Space Weather Highlights
27 June - 03 July 2022

SWPC PRF 2444
04 July 2022

Solar activity was at very low to low levels during the period. Low levels were observed on 27 and 30 Jun and 03 Jul with C-class activity observed from Region 3040 (S13, L=325, class/area Cso/160 on 24 Jun). Late on 28 Jun, an 11 degree filament erupted along a channel centered near N23E20. LASCO C2 imagery observed a narrow CME off the W limb with an apparent Earth-directed component.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at high levels on 27-30 Jun and 01 Jul with a maximum flux value of 6,970 pfu observed at 01/1720 UTC. Normal to moderate levels were observed on 02-03 Jul.

Geomagnetic field activity was at quiet to G1 (Minor) storm levels during the period. Unsettled to active levels were observed on 27-28 Jun due to negative polarity CH HSS effects. Quiet levels were observed on 29-30 Jun. Unsettled to active levels were observed on 01-03 Jul, with an isolated G1 (Minor) storm interval observed early on 02 Jul due to CME effects from the 28 Jun DSF.

Space Weather Outlook
04 July - 30 July 2022

Solar activity is expected to be at very low to low levels through 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 08-13, 16-21 and 24-30 Jul due to CH HSS influence. Normal to moderate levels are expected on 04-07, 14-15 and 22-23 Jul.

Geomagnetic field activity is expected to be at unsettled levels on 05-08, 14-17 and 22-25 Jul with active intervals likely on 06-07, 15-16, and 22-23 Jul and G1 (Minor) storm levels are likely on 06 Jul, all due to recurrent CH HSS activity.

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
27 June	98	32	180	B2.4	1	0	0	2	0	0	0	0
28 June	96	71	180	B1.7	0	0	0	2	0	0	0	0
29 June	92	48	80	B1.4	1	0	0	1	0	0	0	0
30 June	96	40	90	B1.3	0	0	0	0	0	0	0	0
01 July	98	39	210	B1.5	0	0	0	0	0	0	0	1
02 July	100	57	320	B1.5	0	0	0	0	0	0	0	0
03 July	102	42	200	B1.9	1	0	0	2	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
27 June	7.1e+04	3.3e+04	1.7e+08
28 June	5.2e+04	3.3e+04	2.3e+08
29 June	5.0e+04	3.2e+04	1.6e+08
30 June	5.6e+04	3.3e+04	2.5e+08
01 July	2.1e+05	3.3e+04	2.6e+08
02 July	7.1e+04	3.3e+04	2.1e+06
03 July	8.1e+04	3.4e+04	1.6e+06

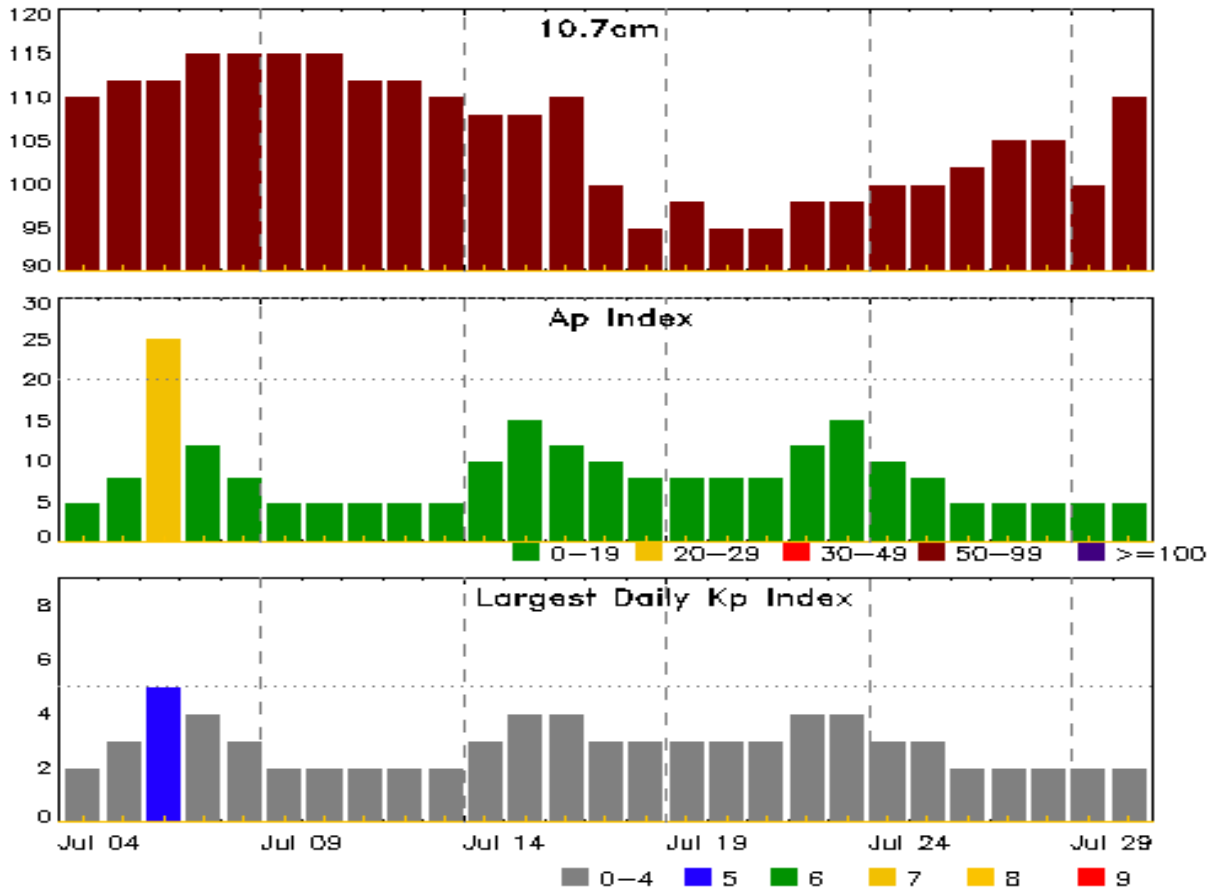
Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
27 June	15	4-4-4-2-2-2-2-2	15	4-5-4-1-1-0-2-2	12	4-4-3-1-1-1-2-2
28 June	11	1-3-2-2-2-3-3-3	11	2-3-3-4-2-1-2-2	8	1-3-2-2-1-1-2-3
29 June	7	2-2-2-3-2-1-1-1	9	2-2-2-4-3-1-0-1	6	2-2-2-2-2-1-1-1
30 June	5	1-1-1-2-2-2-2-1	5	1-1-1-2-3-1-1-0	5	1-1-1-1-1-1-1-1
01 July	8	1-0-0-2-2-3-3-3	3	1-1-0-0-0-0-2-2	7	2-1-1-1-1-2-3-3
02 July	17	4-4-4-3-2-3-1-3	25	4-5-5-4-3-4-2-1	19	4-5-4-3-2-3-1-3
03 July	11	3-0-2-2-3-2-2-4	4	2-0-1-1-1-1-1-2	9	2-0-1-2-2-1-2-4

Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
27 Jun 0627	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	25/1410
28 Jun 0704	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	25/1410
29 Jun 0459	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	25/1410
30 Jun 0459	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	25/1410
01 Jul 0459	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	25/1410
01 Jul 2254	WARNING: Geomagnetic K = 4	01/2253 - 02/1200
01 Jul 2254	WARNING: Geomagnetic K = 4	01/2253 - 02/1200
02 Jul 0140	ALERT: Geomagnetic K = 4	02/0135
02 Jul 0402	WARNING: Geomagnetic K = 5	02/0402 - 1200
02 Jul 0601	ALERT: Geomagnetic K = 5	02/0559
02 Jul 2224	SUMMARY: 10cm Radio Burst	02/2158 - 2158
03 Jul 2231	WARNING: Geomagnetic K = 4	03/2230 - 04/1200
03 Jul 2250	ALERT: Geomagnetic K = 4	03/2245

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
04 Jul	110	5	2	18 Jul	95	8	3
05	112	8	3	19	98	8	3
06	112	25	5	20	95	8	3
07	115	12	4	21	95	8	3
08	115	8	3	22	98	12	4
09	115	5	2	23	98	15	4
10	115	5	2	24	100	10	3
11	112	5	2	25	100	8	3
12	112	5	2	26	102	5	2
13	110	5	2	27	105	5	2
14	108	10	3	28	105	5	2
15	108	15	4	29	100	5	2
16	110	12	4	30	110	5	2
17	100	10	3				

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 #
27 Jun	0203	0207	0211	B5.3			3040
27 Jun	0835	0842	0848	B3.6			3041
27 Jun	1609	1616	1621	B4.0	SF	S10W06	3040
27 Jun	1720	1734	1752	B8.7			3038
27 Jun	1824	1843	1852	C1.4	SF	S17W08	3040
27 Jun	2240	2243	2247	B2.9			3040
28 Jun	0351	0358	0402	B6.9			
28 Jun	0704	0707	0711	B2.6	SF	S12W18	3040
28 Jun	0747	0750	0755	B7.0	SF	S14W08	3040
28 Jun	1505	1511	1517	B3.0			
28 Jun	1758	1801	1805	B4.0			
28 Jun	1812	1817	1821	B4.0			
28 Jun	1854	1902	1906	B6.5			
29 Jun	0204	0208	0214	B6.6	SF	S14W20	3048
29 Jun	1111	1118	1124	B2.1			
29 Jun	1223	1227	1234	B2.3			
29 Jun	1411	1419	1426	B2.3			
29 Jun	1742	1747	1751	B2.4			
29 Jun	1830	1837	1841	B2.7			
29 Jun	2300	2313	2320	C1.4			
30 Jun	0105	0116	0121	B4.2			
30 Jun	0221	0229	0234	B3.0			
30 Jun	1054	1105	1111	B3.9			
30 Jun	1442	1448	1452	B2.2			
01 Jul	B0019	0019	0024		4F	S12W49	3040
01 Jul	0319	0325	0331	B4.0			3046
01 Jul	0747	0754	0800	B2.9			3046
02 Jul	1449	1456	1500	B3.0			3046
02 Jul	1811	1820	1824	B3.0			3046
02 Jul	2125	2134	2138	B7.3			3046
02 Jul	2138	2149	2157	B7.3			3046

Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
03 Jul	0047	0104	0119	B6.3			3046
03 Jul	0403	0410	0415	B3.9			3046
03 Jul	0632	0638	0642	B3.5			3047
03 Jul	0725	0733	0738	B3.9			3040
03 Jul	0825	0831	0835	B3.6	SF	N17E53	3046
03 Jul	0849	0854	0902	B4.5			3040
03 Jul	1014	1018	1038	B2.9			3040
03 Jul	1219	1226	1231	B2.8			3046
03 Jul	1526	1539	1548	B8.3			3040
03 Jul	1734	1740	1746	B5.7			3040
03 Jul	1750	1755	1759	B4.8	SF	S14W87	3040
03 Jul	1932	1954	2004	C3.1			3040

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 3038												
16 Jun	N12E54	45	10	8	Cro	3	B								
17 Jun	N15E35	50	60	7	Dro	7	B								
18 Jun	N15E19	52	80	6	Cai	11	B								
19 Jun	N15E06	53	140	9	Dai	17	BG	3			16	1			
20 Jun	N15W07	53	280	10	Dki	24	BG	1			15				
21 Jun	N14W21	53	430	11	Ehc	33	BG	3			7				
22 Jun	N15W34	53	480	12	Eki	21	BG	12			10				
23 Jun	N16W47	54	500	12	Eki	21	B	4							
24 Jun	N16W61	53	580	11	Ehi	12	B	1			4				
25 Jun	N16W75	53	500	14	Eho	6	B				4				
26 Jun	N16W87	53	190	16	Fso	5	B	1							
								25	0	0	56	1	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 53

			Region 3040												
21 Jun	S13E68	324	60	2	Hsx	1	A								
22 Jun	S13E55	325	140	5	Cso	3	B	3			5				
23 Jun	S12E41	324	130	6	Cso	4	B								
24 Jun	S13E27	325	160	6	Cso	6	B								
25 Jun	S12E16	323	130	8	Cso	5	B	2			4				
26 Jun	S14E02	323	150	5	Cso	8	B	3			8				
27 Jun	S13W11	325	160	4	Cao	9	B	1			2				
28 Jun	S12W25	324	120	6	Cao	8	B				2				
29 Jun	S12W39	325	30	4	Dso	3	B								
30 Jun	S13W50	323	70	4	Dso	4	B								
01 Jul	S13W62	323	120	7	Dso	7	B								1
02 Jul	S13W77	324	120	6	Cso	5	B								
03 Jul	S13W91	325	plage					1			1				
								10	0	0	22	0	0	0	1

Still on Disk.
Absolute heliographic longitude: 323

			Region 3041												
27 Jun	N15W69	23	20	4	Bxo	3	B								
28 Jun	N15W83	23	20	4	Cso	3	B								
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 23

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 3042												
28 Jun	N09W22	321	20	3	Cro	4	B								
29 Jun	N08W35	321	30	2	Cro	3	B								
30 Jun	S02W49	322	10	2	Bxo	2	B								
01 Jul	S02W62	321	plage												
02 Jul	S02W76	323	plage												
03 Jul	S02W90	324	plage												
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 321

			Region 3043												
28 Jun	S13E21	278	10	5	Bxo	4	B								
29 Jun	S14E09	277	10	1	Axx	1	A								
30 Jun	S14W05	279	plage												
01 Jul	S14W19	280	plage												
02 Jul	S14W33	280	plage												
03 Jul	S15W43	277	plage												
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 279

			Region 3044												
28 Jun	S19E12	287	10	4	Bxo	2	B								
29 Jun	S21E01	286	10	1	Axx	1	A								
30 Jun	S21W13	287	plage												
01 Jul	S21W27	288	plage												
02 Jul	S21W41	288	plage												
03 Jul	S21W55	289	plage												
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 286

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 3045												
30 Jun	S12E38	234	10	3	Bxo	4	B								
01 Jul	S11E12	249	10	1	Axx	1	A								
02 Jul	S12W00	247	plage												
03 Jul	S12W13	247	plage												
								0	0	0	0	0	0	0	0
Still on Disk.															
Absolute heliographic longitude: 247															
			Region 3046												
01 Jul	N17E64	197	80	3	Hsx	1	A								
02 Jul	N17E49	198	130	2	Hsx	1	A								
03 Jul	N17E36	198	160	9	Dso	6	B				1				
								0	0	0	1	0	0	0	0
Still on Disk.															
Absolute heliographic longitude: 198															
			Region 3047												
02 Jul	S19E04	243	50	5	Cro	8	B								
03 Jul	S19W08	242	30	5	Cro	5	B								
								0	0	0	0	0	0	0	0
Still on Disk.															
Absolute heliographic longitude: 243															
			Region 3048												
29 Jun	S08E78	212	plage								1				
02 Jul	S08E36	211	20	3	Bxo	3	B								
03 Jul	S08E22	212	plage												
								0	0	0	1	0	0	0	0
Still on Disk.															
Absolute heliographic longitude: 212															
			Region 3049												
03 Jul	S12E49	185	10	1	Axx	1	A								
								0	0	0	0	0	0	0	0
Still on Disk.															
Absolute heliographic longitude: 185															

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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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