Space Weather Highlights
19 July - 25 July 2021

SWPC PRF 2395
26 July 2021

Solar activity was very low on 22 and 25 July with only B-class flares observed. Low levels of solar activity were observed on 19-21, and 23-24 July due to C-class flare activity. A total of six C-flares were observed this period, five C1 flares and a C4 flare at 24/0033 UTC. Regions 2845 (S15, L=195, class/area=Dso/60 on 21 July) and 2849 (S18, L=058, class/area=Axx/20 on 22 July) were the primary producers of C-class flare activity this period. A slow-moving CME observed on 25 July from the vicinity of plage region 2848 (N21, L=120 on 25 July) may disrupt the near-Earth solar wind environment on 29 July. Multiple other CMEs were observed in LASCO coronagraph imagery throughout the week, however, none were Earth-directed.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was normal to moderate throughout the period.

Geomagnetic field activity reached unsettled and active levels on 22 July due to positive polarity CH HSS influence. Quiet to unsettled conditions were observed on 19-20 July, and quiet levels were observed on 21 and 23-25 July under a nominal solar wind regime.

Space Weather Outlook
26 July - 21 August 2021

Solar activity is expected to be very low-to-low throughout the outlook period with B-class flares expected and a chance for C-class flares.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at normal to moderate levels throughout the outlook period.

Geomagnetic field activity is expected to reach active levels on 28-29 July due to positive polarity CH HSS influence and the possible glancing blow of a CME from 25 July. Active conditions are expected on 10 Aug, with unsettled conditions expected on 11 Aug, due to recurrent negative polarity CH HSS influence. Unsettled conditions are expected on 16-17 Aug due to recurrent positive polarity CH HSS influence. Mostly quiet conditions are expected to prevail throughout the remainder of the outlook period.

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
19 July	83	45	130	B1.6	1	0	0	1	0	0	0	0
20 July	87	59	250	B2.0	1	0	0	0	0	0	0	0
21 July	94	86	260	B2.2	2	0	0	2	0	0	0	0
22 July	89	77	290	B2.0	0	0	0	0	0	0	0	0
23 July	87	46	80	B1.5	1	0	0	2	0	0	0	0
24 July	84	35	40	B1.7	1	0	0	0	0	0	0	0
25 July	82	24	30	B1.0	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
19 July	7.0e+04	4.9e+04	2.7e+06
20 July	1.5e+05	5.2e+04	3.2e+06
21 July	1.4e+05	4.9e+04	3.1e+06
22 July	3.0e+05	4.6e+04	3.2e+06
23 July	1.4e+05	4.6e+04	4.3e+06
24 July	1.9e+05	4.6e+04	5.8e+06
25 July	1.1e+05	4.5e+04	9.2e+06

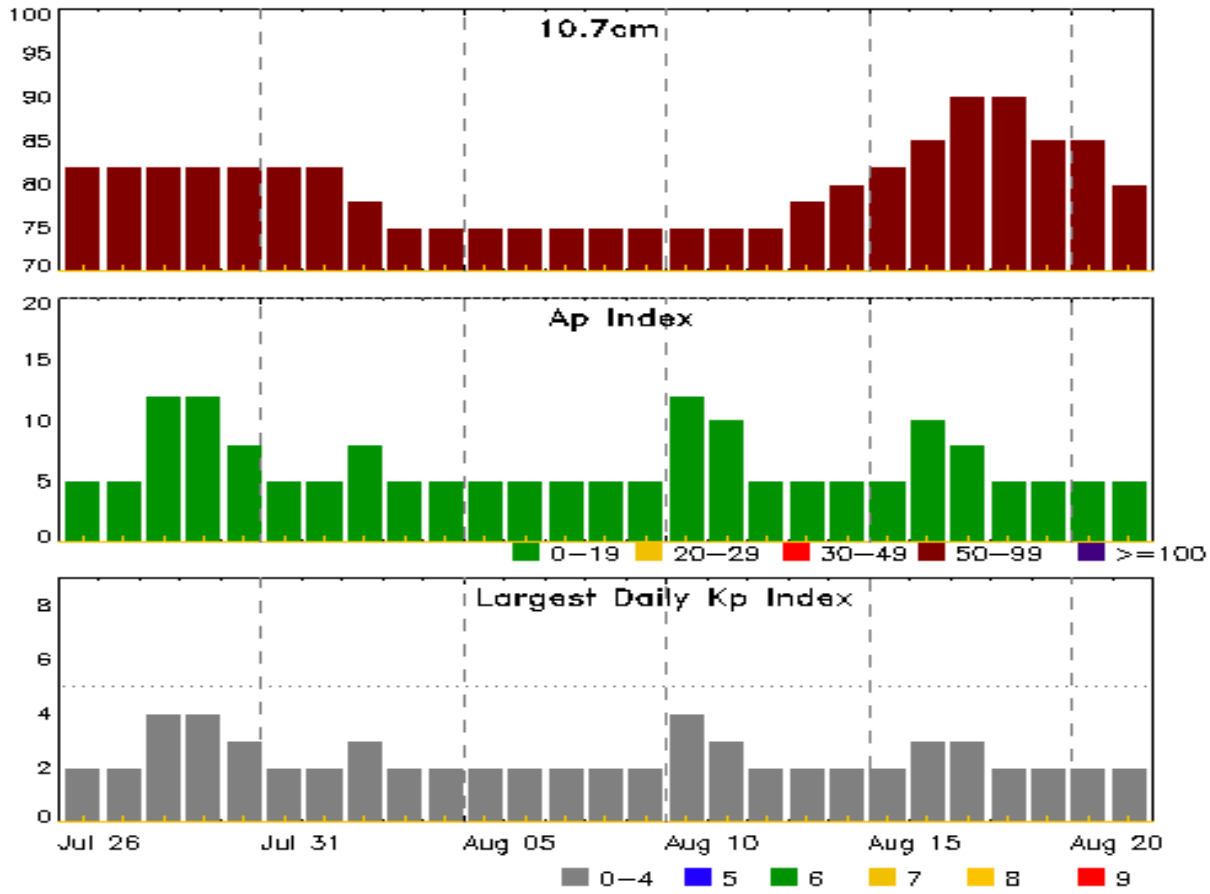
Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
19 July	4	0-0-0-0-0-1-2-1	2	0-0-0-0-0-1-1-0	7	2-3-3-1-1-1-2-2
20 July	9	2-1-3-2-2-1-3-3	9	2-2-4-2-1-2-2-2	10	3-2-3-2-1-2-3-3
21 July	6	2-2-1-2-3-2-1-0	10	2-3-1-2-3-4-1-0	6	2-2-1-2-2-2-1-0
22 July	9	1-2-3-3-3-2-1-1	28	1-3-6-6-4-3-1-0	11	2-2-4-4-3-1-1-1
23 July	3	0-0-1-1-2-1-1-1	3	0-1-1-2-2-0-1-0	4	1-1-1-1-1-1-1-2
24 July	5	0-2-1-2-3-1-1-1	4	0-2-1-3-2-1-0-0	4	1-2-1-2-1-1-0-1
25 July	5	0-0-1-2-3-2-2-1	1	0-0-1-0-1-0-0-1	2	0-1-1-1-1-0-1-1

Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
21 Jul 2029	WATCH: Geomagnetic Storm Category G1 predicted	
22 Jul 0852	WARNING: Geomagnetic K = 4	22/0851 - 1500
22 Jul 0901	ALERT: Geomagnetic K = 4	22/0900
24 Jul 0219	ALERT: Type II Radio Emission	24/0010
25 Jul 0611	ALERT: Type II Radio Emission	25/0452

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
26 Jul	82	5	2	09 Aug	75	5	2
27	82	5	2	10	75	12	4
28	82	12	4	11	75	10	3
29	82	12	4	12	75	5	2
30	82	8	3	13	78	5	2
31	82	5	2	14	80	5	2
01 Aug	82	5	2	15	82	5	2
02	78	8	3	16	85	10	3
03	75	5	2	17	90	8	3
04	75	5	2	18	90	5	2
05	75	5	2	19	85	5	2
06	75	5	2	20	85	5	2
07	75	5	2	21	80	5	2
08	75	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 #
19 Jul	0120	0129	0143	B4.4			
19 Jul	0449	0455	0501	B2.1			
19 Jul	1339	1346	1352	B4.0			2842
19 Jul	B1537	1545	1604		SF	N24W36	2842
19 Jul	1721	1753	1817	B6.8			
19 Jul	1819	1907	1927	C1.2			
20 Jul	1330	1338	1345	B5.0			
20 Jul	1536	1546	1551	B5.0			
20 Jul	1618	1633	1646	B5.4			
20 Jul	2012	2024	2031	B5.5			2846
20 Jul	2319	2327	2337	C1.0			
21 Jul	0201	0209	0215	B3.3			2847
21 Jul	0908	0935	0952	B8.7			
21 Jul	1054	1100	1107	B5.9			2847
21 Jul	1151	1158	1206	B8.6			2842
21 Jul	1339	1348	1354	B9.3			2842
21 Jul	1509	1520	1533	B6.5	SF	S13W55	2845
21 Jul	1536	1542	1552	B7.9			2845
21 Jul	1555	1604	1611	C1.2			2849
21 Jul	1947	2005	2019	C1.3	SF	S13W55	2845
21 Jul	2222	2230	2242	B5.2			2845
22 Jul	1312	1316	1321	B4.8			2849
23 Jul	0151	0219	0239	B4.5			
23 Jul	0958	1004	1008	B4.1			
23 Jul	1011	1013	1015		SF	S28E36	2847
23 Jul	1407	1414	1420	B2.9	SF	S15E58	2849
23 Jul	1632	1639	1643	B3.7			
23 Jul	1747	1754	1758	B2.7			2849
23 Jul	1852	1901	1905	B5.6			2849
23 Jul	1917	1931	1944	B5.1			2849
23 Jul	2043	2050	2057	B3.0			2849

Flare List

	Time			Optical			
Date	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
23 Jul	2354	0033	0102	C4.3			2849
24 Jul	0158	0206	0210	C1.5			2849
24 Jul	0810	0816	0822	B4.4			2849
24 Jul	1145	1152	1158	B2.7			2849
25 Jul	0442	0457	0513	B2.5			
25 Jul	1327	1335	1344	B1.8			

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 2841												
09 Jul	S18E61	231	20	3	Bxo	2	B								
10 Jul	S18E45	234	20	2	Bxo	3	B								
11 Jul	S18E30	236	10	3	Bxo	2	B				1				
12 Jul	S18E15	236	10		Axx	1	A								
13 Jul	S18E03	236	plage												
14 Jul	S18W11	237	plage												
15 Jul	S18W25	238	plage												
16 Jul	S18W39	239	plage												
17 Jul	S18W53	239	plage												
18 Jul	S18W67	240	plage												
19 Jul	S18W81	241	plage												
								0	0	0	1	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 236

			Region 2842												
10 Jul	N24E79	200	60	2	Hsx	1	A								
11 Jul	N24E64	202	60	2	Hsx	1	A								
12 Jul	N24E51	201	60	1	Hsx	1	A								
13 Jul	N23E37	201	50	1	Hsx	1	A								
14 Jul	N24E25	201	60	1	Hsx	1	A								
15 Jul	N24E13	200	30	1	Hsx	1	A								
16 Jul	N25W00	199	20	1	Hsx	1	A								
17 Jul	N26W15	201	40	3	Cso	5	B				1				
18 Jul	N26W27	200	40	4	Dso	5	B								
19 Jul	N26W41	201	90	7	Dsi	10	B				1				
20 Jul	N25W54	201	140	7	Dai	10	B								
21 Jul	N25W66	200	80	8	Dsi	7	BG								
22 Jul	N25W80	200	80	7	Cso	4	B								
23 Jul	N29W89	195	plage												
								0	0	0	2	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 199

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 2844												
16 Jul	S43E59	140	20	1	Axx	1	A								
17 Jul	S43E49	137	10	1	Axx	1	A								
18 Jul	S43E35	138	10	1	Axx	1	A								
19 Jul	S43E22	138	plage												
20 Jul	S43E09	138	plage												
21 Jul	S43W04	137	plage												
22 Jul	S43W17	137	plage												
23 Jul	S43W30	137	plage												
24 Jul	S43W43	137	plage												
25 Jul	S43W56	137	plage												
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 137

			Region 2845												
17 Jul	S15W06	192	30	4	Bxi	6	B								
18 Jul	S15W18	191	30	5	Cso	6	B				1				
19 Jul	S16W34	193	10	2	Hrx	4	A								
20 Jul	S15W50	196	0		Axx	1	A								
21 Jul	S15W61	195	60	4	Dso	4	B	1			2				
22 Jul	S16W75	195	40	4	Cro	4	B								
23 Jul	S12W88	194	plage												
								1	0	0	3	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 192

			Region 2846												
19 Jul	N25E76	84	30	1	Hsx	1	A								
20 Jul	N25E63	84	90	7	Cso	5	B								
21 Jul	N25E49	85	90	10	Cso	7	B								
22 Jul	N26E35	85	100	10	Cro	4	B								
23 Jul	N22E21	84	40	3	Cro	3	B								
24 Jul	N25E07	85	30	4	Cro	3	B								
25 Jul	N25W05	85	30	2	Cro	3	B								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 85

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 2847												
20 Jul	S29E74	73	20	2	Cro	3	B								
21 Jul	S28E61	73	20	10	Cro	3	B								
22 Jul	S28E47	73	40	2	Hrx	1	A								
23 Jul	S38E28	78	20	1	Hrx	1	A				1				
24 Jul	S27E24	77	10	1	Hrx	1	A								
25 Jul	S27E13	67	0		Axx	1	A								
								0	0	0	1	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 67

			Region 2848												
21 Jul	N20E16	118	10	3	Bxo	4	B								
22 Jul	N21E02	118	10	4	Bxo	2	B								
23 Jul	N21W10	116	10	1	Axx	1	A								
24 Jul	N21W25	118	plage			1									
25 Jul	N21W39	120	plage												
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 118

			Region 2849												
21 Jul	S18E75	58	0		Axx	1	A	1							
22 Jul	S18E61	58	20	1	Axx	2	A								
23 Jul	S20E46	59	10		Axx	1	A	1			1				
24 Jul	S27E25	68	plage					1							
25 Jul	S27E11	70	plage												
								3	0	0	1	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 70

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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