Space Weather Highlights
18 August - 24 August 2025

SWPC PRF 2608
25 August 2025

Solar activity was at low levels on 18, 20, and 21 Aug with only C-class flares observed. Activity increased to moderate levels on 19 Aug following an M1.1 flare at 19/0439 UTC from an area beyond the Eastern limb. Moderate levels were also observed on 22 Aug as Region 4191 (N11, L=172, class/area=Ehi/360 on 24 Aug) produced a long-duration M1.7/Sf flare at 22/1851 UTC. Associated with this flare was a Type II radio sweep with an estimated shock speed of 521 km/s. The associated CME was deemed to be behind the Sun-Earth line. Moderate levels continued into 23 and 24 Aug with an M1.9 at 23/2006 UTC and an M1.3 flare at 24/0836 UTC, both originating from beyond the NE limb. While multiple CMEs were observed in coronagraph imagery over the period, nearly all were at or beyond the Eastern limb and none were considered to have an Earth-directed component.

The greater than 10 MeV proton flux at geosynchronous orbit was at background levels from 18-22 Aug. Beginning around midday on 22 Aug, flux levels began to rise following the long-duration M1.7 flare event, mentioned above. Levels continued to rise, eventually reaching a peak of 8.3 pfu at 24/2330 UTC, but never exceeded the greater than 10 pfu levels.

The greater than 2 MeV electron flux at geosynchronous orbit was at normal to moderate levels on 19-20 Aug, and 22-23 Aug. Activity reached high levels on 18, 21, and 24 Aug, with the peak observed value of 2,200 pfu at 18/0830 UTC.

Geomagnetic field activity was at quiet to unsettled levels on 18 and 24 Aug, bookending a negative polarity coronal hole high speed stream. Unsettled to active conditions were observed on 20-23 Aug as CH HSS activity elevated, with active to minor storm levels observed on 19 Aug.

Space Weather Outlook
25 August - 20 September 2025

Solar activity is expected to be at low levels, with varying chances for M-class flares (R1-R2/Minor-Moderate events) through 20 Sep.

The greater than 10 MeV proton levels are expected to be at or above 10 pfu levels on 25 Aug before dropping below the 10 pfu level by 26 Aug. Levels should remain below thresholds through 20 Sep, with no additional events expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at moderate levels on 25-26 Aug, 29 Aug-5 Sep, and 15-19 Sep. Conditions are likely to see high levels on 27-28 Aug, 6-14 Sep, and again on 20 Sep.

Geomagnetic field activity is expected to be at mostly quiet levels on 29 Aug-3 Sep and again on 11-14 Sep. Unsettled levels are likely on 25-28 Aug, 7-10 Sep, and 17-20 Sep. Active conditions

are likely on 4-9 Sep and 15-16 Sep, with possible minor storming on 4-6 Sep and 15 Sep. All increased activity levels are associated with coronal hole high speed stream influence.

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
18 August	114	73	120	B5.5	1	0	0	0	0	0	0	0
19 August	116	36	90	B6.3	3	1	0	0	0	0	0	0
20 August	120	59	180	B6.6	4	0	0	0	0	0	0	0
21 August	121	76	350	B6.9	4	0	0	0	0	0	0	0
22 August	136	51	380	B9.2	1	3	0	1	0	0	0	0
23 August	143	87	400	C1.2	9	1	0	6	0	0	0	0
24 August	152	102	550	C2.1	7	1	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
18 August	4.6e+05	1.5e+04	5.5e+07
19 August	9.2e+05	1.5e+04	1.6e+07
20 August	1.3e+05	1.5e+04	1.9e+07
21 August	2.8e+05	1.6e+04	3.9e+07
22 August	5.2e+05	2.7e+04	3.0e+07
23 August	6.9e+05	8.1e+04	4.1e+07
24 August	1.8e+06	2.6e+05	5.6e+07

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
18 August	5	0-0-1-2-3-2-1-2	14	0-1-1-5-4-4-1-1	7	0-1-1-2-2-3-1-2
19 August	16	3-2-2-3-4-3-4-3	25	3-2-3-5-5-4-4-3	19	3-2-2-3-4-4-5-4
20 August	12	3-3-3-2-3-2-2-3	21	4-3-4-6-2-2-1-0	13	4-3-3-3-2-2-2-3
21 August	8	3-2-1-2-3-1-2-2	4	3-2-1-0-0-0-1-1	7	3-2-1-1-1-1-2-2
22 August	9	3-2-1-2-3-1-3-2	0	0-0-0-3-4-3-3-0	8	3-2-1-1-2-2-2-3
23 August	7	2-2-1-2-3-1-2-1	6	2-3-2-2-2-0-1-1	7	3-2-2-2-2-1-1-2
24 August	5	1-1-1-2-2-2-2-1	6	1-3-1-2-2-1-1-1	7	2-2-1-1-1-1-2-2

Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
18 Aug 0622	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	10/1145
18 Aug 1839	WATCH: Geomagnetic Storm Category G1 predicted	
19 Aug 0041	WARNING: Geomagnetic K = 4	19/0040 - 0600
19 Aug 1256	WARNING: Geomagnetic K = 4	19/1255 - 20/0300
19 Aug 1427	ALERT: Geomagnetic K = 4	
19 Aug 1829	WARNING: Geomagnetic K = 5	19/1828 - 20/0300
19 Aug 1919	ALERT: Geomagnetic K = 5	
20 Aug 0255	EXTENDED WARNING: Geomagnetic K = 5	19/1828 - 20/1500
20 Aug 0255	EXTENDED WARNING: Geomagnetic K = 4	19/1255 - 20/1800
21 Aug 1123	ALERT: Type II Radio Emission	21/0822
21 Aug 1744	ALERT: Electron 2MeV Integral Flux >= 1000pfu	21/1735
24 Aug 1639	ALERT: Electron 2MeV Integral Flux >= 1000pfu	24/1620
24 Aug 2339	WARNING: Proton 10MeV Integral Flux > 10pfu	24/2340 - 25/1200

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

27-Day Outlook values not in Database.

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
19 Aug		0351	0439	0507		M1.1	0.030					
22 Aug		1756	1851	1902		M1.7	0.036					
22 Aug		1855	1859	1902		M1.7	0.009				2	
22 Aug		1855	1859	1902		M1.8	0.010					
23 Aug		1953	2006	2016		M1.9	0.019					
24 Aug		0826	0836	0842		M1.3	0.009					

Flare List

	Time			Optical			
Date	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
18 Aug	2131	2153	2209	C2.1			4188
19 Aug	0340	0347	0351	C1.2			4180
19 Aug	0351	0439	0507	M1.1			
19 Aug	1135	1142	1148	B9.5			
19 Aug	1236	1246	1256	C1.3			
19 Aug	2105	2111	2115	B9.0			
19 Aug	2216	2221	2226	C1.0			
20 Aug	0218	0239	0249	C2.5			
20 Aug	0924	0936	0952	C2.8			
20 Aug	0952	0957	1001	C2.3			
20 Aug	2354	0011	0033	C3.2			4191
21 Aug	0221	0232	0240	C1.7			4188
21 Aug	1245	1255	1303	C1.3			4191
21 Aug	1546	1556	1603	C2.3			4191
21 Aug	1934	1943	2008	C1.1			4191
22 Aug	0141	0148	0154	B9.9			4191
22 Aug	0356	0404	0412	C1.2			4191
22 Aug	1756	1851	1902	M1.7			
22 Aug	1855	1859	1902	M1.8			
22 Aug	1855	1859	1902	M1.7			
22 Aug	1856	1902	1931		SF	N12E61	4191
23 Aug	0623	0629	0634	C2.8	SF	N12E54	4191
23 Aug	1129	1135	1140	C2.3			
23 Aug	1247	1252	1256	C1.9			4191
23 Aug	1319	1332	1350	C3.2	SF	N12E51	4191

Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
23 Aug	1358	1448	1713		SF	N13E49	4191
23 Aug	1448	1454	1501	C3.0			
23 Aug	1512	1516	1519	C2.6			
23 Aug	B1600	U1601	1604		SF	N12E48	4191
23 Aug	1606	1607	1615		SF	N12E48	4191
23 Aug	1901	1922	1940	C9.1	SF	N12E46	4191
23 Aug	1953	2006	2016	M1.9			
23 Aug	2241	2256	2304	C5.5			
23 Aug	2304	2319	2327	C6.2			
24 Aug	0050	0054	0100	C4.8			4191
24 Aug	0523	0532	0551	C2.9			
24 Aug	0655	0705	0717	C5.7			
24 Aug	0734	0742	0751	C4.9			
24 Aug	0751	0756	0758	C4.1			
24 Aug	0815	0823	0826	C4.4			
24 Aug	0826	0836	0842	M1.3			
24 Aug	1236	1237	1254		SF	N02E20	4194
24 Aug	2225	2234	2242	C4.0			

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 4171												
06 Aug	N19E65	13	50	1	Hsx	1	A								
07 Aug	N19E51	14	40	2	Hsx	1	A								
08 Aug	N18E37	15	30	2	Hsx	1	A								
09 Aug	N19E26	13	20	1	Hsx	1	A								
10 Aug	N19E12	14	40	1	Hsx	1	A								
11 Aug	N19W01	13	40	1	Hsx	1	A								
12 Aug	N18W15	14	50	4	Cso	2	B								
13 Aug	N18W27	13	50	3	Cso	2	B								
14 Aug	N19W39	12	70	1	Hsx	1	A								
15 Aug	N19W52	11	30	1	Hsx	1	A								
16 Aug	N19W66	12	30	1	Hsx	1	A								
17 Aug	N19W78	10	10	1	Hrx	1	A								
18 Aug	N18W91	11	10	1	Hrx	1	A								
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 13

			Region 4175												
08 Aug	N12E59	353	20	1	Hrx	2	A								
09 Aug	N12E47	352	30	1	Hsx	1	A								
10 Aug	N12E35	351	30	1	Hsx	2	A								
11 Aug	N12E20	352	20	2	Hax	2	A								
12 Aug	N11E06	353	50	3	Cao	6	B								
13 Aug	N12W08	354	50	5	Cao	7	B								
14 Aug	N11W21	354	30	3	Cro	5	B								
15 Aug	N13W34	353	10	1	Hsx	1	A								
16 Aug	N12W48	354	10	1	Axx	1	A								
17 Aug	N12W62	355	plage												
18 Aug	N12W76	356	plage												
19 Aug	N12W90	357	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 353

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 4176												
08 Aug	N26E45	7	20	3	Dro	4	B								
09 Aug	N26E31	8	10	1	Axx	1	A								
10 Aug	N26E17	9	10	1	Axx	1	A								
11 Aug	N25E03	9	10	1	Axx	1	A								
12 Aug	N25W11	10	plage												
13 Aug	N25W25	11	plage												
14 Aug	N25W39	12	plage												
15 Aug	N25W53	12	plage												
16 Aug	N25W67	13	plage												
17 Aug	N25W81	14	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 9

			Region 4177												
08 Aug	N05E59	353	20	2	Hrx	1	A								
09 Aug	N06E48	351	20	1	Hsx	1	A								
10 Aug	N05E36	350	10	1	Hsx	2	A								
11 Aug	N04E21	351	20	1	Hsx	1	A								
12 Aug	N05E07	352	20	2	Hax	2	A								
13 Aug	N05W07	353	30	3	Cao	4	B								
14 Aug	N05W19	352	10	1	Hrx	1	A								
15 Aug	N05W33	352	20	1	Hsx	1	A								
16 Aug	N05W46	352	10	1	Axx	1	A								
17 Aug	N05W60	353	plage												
18 Aug	N05W74	354	plage												
19 Aug	N05W88	355	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 352

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 4179												
11 Aug	S11E52	320	50	1	Cso	2	B				1				
12 Aug	S11E38	321	30	1	Hax	2	A								
13 Aug	S10E24	322	30	2	Hax	1	A								
14 Aug	S10E12	321	10	1	Hrx	1	A								
15 Aug	S10E01	318	30	6	Cso	4	B	1							
16 Aug	S10W13	319	20	6	Cro	8	B								
17 Aug	S12W24	317	plage												
18 Aug	S12W38	318	plage												
19 Aug	S12W52	319	plage												
20 Aug	S12W67	320	plage												
21 Aug	S12W81	321	plage												
								1	0	0	1	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 318

			Region 4180												
12 Aug	S04E61	298	50	7	Dao	8	B								
13 Aug	S02E45	301	40	8	Dai	7	B	1							
14 Aug	S03E31	302	50	8	Dao	8	B								
15 Aug	S02E16	303	40	8	Dao	7	B	1							
16 Aug	S03E02	304	20	9	Cro	7	B	1							
17 Aug	S03W11	304	40	4	Cai	9	B	2			2				
18 Aug	S02W25	305	10	9	Bxo	6	B								
19 Aug	S02W39	306	plage					1							
20 Aug	S02W54	307	plage												
21 Aug	S02W68	308	plage												
22 Aug	S02W83	310	plage												
								6	0	0	2	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 304

			Region 4181												
13 Aug	S12W24	10	20	5	Cro	3	B								
14 Aug	S13W41	14	10	1	Hrx	1	A								
15 Aug	S11W54	13	10	1	Axx	1	A								
16 Aug	S11W68	14	plage												
17 Aug	S11W82	15	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 10

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 4182												
13 Aug	N08E71	274	30	1	Hax	1	A								
14 Aug	N08E58	275	20	1	Hrx	1	A								
15 Aug	N09E42	277	20	1	Hsx	1	A								
16 Aug	N08E30	276	30	3	Dao	5	B								
17 Aug	N08E16	277	10	1	Hsx	1	A								
18 Aug	N08E02	278	10	1	Axx	1	A								
19 Aug	N09W12	279	plage												
20 Aug	N10W27	280	plage												
21 Aug	N10W41	281	plage												
22 Aug	N10W55	282	plage												
23 Aug	N10W69	283	plage												
24 Aug	N10W83	284	plage												
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 278

			Region 4184												
14 Aug	S19W35	8	10	3	Bxo	2	B								
15 Aug	S19W50	9	20	4	Cso	2	B								
16 Aug	S19W64	10	plage												
17 Aug	S19W78	11	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 8

			Region 4185												
14 Aug	N17W35	8	10	3	Bxo	4	B								
15 Aug	N17W49	8	10	3	Bxo	4	B								
16 Aug	N17W63	9	plage												
17 Aug	N17W77	10	plage												
								0	0	0	0	0	0	0	0

Died on Disk.
Absolute heliographic longitude: 8

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 4186												
15 Aug	N07W47	6	40	3	Cso	3	B								
16 Aug	N08W62	8	60	4	Dso	6	B								
17 Aug	N07W77	10	40	4	Dso	2	B								
18 Aug	N06W91	11	40	4	Dso	2	B								
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 6

			Region 4187												
18 Aug	S18E19	261	10	3	Cro	2	B								
19 Aug	S17E05	262	40	4	Dao	4	B								
20 Aug	S18W08	261	40	4	Dao	4	B								
21 Aug	S19W21	261	40	4	Cao	5	B								
22 Aug	S19W33	260	10	1	Hrx	1	A								
23 Aug	S20W47	261	10	1	Hrx	1	A								
24 Aug	S18W58	258	plage												
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 262

			Region 4188												
18 Aug	S09E72	208	40	3	Hax	1	A	1							
19 Aug	S09E57	209	40	1	Hsx	1	A								
20 Aug	S09E43	210	40	2	Hsx	1	A								
21 Aug	S09E30	210	40	2	Hsx	1	A	1							
22 Aug	S09E18	209	40	3	Hsx	1	A								
23 Aug	S09E04	210	50	2	Hsx	1	A								
24 Aug	S09W10	211	50	1	Hsx	1	A								
								2	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 210

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 4189												
19 Aug	N07E47	220	10	1	Axx	1	A								
20 Aug	N08E32	221	10	3	Bxo	2	B								
21 Aug	N06E18	222	30	4	Cro	6	B								
22 Aug	N07E04	223	30	4	Cso	4	B								
23 Aug	N08W09	223	30	4	Cso	3	B								
24 Aug	N08W24	225	10	1	Hsx	1	A								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 223

			Region 4190												
20 Aug	N18E56	197	10	1	Axx	1	A								
21 Aug	N18E42	198	10	1	Axx	1	A								
22 Aug	N18E29	198	plage												
23 Aug	N18E15	199	plage												
24 Aug	N18E01	200	plage												
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 200

			Region 4191												
20 Aug	N10E79	174	80	10	Hsx	1	A	1							
21 Aug	N10E66	173	220	4	Hsx	1	A	3							
22 Aug	N11E55	172	300	10	Cho	5	B	1			1				
23 Aug	N11E43	171	260	12	Eho	5	B	4			6				
24 Aug	N11E29	172	360	11	Ehi	12	BG	1							
								10	0	0	7	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 172

			Region 4192												
21 Aug	N28W28	268	10	3	Bxo	2	B								
22 Aug	N26W43	270	plage												
23 Aug	N26W57	271	plage												
24 Aug	N26W71	272	plage												
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 268

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 4193												
23 Aug	S27W02	216	10	3	Bxo	3	B								
24 Aug	S27W16	217	10	1	Axx	1	A								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 216

			Region 4194												
23 Aug	N03E27	187	10	4	Bxo	3	B								
24 Aug	N02E13	188	30	4	Cao	3	B				1				
								0	0	0	1	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 188

			Region 4195												
23 Aug	S18E68	146	30	1	Hrx	1	A								
24 Aug	S17E54	147	20	1	Hax	1	A								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 147

			Region 4196												
24 Aug	S11E64	137	10	1	Axx	1	A								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 137

			Region 4197												
24 Aug	S17E66	135	60	7	Dao	2	B								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 135

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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https://www.ngdc.noaa.gov/stp/satellite/goes-r.html -- NCEI GOES data textarchive
https://www.swpc.noaa.gov/products/solar-cycle-progression -- Solar Cycle Progression web site
https://www.swpc.noaa.gov/content/contact-us -- Contact and Copyright information
https://www.swpc.noaa.gov/sites/default/files/images/u2/Usr_guide.pdf -- User Guide