Space Weather Highlights
25 July - 31 July 2022

SWPC PRF 2448
01 August 2022

Solar activity was low. The strongest event of the period was a C9 flare at 31/2309 UTC from an area around the NE limb. Region 3068 (S15, L=208, class/area=Eso/110 on 31 Jul) was the mostly complex on the visible disk by the end of the reporting period. The region continued to increase in area around its leader spot and developed additional intermediate spots through 31 Jul. The remaining active regions were relativley simple and quiet or in decay as they rotated around the W limb.

Several CME were observed in available coronagraph imagery but none appeared to have an Earth-directed component.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at moderate to high levels. High levels were observed on 25-28 Jul and 31 Jul while moderate levels observed on 29-30 Jul.

Geomagnetic field activity ranged from quiet to active levels. Active levels were observed on 26 Jul after a period of prolonged southward Bz and on 31 Jul due to the onset of coronal hole influence. Unsettled levels were reached 25 Jul, 27-28 Jul, and 30 Jul, mostly due to more periods of sustained southward Bz. The remainder of the reporting period was quiet.

Space Weather Outlook
01 August - 27 August 2022

Solar activity is expected to be very low over the outlook period. Most of the regions that are expected to rotate back onto the visible disk were either in decay or relatively simple and quiet as they rotated around the W limb.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to range from moderate to high levels. High levels are likely on 12-16 Aug, and again on 18-24 Aug. The remainder of the outlook period is likely to reached moderate levels. All enhancements in electron flux are anticipated in response to multiple, recurrent CH HSSs.

Geomagnetic field activity is expected to be at quiet to G1 (Minor) geomagnetic storm levels. G1 conditions are likely on 03 Aug and 17 Aug; active conditions are likely on 01 Aug, 04-05 Aug, and 18-19 Aug; unsettled conditions are likely on 06 Aug, 11-12 Aug, and 20 Aug. the remainder of the outlook period is expected to be at mostly quiet levels. All elevated levels of geomagnetic activity are due to multiple, recurrent, CH HSSs.

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
25 July	102	100	280	B2.1	1	0	0	0	0	0	0	0
26 July	99	78	290	B1.7	1	0	0	1	0	0	0	0
27 July	98	52	210	B1.6	1	0	0	0	0	0	0	0
28 July	93	50	130	B1.4	0	0	0	0	0	0	0	0
29 July	93	40	180	B1.2	1	0	0	9	0	0	0	0
30 July	91	27	170	B1.1	0	0	0	0	0	0	0	0
31 July	94	39	180	B1.2	1	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
25 July	5.2e+04	2.9e+04	5.1e+07
26 July	4.1e+04	2.9e+04	4.1e+07
27 July	4.5e+04	3.0e+04	3.0e+07
28 July	5.2e+04	2.9e+04	2.3e+07
29 July	4.3e+04	3.0e+04	2.1e+07
30 July	6.4e+04	3.0e+04	2.6e+07
31 July	1.8e+05	3.1e+04	8.8e+06

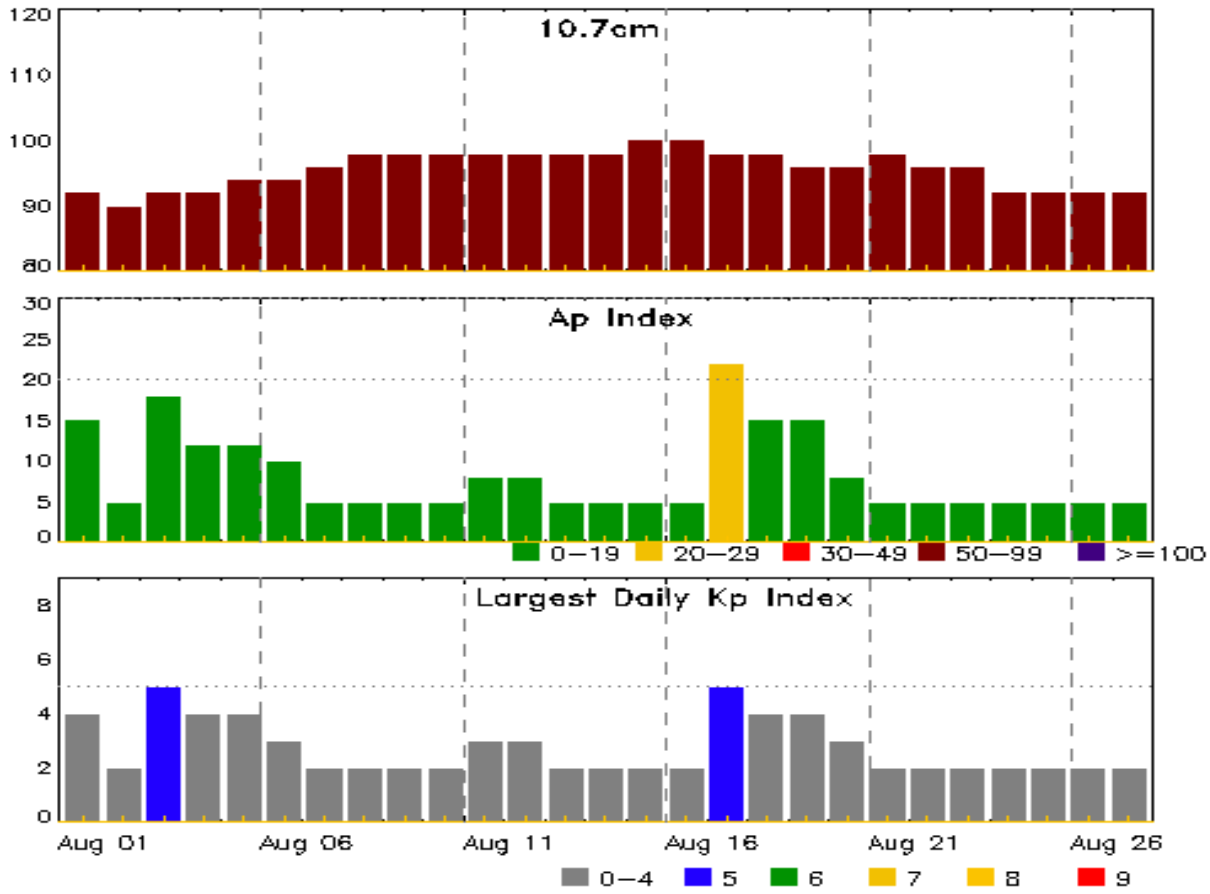
Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
25 July	8	3-2-0-2-3-2-1-2	4	2-2-1-0-1-1-1-1	6	3-2-1-1-1-1-1-2
26 July	7	3-2-0-2-2-2-2-2	6	2-3-0-2-2-1-1-2	8	4-2-1-2-2-1-1-2
27 July	9	2-2-2-2-3-2-2-3	10	2-3-2-3-3-2-1-2	9	3-2-2-2-2-2-2-3
28 July	9	2-2-3-2-3-2-2-1	10	1-3-3-1-4-2-1-1	7	2-2-3-1-2-2-2-1
29 July	6	1-1-1-1-3-2-1-2	2	1-1-0-0-1-1-1-0	4	1-1-1-1-1-1-1-2
30 July	8	1-1-2-2-2-3-1-3	6	1-2-1-2-3-1-1-1	7	2-2-1-1-2-2-1-3
31 July	12	2-2-3-3-3-3-2-3	11	2-2-2-0-4-4-1-2	9	2-2-2-2-3-4-2-3

Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
25 Jul 1542	ALERT: Electron 2MeV Integral Flux >= 1000pfu	25/1525
26 Jul 0241	WARNING: Geomagnetic K = 4	26/0239 - 1200
26 Jul 0242	ALERT: Geomagnetic K = 4	26/0239
26 Jul 0740	CANCELLATION: Geomagnetic K = 4	
26 Jul 1424	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	25/1525
27 Jul 1547	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	25/1525
28 Jul 1532	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	25/1525
29 Jul 1015	SUMMARY: 10cm Radio Burst	29/0619 - 0619
31 Jul 1541	ALERT: Electron 2MeV Integral Flux >= 1000pfu	31/1525
31 Jul 1558	WARNING: Geomagnetic K = 4	31/1558 - 2359
31 Jul 1601	ALERT: Geomagnetic K = 4	31/1601

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
01 Aug	92	15	4	15 Aug	100	5	2
02	90	5	2	16	100	5	2
03	92	18	5	17	98	22	5
04	92	12	4	18	98	15	4
05	94	12	4	19	96	15	4
06	94	10	3	20	96	8	3
07	96	5	2	21	98	5	2
08	98	5	2	22	96	5	2
09	98	5	2	23	96	5	2
10	98	5	2	24	92	5	2
11	98	8	3	25	92	5	2
12	98	8	3	26	92	5	2
13	98	5	2	27	92	5	2
14	98	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

No Events Observed

Flare List

	Time				Optical		
Date	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
25 Jul	0702	0712	0721	B8.5			3058
25 Jul	0823	0833	0839	C1.4			
25 Jul	1315	1332	1345	B9.0			
25 Jul	2149	2157	2204	B3.5			
26 Jul	0138	0149	0200	B3.8			
26 Jul	0248	0253	0257	B3.9			
26 Jul	0341	0347	0351	B3.2			
26 Jul	0551	0558	0602	B3.6	SF	N19E78	
26 Jul	0959	1006	1012	B4.1			3060
26 Jul	1512	1535	1547	C8.5			3060
26 Jul	2207	2211	2216	B3.0			
26 Jul	2222	2231	2236	B5.2			
27 Jul	0027	0031	0035	B3.2			
27 Jul	0218	0223	0234	B2.2			
27 Jul	0919	0924	0929	B3.0			
27 Jul	1022	1034	1044	B2.9			
27 Jul	1049	1056	1103	C3.5			
27 Jul	1151	1202	1209	B4.7			
27 Jul	1636	1650	1700	B4.8			
27 Jul	1828	1833	1838	B2.3			
28 Jul	0602	0608	0614	B2.8			
29 Jul	B0259	0305	0320	B1.7	SF	S16E57	3068
29 Jul	0428	0431	0623	C4.2	SF	S16E56	3068
29 Jul	0606	0613	0618	B2.5			3068
29 Jul	0709	0728	0738		SF	S16E56	3068
29 Jul	0740	0751	0758	B2.8	SF	S16E53	3068
29 Jul	0834	0848	0853	B4.7			3068
29 Jul	1025	1035	1039	B4.6	SF	S16E53	3068
29 Jul	1140	1142	1144		SF	S16E54	3068
29 Jul	1218	1222	1227	B2.4	SF	S17E52	3068
29 Jul	1307	1314	1318	B2.0			3068

Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
29 Jul	1346	1348	1349		SF	S17E52	3068
29 Jul	1352	1357	1405	B2.3			3067
29 Jul	1601	1610	1615	B3.0	SF	S16E48	3068
29 Jul	1942	1947	1953	B1.6			3068
30 Jul	0028	0035	0042	B3.0			
30 Jul	0526	0531	0535	B1.8			3068
30 Jul	1202	1213	1222	B2.6			3068
30 Jul	1345	1354	1405	B2.0			3068
30 Jul	1454	1458	1505	B2.8			3068
30 Jul	1718	1724	1730	B2.1			3062
30 Jul	1813	1821	1832	B1.6			3068
30 Jul	2131	2158	2227	B3.7			
31 Jul	0400	0407	0439	B1.9			
31 Jul	1712	1720	1730	B4.4			3068
31 Jul	2241	2309	2344	C9.3			

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 3058												
14 Jul	N15E71	17	230	4	Dao	7	B		2						
15 Jul	N14E56	18	220	8	Dao	9	B	4			10				
16 Jul	N16E38	23	60	4	Dai	9	BGD	1			7				
17 Jul	N13E26	22	310	8	Dki	9	BGD	2			3				
18 Jul	N14E16	19	80	8	Dri	9	B	1							
19 Jul	N13W00	21	70	9	Dro	7	B				1				
20 Jul	N13W15	23	30	4	Bxo	5	B	1			1				
21 Jul	N14W29	25	20	3	Axx	2	A				1				
22 Jul	N14W42	25	10	2	Axx	3	A				2				
23 Jul	N14W56	25	plage								1				
24 Jul	N14W70	26	plage								1				
25 Jul	N13W83	26	plage												
26 Jul	N13W90	25	plage												
								9	2	0	27	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 21

			Region 3059												
15 Jul	S07E71	4	180	3	Dao	2	B								
16 Jul	S10E55	6	180	7	Dso	5	B	2			3				
17 Jul	S10E41	8	200	9	Dso	5	B								
18 Jul	S10E29	5	120	9	Csi	7	B								
19 Jul	S07E15	6	130	9	Cso	6	B								
20 Jul	S08W00	8	130	10	Cso	8	B								
21 Jul	S08W14	10	100	5	Hsx	3	A								
22 Jul	S08W28	11	100	5	Hsx	1	A								
23 Jul	S08W42	11	70	2	Hsx	1	A								
24 Jul	S08W56	12	50	2	Hsx	1	A								
25 Jul	S08W70	13	80	2	Hsx	1	A								
26 Jul	S07W82	11	60	1	Hsx	1	A								
								2	0	0	3	0	0	0	0

Crossed West Limb.
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 3060												
16 Jul	N13E58	14	50	2	Hsx	2	A								
17 Jul	N10E33	15	60	4	Hax	3	A								
18 Jul	N13E22	13	40	2	Hsx	1	A								
19 Jul	N14E07	15	30	7	Hsx	6	A								
20 Jul	N13W06	14	30	7	Hrx	6	A								
21 Jul	N14W20	16	30	5	Hrx	4	A	1							
22 Jul	N12W34	17	30	4	Bxo	5	B								
23 Jul	N11W48	17	20	4	Bxo	6	B								
24 Jul	N12W61	17	30	4	Cro	5	B				2				
25 Jul	N12W75	18	20	4	Cro	5	B								
26 Jul	N12W89	19	plage					1							
								2	0	0	2	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 14

			Region 3062												
19 Jul	S23E72	310	60	3	Hsx	1	A								
20 Jul	S26E60	308	70	2	Hsx	1	A	1							
21 Jul	S25E48	308	120	2	Hsx	1	A								
22 Jul	S26E36	306	100	2	Hsx	1	A								
23 Jul	S25E23	306	100	2	Hsx	1	A								
24 Jul	S25E10	306	90	2	Hsx	1	A								
25 Jul	S25W03	306	100	4	Cso	4	B								
26 Jul	S26W16	305	100	3	Cso	2	B								
27 Jul	S26W28	304	100	3	Cso	2	B								
28 Jul	S25W40	303	80	3	Hsx	1	A								
29 Jul	S24W53	303	70	2	Hsx	1	A								
30 Jul	S24W66	303	70	2	Hsx	1	A								
31 Jul	S25W79	303	60	2	Hsx	1	A								
								1	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 306

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 3063												
20 Jul	N10E09	358	30	4	Bxo	8	B								
21 Jul	N11W03	359	30	6	Bxo	7	B								
22 Jul	N11W18	1	10	4	Axx	2	A								
23 Jul	N12W28	357	10	3	Bxo	2	B								
24 Jul	N12W41	357	10	3	Axx	3	A	1			1				
25 Jul	N11W59	2	0	1	Axx	1	A								
26 Jul	N10W61	1	plage												
27 Jul	N10W75	352	plage												
28 Jul	N10W89	352	plage												
								1	0	0	1	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 359

			Region 3064												
20 Jul	N08E29	339	30	5	Bxo	6	B								
21 Jul	N08E16	340	40	9	Cso	8	B	3			3				
22 Jul	N09E03	340	40	10	Cao	8	B	2			1				
23 Jul	N09W11	340	40	11	Cao	10	B	3			4				
24 Jul	N09W26	342	30	11	Cro	4	B								
25 Jul	N09W44	347	20	3	Hrx	4	A								
26 Jul	N09W55	344	0	8	Bxo	2	B								
27 Jul	N09W69	346	plage												
28 Jul	N09W83	346	plage												
								8	0	0	8	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 340

			Region 3065												
21 Jul	S19E15	341	10	2	Bxo	3	B								
22 Jul	S19E01	342	20	3	Bxo	6	B				1				
23 Jul	S19W12	341	20	6	Cro	5	B								
24 Jul	S19W26	342	30	6	Cro	6	B								
25 Jul	S19W40	342	30	7	Cro	10	B								
26 Jul	S20W51	341	30	6	Cro	6	B								
27 Jul	S21W66	342	30	5	Bxo	3	B								
28 Jul	S21W80	343	plage												
								0	0	0	1	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 342

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 3066												
25 Jul	S16E15	288	30	4	Cro	5	B								
26 Jul	S16E01	287	30	4	Cro	4	B								
27 Jul	S16W13	289	20	4	Cro	4	B								
28 Jul	S17W27	290	10	3	Bxo	3	B								
29 Jul	S16W34	292	10	1	Axx	1	A								
30 Jul	S16W48	285	plage												
31 Jul	S16W62	286	plage												
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 287

			Region 3067												
26 Jul	N20E65	224	70	2	Cao	3	B								
27 Jul	N20E56	221	60	4	Cao	3	B								
28 Jul	N19E40	223	0	2	Bxo	2	B								
29 Jul	N21E28	222	plage												
30 Jul	N21E14	223	plage												
31 Jul	N21W00	224	plage												
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 224

			Region 3068												
28 Jul	S16E58	205	40	4	Dao	4	B								
29 Jul	S15E45	205	100	8	Dao	8	B	1			9				
30 Jul	S15E30	207	100	10	Dao	6	B								
31 Jul	S15E16	208	110	11	Eso	7	B								
								1	0	0	9	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 208

			Region 3069												
31 Jul	S18W36	260	10	1	Axx	1	A								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 260

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
325 Broadway, Boulder CO 80305

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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