Space Weather Highlights
08 April - 14 April 2024

SWPC PRF 2537
15 April 2024

Solar activity reached high levels on 11 Apr due to an M5.4 flare at 11/1706 UTC from Region 3637 (S12, L=231, class/area=Cso/40 on 14 Apr); the largest event of the period. Moderate levels of solar activity were observed on 13-14 Apr due to an M2.4 flare at 13/0502 UTC and an M4.3 flare at 14/0232 UTC from Region 3637. The remainder of the period saw low levels of solar activity with C-class flares observed. Two CMEs, associated with filament eruptions near N20E02 at 11/0600 UTC and S16W14 at 12/0020 UTC, were anticipated to arrive on 14 Apr, but ultimately were not detected in the solar wind by the end of 14 Apr.

No proton events were observed at geosynchronous orbit.

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

Geomagnetic field activity was quiet to unsettled over 08-10 Apr due to positive polarity CH HSS influences. Quiet and unsettled levels were observed over 11-12 Apr, and quiet levels were observed over 13-14 Apr, as CH HSS influences subsided and nominal solar wind conditions returned.

Space Weather Outlook
15 April - 11 May 2024

Solar activity is expected to be at low to moderate levels throughout the outlook period, with C-class flare activity expected and a varying chance for M-class flare activity.

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 period.

Geomagnetic field activity is likely to reach G1 (Minor) storm levels on 15 Apr due to CH HSS influences and CME effects. Quiet and quiet to unsettled levels are expected to prevail throughout the remainder of the 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
08 April	125	79	470	B3.4	2	0	0	0	0	0	0	0
09 April	124	64	405	B3.8	2	0	0	0	0	0	0	0
10 April	131	54	410	B6.1	11	0	0	3	0	0	0	0
11 April	144	81	560	B9.3	10	1	0	4	0	0	0	0
12 April	152	83	570	C1.5	8	0	0	7	0	0	0	0
13 April	161	115	750	C1.2	8	1	0	3	0	0	0	0
14 April	178	152	770	C1.6	13	1	0	12	1	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
08 April	5.0e+04	1.6e+04	1.9e+06
09 April	1.9e+05	1.6e+04	8.3e+06
10 April	2.4e+05	1.6e+04	1.1e+07
11 April	2.1e+05	1.6e+04	7.0e+06
12 April	1.7e+05	1.6e+04	1.1e+07
13 April	1.8e+05	1.7e+04	1.6e+07
14 April	2.3e+05	1.6e+04	1.4e+07

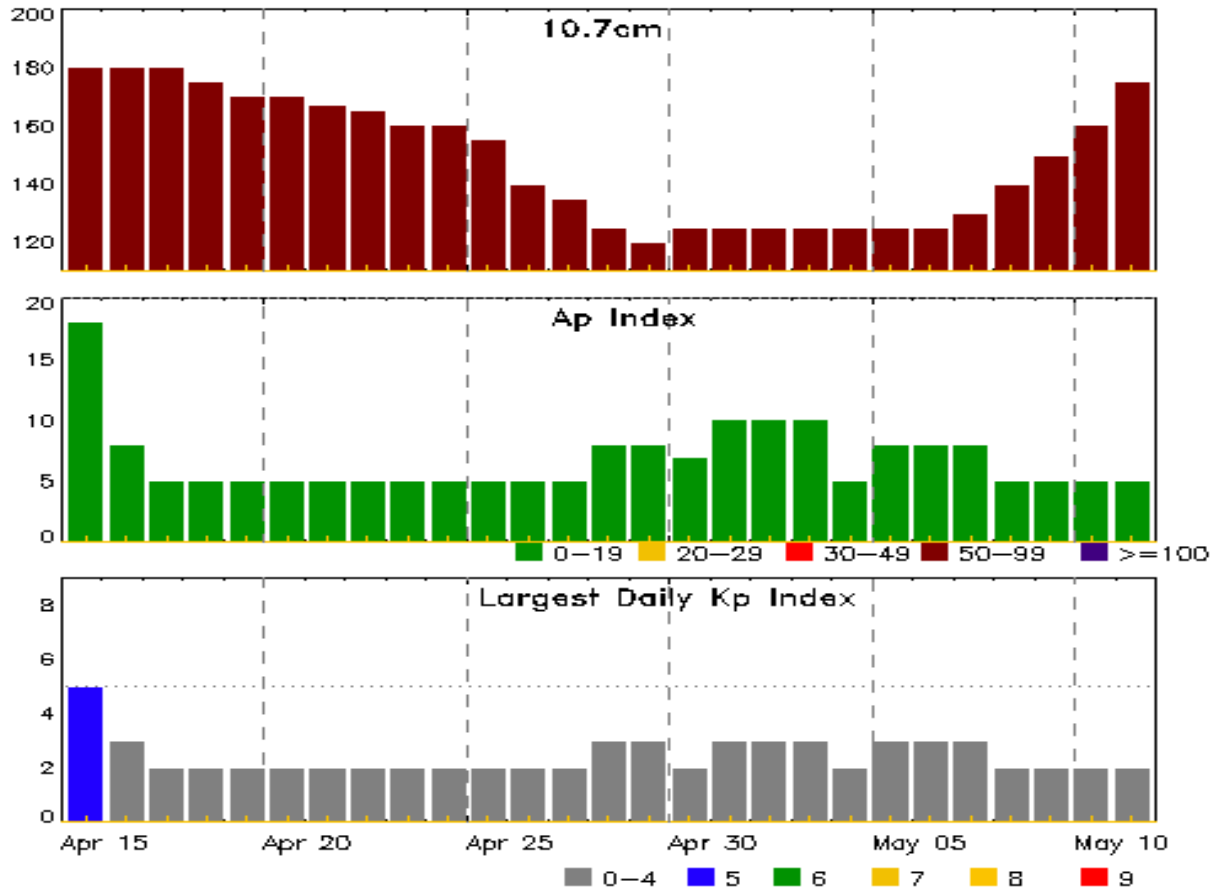
Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
08 April	8	2-3-3-1-2-2-1-1	9	2-3-4-3-1-1-0-0	8	3-3-3-2-1-1-1-1
09 April	10	1-2-3-2-3-2-2-3	18	1-2-3-5-5-2-2-2	11	1-3-3-3-3-2-2-3
10 April	7	2-1-2-2-3-2-2-1	11	2-1-1-4-2-4-2-1	8	3-2-2-2-2-2-2-2
11 April	6	2-2-0-2-2-2-2-1	3	2-1-0-1-1-1-1-1	6	2-3-1-1-1-1-1-1
12 April	6	1-2-1-2-2-2-2-2	3	1-2-1-1-0-1-1-1	7	2-3-2-2-1-1-1-2
13 April	6	2-2-0-1-2-3-2-1	2	1-1-1-0-0-0-0-1	5	2-2-1-1-1-2-1-1
14 April	5	1-0-2-2-2-1-2-2	3	2-0-2-1-1-0-1-1	9	2-1-2-2-1-1-2-2

Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
08 Apr 0521	WARNING: Geomagnetic K = 4	08/0520 - 1500
09 Apr 0534	WARNING: Geomagnetic K = 4	09/0533 - 1200
11 Apr 1707	ALERT: X-ray Flux exceeded M5	11/1705
11 Apr 1714	ALERT: Type IV Radio Emission	11/1659
11 Apr 1727	SUMMARY: X-ray Event exceeded M5	11/1652 - 1711
12 Apr 2112	WATCH: Geomagnetic Storm Category G1 predicted	
13 Apr 2110	WATCH: Geomagnetic Storm Category G1 predicted	

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
15 Apr	180	18	5	29 Apr	120	8	3
16	180	8	3	30	125	7	2
17	180	5	2	01 May	125	10	3
18	175	5	2	02	125	10	3
19	170	5	2	03	125	10	3
20	170	5	2	04	125	5	2
21	167	5	2	05	125	8	3
22	165	5	2	06	125	8	3
23	160	5	2	07	130	8	3
24	160	5	2	08	140	5	2
25	155	5	2	09	150	5	2
26	140	5	2	10	160	5	2
27	135	5	2	11	175	5	2
28	125	8	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
11 Apr	1652	1706	1711	M5.4	0.022					5500		1
13 Apr	0458	0502	0506	M2.4	0.004	SF	S10	E80	3637	1500		
14 Apr	0224	0232	0236	M4.3	0.010	1F	S11	E67	3637			

Flare List

	Time			Optical			
Date	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
08 Apr	0243	0314	0344	C1.4			3634
08 Apr	0410	0417	0426	C1.2			3632
08 Apr	2324	2330	2335	B9.1			
09 Apr	0334	0353	0409	C1.0			3631
09 Apr	0553	0601	0605	B6.5			3628
09 Apr	0841	0845	0850	B6.4			3634
09 Apr	0854	0905	0918	B7.9			3634
09 Apr	1827	1834	1839	B7.6			3634
09 Apr	2204	2211	2217	C1.0			3634
09 Apr	2332	2341	2347	B9.4			3629
10 Apr	0211	0222	0227	C2.6	SF	N29E41	3634
10 Apr	0242	0245	0249	B7.6			
10 Apr	0521	0527	0531	B6.8			
10 Apr	0556	0603	0619	C1.2	SF	N04W75	3629
10 Apr	0632	0642	0657	C2.1			3629
10 Apr	0833	0842	0850	B8.1			
10 Apr	0850	0854	0858	B7.3			
10 Apr	1139	1151	1157	C4.0			3629
10 Apr	1243	1248	1253	C2.0			3629
10 Apr	1324	1333	1337	C1.9			3629
10 Apr	1427	1435	1439	C1.7			
10 Apr	1640	1647	1653	C1.7			3629
10 Apr	1657	1702	1708	C1.8			3629
10 Apr	1731	1735	1742	C2.0			3629
10 Apr	2247	2253	2257	C1.5	SF	N26E23	3634
11 Apr	0118	0126	0132	C1.9			3636
11 Apr	0132	0136	0140	C2.6			3636
11 Apr	0320	0327	0334	C2.2			

Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
11 Apr	0359	0409	0422	C1.3			3636
11 Apr	0613	0623	0634	C1.8	SF	S11E12	3633
11 Apr	0843	0855	0901	C1.3			3635
11 Apr	0949	0957	1001	C3.4			3635
11 Apr	1052	1110	1122	C3.5			3635
11 Apr	1353	1410	1432	C5.9	SF	N20E46	3635
11 Apr	1427	1428	1431		SF	N27E26	3634
11 Apr	1607	1620	1625	C3.6	SF	N20E47	3635
11 Apr	1652	1706	1711	M5.4			
12 Apr	0317	0327	0333	C5.5	SF	N28E07	3634
12 Apr	0736	0737	0739		SF	S22E72	3636
12 Apr	0741	0741	0743		SF	S19E67	3636
12 Apr	0957	0958	1000		SF	S19E67	3636
12 Apr	1109	1123	1136	C3.1	SF	N16E58	3635
12 Apr	1324	1332	1336	C1.9			
12 Apr	1339	1345	1408	C3.6	SF	N27E03	3634
12 Apr	1408	1412	1416	C2.7			3634
12 Apr	1537	1537	1539		SF	S19E61	3636
12 Apr	1548	1552	1557	C4.0			3637
12 Apr	1745	1755	1759	C8.9			3637
12 Apr	2309	2314	2318	C3.1			3637
13 Apr	0458	0502	0506	M2.4	SF	S10E80	3637
13 Apr	0728	0737	0753	C2.3			
13 Apr	0911	0925	0933	C2.6			3637
13 Apr	0933	0936	0941	C2.7			3637
13 Apr	1237	1244	1251	C2.4			
13 Apr	1314	1322	1329	C2.0			
13 Apr	1353	1404	1413	C3.3			3637
13 Apr	1448	1459	1508	C5.5	SF	N30W11	3634
13 Apr	1600	1601	1605		SF	N18E20	3635
13 Apr	2101	2109	2118	C2.1			3638
14 Apr	0054	0101	0110	C2.9			3639
14 Apr	0224	0232	0236	M4.3	1F	S11E67	3637
14 Apr	0524	0529	0541	C2.5			3639
14 Apr	0614	0614	0620		SF	S11E12	3633
14 Apr	0616	0624	0633	C3.1			3628
14 Apr	0633	0645	0652	C3.3			3638
14 Apr	0916	0916	0920		SF	N28E67	3639

Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
14 Apr	1019	1101	1145	C5.0			3636
14 Apr	1029	1029	1034		SF	N29E67	3639
14 Apr	1031	1100	1142		SF	S18E41	3636
14 Apr	1114	1120	1125		SF	N28E66	3639
14 Apr	1128	1132	1138		SF	N28E66	3639
14 Apr	1307	1315	1326	C4.0	SF	N28E66	3639
14 Apr	1343	1350	1355		SF	N26W19	3634
14 Apr	1500	1509	1516	C5.3	SF	N28E66	3639
14 Apr	1538	1538	1541		SF	N24W20	
14 Apr	1613	U1615	A1615		SF	N28E66	3639
14 Apr	1622	1629	1635	C8.0			3639
14 Apr	1815	1823	1826	C4.1			3639
14 Apr	1826	1830	1839	C7.1	SF	N31E72	3639
14 Apr	1921	1932	1941	C3.2			3639
14 Apr	1941	1945	1950	C2.9			3639
14 Apr	2348	2353	0002	C4.1			3639

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 3624												
30 Mar	N16E50	72	10	3	Bxo	2	B								
31 Mar	N16E39	70	10	4	Hrx	1	A								
01 Apr	N15E25	71	1	1	Axx	1	A								
02 Apr	N15E10	72	plage												
03 Apr	N15W04	73	5	1	Axx	1	A								
04 Apr	N15W18	74	plage												
05 Apr	N15W32	75	plage												
06 Apr	N15W46	76	plage												
07 Apr	N15W60	76	plage												
08 Apr	N15W74	77	plage												
09 Apr	N15W88	78	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 73

			Region 3627												
02 Apr	N09E58	24	5	1	Axx	1	A								
03 Apr	N10E44	25	5	1	Axx	1	A								
04 Apr	N11E30	26	10	1	Axx	1	A								
05 Apr	N09E19	24	10	1	Axx	1	A								
06 Apr	N09E05	25	plage												
07 Apr	N09W09	25	plage												
08 Apr	N09W23	26	plage												
09 Apr	N09W37	27	plage												
10 Apr	N09W52	28	plage												
11 Apr	N09W66	30	plage												
12 Apr	N09W80	30	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 25

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 3628												
03 Apr	N07E67	2	90	2	Hsx	1	A								
04 Apr	N10E54	2	110	2	Hsx	1	A								
05 Apr	N08E41	2	190	3	Hax	4	A								
06 Apr	N07E28	2	240	4	Hax	2	A								
07 Apr	N08E14	2	250	5	Cko	6	B								
08 Apr	N08W00	3	260	5	Cho	5	B								
09 Apr	N08W14	4	260	5	Cho	4	B								
10 Apr	N08W28	4	260	4	Hhx	4	A								
11 Apr	N08W38	2	260	4	Cko	6	B								
12 Apr	N07W51	1	240	3	Hax	3	A								
13 Apr	N08W64	1	180	3	Hax	4	A								
14 Apr	N08W77	1	120	2	Hax	2	A	1							
								1	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 3

			Region 3629												
04 Apr	N07W12	68	20	3	Cro	3	B								
05 Apr	N06W28	71	30	4	Cao	6	B								
06 Apr	N05W41	71	60	4	Dai	8	B								
07 Apr	N05W55	71	40	4	Cao	6	B								
08 Apr	N06W69	72	20	2	Cao	3	B								
09 Apr	N05W83	73	10	1	Cao	1	B								
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 68

			Region 3630												
05 Apr	S11W24	67	30	5	Bxi	5	B	1							
06 Apr	S11W38	68	20	5	Bxi	5	B								
07 Apr	S11W53	69	5	1	Axx	1	A								
08 Apr	S11W67	70	plage												
09 Apr	S11W81	71	plage												
								1	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 67

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 3631												
05 Apr	N11W08	51	10	1	Axx	2	A								
06 Apr	N11W22	52	plage												
07 Apr	N11W37	53	5	2	Axx	1	A								
08 Apr	N11W48	51	10	1	Axx	1	A								
09 Apr	N11W62	52	plage					1							
10 Apr	N11W77	53	plage												
								1	0	0	0	0	0	0	0

Died on Disk.
Absolute heliographic longitude: 51

			Region 3632												
05 Apr	N26E44	359	40	3	Cao	3	B								
06 Apr	N26E30	359	30	3	Cao	3	B								
07 Apr	N26E16	360	10	1	Cao	1	B	1			1				
08 Apr	N28E04	359	10	2	Hsx	2	A	1							
09 Apr	N26W09	359	5		Axx	1	A								
10 Apr	N26W23	360	plage												
11 Apr	N26W37	1	plage												
12 Apr	N26W51	1	plage												
13 Apr	N26W65	2	plage												
14 Apr	N26W79	3	plage												
								2	0	0	1	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 359

			Region 3633												
05 Apr	S09E82	322	plage					3							
06 Apr	S09E71	319	50	4	Hsx	3	A								
07 Apr	S08E59	320	70	5	Dso	4	BG								
08 Apr	S07E44	319	160	8	Dsi	6	BG								
09 Apr	S07E30	320	120	8	Dso	6	BG								
10 Apr	S08E19	317	130	8	Dso	6	BG								
11 Apr	S08E05	319	120	7	Cso	5	B	1			1				
12 Apr	S08W10	320	110	5	Cso	6	B								
13 Apr	S08W23	320	110	6	Cso	8	B								
14 Apr	S08W38	322	80	4	Cso	2	B				1				
								4	0	0	2	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 319

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 3634												
08 Apr	N27E54	309	10	2	Axx	2	A	1							
09 Apr	N27E40	310	10	2	Axx	2	A	1							
10 Apr	N26E23	313	10	3	Bxo	2	B	2			2				
11 Apr	N26E09	315	120	6	Dsi	10	BG				1				
12 Apr	N26W05	315	120	7	Dsi	13	B	3			2				
13 Apr	N27W17	314	280	9	Dki	17	B	1			1				
14 Apr	N26W30	314	290	9	Dki	18	B				1				
								8	0	0	7	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 315

			Region 3635												
10 Apr	N19E48	289	10	7	Bxo	2	B								
11 Apr	N20E38	286	30	10	Cso	8	B	5			2				
12 Apr	N21E26	284	50	10	Csi	9	B	1							
13 Apr	N23E13	284	30	10	Cao	7	B				1				
14 Apr	N21W00	284	20	6	Cso	5	B								
								6	0	0	3	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 284

			Region 3636												
11 Apr	S21E72	252	30	2	Hsx	2	A	3							
12 Apr	S21E58	252	50	3	Hsx	2	A				4				
13 Apr	S21E46	251	100	5	Cso	5	B								
14 Apr	S21E33	251	80	3	Cso	4	B	1			1				
								4	0	0	5	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 251

			Region 3637												
12 Apr	S10E81	230	plage					3							
13 Apr	S11E66	231	20	4	Cro	3	B	3	1						
14 Apr	S12E53	231	40	4	Cso	4	B		1			1			
								6	2	0	0	1	0	0	0

Still on Disk.
Absolute heliographic longitude: 231

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 3638												
13 Apr	S17E70	227	30	1	Hsx	1	A	1							
14 Apr	S17E58	226	30	1	Hsx	1	A	1							
								2	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 226

			Region 3639												
14 Apr	N29E62	222	30	5	Cao	7	B	10			8				
								10	0	0	8	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 222

			Region 3640												
14 Apr	N21E58	226	10	1	Axx	1	A								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 226

			Region 3641												
14 Apr	N11E13	271	70	5	Dao	8	B								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 271

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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