Space Weather Highlights
15 July - 21 July 2024

SWPC PRF 2551
22 July 2024

Solar activity was at moderate to high levels. High levels were observed on 16 and 17 Jul due to an X1.9/1B flare at 16/1326 UTC from Region 3738 (S09, L=213, class/area Fkc/1140 on 14 Jul) and an M5.0/2b flare at 17/0639 UTC from Region 3743 (S08, L=162, class/area Dai/220 on 13 Jul). The X1 flare had accompanying Type II (398 km/s) and Type IV radio bursts, a Castelli U radio signature, as well as a CME of the W limb that was not Earth-directed. Region 3753 (N12, L=170, class/area Dai/100 on 16 Jul) and 3744 (N16, L=144, class/area Dso/180 on 12 Jul) produced a pair of M1 flares at 16/2124 UTC and 16/2206 UTC. Two associated partial halo CMEs were observed after 16/2312 UTC. Modelling of the pair indicated an arrival beginning at midday on 20 Jul followed by a secondary arrival early on 21 Jul. At 21/1610 UTC, a disappearing solar filament was observed in the vicinity of Region 3757 (N18, L=061, class/area Hax/060 on 17 Jul). An associated halo CME was observed at 21/1648 UTC. Initial analysis indicated an arrival on 24 Jul. Further analysis is in progress at the time of this writing.

No proton events were observed at geosynchronous orbit.

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

Geomagnetic field activity ranged from quiet to unsettled levels. Weak transient activity was evident on 15-16 Jul and possibly 19-20 Jul, however weak solar wind speeds in the 300-400 km/s range as well as a predominant northward Bz component led to only isolated unsettled periods on 15-16 Jul. Quiet conditions prevailed through 21 Jul.

Space Weather Outlook
22 July - 17 August 2024

Solar activity is expected to continue at moderate levels with M-class flares (R1-R2, Minor-Moderate) levels likely and a slight chance for X-class (R3, Strong) through 27 Jul as Regions 3751 (S08, L=092, class/area Ekc/410 on 19 Jul) and 3761 (S10, L=081, class/area Dki/300 on 21 Jul) rotate across the visible disk. Low to moderate levels are likely from 28 Jul through 17 Aug.

There is a slight chance for a greater than 10 MeV proton event exceeding the S1 (Minor) levels through 29 Jul due to the flare potential of Regions 3751 and 3761.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to continue at normal to moderate levels.

Geomagnetic field activity is expected to be at mostly quiet levels through 17 Aug barring any inbound CME activity. A potential for G1-G2 (Minor-Moderate) levels is likely for 24 Jul due to the arrival of the 21 Jul CME, however analysis is still in progress.

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
15 July	233	205	1890	C2.7	5	3	0	20	1	0	0	0
16 July	242	250	1540	C2.9	3	4	1	7	6	0	0	0
17 July	224	275	1190	C2.3	4	5	0	11	1	1	0	0
18 July	209	276	1230	C2.2	12	2	0	20	1	0	0	0
19 July	202	269	1040	C2.0	6	3	0	16	2	1	0	0
20 July	207	212	1160	C1.9	8	2	0	20	2	0	0	0
21 July	198	200	1360	C2.3	15	4	0	15	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
15 July	2.7e+05	2.0e+04	1.1e+06
16 July	4.8e+05	2.1e+04	1.0e+06
17 July	3.0e+05	2.0e+04	1.0e+06
18 July	2.0e+05	2.0e+04	1.0e+06
19 July	2.5e+05	1.9e+04	9.3e+05
20 July	1.8e+05	1.9e+04	9.9e+05
21 July	1.7e+05	1.9e+04	1.0e+06

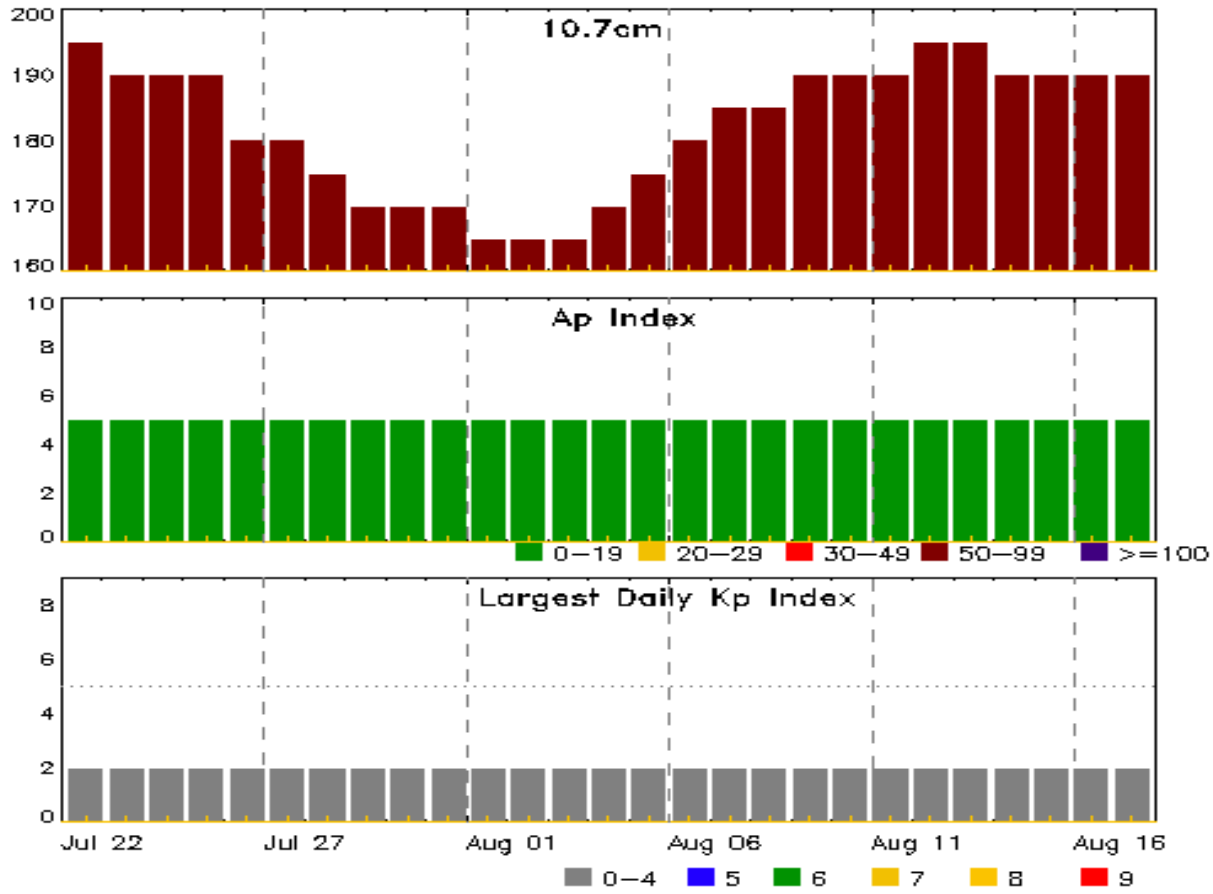
Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
15 July	8	1-1-2-1-3-2-2-3	3	1-2-1-0-0-0-1-2	7	1-2-2-1-1-1-2-3
16 July	12	3-2-2-2-4-3-2-2	8	3-2-2-2-1-2-2-2	10	3-2-2-2-2-3-2-2
17 July	7	1-2-2-1-3-2-2-1	7	1-3-2-2-3-2-1-0	5	1-2-2-1-2-1-1-1
18 July	4	0-0-1-2-2-1-2-1	4	1-1-2-1-2-1-1-0	5	1-1-2-2-1-1-1-1
19 July	5	1-1-1-2-2-1-2-2	3	0-1-1-1-1-1-1-1	5	1-1-2-1-1-1-2-2
20 July	8	2-2-2-2-2-2-3-2	7	2-2-2-3-1-1-2-1	7	2-2-2-2-1-2-2-1
21 July	9	0-1-0-3-3-2-4-2	2	0-0-0-0-1-1-2-1	6	2-1-1-1-2-1-2-2

Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
16 Jul 1323	ALERT: X-ray Flux exceeded M5	16/1320
16 Jul 1340	SUMMARY: 10cm Radio Burst	16/1318 - 1326
16 Jul 1346	SUMMARY: X-ray Event exceeded X1	16/1311 - 1336
16 Jul 1359	ALERT: Type II Radio Emission	16/1321
16 Jul 1409	ALERT: Type IV Radio Emission	16/1338
16 Jul 2230	ALERT: Type II Radio Emission	16/2208
16 Jul 2305	ALERT: Type IV Radio Emission	16/2220
17 Jul 0641	ALERT: X-ray Flux exceeded M5	17/0638
17 Jul 0655	SUMMARY: 10cm Radio Burst	17/0634 - 0637
17 Jul 0702	ALERT: Type II Radio Emission	17/0641
17 Jul 0714	SUMMARY: X-ray Event exceeded M5	17/0626 - 0701
17 Jul 0720	ALERT: Type II Radio Emission	17/0700
17 Jul 0758	ALERT: Type IV Radio Emission	17/0722
18 Jul 1845	WATCH: Geomagnetic Storm Category G1 predicted	
19 Jul 1816	SUMMARY: 10cm Radio Burst	19/1801 - 1803
21 Jul 1805	CANCELLATION: 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
22 Jul	195	5	2	05 Aug	175	5	2
23	190	5	2	06	180	5	2
24	190	5	2	07	185	5	2
25	190	5	2	08	185	5	2
26	180	5	2	09	190	5	2
27	180	5	2	10	190	5	2
28	175	5	2	11	190	5	2
29	170	5	2	12	195	5	2
30	170	5	2	13	195	5	2
31	170	5	2	14	190	5	2
01 Aug	165	5	2	15	190	5	2
02	165	5	2	16	190	5	2
03	165	5	2	17	190	5	2
04	170	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
15 Jul	0329	0345	0355	M1.2	0.014	SF	S11W57	3738				
15 Jul	0921	0937	1008	M2.7	0.004	SN	S07W66	3738				
15 Jul	1008	1013	1019	M1.9	0.013	SF	S08W64	3738				
16 Jul	0249	0301	0322	M1.4	0.020	1N	N16E02	3744				
16 Jul	0724	0737	0750	M3.6	0.032	1B	N11W27	3753	480			
16 Jul	1311	1326	1336	X1.9	0.140	1B	S06W85	3738		550	3	2
16 Jul	2106	2124	2136	M1.6	0.003	1N	N11W34	3753				
16 Jul	2146	2206	2217	M1.9	0.025	1N	N18W10	3744	170		2	
17 Jul	0626	0639	0701	M5.0	0.076	2B	S10W31	3743		560	1	
17 Jul	0701	0708	0713	M3.4	0.026			3743	340		1	1
17 Jul	0926	0945	1010	M1.2	0.029	SF	S10W83	3738				
17 Jul	1940	1951	1953	M1.2	0.007	1N	N11W46	3753	100			
17 Jul	1953	1958	2004	M2.0	0.012			3753				
18 Jul	1004	1014	1020	M2.2	0.018	SN	S07E24	3751				
18 Jul	1020	1027	1031	M2.0	0.013			3751				
19 Jul	0813	0823	0830	M3.2	0.020	1F	N11W67	3753				
19 Jul	1753	1806	1825	M2.0	0.022	2N	S10E03	3751		220		
19 Jul	2244	2251	2306	M1.0	0.013			3758				
20 Jul	0710	0720	0724	M1.8	0.007	SF	S07W03	3751				
20 Jul	1836	1849	1902	M1.5	0.017	1N	N12W68	3744				
21 Jul	0346	0355	0359	M1.4	0.007			3744	130			
21 Jul	0828	0834	0841	M1.5	0.008			3751				
21 Jul	1618	1631	1659	M1.0	0.020			3757	580		2	
21 Jul	2321	2328	2334	M3.2	0.012	SF	N15W86	3744	110			

Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
15 Jul	0217	0221	0226	C3.8			3738
15 Jul	0329	0345	0355	M1.2	SF	S11W57	3738
15 Jul	0505	0512	0524	C7.1	1N	N13E10	3744
15 Jul	B0512	0538	0545		SF	S10W04	3743
15 Jul	0734	0738	0749		SF	N15E10	3744
15 Jul	0807	0810	0813		SF	N14E08	3744
15 Jul	0816	0829	0847	C4.3			3738
15 Jul	0821	0826	0844		SF	N14E08	3744
15 Jul	0841	0842	0846		SF	S10W62	3738
15 Jul	0921	0937	1008	M2.7	SN	S07W66	3738
15 Jul	1007	1013	1029	M1.9	SF	S08W64	3738
15 Jul	1022	1022	1029		SF	S11W07	3743
15 Jul	1136	1137	1143		SF	N15E08	3744
15 Jul	1153	1157	1200		SF	N14E07	3744
15 Jul	1237	1242	1301		SF	S10W08	3743
15 Jul	1302	1308	1311		SF	S10W08	3743
15 Jul	1506	1514	1540		SF	S09W10	3743
15 Jul	1611	1617	1622	C4.5	SF	S12W64	3738
15 Jul	1807	1815	1822		SF	S19W09	3745
15 Jul	1831	1831	1834		SF	S18E46	3750
15 Jul	2003	2008	2015	C7.9	SF	S08E57	3751
15 Jul	2102	2107	2126		SF	S19W04	3747
15 Jul	2212	2215	2222		SF	S11W66	3738
16 Jul	0249	0301	0322	M1.4	1N	N16E02	3744
16 Jul	0503	0505	0508		SF	N12W25	3753
16 Jul	0532	0545	0631		SF	N12W25	3753
16 Jul	0651	0708	0727		SF	S10W19	3743
16 Jul	0724	0737	0750	M3.6	1B	N11W27	3753
16 Jul	0842	0850	0901	C7.3	1F	N15W05	3744
16 Jul	0909	0916	0939		SF	S09W21	3743
16 Jul	1044	1050	1054	C4.0	SF	S18E37	3750
16 Jul	1257	1306	1311	C5.0			3738
16 Jul	1311	1326	1336	X1.9	1B	S06W85	3738
16 Jul	1603	1603	1612		SF	S07W26	3743
16 Jul	2040	2041	2053		SF	N17W10	3744
16 Jul	2106	2124	2136	M1.6	1N	N11W34	3753
16 Jul	2146	2201	2329	M1.9	1N	N18W10	3744
17 Jul	0026	0027	0031		SF	N18W17	3744

Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
17 Jul	0243	0252	0304	C4.6			3751
17 Jul	0313	0319	0325	C8.7			3751
17 Jul	0408	0413	0418	C3.6			3743
17 Jul	0606	0612	0617	C5.1			3743
17 Jul	0626	0639	0701	M5.0	2B	S10W31	3743
17 Jul	0648	0653	0704		SF	N09W39	3753
17 Jul	0701	0708	0713	M3.4			3743
17 Jul	0917	0919	0921		SF	S08E40	3751
17 Jul	0918	0920	0935		SF	N09W42	3753
17 Jul	0921	0921	0926		SF	N16W18	3744
17 Jul	0926	0945	1010	M1.2	SF	S10W83	3738
17 Jul	1101	1107	1117		SF	S08E37	3751
17 Jul	1131	1132	1134		SF	S08E37	3751
17 Jul	1344	1347	1351		SF	N18W17	3744
17 Jul	1629	1631	1643		SF	S06E34	3751
17 Jul	1707	1708	1711		SF	S06E08	
17 Jul	1940	1951	1953	M1.2	1N	N11W46	3753
17 Jul	1953	1958	2004	M2.0			3753
18 Jul	0250	0256	0301	C2.9			3754
18 Jul	0408	0420	0429	C8.2	1F	S07E26	3751
18 Jul	0435	0436	0445		SF	N18W26	3744
18 Jul	0526	0533	0551	C6.6			3751
18 Jul	0637	0649	0655	C4.9	SF	N12W52	3753
18 Jul	0655	0658	0704	C5.6			3753
18 Jul	0655	0657	0714		SF	S07E26	3751
18 Jul	0721	0724	0745		SF	S09E25	3751
18 Jul	0749	0816	0831		SF	S07E24	3751
18 Jul	0847	0901	0910	C6.4	SF	N18W30	3744
18 Jul	1004	1014	1020	M2.2	SN	S07E24	3751
18 Jul	1020	1027	1031	M2.0			3751
18 Jul	1142	1142	1147		SF	S08E22	3751
18 Jul	1207	1225	1238	C4.5	SF	S08E22	3751
18 Jul	1223	1226	1228		SF	N18E53	3757
18 Jul	1328	1332	1339		SF	N18W32	3744
18 Jul	1431	1440	1447	C4.3	SF	S08E22	3751
18 Jul	1507	1518	1521	C4.4	SF	S07E21	3751
18 Jul	1521	1529	1533	C4.6			3751
18 Jul	1540	1549	1555	C6.2	SF	S07E18	3751

Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
18 Jul	1606	1620	1636	C7.4	SF	N23E37	3754
18 Jul	1610	1610	1617		SF	S07E18	3751
18 Jul	1617	1620	1643		SF	N13W61	3753
18 Jul	1640	1642	1646		SF	N24E37	3754
18 Jul	1650	1650	1703		SF	S06W05	3759
18 Jul	1847	1848	1853		SF	S06E18	3751
19 Jul	0443	0454	0510		SF	S06W12	3759
19 Jul	0518	0529	0531	C5.0	SF	N07W64	3753
19 Jul	0641	0642	0645		SF	N26E29	3754
19 Jul	0722	0725	0730		SF	S09E13	3751
19 Jul	0752	0801	0809	C6.5	SF	S11E08	3751
19 Jul	0813	0823	0830	M3.2	1F	N11W67	3753
19 Jul	0925	0928	0934		SF	S09E23	
19 Jul	1052	1053	1055		SF	S08W56	3743
19 Jul	1138	1201	1224	C6.2	SF	S19W58	3742
19 Jul	1259	1304	1308		SF	N20E39	3757
19 Jul	1324	1325	1328		SF	S11E07	3751
19 Jul	1333	1334	1343		SF	S15E33	3756
19 Jul	1344	1345	1353		SF	S09E21	3751
19 Jul	1349	1349	1351		SF	S10E09	3751
19 Jul	1353	1401	1416	C8.7	1N	S12E08	3751
19 Jul	1548	1554	1558	C2.7	SF	S09E06	3751
19 Jul	1612	1612	1615		SF	S09E06	3751
19 Jul	1753	1806	1825	M2.0	2N	S10E03	3751
19 Jul	2225	2237	2244	C8.7	SF	S05W68	3758
19 Jul	2244	2251	2306	M1.0			3758
20 Jul	0012	0024	0044	C9.3	SF	S19W70	3745
20 Jul	0426	0437	0456	C3.6			3751
20 Jul	B0507	U0553	0725		SF	N14W60	3753
20 Jul	0524	0534	0545	C6.8	1N	S07W02	3751
20 Jul	0551	0552	0556		SF	N15W61	3744
20 Jul	0600	0611	0703		SF	N22E35	3757
20 Jul	0616	0618	0627		SF	S11E10	3761
20 Jul	0710	0720	0724	M1.8	SF	S07W03	3751
20 Jul	0726	0726	0730		SF	S08W26	3759
20 Jul	0803	0803	0805		SF	S10E09	3761
20 Jul	0827	0837	0900		SF	S09W26	3759
20 Jul	0855	0857	0910		SF	S10E09	3761

Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
20 Jul	0914	0917	0919		SF	S05W01	3751
20 Jul	1313	1325	1336	C6.8	SF	N14W68	3753
20 Jul	1517	1520	1526		SF	S05W04	3751
20 Jul	1612	1625	1634	C4.2	SF	S10W05	3751
20 Jul	1810	1811	1816		SF	N14W69	3744
20 Jul	1828	1831	1834		SF	N14W67	3744
20 Jul	1836	1849	1911	M1.5	1N	N12W68	3744
20 Jul	1858	1904	1910		SF	S11E03	3761
20 Jul	2011	2013	2019		SF	S13W08	3751
20 Jul	2124	2138	2151	C5.7	SF	N14W68	3744
20 Jul	2225	2236	2241	C6.9			3744
20 Jul	2239	2244	2251	C6.9	SF	N14W68	3744
21 Jul	0203	0207	0213	C7.4	SF	S07W13	3751
21 Jul	0346	0355	0359	M1.4			3744
21 Jul	B0540	U0543	A0624	C4.3	SF	S10W13	3751
21 Jul	0715	U0716	0724		SF	S13W09	3751
21 Jul	0737	0743	0750	C6.0	1F	S07W18	3751
21 Jul	0743	0743	0747		SF	S11E62	3762
21 Jul	0828	0834	0841	M1.5			3751
21 Jul	0843	0845	0848		SF	S11W06	3761
21 Jul	0925	0926	0928		SF	S06W45	3759
21 Jul	0929	0931	0941		SF	S12E60	3762
21 Jul	1009	1017	1031	C4.1	SF	N14W74	3744
21 Jul	1101	1107	1119	C5.8	SN	S09W17	3751
21 Jul	1123	U1123	1135		SF	N18E19	3757
21 Jul	1200	1208	1213	C4.8			
21 Jul	1213	1218	1224	C5.4			3744
21 Jul	1230	1237	1244	C5.8			3751
21 Jul	1325	1331	1335	C4.5			3751
21 Jul	1424	1427	1443	C3.4			3762
21 Jul	1549	1555	1559	C3.3			3744
21 Jul	1559	1603	1607	C3.5			3751
21 Jul	1618	1631	1659	M1.0			3757
21 Jul	2004	2012	2021	C4.7			3744
21 Jul	2021	2027	2033	C4.5			3744
21 Jul	2046	2049	2052		SF	S06W23	3751
21 Jul	2147	2156	2204	C5.4			3762
21 Jul	2216	2220	2239		SF	S09W21	3751

Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
21 Jul	2254	2255	2304		SF	S10W14	3761
21 Jul	2321	2328	2334	M3.2	SF	N15W86	3744
21 Jul	2348	2351	2354		SF	S08W33	3751

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 3736												
03 Jul	S18E65	240	60	7	Cso	2	B	2							
04 Jul	S18E54	239	90	8	Dso	2	B								
05 Jul	S19E42	237	120	10	Dso	3	B								
06 Jul	S19E27	239	120	10	Cso	5	B								
07 Jul	S19E16	237	120	8	Cso	2	B								
08 Jul	S19W00	239	90	7	Cso	8	B	1			1				
09 Jul	S19W14	240	40	3	Hsx	3	A	1			1				
10 Jul	S19W28	241	40	3	Hsx	3	A				1				
11 Jul	S20W41	241	50	4	Hsx	2	A								
12 Jul	S21W54	241	20	1	Hax	1	A								
13 Jul	S20W69	242	10	1	Axx	1	A								
14 Jul	S20W83	243	10	1	Axx	1	A								
								4	0	0	3	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 239

			Region 3738												
05 Jul	S08E70	209	80	7	Dao	3	B								
06 Jul	S09E58	208	290	13	Ekc	15	BG	3	1		10				
07 Jul	S09E44	209	280	13	Ekc	15	BG	7			18				
08 Jul	S08E30	210	330	14	Ekc	32	BG	5			9				
09 Jul	S10E15	211	320	14	Eki	50	BG	5			11				
10 Jul	S10E01	212	870	17	Fhc	83	BG	7	5		15	3			
11 Jul	S08W13	213	940	17	Fkc	67	BG	5	1		10	3			
12 Jul	S09W26	213	1100	17	Fki	50	BG	2			6				
13 Jul	S09W40	213	1100	19	Fkc	52	BGD	5	4		10	1			
14 Jul	S09W53	213	1140	19	Fkc	40	BGD	9	4	1	19	2			
15 Jul	S09W68	215	1010	20	Fkc	19	BGD	3	3		6				
16 Jul	N09W83	217	450	18	Fki	11	BGD	1		1		1			
								52	18	2	114	10	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 212

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 3741												
07 Jul	N09E63	190	10	1	Axx	1	A								
08 Jul	N09E48	192	10	1	Hrx	1	A				1				
09 Jul	N09E33	193	10	1	Axx	1	A								
10 Jul	N09E19	194	10	1	Axx	1	A								
11 Jul	N09E05	195	plage												
12 Jul	N09W09	196	plage												
13 Jul	N09W23	196	plage												
14 Jul	N09W37	197	plage												
15 Jul	N09W51	198	plage												
16 Jul	N09W65	199	plage												
17 Jul	N09W79	200	plage												
								0	0	0	1	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 195

			Region 3742												
08 Jul	S23E69	170	plage	1		1									
09 Jul	S24E56	172	60	17	Cso	2	B	1							
10 Jul	S24E42	171	80	15	Eso	2	B								
11 Jul	S23E29	171	10	2	Axx	1	A				1				
12 Jul	S23E16	171	10	3	Bxo	4	B								
13 Jul	S23E02	171	10	1	Axx	1	A								
14 Jul	S23W12	171	10	1	Axx	2	A				1				
15 Jul	S21W25	172	plage												
16 Jul	S21W39	173	plage												
17 Jul	S16W53	174	50	8	Dao	7	B								
18 Jul	S15W65	172	30	3	Cro	3	B								
19 Jul	S16W80	173	10	1	Axx	1	A	1			1				
								2	0	0	3	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 171

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 3743												
09 Jul	S09E62	164	30	1	Cao	3	B				1				
10 Jul	S09E48	165	60	6	Dao	3	B								
11 Jul	S09E34	166	140	8	Dai	13	BG								
12 Jul	S09E24	163	200	9	Dsi	12	B	1			2				
13 Jul	S08E11	162	220	10	Dai	23	B				3				
14 Jul	S08W05	164	160	9	Dai	20	B				3				
15 Jul	S08W17	164	140	9	Dai	15	B				5				
16 Jul	S11W30	164	150	15	Eai	22	B				3				
17 Jul	S09W43	164	60	10	Dai	22	BG	2	2				1		
18 Jul	S09W57	164	40	5	Cro	6	B								
19 Jul	S11W72	165	10	3	Bxo	2	B				1				
20 Jul	S11W86	167	plage												
								3	2	0	18	0	1	0	0

Crossed West Limb.
Absolute heliographic longitude: 164

			Region 3744												
09 Jul	N16E76	150	90	2	Hsx	1	A								
10 Jul	N15E65	148	170	4	Cso	3	B								
11 Jul	N16E51	149	160	10	Dao	6	B								
12 Jul	N16E43	144	180	6	Dso	7	B								
13 Jul	N16E25	147	160	8	Dso	8	B				2				
14 Jul	N15E13	146	150	6	Dso	8	B	1			1	1			
15 Jul	N16W01	148	120	5	Cso	7	B	1			5	1			
16 Jul	N16W16	150	90	3	Cao	5	B	1	2		1	3			
17 Jul	N16W30	151	70	4	Cao	6	B				3				
18 Jul	N16W43	150	40	3	Cai	5	B	1			3				
19 Jul	N16W55	148	20	2	Cro	4	B								
20 Jul	N15W70	151	30	3	Cro	5	B	3	1		5	1			
21 Jul	N15W83	149	80	5	Dai	5	B	5	2		2				
								12	5	0	22	6	0	0	0

Still on Disk.
Absolute heliographic longitude: 148

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 3745													
10 Jul	S17E58	155	20	5	Cro	2	B								
11 Jul	S17E44	156	20	9	Dro	3	B		1						
12 Jul	S17E31	156	20	9	Bxo	2	B	1			1				
13 Jul	S15E20	153	20	7	Dro	3	B					1	1		
14 Jul	S15E03	156	20	8	Dro	5	B				2				
15 Jul	S18W11	158	20	6	Cso	3	B				1				
16 Jul	S19W23	157	30	5	Dro	7	B								
17 Jul	S20W37	158	60	5	Dao	6	B								
18 Jul	S20W50	157	70	6	Cao	6	B								
19 Jul	S23W61	154	20	5	Cro	6	B								
20 Jul	S23W75	156	20	4	Cro	2	B	1			1				
21 Jul	S23W89	155	30	3	Cro	2	B								
								2	1	0	5	1	1	0	0

Still on Disk.
Absolute heliographic longitude: 156

		Region 3746													
11 Jul	N23W23	223	10	2	Bxo	2	B								
12 Jul	N23W37	224	plage												
13 Jul	N23W51	224	plage												
14 Jul	N23W65	225	plage												
15 Jul	N23W79	226	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 223

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 3747												
11 Jul	S24E44	156	100	4	Hsx	2	A								
12 Jul	S25E32	155	180	3	Hsx	2	A								
13 Jul	S24E18	155	180	4	Cso	2	B		2		1				
14 Jul	S25E04	155	140	4	Hsx	1	A								
15 Jul	S25W07	154	130	2	Hsx	2	A				1				
16 Jul	S26W20	154	120	2	Hsx	2	A								
17 Jul	S25W34	155	100	2	Hax	3	A								
18 Jul	S25W45	152	110	3	Hax	2	A								
19 Jul	S25W59	152	60	1	Hax	2	A								
20 Jul	S25W74	155	50	2	Hax	2	A								
21 Jul	S25W86	152	50	2	Hax	1	A								
								0	2	0	2	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 155

			Region 3748												
12 Jul	N15E57	130	30	7	Bxo	4	B								
13 Jul	N15E43	130	10	5	Bxo	4	B								
14 Jul	N14E27	133	10	1	Axx	2	A								
15 Jul	N14E14	133	10	3	Bxo	4	B								
16 Jul	N15E01	133	20	4	Cro	6	B								
17 Jul	N15W13	134	10	1	Axx	2	A								
18 Jul	N16W24	131	10	4	Bxo	3	B								
19 Jul	N15W40	133	10	1	Axx	2	A								
20 Jul	N15W54	135	plage												
21 Jul	N15W68	136	plage												
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 133

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 3749												
13 Jul	S32E66	106	50	4	Cso	2	B								
14 Jul	S32E52	108	50	5	Cso	3	B								
15 Jul	S32E35	112	40	12	Cao	4	B								
16 Jul	S33E29	105	20	1	Hrx	4	A								
17 Jul	S33E17	104	20	3	Hrx	2	A								
18 Jul	S33E04	103	10	1	Axx	1	A								
19 Jul	S33W10	104	plage												
20 Jul	S33W24	105	plage												
21 Jul	S33W38	106	plage												
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 103

			Region 3750												
13 Jul	S20E65	108	110	7	Cso	7	B								
14 Jul	S20E52	107	100	8	Cso	6	B								
15 Jul	S20E38	109	90	10	Cao	9	B				1				
16 Jul	S20E27	107	80	8	Dao	6	B	1			1				
17 Jul	S20E13	108	40	9	Cao	7	B								
18 Jul	S19W01	108	20	9	Cro	3	B								
19 Jul	S20W21	111	10	1	Axx	1	A								
20 Jul	S20W35	116	plage												
21 Jul	S20W49	117	plage												
								1	0	0	2	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 108

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 3751												
13 Jul	S07E75	98	90	2	Hsx	1	A								
14 Jul	S07E66	95	230	11	Eai	7	B	2			8				
15 Jul	S08E54	93	220	10	Dsi	10	BG	1			1				
16 Jul	S08E41	93	280	11	Ekc	12	BG								
17 Jul	S08E27	94	340	12	Ekc	22	BG	2			4				
18 Jul	S08E14	93	400	11	Ekc	28	BGD	7	2		11	1			
19 Jul	S08E01	92	410	11	Ekc	32	BGD	3	1		7	1	1		
20 Jul	S09W15	96	380	13	Ekc	28	BGD	3	1		5	1			
21 Jul	S08W28	94	380	13	Ekc	28	BGD	7	1		7	1			
								25	5	0	43	4	1	0	0

Still on Disk.
Absolute heliographic longitude: 92

			Region 3752												
14 Jul	N22E67	93	30	2	Hax	2	A								
15 Jul	N22E53	94	30	2	Hsx	1	A								
16 Jul	N23E40	94	30	1	Hsx	1	A								
17 Jul	N23E26	95	20	1	Hrx	1	A								
18 Jul	N22E14	93	10	1	Hrx	2	A								
19 Jul	N22E01	92	10	1	Hrx	1	A								
20 Jul	N22W13	94	10	1	Axx	1	A								
21 Jul	N22W27	93	plage												
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 92

			Region 3753												
15 Jul	N12W22	169	50	3	Dao	7	B								
16 Jul	N12W36	170	100	5	Dai	11	B		2		2	2			
17 Jul	N11W50	171	50	9	Cai	10	B		2		2	1			
18 Jul	N15W62	169	50	8	Cao	4	B	2			2				
19 Jul	N12W76	169	80	2	Cao	4	B	1	1		1	1			
20 Jul	N12W90	171	plage					1			2				
								4	5	0	9	4	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 169

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 3754												
15 Jul	N23E69	78	30	4	Cro	4	B								
16 Jul	N24E53	81	50	11	Eao	7	B								
17 Jul	N25E39	82	50	7	Cao	4	B								
18 Jul	N25E30	77	40	3	Cao	4	B	2			2				
19 Jul	N24E17	76	10	2	Cro	3	B				1				
20 Jul	N25E04	77	10	3	Bxo	3	B								
21 Jul	N25W10	77	10	2	Axx	1	A								
								2	0	0	3	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 77

			Region 3755												
16 Jul	N03E61	73	50	4	Dao	4	B								
17 Jul	N03E47	74	100	8	Dao	6	B								
18 Jul	N02E35	72	80	5	Cao	8	B								
19 Jul	N02E19	73	50	5	Cao	8	B								
20 Jul	N02E06	75	30	3	Cro	5	B								
21 Jul	N02W08	75	30	4	Cso	3	B								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 75

			Region 3756												
16 Jul	S18E68	66	40	2	Hsx	1	A								
17 Jul	S18E54	67	100	5	Hsx	1	A								
18 Jul	S17E40	67	100	3	Hsx	1	A								
19 Jul	S26E25	68	90	1	Cso	2	B				1				
20 Jul	S18E13	68	100	2	Hsx	1	A								
21 Jul	S17W00	67	100	2	Hsx	1	A								
								0	0	0	1	0	0	0	0

Still on Disk.
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 3757												
16 Jul	N17E74	60	30	2	Hsx	1	A								
17 Jul	N18E60	61	60	3	Hax	1	A								
18 Jul	N18E47	60	40	2	Hsx	1	A				1				
19 Jul	N17E33	60	20	2	Cso	3	B				1				
20 Jul	N17E22	59	40	5	Cao	5	B				1				
21 Jul	N17E08	58	40	5	Cao	5	B		1		1				
								0	1	0	4	0	0	0	0
Still on Disk. Absolute heliographic longitude: 58															
			Region 3758												
17 Jul	S07W37	156	60	3	Cso	2	B								
18 Jul	S08W50	157	50	6	Cao	5	B								
19 Jul	S07W68	160	10	2	Bxo	2	B	1	1		1				
20 Jul	S08W81	162	plage												
								1	1	0	1	0	0	0	0
Crossed West Limb. Absolute heliographic longitude: 156															
			Region 3759												
17 Jul	S05E03	116	0	2	Bxo	3	B								
18 Jul	S06W10	117	110	6	Dao	12	B				1				
19 Jul	S07W23	116	110	6	Dao	12	B				1				
20 Jul	S07W37	118	230	8	Dao	12	B				2				
21 Jul	S06W50	117	200	9	Dao	8	B				1				
								0	0	0	5	0	0	0	0
Still on Disk. Absolute heliographic longitude: 116															
			Region 3760												
18 Jul	N20W05	112	20	2	Cro	2	B								
19 Jul	N18W17	110	10	1	Axx	1	A								
20 Jul	N20W33	114	10	5	Bxo	3	B								
21 Jul	N20W46	112	10	5	Axx	1	A								
								0	0	0	0	0	0	0	0
Still on Disk. Absolute heliographic longitude: 112															

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 3761												
19 Jul	S10E13	79	100	4	Dai	3	B								
20 Jul	S10W01	82	200	7	Dai	12	BG				4				
21 Jul	S10W15	81	300	9	Dki	17	BG				2				
								0	0	0	6	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 82

			Region 3762												
20 Jul	S14E64	17	50	8	Cao	3	B								
21 Jul	S13E51	15	130	9	Dao	8	B	2			2				
								2	0	0	2	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 15

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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