Space Weather Highlights
04 April - 10 April 2022

SWPC PRF 2432
11 April 2022

Solar activity was at low levels through the period with numerous C-class flares observed. Rgn 2978 (S19, L=011, class/area Eko/670 on 30 Mar) produced a majority of the C-class activity with the largest event a C4 observed at 10/0241 UTC. Additional C-class activity was observed from Rgns 2967 (N20, L=075, class/area Eho/530 on 26 Mar), 2979 (S22, L=030, class/area Azz/030 on 29 Mar), 2982 (S20, L=334, class/area Bxo/040 on 04 Apr), 2983 (N20, L=328, class/area Hsx/040 on 02 Apr) and 2985 (S20, L=289, class/area Hax/050 on 05 Apr). During the period, numerous filament eruptions were observed on 03, 04 and 07 Apr that impacted Earth on 06-10 Apr. More details below.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at high levels on 04-07 Apr with a peak flux of 3,920 pfu observed on 04 Apr. Low to moderate levels were observed on 08-10 Apr.

Geomagnetic field activity ranged from quiet to strong (G3) levels during the period. Unsettled to active levels were observed on 04 Apr due to negative polarity CH HSS effects. This was followed by quiet levels on 05 Apr. Quiet to unsettled levels occured on 06 Apr due to weak effects from the 03 Apr CME. 07 Apr saw quiet to active levels due to combined effects from the 03 and 04 CMEs. 08-09 Apr witnessed quiet to active levels as effects from the 04 Apr CME persisted. On 10 Apr, effects from the 07 CME, combined with negative polarity CH HSS influence, increased geomagnetic levels to Minor to Strong (G1-G3) storm levels. On the 10th, wind speeds were initially in the 450-475 km/s range, became elevated to about 530 km/s near 10/0400 UTC before settling down to about 485 km/s by the end of the day. Density peaked to 36 ppcm at about 10/0215 UTC, total field Bt increased to 19 nT and the Bz component dived south to -15 nT at 10/0513 UTC. The phi angle switched from a positive orientation to a mostly negative sector at 10/0214 UTC.

Space Weather Outlook
11 April - 07 May 2022

Solar activity is likely to be moderate (R1-R2, Minor-Moderate) on 15-28 Apr due to the return of old Rgn 2975 (N13, L=088). Very low to low activity is expected on 11-14 Apr, 29-30 Apr and 01-07 May.

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 on 11-29 Apr and 05-07 May with moderate to high levels on 30 Apr and 01-04 May in response to CH HSS influence.

Geomagnetic field activity is expected to reach unsettled to active levels on 11, 14-15, 20-21,

23-24, 29-30 Apr, 01 and 06-07 May, all due to recurrent CH HSS effects. Quiet conditions are anticipated for 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
04 April	128	86	860	B8.2	5	0	0	0	0	0	0	0
05 April	122	75	480	B5.3	2	0	0	1	0	0	0	0
06 April	117	61	380	B5.0	2	0	0	2	0	0	0	0
07 April	111	52	320	B3.5	1	0	0	1	0	0	0	0
08 April	109	55	330	B3.0	3	0	0	2	0	0	0	0
09 April	107	37	110	B3.4	3	0	0	0	0	0	0	0
10 April	101	13	40	B2.6	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
04 April	6.3e+06	7.4e+04	8.6e+07
05 April	1.4e+06	4.7e+04	1.1e+08
06 April	4.0e+05	4.2e+04	1.4e+08
07 April	2.5e+05	4.0e+04	6.6e+07
08 April	6.6e+04	3.8e+04	2.8e+06
09 April	1.7e+05	3.9e+04	5.2e+06
10 April	6.2e+05	3.9e+04	4.0e+06

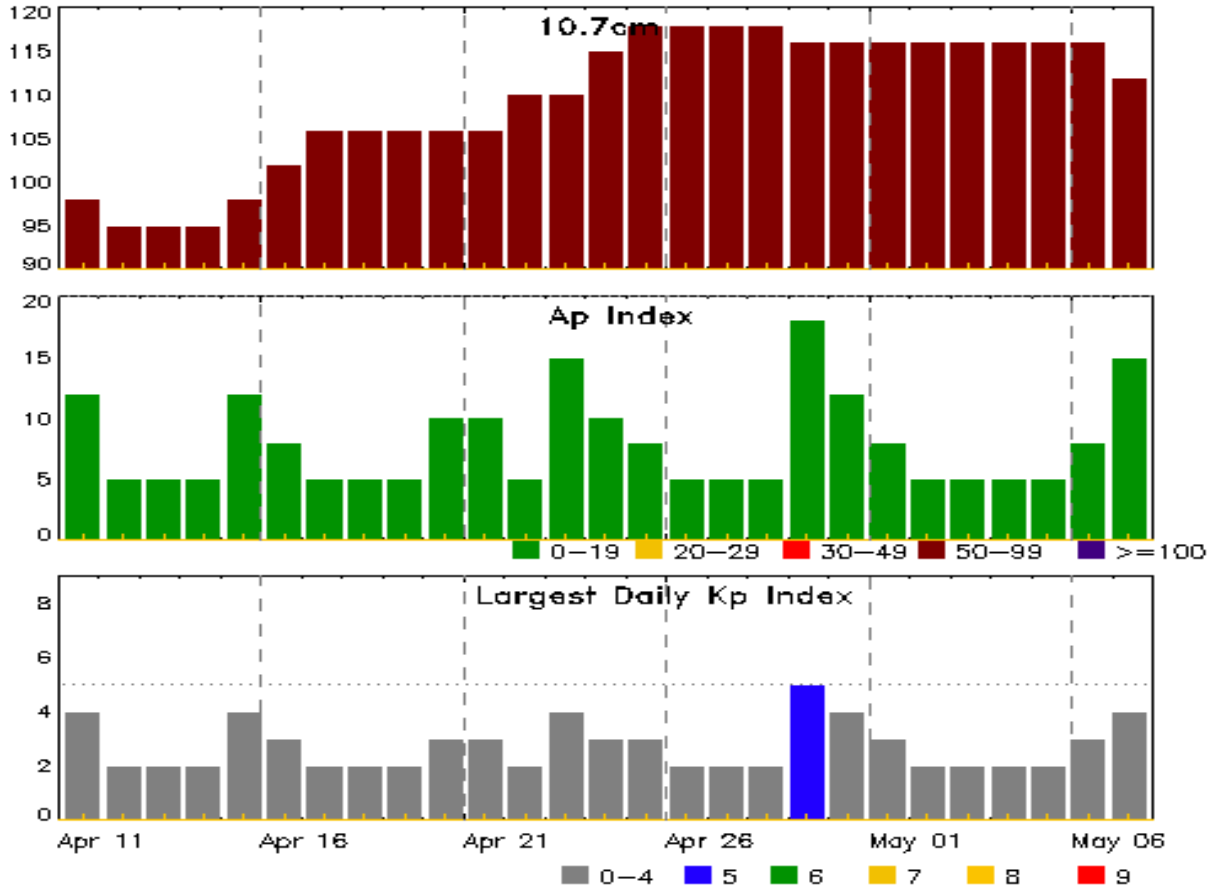
Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
04 April	8	3-3-2-2-2-2-2-0	13	3-3-4-3-3-2-2-1	11	4-4-3-2-2-2-2-1
05 April	6	2-2-2-2-2-2-2-0	6	1-2-3-3-2-1-0-0	6	2-2-2-2-1-2-1-1
06 April	6	2-0-2-2-2-2-2-1	6	1-2-2-3-2-1-1-1	8	3-2-2-3-1-2-1-2
07 April	12	2-4-2-3-3-2-2-2	23	2-3-4-6-4-3-2-2	15	2-4-3-4-3-3-2-3
08 April	9	3-3-2-2-2-2-2-2	7	4-2-1-1-1-0-1-2	9	4-3-2-1-1-1-2-2
09 April	17	3-3-4-3-4-4-2-1	34	3-4-6-5-3-6-2-0	19	4-4-4-3-3-4-3-1
10 April	18	2-6-3-3-2-2-1-2	38	2-6-6-6-4-3-2-2	18	3-7-5-4-2-2-2-3

Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
04 Apr 0241	WARNING: Geomagnetic K = 4	04/0245 - 0900
04 Apr 0301	ALERT: Geomagnetic K = 4	04/0259
04 Apr 0558	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	03/0920
04 Apr 0857	EXTENDED WARNING: Geomagnetic K = 4	04/0245 - 1500
04 Apr 1646	WATCH: Geomagnetic Storm Category G1 predicted	
05 Apr 0943	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	03/0920
06 Apr 0729	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	03/0920
07 Apr 0505	WARNING: Geomagnetic K = 4	07/0505 - 1500
07 Apr 0528	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	03/0920
07 Apr 0602	ALERT: Geomagnetic K = 4	07/0559
07 Apr 2235	WARNING: Geomagnetic K = 4	07/2235 - 08/0600
08 Apr 0318	ALERT: Geomagnetic K = 4	08/0259
09 Apr 0049	WARNING: Geomagnetic K = 4	09/0045 - 1200
09 Apr 0050	ALERT: Geomagnetic K = 4	09/0048
09 Apr 1153	EXTENDED WARNING: Geomagnetic K = 4	09/0045 - 1800
09 Apr 1754	EXTENDED WARNING: Geomagnetic K = 4	09/0045 - 10/1200
10 Apr 0334	WARNING: Geomagnetic K = 5	10/0335 - 0900
10 Apr 0427	ALERT: Geomagnetic K = 5	10/0427
10 Apr 0443	WARNING: Geomagnetic K = 6	10/0445 - 0900
10 Apr 0446	ALERT: Geomagnetic K = 6	10/0446
10 Apr 0512	WARNING: Geomagnetic K>= 7	10/0507 - 0900
10 Apr 0512	ALERT: Geomagnetic K = 7	10/0510
10 Apr 0740	EXTENDED WARNING: Geomagnetic K = 4	09/0045 - 10/1800
10 Apr 0740	EXTENDED WARNING: Geomagnetic K = 5	10/0335 - 1500
10 Apr 0740	ALERT: Geomagnetic K = 5	10/0740
10 Apr 2252	WARNING: Geomagnetic K = 4	10/2251 - 11/1200

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
11 Apr	98	12	4	25 Apr	118	8	3
12	95	5	2	26	118	5	2
13	95	5	2	27	118	5	2
14	95	5	2	28	118	5	2
15	98	12	4	29	116	18	5
16	102	8	3	30	116	12	4
17	106	5	2	01 May	116	8	3
18	106	5	2	02	116	5	2
19	106	5	2	03	116	5	2
20	106	10	3	04	116	5	2
21	106	10	3	05	116	5	2
22	110	5	2	06	116	8	3
23	110	15	4	07	112	15	4
24	115	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 #
04 Apr	0318	0329	0342	C1.5			2984
04 Apr	0921	0937	0959	C2.0			2976
04 Apr	0959	1017	1037	C2.5			2984
04 Apr	1037	1049	1056	C2.5			2979
04 Apr	2052	2113	2142	C2.7			2982
05 Apr	0756	0758	0803	C1.2			2978
05 Apr	2231	2241	2248	C1.9	SF	S25E47	2985
06 Apr	0003	0004	0007		SF	S17W21	2982
06 Apr	0407	0409	0414		SF	S24W39	2981
06 Apr	0415	0420	0425	C1.3			2978
06 Apr	0956	1023	1114	C3.1			
07 Apr	0116	0131	0141	C1.2	SF	S23E31	2985
07 Apr	1411	1419	1426	B5.5			
08 Apr	1110	1121	1128	C1.0			2983
08 Apr	1439	1514	1541	C2.4	SF	S21W76	2981
08 Apr	1455	1500	1501		SF	S17W76	2978
08 Apr	1719	1729	1740	C1.0			2983
08 Apr	1906	1918	1929	B7.0			2978
09 Apr	0607	0617	0630	B6.5			2983
09 Apr	0720	0733	0740	C1.0			2978
09 Apr	1116	1124	1133	C4.7			2978
09 Apr	1852	1900	1905	C1.1			2978
10 Apr	0111	0118	0124	B5.0			2978
10 Apr	0230	0241	0250	C4.9			2978
10 Apr	1724	1730	1736	B5.1			
10 Apr	2159	2213	2227	B5.8			

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 2975												
23 Mar	N13E63	78	160	11	Dao	5	B	1			1				
24 Mar	N14E55	75	160	9	Cao	5	B	5							
25 Mar	N12E39	77	160	12	Eso	5	B								
26 Mar	N12E20	87	40	3	Hsx	3	A								
27 Mar	N12E05	85	50	9	Csi	22	B				1				
28 Mar	N13W12	89	210	10	Dac	26	BG	6	2		2				
29 Mar	N13W25	87	300	10	Dhc	30	BGD	8	2		6	1	1		
30 Mar	N13W38	88	330	10	Dkc	20	BGD	7		1	2				
31 Mar	N13W52	89	330	10	Dkc	20	BGD	2	1		2	1			
01 Apr	N13W66	90	300	11	Ekc	24	B	3							
02 Apr	N15W78	88	260	11	Ekc	9	BD	5	2		2	2			
03 Apr	N15W91	88	260	11	Ekc	8	BG	3			2				
								40	7	1	18	4	1	0	0

Crossed West Limb.
Absolute heliographic longitude: 85

			Region 2976												
24 Mar	N15E64	66	400	9	Dho	6	B								
25 Mar	N16E47	68	450	12	Eho	13	B				1				
26 Mar	N20E27	75	530	15	Eho	13	B								
27 Mar	N16E22	68	500	14	Eho	15	BD								
28 Mar	N16E08	69	480	13	Eho	10	BD								
29 Mar	N14W03	66	500	13	Eko	9	BD								
30 Mar	N15W18	68	550	13	Eko	4	BD	1							
31 Mar	N16W31	67	410	12	Eko	6	B								
01 Apr	N16W45	69	410	13	Eko	6	B								
02 Apr	N18W58	68	330	14	Eho	4	B		1		1				
03 Apr	N20W78	74	310	5	Hhx	2	A	2							
04 Apr	N14W91	75	280	3	Hhx	1	A	1							
								4	1	0	2	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 66

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 2978												
27 Mar	S15E75	14	180	2	Hsx	1	A	4							
28 Mar	S17E68	9	210	12	Eso	4	B	3							
29 Mar	S20E56	6	310	10	Dho	8	BG	4			1				
30 Mar	S19E39	11	670	12	Eko	8	BG	2							
31 Mar	S18E28	8	400	11	Eho	7	BG	2			3				
01 Apr	S18E14	10	410	14	Eki	9	BG	9			2				
02 Apr	S18E03	7	420	16	Chi	11	BG	1							
03 Apr	S18W10	7	440	14	Chi	14	B								
04 Apr	S18W24	8	370	14	Ehi	12	B								
05 Apr	S17W37	8	350	13	Ehi	15	B	1							
06 Apr	S16W51	9	290	12	Ehi	13	B	1							
07 Apr	S18W64	9	260	11	Cho	5	B								
08 Apr	S19W78	8	250	10	Cho	3	B	1			1				
09 Apr	S17W95	13	60	2	Hsx	1	A	3							
								31	0	0	7	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 7

			Region 2979												
28 Mar	S21E10	67	20	3	Bxo	4	B								
29 Mar	S22W06	68	30	5	Axx	2	A								
30 Mar	S22W20	70	plage												
31 Mar	S22W34	71	plage												
01 Apr	S22W48	72	plage												
02 Apr	S22W62	73	plage												
03 Apr	S22W76	73	plage												
04 Apr	S22W90	74	plage					1							
								1	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 68

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 2981												
31 Mar	S26E31	5	30	4	Dri	11	B	2			1				
01 Apr	S26E18	6	80	7	Dri	19	BG	9			1				
02 Apr	S25E06	4	80	9	Cri	17	BG	3			1				
03 Apr	S25W07	4	120	10	Cri	16	B	1			1				
04 Apr	S26W21	5	110	10	Cro	8	B								
05 Apr	S25W35	6	50	10	Cro	6	B								
06 Apr	S22W49	7	40	5	Bxo	5	B				1				
07 Apr	S25W63	8	20	3	Bxo	3	B								
08 Apr	S23W78	10	20	5	Cao	4	B				1				
								15	0	0	6	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 4

			Region 2982												
01 Apr	S19E47	337	20	1	Hrx	1	A								
02 Apr	S19E34	337	20	1	Axx	1	A								
03 Apr	S19E21	336	10	1	Axx	1	A								
04 Apr	S20E10	334	40	4	Bxo	2	B	1							
05 Apr	S22W03	334	plage												
06 Apr	S22W17	335	plage								1				
07 Apr	S22W31	336	plage												
08 Apr	S22W45	336	plage												
09 Apr	S22W59	337	plage												
10 Apr	S22W72	337	plage												
								1	0	0	1	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 334

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 2983												
01 Apr	N23E53	331	plage												
02 Apr	N20E42	328	40	2	Hsx	2	A								
03 Apr	N23E28	329	30	2	Hrx	3	A								
04 Apr	N24E15	329	30	3	Hrx	1	A								
05 Apr	N24E04	327	20	1	Hrx	1	A								
06 Apr	N24W10	328	10	1	Axx	1	A								
07 Apr	N24W24	329	plage												
08 Apr	N21W47	337	30	3	Cro	4	B	2							
09 Apr	N21W62	340	30	1	Bxo	3	B								
10 Apr	N21W73	338	40	3	Bxo	3	B								
								2	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 327

			Region 2984												
02 Apr	N12W69	80	30	3	Dro	4	B	3			1				
03 Apr	N12W83	80	30	3	Dro	2	B								
								3	0	0	1	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 80

			Region 2985												
03 Apr	S20E68	289	30	2	Hsx	3	A								
04 Apr	S20E55	289	30	1	Hax	2	A								
05 Apr	S20E42	289	50	2	Hax	2	A	1			1				
06 Apr	S20E29	289	40	2	Hrx	2	A								
07 Apr	S20E16	289	30	4	Cro	3	B	1			1				
08 Apr	S20E02	290	30	3	Cro	4	B								
09 Apr	S20W11	289	20	2	Bxo	3	B								
10 Apr	S20W23	288	plage												
								2	0	0	2	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 290

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 2986													
05 Apr	N16W50	21	10	1	Axx	1	A								
06 Apr	N16W64	22	plage												
07 Apr	N16W78	23	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 21

		Region 2987													
07 Apr	S30E43	262	10	1	Axx	1	A								
08 Apr	S31E35	256	plage												
09 Apr	S31E21	257	plage												
10 Apr	S31E08	257	plage												
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 257

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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