Space Weather Highlights
21 August - 27 August 2023

SWPC PRF 2504
28 August 2023

Solar activity ranged from low to moderate. Region 3415 (S09, L=79, class/area=Dko/350 on 24 Aug) produced the strongest flare of the period, a long-duration M1.4/1n at 25/0109 UTC. Lower M-class X-ray flares (R1 - Minor) were observed from Region 3405 (N10, L=183, class/area=Eso/180 on 16 Aug) and an area around the E limb. The remaining active regions were relatively simple.

Other activity included a Type II radio sweep on 26 Aug which was associated with activity just past the Sun's visible disk. None of the CMEs observed in available coronagraph imagery appeared to on the Sun-Earth line.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was low to moderate levels over the reporting period.

Geomagnetic field activity ranged from quiet to active conditions. A single period of active conditions were observed 27 Aug due to a period of sustained Bz south that reached -7 nT. Only quiet to unsettled conditions were observed for the remainder of the reporting period.

Space Weather Outlook
28 August - 23 September 2023

Solar activity is expected to be at low levels with a slight chance for M-class (R1-R2 Minor-Moderate) activity throughout the outlook period.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected reach high levels on 07-10 Sep due to recurrent CH HSS influence. The remaining days are likely to be at background to moderate levels.

Geomagnetic field activity is expected to range from quiet to active levels. Active conditions are likely on 14 Sep, with unsettled conditions likely on 28-19 Aug, 06-08 Sep, 15-17 Sep and 23 Sep. All elevations in geomagnetic activity are anticipated due to recurrent CH HSS features. The remainder of the outlook period is expected to be at quiet levels.

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
21 August	149	102	660	B9.0	7	0	0	4	0	0	0	0
22 August	151	96	700	B8.4	4	1	0	3	0	0	0	0
23 August	147	99	900	B8.2	7	0	0	5	0	0	0	0
24 August	144	86	950	B6.7	5	0	0	5	0	0	0	0
25 August	139	77	930	B5.1	5	1	0	4	1	0	0	0
26 August	139	75	640	B5.1	4	1	0	3	1	0	0	0
27 August	142	69	610	B6.2	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
21 August	6.5e+04	1.8e+04	4.8e+06
22 August	3.2e+04	1.8e+04	8.1e+06
23 August	3.2e+04	1.8e+04	1.2e+07
24 August	6.8e+04	1.8e+04	1.1e+07
25 August	2.7e+04	1.8e+04	3.4e+06
26 August	5.5e+04	1.8e+04	5.5e+06
27 August	3.8e+04	1.8e+04	3.9e+06

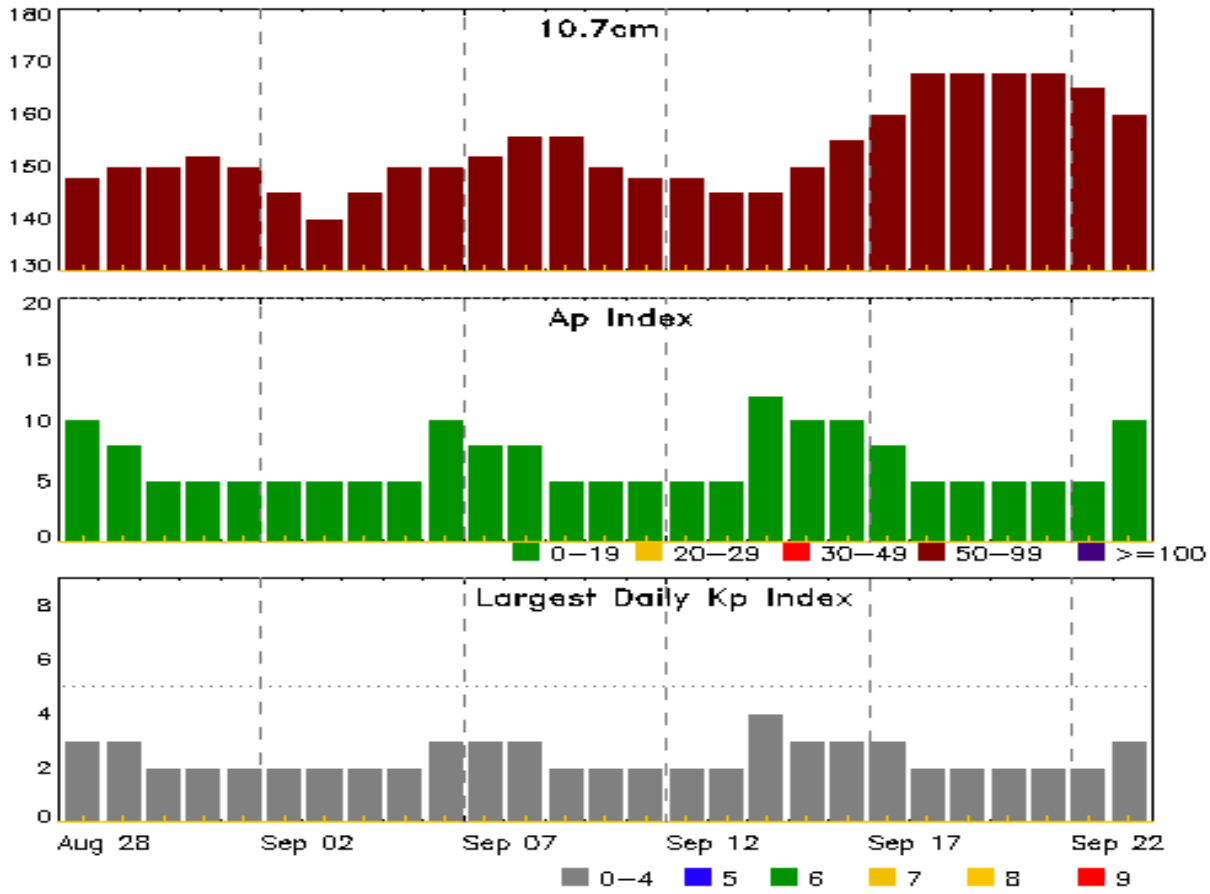
Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
21 August	10	2-1-3-2-3-2-2-3	13	2-2-3-4-4-1-2-2	9	2-2-3-2-3-2-2-2
22 August	12	2-3-3-2-0-0-0-3	10	1-3-4-2-3-1-1-1	8	2-3-3-2-2-1-1-2
23 August	5	1-1-1-2-2-1-2-2	2	1-1-0-0-0-0-1-1	4	2-1-0-1-1-0-1-2
24 August	9	2-2-1-2-3-3-2-2	5	1-1-0-0-2-3-2-2	9	1-1-1-1-2-3-3-3
25 August	7	2-2-1-2-3-2-2-1	2	2-1-0-0-1-1-1-0	5	2-1-1-1-2-1-2-1
26 August	9	2-3-3-2-2-2-2-2	12	1-2-3-2-4-4-1-1	7	2-2-3-2-2-2-1-2
27 August	13	3-4-4-2-2-2-2-1	15	4-3-4-2-2-4-2-1	22	4-3-3-1-2-2-3-1

Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
24 Aug 1659	WARNING: Geomagnetic K = 4	24/1700 - 2359
26 Aug 1308	ALERT: Type II Radio Emission	26/1256
27 Aug 0241	WARNING: Geomagnetic K = 4	27/0240 - 1500
27 Aug 0304	ALERT: Geomagnetic K = 4	27/0259

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
28 Aug	148	10	3	11 Sep	148	5	2
29	150	8	3	12	148	5	2
30	150	5	2	13	145	5	2
31	152	5	2	14	145	12	4
01 Sep	150	5	2	15	150	10	3
02	145	5	2	16	155	10	3
03	140	5	2	17	160	8	3
04	145	5	2	18	168	5	2
05	150	5	2	19	168	5	2
06	150	10	3	20	168	5	2
07	152	8	3	21	168	5	2
08	156	8	3	22	165	5	2
09	156	5	2	23	160	10	3
10	150	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
22 Aug	2235	2304	2338	M1.1	0.002	SF	N11	W29	3405	300		
25 Aug	0056	0109	0126	M1.4	0.001	1N	S12	E50	3415			
26 Aug	2205	2250	2342	M1.1	0.044							

Flare List

	Time			Optical			
Date	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
21 Aug	0518	0528	0533	C1.5			
21 Aug	0533	0545	0602	C2.0			
21 Aug	0735	0753	0811	C4.3			
21 Aug	1218	1238	1253	C3.1	SF	N26W76	3403
21 Aug	1607	1614	1620		SF	N09E74	3413
21 Aug	1730	1735	1736		SF	N22W73	3403
21 Aug	1900	1909	1918	C1.3			
21 Aug	2323	2343	2347	C4.7	SF	N08E69	3413
21 Aug	2347	0000	0007	C5.7			
22 Aug	0743	0750	0758	C2.0	SF	N09E63	3413
22 Aug	0915	0922	0927	C1.2			
22 Aug	1018	1026	1031	C1.6	SF	N08W26	3405
22 Aug	2235	2304	2338	M1.1	SF	N11W29	3405
22 Aug	2338	2341	2345	C7.1			3405
23 Aug	B0000	0005	0022		SF	N11W29	3405
23 Aug	0120	0130	0138	C3.4			3407
23 Aug	0701	0709	0715	C1.5			
23 Aug	0937	0946	0956		SF	N12E54	3413
23 Aug	1000	1013	1034	C3.2	SF	N13E54	3413
23 Aug	1038	1102	1113		SF	N13E54	3413
23 Aug	1211	1220	1233	C1.4			
23 Aug	1354	1407	1412	C3.9	SF	N06W41	3405
23 Aug	1510	1516	1522	C1.7			3413
23 Aug	1555	1616	1649	C2.4			3413
24 Aug	0004	0005	0010		SF	N13E45	3413
24 Aug	0638	0645	0654	C1.4	SF	N13E41	3413
24 Aug	1213	1216	1228		SF	N13E39	3413
24 Aug	1551	1554	1559	C1.0			

Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
24 Aug	1756	1804	1808	C1.4	SF	N09W59	3405
24 Aug	1940	2041	2141	C3.0			3403
24 Aug	2150	2214	2231	C4.1	SF	N10W54	3405
25 Aug	0056	0109	0126	M1.4	1N	S12E50	3415
25 Aug	0321	0329	0333	C1.4	SF	N08W64	3405
25 Aug	0910	0917	0921	C1.2			3405
25 Aug	1018	1022	1029	B8.1			3405
25 Aug	1106	1108	1127	C1.2	SF	N06W41	3405
25 Aug	1439	1443	1447	B7.9			3405
25 Aug	1515	1519	1527		SF	N13E22	3413
25 Aug	1535	1536	1539	C5.0	SF	N09W70	3405
25 Aug	1613	1620	1624	C1.1			3416
25 Aug	2141	2145	2149	B6.7			
26 Aug	0940	1006	1037	C2.2	SF	N10E07	3413
26 Aug	1219	1220	1222		SF	N08W83	3405
26 Aug	1244	1302	1326	C1.9	1F	N10W70	3405
26 Aug	1507	1507	1513		SF	S08E28	3415
26 Aug	2011	2017	2021	C1.1			3405
26 Aug	2141	2150	2155	C2.6			3405
26 Aug	2205	2250	2342	M1.1			

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 3403												
13 Aug	N26E32	242	50	5	Cao	7	B	1							
14 Aug	N26E18	242	130	6	Dao	10	B								
15 Aug	N26E05	242	200	7	Dao	18	B				2				
16 Aug	N22W09	243	260	8	Dko	12	B	5			3				
17 Aug	N25W22	243	180	10	Dai	16	B	1			1				
18 Aug	N26W35	243	160	10	Dai	12	B								
19 Aug	N27W48	242	120	10	Dsi	8	B	2			1				
20 Aug	N27W61	242	120	10	Cso	7	B								
21 Aug	N26W75	243	110	4	Cso	3	B	1			2				
								10	0	0	9	0	0	0	0

Died on Disk.
Absolute heliographic longitude: 242

			Region 3404												
13 Aug	S08E74	200	60	2	Hax	1	A								
14 Aug	S07E59	201	60	2	Hax	2	A								
15 Aug	S07E45	201	60	7	Cao	3	B								
16 Aug	S11E34	199	50	1	Hsx	2	A				1				
17 Aug	S09E20	201	30	2	Cao	3	B								
18 Aug	S10E07	201	10	1	Hax	1	A								
19 Aug	S10W07	201	10	1	Hrx	1	A								
20 Aug	S10W20	201	0		Axx	1	A								
21 Aug	S11W33	201	20	1	Cao	2	B								
22 Aug	S12W47	202	10	2	Axx	2	A								
23 Aug	S11W62	203	10	1	Axx	1	A								
24 Aug	S09W71	200	20	2	Bxo	3	B								
25 Aug	S09W85	201	plage												
								0	0	0	1	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 201

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 3405												
14 Aug	N11E75	186	120	2	Hsx	1	A	1			1				
15 Aug	N10E65	181	160	9	Dso	3	B	3			4				
16 Aug	N10E51	182	180	16	Fso	5	B	1			1				
17 Aug	N11E38	183	160	13	Eso	4	B	1			1				
18 Aug	N11E25	183	140	14	Eso	6	B	1			1				
19 Aug	N09E11	183	100	12	Cso	2	B								
20 Aug	N09W04	185	90	6	Cso	2	B								
21 Aug	N10W20	187	110	3	Hsx	1	A								
22 Aug	N09W33	188	110	4	Cso	3	B	2	1		2				
23 Aug	N10W48	189	130	3	Hsx	4	A	1			2				
24 Aug	N09W61	189	140	2	Hsx	2	A	2			2				
25 Aug	N10W75	191	120	4	Cao	2	B	4			3				
26 Aug	N10W88	190	60	2	Hax	1	A	3			1	1			
								19	1	0	18	1	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 185

			Region 3406												
15 Aug	S17W18	265	10	2	Bxo	3	B								
16 Aug	S18W32	266	10	4	Bxo	4	B								
17 Aug	S18W45	266	plage												
18 Aug	S17W62	269	plage												
19 Aug	S16W76	270	plage												
20 Aug	S16W90	272	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 265

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 3407												
15 Aug	S18E22	224	30	4	Cro	6	B				2				
16 Aug	S22E09	225	190	6	Dso	7	B								
17 Aug	S18W04	225	200	7	Dsi	8	B								
18 Aug	S18W13	223	140	6	Dso	5	B								
19 Aug	S18W32	226	110	6	Dao	4	B								
20 Aug	S18W45	226	180	6	Dai	8	B								
21 Aug	S19W58	225	120	4	Dai	8	B								
22 Aug	S19W71	226	30	2	Cso	1	B								
23 Aug	S17W83	224	30	2	Hsx	1	A	1							
								1	0	0	2	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 225

			Region 3408												
16 Aug	S18W03	237	10	3	Bxo	5	B								
17 Aug	S18W18	239	10	2	Bxo	3	B								
18 Aug	S18W32	240	plage												
19 Aug	S18W46	241	plage												
20 Aug	S18W60	242	plage												
21 Aug	S18W74	242	plage												
22 Aug	S18W88	243	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 237

			Region 3409												
16 Aug	N21W17	251	30	4	Cro	9	B								
17 Aug	N21W30	251	20	3	Cro	7	B	1			3				
18 Aug	N20W42	250	20	4	Bxo	5	B	3			2				
19 Aug	N22W56	250	30	5	Cro	5	B								
20 Aug	N22W70	252	10	4	Bxo	3	B	1			1				
21 Aug	N22W84	252	plage												
								5	0	0	6	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 251

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 3410												
16 Aug	S30W34	269	10	4	Bxo	4	B								
17 Aug	S30W48	269	10	1	Axx	1	A								
18 Aug	S30W62	270	10	1	Axx	1	A								
19 Aug	S30W75	270	10	1	Axx	1	A	1			1				
20 Aug	S30W89	271	plage					1							
								2	0	0	1	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 269

			Region 3411												
17 Aug	N14E54	167	70	2	Hsx	1	A								
18 Aug	N15E35	173	30	2	Hsx	1	A								
19 Aug	N13E22	171	50	4	Hsx	2	A								
20 Aug	N13E10	171	50	2	Hsx	1	A								
21 Aug	N13W03	170	60	2	Hsx	1	A								
22 Aug	N12W16	171	40	2	Hsx	1	A								
23 Aug	N14W28	169	40	3	Hsx	1	A								
24 Aug	N13W43	171	50	1	Hsx	1	A								
25 Aug	N14W56	172	50	2	Hsx	1	A								
26 Aug	N14W71	173	40	2	Hsx	1	A								
27 Aug	N14W84	173	40	2	Hsx	1	A								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 170

			Region 3412												
18 Aug	N32E72	136	60	2	Hsx	1	A								
19 Aug	N30E58	136	40	1	Hsx	1	A								
20 Aug	N30E44	137	40	2	Hsx	1	A								
21 Aug	N30E34	134	70	2	Hsx	1	A								
22 Aug	N31E20	135	60	2	Hsx	1	A								
23 Aug	N30E08	133	50	2	Hsx	1	A								
24 Aug	N10W07	136	60	2	Hsx	1	A								
25 Aug	N31W20	135	60	2	Hsx	1	A								
26 Aug	N31W35	137	60	2	Hsx	1	A								
27 Aug	N31W47	136	60	2	Hsx	1	A								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 136

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 3413												
21 Aug	N10E73	94	150	3	Hsx	1	A	1			2				
22 Aug	N09E60	95	200	6	Hsx	3	A	1			1				
23 Aug	N10E46	95	280	17	Fho	6	B	3			3				
24 Aug	N11E33	95	330	11	Eki	15	B	1			3				
25 Aug	N11E16	100	400	7	Dki	8	B				1				
26 Aug	N12E01	101	250	7	Dko	6	B	1			1				
27 Aug	N10W13	102	260	7	Dki	12	B								
								7	0	0	11	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 101

			Region 3414												
21 Aug	S09E32	135	20	2	Cro	5	B								
22 Aug	S08E19	136	10	1	Axx	4	A								
23 Aug	S11E05	136	10	2	Axx	2	A								
24 Aug	S07W07	135	plage												
25 Aug	S10W23	138	plage												
26 Aug	S10W37	139	plage												
27 Aug	S10W51	140	plage												
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 136

			Region 3415												
22 Aug	S09E74	81	240	5	Hax	1	A								
23 Aug	S11E62	79	350	10	Dho	3	B								
24 Aug	S09E49	79	350	5	Dko	4	B								
25 Aug	S09E35	79	270	5	Dko	4	BD		1			1			
26 Aug	S10E20	82	200	5	Dao	5	BD				1				
27 Aug	S10E06	83	200	4	Dao	4	BD								
								0	1	0	1	1	0	0	0

Still on Disk.
Absolute heliographic longitude: 83

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 3416													
25 Aug	S19E71	44	30	2	Hsx	1	A	1							
26 Aug	S19E52	50	30	2	Hsx	1	A								
27 Aug	S19E38	51	50	2	Hsx	1	A								
								1	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 51

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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