

Space Weather Highlights
22 November - 28 November 2021

SWPC PRF 2413
29 November 2021

Solar activity was at very low levels with only B-class activity observed. The largest flare was a B8.4 at 28/0859 UTC from Region 2900 (S26, L=256, class/area, Dso/160 on 28 Nov). This was also the most active region on the disk during the highlight period. Other notable activity included an approximate 10 degree filament eruption centered near S36E33 and observed in GONG H-alpha imagery beginning at 24/0958 UTC. The associated CME was observed in LASCO coronagraph imagery beginning at 24/1412 UTC. WSA/Enlil modelling indicated an Earth-directed component with an arrival time of late on 27 Nov. No other Earth-directed CMEs were observed during the highlight period.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit reached high levels on 23, 24 and 26 Nov due to CH HSS influences. Normal to moderate levels were observed on 22, 25, 27 and 28 Nov.

Geomagnetic field activity reached unsettled levels on 22-23 Nov due to influences from a negative polarity CH HSS. Unsettled levels were also reached on 27-28 Nov due to the arrival of the aforementioned CME from 24 Nov. A relatively weak shock was observed near 27/2153 UTC causing enhancements in solar wind parameters. Total field reached a maximum of 17 nT during the event at 28/0057 UTC, while the Bz component reached a maximum southward deviation of -14 nT at the same time. Solar wind speeds reached a maximum near 400 km/s. Quiet levels were observed on 24-26 Nov with a nominal solar wind.

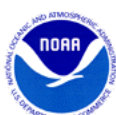
Space Weather Outlook
29 November - 25 December 2021

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 10-12 Dec and 20-23 Dec due to recurrent CH HSS influences. Normal to moderate levels are expected for the remainder of the period.

Geomagnetic field activity reached active levels early on 29 Nov due to lingering influences from the 24 Nov CME. Unsettled to active levels are expected on 03-05 Dec, 12-14 Dec, and 17-18 Dec due to influences from recurrent CH HSS activity. Quiet to unsettled levels are expected for 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
22 November	78	22	30	A1.7	0	0	0	0	0	0	0	0
23 November	80	39	80	A3.2	0	0	0	0	0	0	0	0
24 November	83	39	50	A4.7	0	0	0	0	0	0	0	0
25 November	94	20	90	A5.7	0	0	0	0	0	0	0	0
26 November	92	52	190	A9.4	0	0	0	0	0	0	0	0
27 November	92	53	320	B1.0	0	0	0	0	0	0	0	0
28 November	92	53	270	B1.8	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	
	22 November	4.3e+05	4.3e+04	2.3e+07
23 November	4.6e+05	4.3e+04	4.1e+07	
24 November	2.4e+05	4.3e+04	6.8e+07	
25 November	7.0e+04	4.4e+04	3.8e+07	
26 November	6.3e+05	4.5e+04	6.1e+07	
27 November	1.4e+05	4.5e+04	3.1e+07	
28 November	1.4e+06	4.5e+04	2.5e+06	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	22 November	7	3-3-0-1-1-2-2-1	5	2-2-0-1-2-2-2-1	9
23 November	7	1-2-1-3-1-2-2-2	20	2-3-1-6-3-4-2-1	9	2-2-2-3-2-2-2-2
24 November	3	1-1-1-1-1-1-1-0	4	2-1-1-3-1-0-0-0	5	2-2-2-1-1-1-1-1
25 November	3	1-1-1-1-1-1-1-0	3	0-1-2-2-1-1-0-0	5	2-2-1-1-1-1-1-1
26 November	3	0-1-1-0-1-2-1-1	0	0-0-0-0-0-0-0-0	4	1-1-1-1-1-2-0-1
27 November	3	0-0-1-0-1-1-1-3	2	0-0-0-0-2-0-0-2	5	0-0-1-1-1-1-1-3
28 November	7	2-3-2-1-1-1-2-2	3	2-1-0-2-2-0-0-1	12	3-3-2-2-1-1-2-3

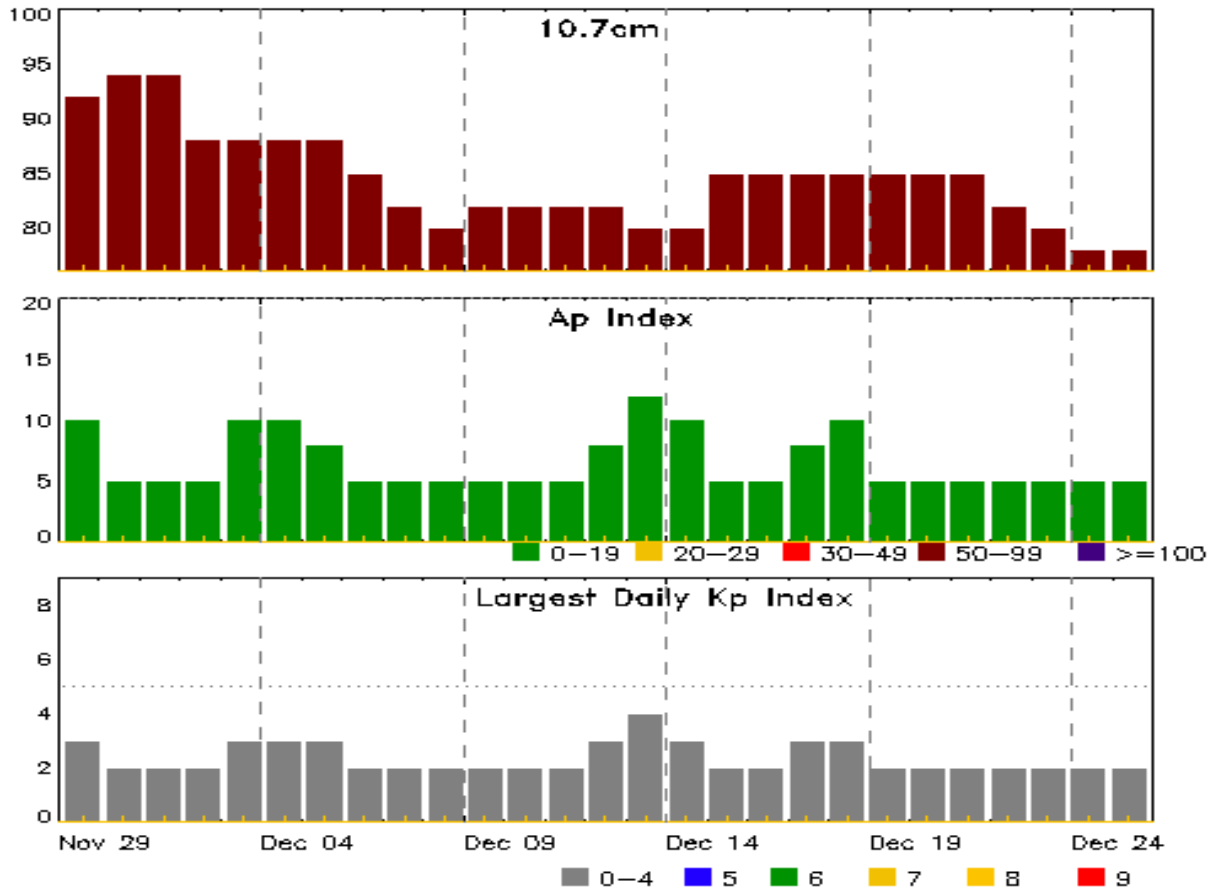


Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
22 Nov 0130	WARNING: Geomagnetic K = 4	22/0130 - 0600
22 Nov 0535	EXTENDED WARNING: Geomagnetic K = 4	22/0130 - 1200
23 Nov 1651	ALERT: Electron 2MeV Integral Flux \geq 1000pfu	23/1650
24 Nov 1316	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	23/1650
26 Nov 1354	ALERT: Electron 2MeV Integral Flux \geq 1000pfu	26/1310
27 Nov 2301	WARNING: Geomagnetic K = 4	27/2300 - 28/0300
28 Nov 0237	EXTENDED WARNING: Geomagnetic K = 4	27/2300 - 28/0900
28 Nov 0852	EXTENDED WARNING: Geomagnetic K = 4	27/2300 - 28/1500
28 Nov 2224	WARNING: Geomagnetic K = 4	28/2225 - 29/0300



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
29 Nov	92	10	3	13 Dec	80	12	4
30	94	5	2	14	80	10	3
01 Dec	94	5	2	15	85	5	2
02	88	5	2	16	85	5	2
03	88	10	3	17	85	8	3
04	88	10	3	18	85	10	3
05	88	8	3	19	85	5	2
06	85	5	2	20	85	5	2
07	82	5	2	21	85	5	2
08	80	5	2	22	82	5	2
09	82	5	2	23	80	5	2
10	82	5	2	24	78	5	2
11	82	5	2	25	78	5	2
12	82	8	3				



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		Intensity	
									245	2695	II	IV

No Events Observed

Flare List

Date	Time			X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
	Begin	Max	End				
23 Nov	0237	0242	0246	B1.1			
24 Nov	1620	1629	1640	B1.3			2898
24 Nov	2026	2033	2039	B1.1			2898
24 Nov	2058	2103	2111	B1.6			
25 Nov	0335	0342	0348	B1.3			2898
26 Nov	0800	0807	0811	B1.4			
26 Nov	1025	1040	1045	B3.7			2900
26 Nov	1045	1050	1054	B5.0			2900
26 Nov	1208	1213	1217	B2.1			2900
26 Nov	1233	1241	1247	B2.3			
26 Nov	1320	1326	1330	B2.3			
26 Nov	1336	1342	1352	B2.3			
26 Nov	1444	1459	1506	B3.9			2898
26 Nov	2010	2021	2035	B2.4			2898
26 Nov	2309	2317	2321	B1.5			2900
27 Nov	0013	0026	0040	B1.7			2900
27 Nov	0114	0119	0126	B1.9			2900
27 Nov	0338	0354	0412	B2.8			2900
27 Nov	0418	0450	0511	B5.1			2900
27 Nov	0832	0846	0900	B3.0			2899
27 Nov	0928	0937	0944	B2.4			2898
27 Nov	1618	1622	1627	B1.7			2900
27 Nov	1941	1952	1957	B2.7			2898
27 Nov	2316	2330	2354	B3.8			2900
28 Nov	0334	0341	0347	B2.2			2897
28 Nov	0811	0821	0825	B4.8			2900
28 Nov	0849	0859	0914	B8.4			2900
28 Nov	0918	0925	0932	B6.9			2900
28 Nov	1004	1016	1022	B6.2			2898
28 Nov	1326	1338	1347	B6.3			
28 Nov	1630	1636	1643	B3.3			



Flare List

Date	Time			Optical			Rgn #
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	
28 Nov	1820	1826	1840	B5.2			2900
28 Nov	2052	2059	2103	B3.0			2900
28 Nov	2240	2245	2251	B3.5			2900



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 2896																					
14 Nov	S18E72	329	60	1	Hsx	1	A														
15 Nov	S18E58	331	60	1	Hsx	1	A														
16 Nov	S18E44	332	90	2	Hsx	1	A														
17 Nov	S18E32	330	90	1	Hsx	1	A														
18 Nov	S18E18	331	20	1	Hsx	1	A														
19 Nov	S17E05	331	20	1	Hsx	1	A														
20 Nov	S17W08	331	20	1	Hsx	1	A														
21 Nov	S18W22	331	10	1	Hrx	1	A														
22 Nov	S18W34	330	10	1	Hsx	1	A														
23 Nov	S17W48	331	20	1	Axx	1	A														
24 Nov	S17W62	332	10	1	Axx	1	A														
25 Nov	S17W76	333	plage																		
26 Nov	S17W90	334	plage																		
													0	0	0	0	0	0	0	0	0

Crossed West Limb.
 Absolute heliographic longitude: 331

Region 2897																					
16 Nov	N15E62	314	80	1	Hsx	2	A														
17 Nov	N16E48	314	80	1	Hsx	1	A														
18 Nov	N17E31	318	20	1	Hsx	1	A														
19 Nov	N16E17	319	20	1	Hsx	1	A														
20 Nov	N17E04	318	20	1	Hsx	1	A														
21 Nov	N15W09	318	10	1	Hsx	1	A														
22 Nov	N15W23	319	20	1	Hsx	1	A														
23 Nov	N15W35	318	30	2	Bxo	3	B														
24 Nov	N15W48	318	10	1	Axx	1	A														
25 Nov	N15W62	319	plage																		
26 Nov	N15W76	320	plage																		
27 Nov	N15W90	321	plage																		
													0	0	0	1	0	0	0	0	0

Crossed West Limb.
 Absolute heliographic longitude: 318



Region Summary - continued

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 2898																					
23 Nov	S32E03		251	30	1	Cro	5	B													
24 Nov	S24E31		239	30	4	Cro	7	B													
25 Nov	S24E17		240	90	7	Dro	10	B													
26 Nov	S24E04		240	120	8	Dao	10	B													
27 Nov	S24W06		236	140	10	Dao	10	B													
28 Nov	S24W22		239	90	8	Cso	7	B													
									0	0	0	0	0	0	0	0	0	0	0	0	

Still on Disk.
Absolute heliographic longitude: 251

Region 2899																					
26 Nov	S21W62		306	20	4	Bxo	5	B													
27 Nov	S21W78		308	50	4	Bxo	4	B													
28 Nov	S21W91		308	plage																	
									0	0	0	0	0	0	0	0	0	0	0	0	

Still on Disk.
Absolute heliographic longitude: 306

Region 2900																					
26 Nov	S28W12		256	50	4	Cro	7	B													
27 Nov	S27W24		254	130	7	Dso	9	B													
28 Nov	S26W36		253	160	8	Dso	15	B													
									0	0	0	0	0	0	0	0	0	0	0	0	

Still on Disk.
Absolute heliographic longitude: 256

Region 2901																					
28 Nov	N16E64		153	20	1	Hsx	1	A													
									0	0	0	0	0	0	0	0	0	0	0	0	

Still on Disk.
Absolute heliographic longitude: 153



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

The Weekly has been published continuously since 1951 and is available online since 1997.

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Current

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