associated halo CME arrived at Earth just after 10/0000 UTC as an interplanetary shock, and with the driver directed south of the ecliptic plane. Solar activity was at very low levels throughout the remainder of the period with B-class flare activity.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was normal to moderate throughout the period.

Geomagnetic field reached active levels early on 10 Dec due to the arrival of the 07 Dec CME. Quiet or quiet to unsettled conditions were observed throughout the remainder of the period.

Space Weather Outlook
14 December - 09 January 2021

Solar activity is expected to be very low to 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 21-25 Dec, with normal to moderate levels expected to persist throughout the remainder of the outlook period.

Geomagnetic field activity is expected to reach active levels on 20-22 Dec due to CH HSS influences. Quiet and quiet to unsettled conditions are expected to prevail throughout the remainder of the 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
07 December	90	35	170	B2.1	1	0	0	2	1	0	0	0
08 December	82	11	70	A6.9	0	0	0	0	0	0	0	0
09 December	82	11	50	A4.0	0	0	0	1	0	0	0	0
10 December	82	11	80	A5.1	0	0	0	0	0	0	0	0
11 December	83	11	60	A6.7	0	0	0	2	0	0	0	0
12 December	82	24	30	A6.9	0	0	0	1	0	0	0	0
13 December	81	14	10	A6.6	0	0	0	1	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
07 December	1.1e+06	4.8e+04	1.7e+07
08 December	3.2e+06	6.9e+04	1.4e+07
09 December	9.4e+06	5.7e+04	7.9e+06
10 December	4.5e+06	4.6e+04	3.2e+06
11 December	1.2e+06	4.3e+04	3.2e+06
12 December	9.5e+05	4.3e+04	6.1e+06
13 December	3.8e+05	4.3e+04	5.0e+06

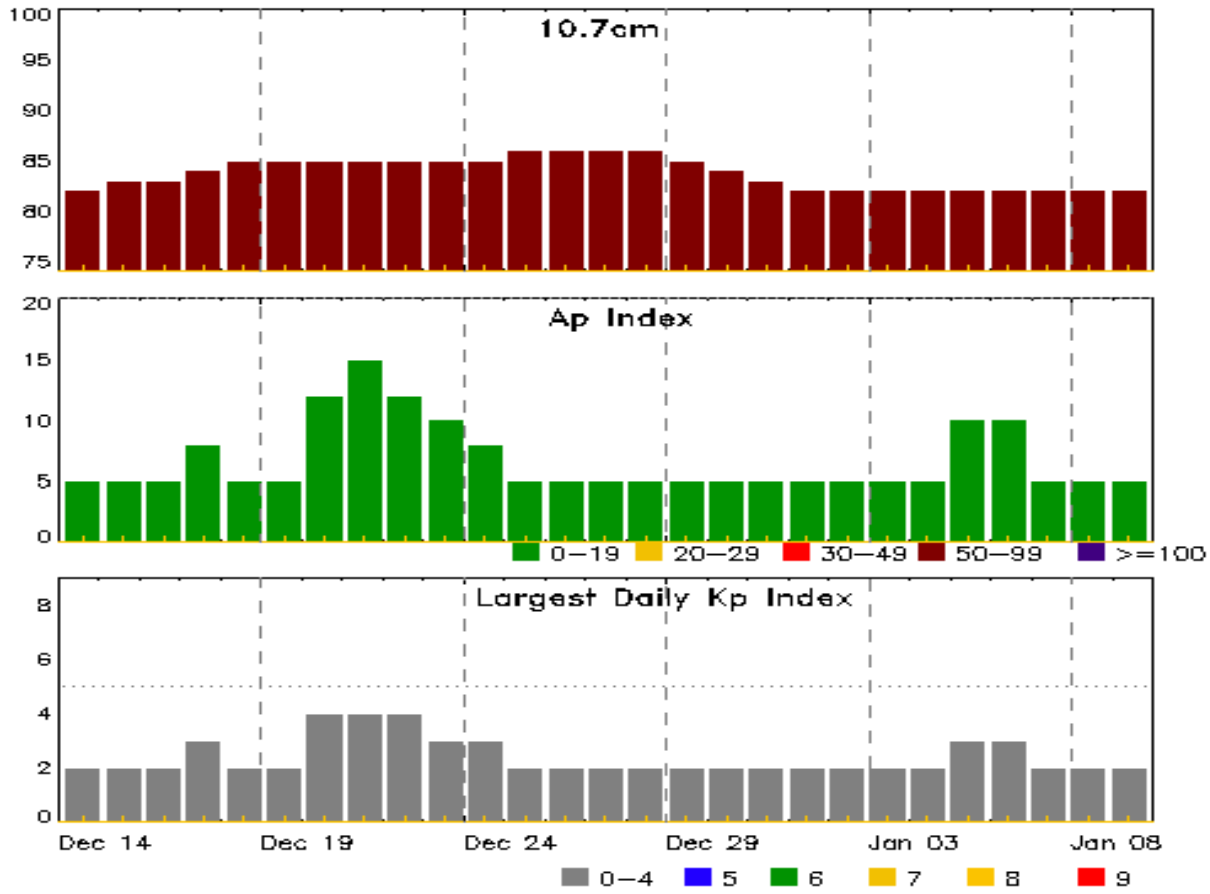
Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
07 December	2	1-0-0-1-1-1-1-0	0	0-0-0-1-0-0-0-0	3	1-0-1-1-0-1-0-0
08 December	4	1-1-2-1-1-1-1-1	3	0-0-2-3-1-0-0-0	5	1-2-2-1-1-0-1-1
09 December	6	1-3-2-1-1-1-2-1	4	0-1-1-0-0-2-3-2	7	2-3-2-1-0-2-3-2
10 December	6	3-2-1-1-1-2-1-2	4	3-2-1-0-1-0-0-1	8	4-3-1-1-1-1-1-2
11 December	4	2-2-1-1-1-1-1-1	3	1-2-2-0-0-0-0-1	7	3-3-1-1-0-1-2-1
12 December	3	1-1-1-0-1-1-1-1	2	1-0-0-0-0-0-2-1	4	2-1-1-1-1-1-1-2
13 December	3	3-0-0-0-1-1-1-0	2	1-0-0-0-1-1-2-0	15	3-1-0-0-1-1-2-1

Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
07 Dec 1718	SUMMARY: 10cm Radio Burst	07/1642 - 1651
08 Dec 1003	WATCH: Geomagnetic Storm Category G1 predicted	
08 Dec 1506	WATCH: Geomagnetic Storm Category G3 predicted	
10 Dec 0218	WARNING: Geomagnetic K = 4	10/0217 - 1200
10 Dec 0300	ALERT: Geomagnetic K = 4	10/0259
10 Dec 0447	SUMMARY: Geomagnetic Sudden Impulse	10/0211
10 Dec 1634	WATCH: Geomagnetic Storm Category G1 predicted	
11 Dec 1157	CANCELLATION: Geomagnetic Storm Category G1 predicted	

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
14 Dec	82	5	2	28 Dec	86	5	2
15	83	5	2	29	85	5	2
16	83	5	2	30	84	5	2
17	84	8	3	31	83	5	2
18	85	5	2	01 Jan	82	5	2
19	85	5	2	02	82	5	2
20	85	12	4	03	82	5	2
21	85	15	4	04	82	5	2
22	85	12	4	05	82	10	3
23	85	10	3	06	82	10	3
24	85	8	3	07	82	5	2
25	86	5	2	08	82	5	2
26	86	5	2	09	82	5	2
27	86	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 #
07 Dec	0109	0113	0118	B3.5			
07 Dec	0120	0124	0128	B3.8			
07 Dec	0256	0303	0309	B3.6			
07 Dec	0951	0955	0959	B5.4	SF	S25W04	2790
07 Dec	1429	1438	1457	B6.0	SF	S23W10	2790
07 Dec	1546	1632	1733	C7.4	1F	S25W09	2790
08 Dec	2141	2154	2210	B1.6			2790
09 Dec	0023	0033	0040	B1.7			2791
09 Dec	0040	0053	0103	B3.2	SF	S17E04	2791
10 Dec	0345	0434	0448	B1.5			2790
10 Dec	1009	1022	1029	B1.7			2791
10 Dec	1041	1050	1055	B1.1			2791
10 Dec	1055	1100	1101	B1.0			2791
10 Dec	1101	1111	1125	B1.5			2791
10 Dec	1247	1257	1303	B3.1			2791
10 Dec	1303	1311	1318	B2.7			2791
10 Dec	1503	1550	1624	B2.7			2791
10 Dec	1805	1818	1828	B2.4			2791
11 Dec	0050	0107	0117	B5.8	SF	S16W22	2791
11 Dec	0351	0359	0405	B1.2			2791
11 Dec	0428	0454	0512	B5.3			2792
11 Dec	0714	0727	0736	B1.9			2792
11 Dec	0848	0903	0913	B1.8			2791
11 Dec	0954	0959	1003	B3.0			2791
11 Dec	1320	1334	1348	B1.9			2792
11 Dec	1526	1533	1538	B1.4			2790
11 Dec	1755	1836	1913	B5.0	SF	S16W30	2791
12 Dec	0101	0148	0204	B6.7			2792
12 Dec	0625	0630	0634	B1.2			2792
12 Dec	1102	1110	1114	B1.3			2792
12 Dec	1505	1513	1521	B1.6	SF	S16W43	2791

Flare List

	Time			Optical			
Date	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
12 Dec	1646	1759	1847	B1.9			2792
12 Dec	2029	2042	2052	B2.3			2792
13 Dec	0317	0342	0409	B2.0			
13 Dec	0845	0855	0908	B1.4			
13 Dec	1916	1921	1925	B3.1	SF	S14E80	

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 2720													
24 Aug	N08W24	133	30	4	Dro	5	B								
25 Aug	N08W39	136	100	6	Dao	7	B				2				
26 Aug	N08W55	138	60	8	Cso	5	B								
27 Aug	N08W68	137	50	6	Hsx	2	A								
28 Aug	N07W83	139	10	4	Axx	1	A								
29 Aug	N07W98	142	plage												
07 Dec	S24W12	248	plage	8		2									
08 Dec	S24W26	249	plage												
								0	0	0	2	0	0	0	0

Died on Disk.
Absolute heliographic longitude: 248

		Region 2787													
27 Nov	N29E64	304	10	1	Axx	1	A								
28 Nov	N29E51	304	10	1	Axx	1	A								
29 Nov	N29E37	305	10	1	Axx	1	A								
30 Nov	N30E24	303	10	1	Axx	1	A								
01 Dec	N30E10	305	plage					1							
02 Dec	N30W04	306	plage												
03 Dec	N30W18	307	plage												
04 Dec	N30W32	308	plage												
05 Dec	N30W46	309	plage												
06 Dec	N30W60	310	plage												
07 Dec	N30W74	310	plage												
08 Dec	N30W88	311	plage												
								1	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 306

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 2789													
29 Nov	S25E43	299	10	1	Axx	1	A								
30 Nov	S25E29	299	plage												
01 Dec	S25E15	300	plage												
02 Dec	S25E01	301	plage												
03 Dec	S25W13	302	plage												
04 Dec	S25W27	303	plage												
05 Dec	S25W41	304	plage												
06 Dec	S25W55	305	plage												
07 Dec	S25W69	305	plage												
08 Dec	S25W83	306	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 301

		Region 2790													
01 Dec	S23E62	253	100	2	Cso	3	B	1			2				
02 Dec	S23E50	251	80	3	Cao	4	B								
03 Dec	S22E36	252	110	5	Hsx	6	A	2			2				
04 Dec	S23E24	252	100	4	Cao	4	B				1				
05 Dec	S23E12	251	70	4	Cso	4	B	2			1				
06 Dec	S23W02	252	60	2	Hsx	1	A	1			1				
07 Dec	S22W15	251	50	2	Hsx	1	A	1			2	1			
08 Dec	S21W29	252	70	2	Hsx	1	A								
09 Dec	S23W42	251	50	2	Hsx	1	A								
10 Dec	S22W55	252	80	2	Hsx	1	A								
11 Dec	S23W68	252	60	1	Hsx	1	A								
12 Dec	S23W82	252	20	1	Hrx	1	A								
								7	0	0	9	1	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 252

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 2791													
05 Dec	S16E45	218	20	5	Bxo	5	B								
06 Dec	S16E30	220	20	5	Bxo	4	B								
07 Dec	S15E15	221	10	2	Axx	2	A								
08 Dec	S15E01	222	plage												
09 Dec	S15W13	223	plage								1				
10 Dec	S15W27	224	plage												
11 Dec	S15W41	225	plage								2				
12 Dec	S15W55	225	plage								1				
13 Dec	S15W69	226	plage												
								0	0	0	4	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 222

		Region 2792													
12 Dec	S23E67	103	10	2	Bxo	3	B								
13 Dec	S22E52	105	10	1	Bxo	4	B								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 105

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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