

Space Weather Highlights
15 December - 21 December 2025

SWPC PRF 2625
22 December 2025

Solar activity reached high levels on 19-21 Dec. There were three M1 flares from an unnumbered region beyond the east limb, Region 4315 (N19E58, L=35, class/area Bxo/10 on 20 Dec) and Region 4316 (S07E28, L=45, class/area Dsi/50 on 21 Dec. Low levels with only C-class activity was observed on 15-18 Dec. These two numbered regions also produced numerous C-class flares. No significant CME activity was observed on the Earth-facing disk.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit reached high levels on 17-21 Dec due to coronal hole high speed stream influences. Normal to moderate levels were observed on 15-16 Dec.

Geomagnetic field activity reached G1 (Minor) storm levels on 17 and 21 Dec due to CH HSS influences. Active levels were observed on 18 Dec. Quiet to unsettled levels were observed on 15-16, and 19-20 Dec.

Space Weather Outlook
22 December - 17 January 2026

Solar activity is expected to be at low to moderate levels for the outlook period.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at high levels on 25-29 Dec, 1-6 Jan, and 14-17 Jan. All due to recurrent CH HSS influences.

Geomagnetic field activity is expected to be at G2 (Moderate) storm levels on 30 Dec; G1 (Minor) storm levels are expected on 22-23 Dec, 31 Dec, and 17 Jan, active levels are expected on 24-25 Dec, 01-02 Jan, 09-10 Jan, and 12-14 Jan. All due to recurrent CH HSS influences.



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
15 December	118	73	230	B5.0	7	0	0	1	0	0	0	0
16 December	117	81	220	B5.0	4	0	0	0	0	0	0	0
17 December	119	68	270	B6.4	3	0	0	1	0	0	0	0
18 December	116	87	350	B4.8	3	0	0	1	0	0	0	0
19 December	118	33	60	B5.9	6	1	0	0	0	0	0	0
20 December	120	74	160	B6.5	9	1	0	2	0	0	0	0
21 December	124	85	240	B6.7	13	1	0	8	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	
15 December	8.3e+05	1.5e+04	2.7e+07	
16 December	1.2e+06	1.5e+04	2.9e+07	
17 December	8.4e+05	1.4e+04	4.0e+07	
18 December	1.0e+06	1.5e+04	8.0e+07	
19 December	5.1e+05	1.5e+04	1.1e+08	
20 December	2.5e+06	1.5e+04	2.3e+08	
21 December	1.3e+06	1.5e+04	3.6e+07	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
15 December	5	0-0-2-1-3-2-1-1	9	0-0-2-2-5-2-0-0	6	1-0-1-1-3-2-1-1
16 December	6	2-1-2-2-2-2-2-1	12	1-2-2-4-3-3-3-2	12	3-3-2-2-2-3-3-2
17 December	10	2-2-3-2-2-2-3-3	17	3-2-3-3-4-3-3-4	18	3-3-3-2-3-3-4-5
18 December	11	4-2-3-2-1-3-2-2	36	4-2-6-6-4-5-3-2	17	4-3-4-3-2-3-3-3
19 December	4	1-1-1-1-1-2-1-1	4	2-1-1-1-1-2-1-1	6	2-2-1-1-1-2-2-2
20 December	4	2-1-1-1-1-1-1-2	8	2-1-0-2-4-2-1-2	6	2-1-1-1-2-2-2-3
21 December	20	3-1-3-3-4-4-2-5	50	1-2-3-6-6-7-5-4	22	4-3-3-4-4-5-4-5

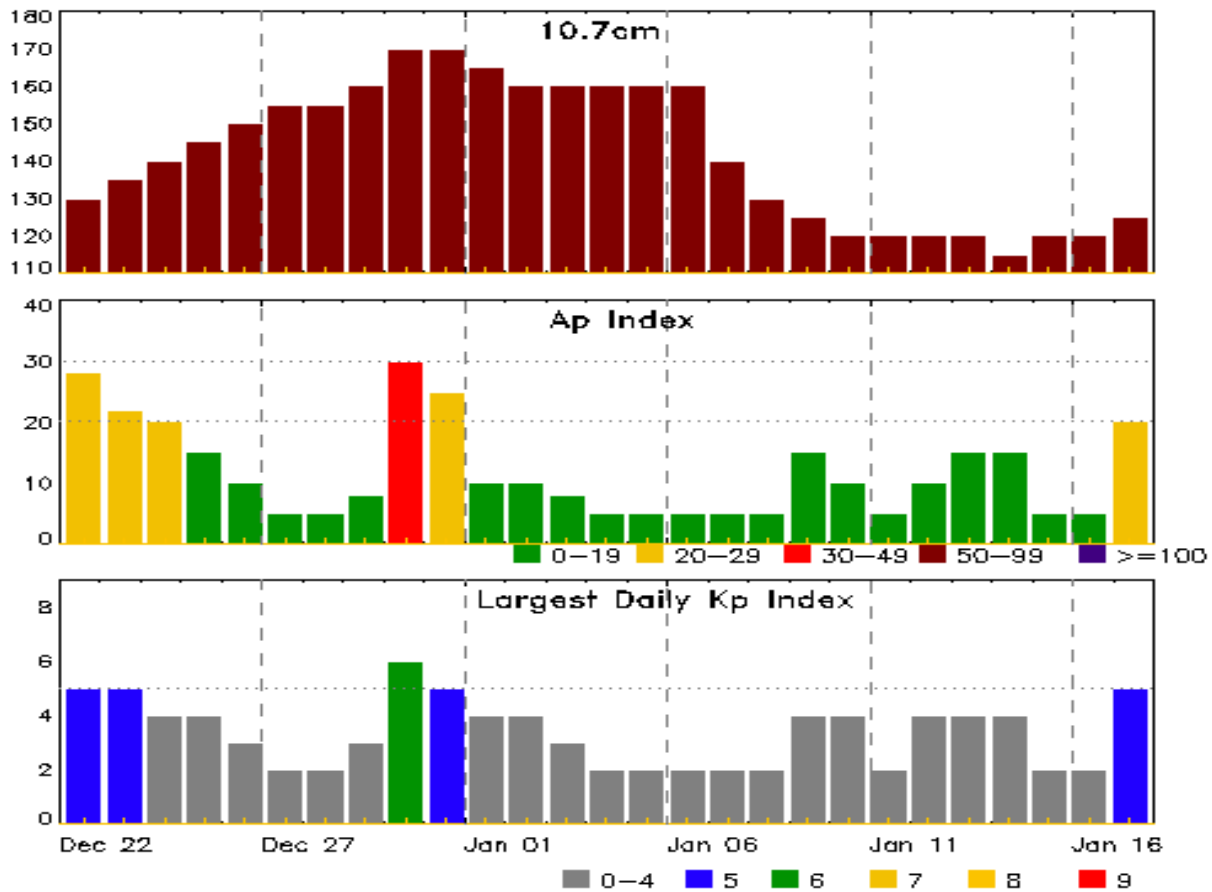


Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
15 Dec 2245	WATCH: Geomagnetic Storm Category G1 predicted	
16 Dec 0111	WARNING: Geomagnetic K = 4	16/0110 - 0600
17 Dec 0004	CANCELLATION: Geomagnetic Storm Category G1 predicted	
17 Dec 1506	ALERT: Electron 2MeV Integral Flux ≥ 1000 pfu	17/1405
17 Dec 2045	WARNING: Geomagnetic K = 4	17/2044 - 18/0600
17 Dec 2050	ALERT: Geomagnetic K = 4	
17 Dec 2221	WARNING: Geomagnetic K = 5	17/2221 - 18/0600
18 Dec 0002	ALERT: Geomagnetic K = 5	
18 Dec 0318	EXTENDED WARNING: Geomagnetic K = 4	17/2044 - 18/1200
18 Dec 0556	EXTENDED WARNING: Geomagnetic K = 5	17/2221 - 18/1500
18 Dec 0557	EXTENDED WARNING: Geomagnetic K = 4	17/2044 - 18/1800
18 Dec 1106	CONTINUED ALERT: Electron 2MeV Integral Flux ≥ 1000 pfu	17/1405
18 Dec 1756	EXTENDED WARNING: Geomagnetic K = 4	17/2044 - 18/2359
18 Dec 2314	EXTENDED WARNING: Geomagnetic K = 4	17/2044 - 19/1200
19 Dec 0756	CONTINUED ALERT: Electron 2MeV Integral Flux ≥ 1000 pfu	17/1405
20 Dec 0459	CONTINUED ALERT: Electron 2MeV Integral Flux ≥ 1000 pfu	17/1405
20 Dec 0809	ALERT: Type II Radio Emission	20/0759
20 Dec 1236	WATCH: Geomagnetic Storm Category G1 predicted	
21 Dec 0240	WARNING: Geomagnetic K = 4	21/0240 - 22/2359
21 Dec 0304	ALERT: Geomagnetic K = 4	
21 Dec 0414	EXTENDED WARNING: Geomagnetic K = 4	21/0240 - 1800
21 Dec 1350	WARNING: Geomagnetic K = 5	21/1400 - 22/1200
21 Dec 1445	ALERT: Electron 2MeV Integral Flux ≥ 1000 pfu	21/1425
21 Dec 1755	EXTENDED WARNING: Geomagnetic K = 4	21/0240 - 22/1800
21 Dec 1800	ALERT: Geomagnetic K = 5	
21 Dec 2316	ALERT: Geomagnetic K = 5	



Twenty-seven Day Outlook



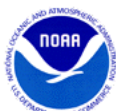
Date	Radio Flux 10.7cm	Planetary A Index	Largest Kp Index	Date	Radio Flux 10.7cm	Planetary A Index	Largest Kp Index
22 Dec	130	28	5	05 Jan	160	5	2
23	135	22	5	06	160	5	2
24	140	20	4	07	140	5	2
25	145	15	4	08	130	5	2
26	150	10	3	09	125	15	4
27	155	5	2	10	120	10	4
28	155	5	2	11	120	5	2
29	160	8	3	12	120	10	4
30	170	30	6	13	120	15	4
31	170	25	5	14	115	15	4
01 Jan	165	10	4	15	120	5	2
02	160	10	4	16	120	5	2
03	160	8	3	17	125	20	5
04	160	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		II	IV
									245	2695		
19 Dec	1535	1558	1608	M1.0	0.013							
20 Dec	0736	0753	0806	M1.0	0.010		SF	N19E58	4315		3	
21 Dec	1812	1827	1836	M1.3	0.011		SF	S07E28	4316			

Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location	Rgn
						Lat CMD	#
15 Dec	0120	0129	0134	C1.9			4307
15 Dec	0140	0148	0156	C1.8			4304
15 Dec	0302	0316	0324	C1.4			4307
15 Dec	1152	1205	1215	C1.3	SF	N06E25	4308
15 Dec	1221	1225	1234	C2.0			4304
15 Dec	1428	1432	1436	B8.3			4307
15 Dec	1720	1728	1749	C3.9			4304
15 Dec	1916	1925	1945	B6.5			4307
15 Dec	2323	2336	2343	C1.3			4307
16 Dec	0358	0417	0426	C3.0			
16 Dec	0913	0921	0931	B9.4			4310
16 Dec	1105	1111	1113	B7.5			4310
16 Dec	1336	1343	1347	C1.5			
16 Dec	1347	1351	1355	C1.9			
16 Dec	1440	1454	1513	B8.3			4309
16 Dec	1746	1759	1806	C1.1			
17 Dec	0827	0840	0901	C1.3			4307
17 Dec	0948	0955	1000	C1.0			4307
17 Dec	B1107	U1111	A1123		SF	S15W66	4307
17 Dec	1638	1644	1651	B9.1			
17 Dec	2005	2009	2012	B9.8			4307
17 Dec	2320	2335	2341	C2.0			
18 Dec	0002	0011	0014	C1.3			4307
18 Dec	0305	0315	0331	C1.7	SF	N06W13	4308
18 Dec	0642	0649	0653	B7.7			4311
18 Dec	0744	0750	0756	C3.2			4312
18 Dec	0924	0930	0941	B8.3			4312
18 Dec	2031	2038	2045	B9.4			4312



Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
19 Dec	0534	0543	0549	C1.9			4307
19 Dec	0553	0558	0601	C1.3			4307
19 Dec	0608	0620	0628	C1.7			4307
19 Dec	1314	1343	1358	C2.2			
19 Dec	1535	1558	1608	M1.0			
19 Dec	1704	1716	1724	C2.3			
19 Dec	2215	2223	2231	C1.8			4312
20 Dec	0059	0109	0113	C1.2			
20 Dec	0340	0346	0350	B8.8			
20 Dec	0410	0418	0422	B8.0			
20 Dec	0522	0534	0542	C1.3			
20 Dec	0542	0546	0549	C1.2			
20 Dec	0608	0614	0623	C1.3			4315
20 Dec	0652	0706	0725	C1.4			4315
20 Dec	0736	0753	0806	M1.0	SF	N19E58	4315
20 Dec	1915	1928	1939	C2.7	SF	N23E40	4314
20 Dec	1948	1955	1958	C2.8			4317
20 Dec	1958	2005	2007	C3.1			
20 Dec	2310	2320	2330	C1.3			4317
21 Dec	0214	0224	0232	C1.8			4317
21 Dec	1154	1203	1211	C1.3			4316
21 Dec	1211	1223	1229	C1.3			4317
21 Dec	1247	1256	1301	C1.3	SF	N19E42	4315
21 Dec	1433	1456	1516		SF	S07E29	4316
21 Dec	1552	1558	1605	C1.4	SF	S07E29	4316
21 Dec	1635	1708	1718	C2.6	SF	S07E28	4316
21 Dec	1812	1827	1836	M1.3	SF	S07E28	4316
21 Dec	1929	1943	1951	C3.9			4316
21 Dec	1933	1942	2006		SF	S07E27	4316
21 Dec	1951	2000	2003	C6.1			
21 Dec	2012	2029	2104	C4.0	SF	S07E27	4316
21 Dec	2051	2101	2107	C6.2			
21 Dec	2126	2326	A2338	C3.1	SF	S07E24	4316
21 Dec	2228	2234	2237	C2.2			
21 Dec	2325	2330	2334	C2.0			



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 4303

07 Dec	S27E53	202	30	4	Cro	4	B								
08 Dec	S27E38	204	20	3	Cso	3	B								
09 Dec	S27E23	205	10	1	Hsx	1	A								
10 Dec	S27E10	206	10	1	Axx	1	A								
11 Dec	S25W04	206	plage												
12 Dec	S25W18	207	plage												
13 Dec	S25W32	208	plage												
14 Dec	S25W46	209	plage												
15 Dec	S25W60	210	plage												
16 Dec	S25W74	211	plage												
17 Dec	S25W88	212	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 206

Region 4304

08 Dec	N26W08	250	20	7	Cro	3	B	3	1		2	1			
09 Dec	N26W23	251	50	8	Dao	7	B								
10 Dec	N26W36	252	70	8	Cai	15	BG	2			3				
11 Dec	N26W49	252	110	7	Cai	6	BG								
12 Dec	N26W63	252	90	7	Dao	10	B								
13 Dec	N26W74	250	50	7	Cao	3	B	2							
14 Dec	N26W85	248	60	7	Dai	5	B	3							
								10	1	0	5	1	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 250



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	3	4
Region 4305															
09 Dec	S25E34	195	20	5	Cro	5	B	1							
10 Dec	S25E20	196	70	7	Dai	10	BG	1							
11 Dec	S25E06	196	140	8	Dao	8	B	1			1				
12 Dec	S25W07	196	130	8	Dai	12	B								
13 Dec	S25W23	199	80	4	Hax	3	A								
14 Dec	S25W36	199	70	5	Hax	5	A								
15 Dec	S25W49	199	60	2	Hsx	1	A								
16 Dec	S25W62	199	50	2	Hax	1	A								
17 Dec	S25W75	199	60	1	Hsx	1	A								
18 Dec	S25W89	197	60	1	Hsx	1	A								
								3	0	0	1	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 196

Region 4306

11 Dec	S16W28	231	10	4	Bxo	5	B								
12 Dec	S16W42	232	plage												
13 Dec	S16W56	232	plage												
14 Dec	S16W70	233	plage												
15 Dec	S16W84	234	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 231

Region 4307

11 Dec	S11E08	195	30	4	Dro	9	B								
12 Dec	S12W05	195	50	5	Dri	11	BG	2			1				
13 Dec	S13W19	195	30	6	Dri	9	B								
14 Dec	S13W34	197	70	7	Dai	12	B	2			1				
15 Dec	S15W48	198	120	8	Dao	8	B	3							
16 Dec	S15W60	197	110	9	Dao	6	B								
17 Dec	S15W74	198	130	9	Dao	5	B	2			1				
18 Dec	S15W88	196	130	8	Dao	5	B	1							
								10	0	0	3	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 195



Region Summary - continued

Date	Location	Sunspot Characteristics						Flares							
	Lat CMD	Helio	Area 10 ⁻⁶ hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical				
		Lon						C	M	X	S	1	2	3	4
Region 4308															
12 Dec	N08E59	131	20	4	Bxo	4	B								
13 Dec	N07E45	131	20	5	Cro	6	B	1							
14 Dec	N06E31	132	20	5	Cro	4	B								
15 Dec	N07E17	133	30	6	Cso	7	B	1				1			
16 Dec	N07E04	134	20	6	Cro	4	B								
17 Dec	N08W13	137	10	3	Axx	2	A								
18 Dec	N08W27	136	10	1	Axx	1	A	1				1			
19 Dec	N08W39	136	plage												
20 Dec	N08W53	137	plage												
21 Dec	N08W67	137	plage												
								3	0	0	2	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 134

Region 4309

14 Dec	S09W33	195	10	3	Bxo	2	B								
15 Dec	S09W44	194	10	5	Bxo	3	B								
16 Dec	S09W62	199	10	1	Axx	1	A								
17 Dec	S09W76	200	plage												
18 Dec	S09W90	199	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 195

Region 4310

15 Dec	N01W25	175	10	3	Bxo	4	B								
16 Dec	N01W38	175	10	4	Bxi	6	B								
17 Dec	N02W52	176	20	5	Cro	4	B								
18 Dec	N02W66	177	20	5	Cro	2	B								
19 Dec	N03W80	177	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 175



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 4311

16 Dec	N03E16	121	20	2	Cro	3	B								
17 Dec	N03E02	122	50	4	Cso	6	B								
18 Dec	N03W12	120	60	1	Cso	5	B								
19 Dec	N04W27	124	10	1	Axx	1	A								
20 Dec	N04W41	125	10	3	Bxo	1	B								
21 Dec	N03W54	125	20	5	Cro	5	B								
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 122

Region 4312

18 Dec	N18E62	48	60	1	Hax	1	A	1							
19 Dec	N19E51	51	40	2	Hsx	1	A	1							
20 Dec	N19E32	52	40	2	Hsx	1	A								
21 Dec	N18E20	51	40	2	Hsx	1	A								
								2	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 51

Region 4313

18 Dec	S14E29	81	10	1	Axx	2	A								
19 Dec	S14E16	81	10	1	Axx	1	A								
20 Dec	S14E02	82	plage												
21 Dec	S14W12	82	plage												
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 82

Region 4314

20 Dec	N24E31	53	10	5	Bxo	4	B	1			1				
21 Dec	N24E18	53	plage												
								1	0	0	1	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 53



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 4315

20 Dec	N20E49	35	10	5	Bxo	2	B	2	1						
21 Dec	N19E35	36	10	3	Bxo	2	B	1			1				
								3	1	0	1	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 36

Region 4316

20 Dec	S00E40	44	40	3	Dao	4	B								
21 Dec	S08E26	45	50	7	Dri	12	B	6	1		7				
								6	1	0	7	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 45

Region 4317

20 Dec	N13E73	11	50	5	Dao	2	B	2							
21 Dec	N11E64	11	120	6	Cao	15	B	2							
								4	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 11



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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