

Space Weather Highlights
06 December - 12 December 2021

SWPC PRF 2415
13 December 2021

Solar activity ranged from very low to low. A C1.3 flare was observed at 06/0622 UTC from Region 2902 (N18, L=198, class/area Dsi/100 on 02 Dec), the largest of the period. All other numbered regions on the visible disk were quiescent. No Earth-directed CMEs were observed in available coronagraph imagery during the reporting period.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was normal to high levels. High levels were observed from 06-10 Dec following influence from a positive polarity CH HSS. Normal to moderate levels returned on 11-12 Dec.

Geomagnetic field activity ranged from quiet to unsettled. Isolated unsettled levels were observed on 06-07 Dec in response to influence from a positive polarity CH HSS and again on 11 Dec following the onset of a weak, slow-moving transient feature. The remainder of the summary period was at quiet levels.

Space Weather Outlook
13 December - 08 January 2022

Solar activity is expected to be at very low levels through the outlook period.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to range from normal to high levels. High levels are likely on 16-21 Dec and again on 29 Dec - 04 Jan in response to multiple, recurrent CH HSSs. Normal to moderate levels are expected for the remainder of the outlook period.

Geomagnetic field activity is expected to be at quiet to G1 (Minor) geomagnetic storm levels. G1 levels are likely on 27-28 Dec; active conditions are likely on 15 Dec and 29 Dec; unsettled conditions are likely on 13 Dec, 16-18 Dec and 30 Dec - 01 Jan. All elevations in geomagnetic activity are anticipated in response to multiple, recurrent CH HSSs. The remainder of the outlook period is likely to be at quiet levels under nominal solar wind conditions.



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
06 December	80	14	10	A5.8	2	0	0	1	0	0	0	0
07 December	79	13	10	A1.0	0	0	0	0	0	0	0	0
08 December	77	0	0	A0.0	0	0	0	0	0	0	0	0
09 December	77	0	0	A0.0	0	0	0	0	0	0	0	0
10 December	76	0	0	A1.3	0	0	0	0	0	0	0	0
11 December	76	0	0	A3.2	0	0	0	0	0	0	0	0
12 December	80	12	30	A4.1	1	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	
	06 December	3.7e+05	4.5e+04	5.0e+07
07 December	1.6e+05	4.5e+04	3.5e+07	
08 December	1.2e+05	4.4e+04	4.3e+07	
09 December	1.3e+05	4.5e+04	5.6e+07	
10 December	8.2e+05	4.6e+04	9.0e+07	
11 December	1.3e+06	4.5e+04	1.2e+07	
12 December	9.8e+05	4.5e+04	1.2e+07	

Daily Geomagnetic Data

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

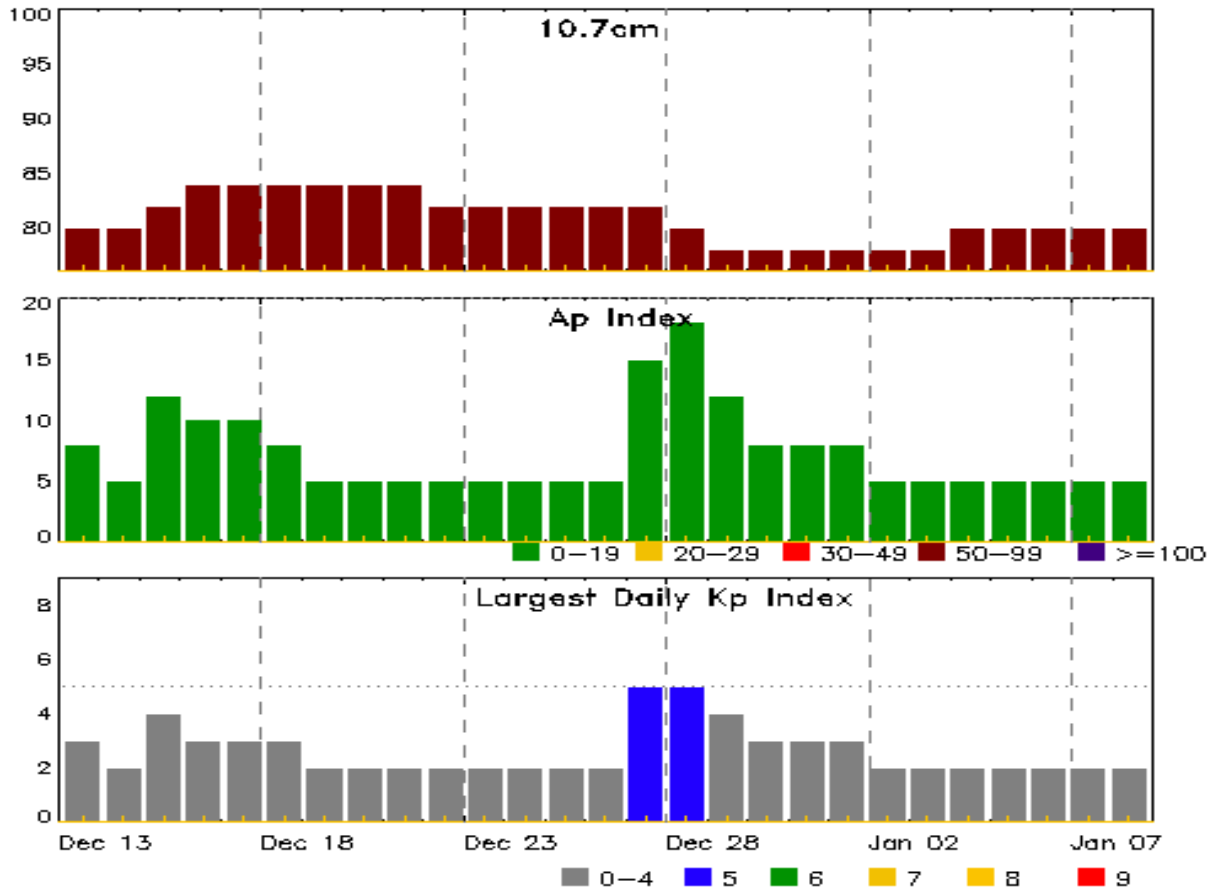


Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
06 Dec 1338	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	02/1130
09 Dec 1403	ALERT: Electron 2MeV Integral Flux \geq 1000pfu	09/1345
10 Dec 0956	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	09/1345
11 Dec 0501	WARNING: Geomagnetic K = 4	11/0502 - 0900



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
13 Dec	80	8	3	27 Dec	82	15	5
14	80	5	2	28	80	18	5
15	82	12	4	29	78	12	4
16	84	10	3	30	78	8	3
17	84	10	3	31	78	8	3
18	84	8	3	01 Jan	78	8	3
19	84	5	2	02	78	5	2
20	84	5	2	03	78	5	2
21	84	5	2	04	80	5	2
22	82	5	2	05	80	5	2
23	82	5	2	06	80	5	2
24	82	5	2	07	80	5	2
25	82	5	2	08	80	5	2
26	82	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				
06 Dec	0020	0024	0028	B2.2			
06 Dec	0206	0218	0252	B2.2			
06 Dec	0418	0452	0459	B4.8			
06 Dec	0537	0552	0613	B9.0			2902
06 Dec	0616	0622	0629	C1.3			2902
06 Dec	0650	0653	0657	C1.3			2902
06 Dec	0740	0750	1355	B9.6	SF	S28E39	2904
06 Dec	1355	1401	1405	B3.5			
06 Dec	1818	1834	1858	B1.2			
07 Dec	1856	1905	1913	B1.8			
11 Dec	1847	1852	1856	B1.2			
12 Dec	0540	0546	0550	B6.6			
12 Dec	0807	0817	0825	B1.6			
12 Dec	2041	2052	2056	B4.9			
12 Dec	2056	2104	2109	B8.3			
12 Dec	2109	2114	2122	C1.2	SF	S21E76	



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 2901																					
28 Nov	N16E64	153	20		1	Hsx	1	A													
29 Nov	N15E50	153	30		1	Hsx	1	A													
30 Nov	N15E37	153	10		1	Axx	1	A													
01 Dec	N16E24	152	plage																		
02 Dec	N16E10	155	plage																		
03 Dec	N16W04	155	plage																		
04 Dec	N21W19	157	10		3	Bxo	2	B													
05 Dec	N21W33	158	plage																		
06 Dec	N21W47	159	plage																		
07 Dec	N21W61	160	plage																		
08 Dec	N21W75	161	plage																		
09 Dec	N21W89	161	plage																		
										0	0	0	0	0	0	0	0	0	0	0	

Crossed West Limb.
Absolute heliographic longitude: 155

Region 2902																					
30 Nov	N18W06	196	30		4	Cro	5	B													
01 Dec	N18W19	197	30		4	Dro	4	B													
02 Dec	N18W33	198	100		6	Dsi	13	B													
03 Dec	N18W46	197	60		6	Cro	5	B													
04 Dec	N15W62	200	20		3	Hrx	2	A													
05 Dec	N13W75	200	10		1	Axx	1	A													
06 Dec	N13W89	201	plage																		
										2											
										2	0	0	0	0	0	0	0	0	0	0	

Crossed West Limb.
Absolute heliographic longitude: 196



Region Summary - continued

Date	Location		Sunspot Characteristics					Flares							
	Lat	CMD	Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical			
			Lon	10 ⁶	hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2

Region 2903

30 Nov	S17E41	148	10	2	Axx	1	A										
01 Dec	S18E29	148	plage														
02 Dec	S18E15	150	plage														
03 Dec	S18W00	151	plage														
04 Dec	S18W14	152	plage														
05 Dec	S18W24	149	10	3	Bxo	2	B										
06 Dec	S18W38	150	plage														
07 Dec	S18W52	151	plage														
08 Dec	S18W66	152	plage														
09 Dec	S18W80	152	plage														
									0	0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 151

Region 2904

04 Dec	S26E54	84	10	1	Axx	1	A										
05 Dec	S27E45	80	30	4	Bxo	3	B										
06 Dec	S27E29	81	10	4	Bxo	4	B				1						
07 Dec	S26E16	81	10	2	Bxo	3	B										
08 Dec	S26E03	83	plage														
09 Dec	S26W11	83	plage														
10 Dec	S26W25	84	plage														
11 Dec	S26W39	85	plage														
12 Dec	S26W53	86	plage														
									0	0	0	1	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 83

Region 2905

12 Dec	S11E44	349	30	2	Cro	2	B										
									0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 349



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

Published every Monday by the Space Weather Prediction Center.

U.S. Department of Commerce
NOAA / National Weather Service
Space Weather Prediction Center
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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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