Space Weather Highlights
24 July - 30 July 2023

SWPC PRF 2500
31 July 2023

Solar activity was reached moderate levels. A total of 11 R1 (Minor) events were observed during the reporting period from four different active regions. The largest event was an M4.6 flare at 26/1037 UTC from Region 3376 (N23, L=228, class/area=Dso/180 on 18 Jul). The region also produced an M4.1 flare at 28/1158 UTC with an associated Type II radio sweep just as it rotated beyond the NW limb.

Other activity included a Type II radio sweep on 24 Jul which was associated with activity on the farside. An additional Type II radio sweep was observed on 29 Jul from activity just beyond the NE limb. A filament eruption, centered near N27E25 and approximately 28 degrees in length, began erupting after 28/2030 UTC. The event produced an Earth-directed CME signature in subsequent coronagraph imagery. The event was analyzed and modeled with the results suggesting arrival over 01-02 Aug.

Two greater than 10 MeV proton enhancements were observed during the week. The first was observed beginning on 24 Jul. It was likely associated with energetic activity on the farside and did not reach the 10 pfu (S1 - Minor) threshold. The second event was associated with the M4.1 flare from the vicinity of Region 3376 just beyond the NW limb. The greater than 10 MeV proton flux levels began to increase shortly after the flare and reached the S1 event threshold at 29/0020 UTC. The event had a peak flux of 154 pfu (S2 - Moderate) at 29/0920 UTC. Flux levels decreased below the S1 threshold by 30/1630 UTC.

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

Geomagnetic field activity ranged from quiet to G1 (minor) storm levels. G1 conditions were observed on 25-16 Jul in response to transient influence, likely from an event that occurred on 23 Jul. A weak shock was observed in the solar wind on around 25/2155 UTC. Total field increased to a peak of 17 nT and Bz reached as far south as -11 nT. Wind speeds increased to highs of ~555 km/s during the passage. Mostly quiet to unsettled conditions were observed during the other reporting days. A weak, positive polarity CH HSS onset was observed on 30 Jul and continued through the end of the period.

Space Weather Outlook
31 July - 26 August 2023

Solar activity is likely to reach moderate levels (R1-R2/Minor-Moderate) on 31 Jul - 04 Aug. Activity for the remainder of the outlook period is likely to be at low levels, with a chance for M-class X-ray activity (R1).

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is likely to reach high levels on

02-04 Aug. The remainder of the outlook period is likely to be at moderate levels.

Geomagnetic field activity is expected to range from quiet to G1 (Minor) geomagnetic storm conditions. G1 levels are likely, with a chance for G2 (Moderate), on 01-02 Aug due to the anticipated influence of a CME that left the Sun on 28 Jul. Active conditions are likely on 26 Aug and unsettled conditions are likely 31 Jul, 05-06 Aug, and 10-12 Aug due to multiple, recurrent CH HSSs.

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
24 July	165	141	1145	C1.0	8	0	0	28	0	1	0	0
25 July	169	137	1110	C1.2	7	2	0	15	1	1	0	0
26 July	167	147	955	C1.9	10	3	0	14	4	1	0	0
27 July	165	154	1010	C1.8	15	2	0	17	0	0	0	0
28 July	168	148	1210	C1.6	9	1	0	13	0	0	0	0
29 July	179	147	1140	C1.4	6	1	0	16	1	0	0	0
30 July	174	139	1010	C1.3	4	2	0	23	3	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
24 July	7.2e+05	8.5e+04	8.0e+06
25 July	1.2e+07	1.3e+05	5.8e+06
26 July	2.0e+06	2.6e+04	5.3e+06
27 July	2.3e+05	2.0e+04	1.5e+07
28 July	4.7e+05	1.3e+05	2.8e+07
29 July	5.2e+07	6.5e+06	2.7e+07
30 July	3.0e+07	1.7e+06	1.5e+07

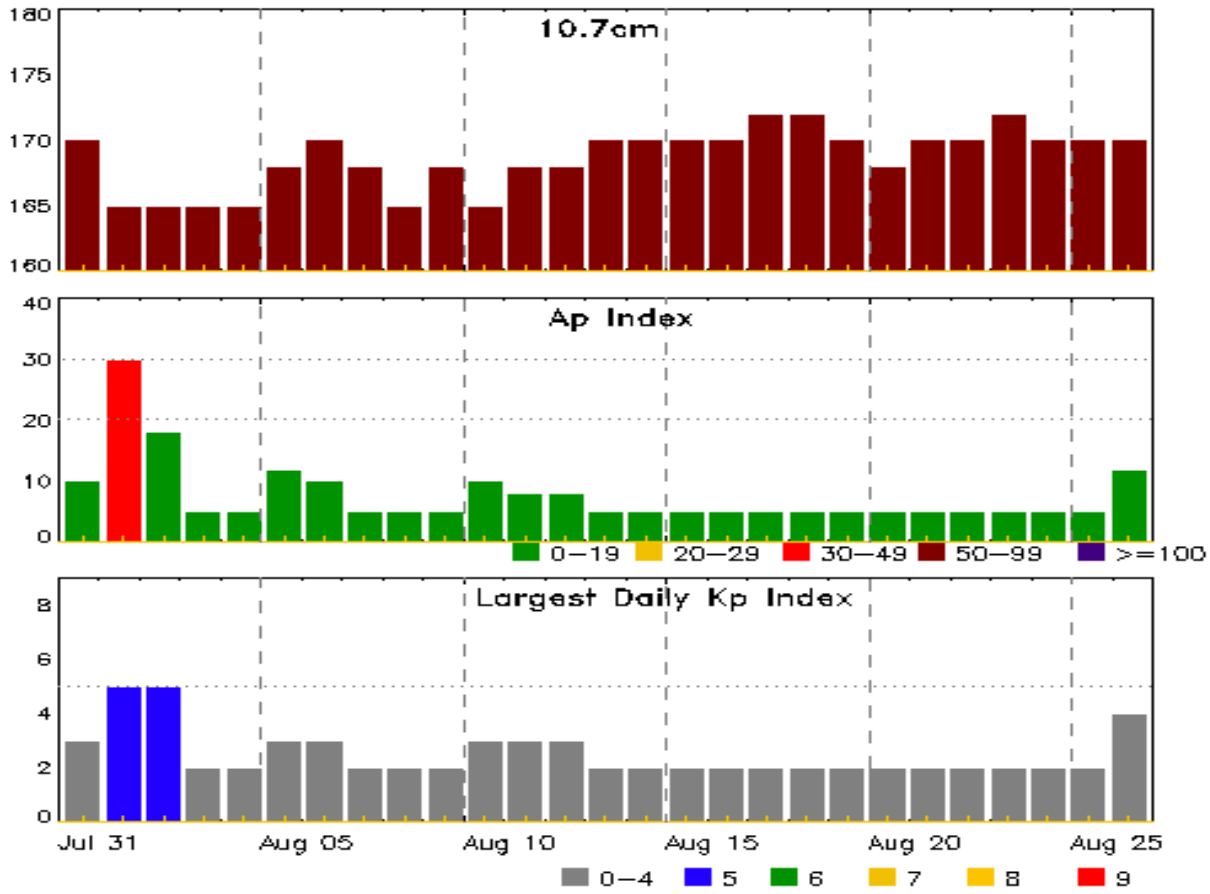
Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
24 July	8	2-2-1-2-3-2-2-2	6	3-2-1-0-3-1-1-1	7	2-1-1-1-2-1-2-3
25 July	12	1-1-2-2-3-2-2-5	16	1-2-3-1-4-5-2-3	11	1-1-2-2-2-2-2-5
26 July	23	3-5-4-4-4-3-2-3	35	4-5-5-5-5-5-2-2	21	4-5-4-4-3-3-2-3
27 July	7	2-2-1-2-3-2-2-1	6	2-2-2-2-1-1-2-1	7	2-2-2-2-2-2-2-1
28 July	5	1-0-0-1-3-2-2-2	6	1-0-0-0-4-2-2-1	6	1-1-1-1-2-1-3-3
29 July	8	2-2-0-2-3-3-2-2	17	2-3-1-2-6-3-2-1	9	2-2-1-2-3-3-2-2
30 July	18	1-2-2-2-3-2-6-3	23	1-5-4-5-4-4-1-1	4	1-3-2-2-3-2-3-2

Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
24 Jul 1645	WATCH: Geomagnetic Storm Category G1 predicted	
24 Jul 1817	ALERT: Type II Radio Emission	24/1735
24 Jul 2006	WARNING: Proton 10MeV Integral Flux > 10pfu	24/2005 - 2359
24 Jul 2349	CANCELLATION: Proton 10MeV Integral Flux > 10pfu	
25 Jul 2208	WARNING: Geomagnetic Sudden Impulse expected	25/2225 - 2255
25 Jul 2224	WARNING: Geomagnetic K = 4	25/2225 - 26/0600
25 Jul 2229	WARNING: Geomagnetic K = 5	25/2230 - 26/0300
25 Jul 2243	ALERT: Geomagnetic K = 4	25/2233
25 Jul 2253	SUMMARY: Geomagnetic Sudden Impulse	25/2235
26 Jul 0001	ALERT: Geomagnetic K = 5	25/2359
26 Jul 0205	EXTENDED WARNING: Geomagnetic K = 4	25/2225 - 26/1500
26 Jul 0206	EXTENDED WARNING: Geomagnetic K = 5	25/2230 - 26/0900
26 Jul 0517	ALERT: Geomagnetic K = 5	26/0509
28 Jul 1627	ALERT: Type II Radio Emission	28/1552
28 Jul 1923	WARNING: Proton 10MeV Integral Flux > 10pfu	28/1923 - 29/0600
29 Jul 0038	ALERT: Proton Event 10MeV Integral Flux >= 10pfu	29/0020
29 Jul 0537	ALERT: Proton Event 10MeV Integral Flux >= 100pfu	29/0530
29 Jul 0538	EXTENDED WARNING: Proton 10MeV Integral Flux > 10pfu	28/1923 - 30/0600
29 Jul 0752	ALERT: Type II Radio Emission	29/0726
29 Jul 2007	SUMMARY: Proton Event 10MeV Integral Flux >= 100pfu	29/0530 - 1205
29 Jul 2132	WATCH: Geomagnetic Storm Category G1 predicted	
30 Jul 0555	EXTENDED WARNING: Proton 10MeV Integral Flux > 10pfu	28/1923 - 30/2359
30 Jul 2018	SUMMARY: Proton Event 10MeV Integral Flux >= 10pfu	29/0020 - 30/1630
30 Jul 2018	CANCELLATION: Proton 10MeV Integral Flux > 10pfu	
30 Jul 2054	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
31 Jul	170	10	3	14 Aug	170	5	2
01 Aug	165	30	5	15	170	5	2
02	165	18	5	16	170	5	2
03	165	5	2	17	172	5	2
04	165	5	2	18	172	5	2
05	168	12	3	19	170	5	2
06	170	10	3	20	168	5	2
07	168	5	2	21	170	5	2
08	165	5	2	22	170	5	2
09	168	5	2	23	172	5	2
10	165	10	3	24	170	5	2
11	168	8	3	25	170	5	2
12	168	8	3	26	170	12	4
13	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
25 Jul	0136	0203	0224	M1.5	0.029	2N	N25W49	3376	180			
25 Jul	2108	2116	2124	M1.6	0.010	SF	N19W61	3376				
26 Jul	0421	0428	0433	M1.2	0.008			3376				
26 Jul	1017	1037	1048	M4.6	0.040			3376				
26 Jul	1550	1559	1607	M2.0	0.013	1B	N19W73	3376				
27 Jul	0944	0951	0958	M1.9	0.013	SF	N21W88	3376				
27 Jul	2204	2234	2305	M1.7	0.051	SF	S21E68	3388				
28 Jul	1539	1558	1613	M4.1	0.056			3376				2
29 Jul	1611	1624	1637	M1.4	0.014	1N	S11W08	3380		100		
30 Jul	0801	0814	0818	M1.8	0.014	1F	S16E55	3390	110	120		
30 Jul	0818	0822	0826	M1.8	0.009			3390	370			

Flare List

	Time			Optical			
Date	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
24 Jul	0003	0014	0020		SF	N21W37	3376
24 Jul	0004	0021	0036	C8.4	2N	N16E24	3379
24 Jul	0110	0110	0114		SF	N22W38	3376
24 Jul	0117	0121	0126		SF	N22W38	3376
24 Jul	0140	0150	0154	C3.4	SF	S13E71	3380
24 Jul	0217	0218	0223		SF	S13E71	3380
24 Jul	0327	0426	0508	C9.1			3372
24 Jul	0336	0337	0342		SF	N26W80	3372
24 Jul	0411	0413	0415		SF	N26W80	3372
24 Jul	0424	0428	0434		SF	N09W58	3373
24 Jul	0516	0543	0603	C8.5	SF	N26W80	3372
24 Jul	0738	0756	0810	C4.2			3380
24 Jul	0923	0929	0935		SF	N18E24	3379
24 Jul	1202	1204	1207		SF	S09E64	3380
24 Jul	1316	1317	1323		SF	S09E60	3380
24 Jul	1503	1517	1525	C2.2	SF	N09W61	3373
24 Jul	1615	1629	1634		SF	N11E08	3379
24 Jul	1624	1624	1631		SF	N20W46	3376
24 Jul	1733	1735	1737		SF	S14E73	3380
24 Jul	1754	1800	1806	C2.8	SF	N08W64	3373

Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
24 Jul	1806	1806	1828		SF	N20W48	3376
24 Jul	1831	1836	1855		SF	N20W47	3376
24 Jul	1917	1918	1925		SF	N20W48	3376
24 Jul	1926	1927	1929		SF	N20W48	3376
24 Jul	1935	1941	1947		SF	N11E07	3379
24 Jul	2053	2054	2057		SF	S09E62	3380
24 Jul	2220	2221	2223		SF	N20W50	3376
24 Jul	2232	2238	2256		SF	N20W50	3376
24 Jul	2257	2257	2304		SF	N20W50	3376
24 Jul	2322	2347	A2359		SF	N20W50	3376
24 Jul	2323	2330	2334	C2.3	SF	N04W71	3373
25 Jul	B0000	0048	0111	C2.4	SF	N20W50	3376
25 Jul	B0106	U0109	A0121		SF	N24W49	3376
25 Jul	B0136	U0213	A0405	M1.5	2N	N25W49	3376
25 Jul	0555	0605	0614	C2.6			3373
25 Jul	0654	0700	0706	C3.9	SF	S12E51	3380
25 Jul	0814	0821	0825	C3.2	SF	S12E51	3380
25 Jul	0943	0944	0950		SF	N21W56	3376
25 Jul	1242	1246	1250	C3.2			
25 Jul	1341	1345	1347		SF	S15E61	3376
25 Jul	1350	1352	1521		SF	S15E60	
25 Jul	1543	1702	1715		SF	N20W60	3376
25 Jul	1722	1741	1747		SF	N20W62	3376
25 Jul	1805	1805	1811		SF	N20W62	3376
25 Jul	1818	1824	1832		SF	N19W61	3376
25 Jul	1927	1930	1935		SF	N19W61	3376
25 Jul	2028	2029	2034		SF	N19W61	3376
25 Jul	2048	2058	2108	C4.1			3380
25 Jul	2108	2116	2124	M1.6			3380
25 Jul	2108	2114	2206		1B	S09E42	3380
25 Jul	2338	2354	0009	C4.3			3376
25 Jul	2340	2340	2343		SF	N19W66	3376
25 Jul	2348	2349	2353		SF	N20W64	3376
26 Jul	B0000	0000	0019		1N	N17E00	3383
26 Jul	0002	0008	0009		SF	N20W64	3376
26 Jul	0011	0045	0119	C5.5	1F	N20W64	3376
26 Jul	0051	0059	0108	C4.9			3376
26 Jul	0353	0411	0421	C9.2			3376

Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
26 Jul	0421	0428	0433	M1.2			3376
26 Jul	0507	0517	0539	C9.1	2F	S08E38	3380
26 Jul	0553	0554	0555		SF	N21W67	3380
26 Jul	0604	0609	0613	C5.2	SF	N21W67	3376
26 Jul	0621	U0645	0728		SF	S08E38	3380
26 Jul	B0723	U0751	0805		SF	N13E71	
26 Jul	0816	0820	0823	C8.3	SF	N13E71	3380
26 Jul	1017	1037	1048	M4.6			3376
26 Jul	1221	1232	1242	C4.5	SF	N21W71	3376
26 Jul	1308	1312	1318	C4.4			
26 Jul	1326	1328	1344		SF	S15E53	3384
26 Jul	1326	1329	1344		SF	N12E71	3386
26 Jul	1345	1346	1358		SF	N13E70	3386
26 Jul	1505	1559	1650		1B	N19W73	3376
26 Jul	B1505	U1507	A1534		SF	N21W71	3376
26 Jul	1516	1524	1533	C7.9	1N	S10E31	3380
26 Jul	1550	1559	1607	M2.0			3376
26 Jul	1707	1721	1725		SF	N19W71	3376
26 Jul	1900	1902	1903		SF	N14W16	3379
26 Jul	2246	2301	2311	C9.2	SF	N19W76	3376
27 Jul	0028	0039	0049	C6.6	SF	S11E24	3380
27 Jul	0100	0110	0114	C5.4	SF	N22W74	3376
27 Jul	0149	0153	0157		SF	N22W74	3376
27 Jul	0215	0222	0226	C4.0			3376
27 Jul	0320	0327	0332	C3.0			3376
27 Jul	0411	0420	0425	C4.7	SF	N22W74	3376
27 Jul	0448	0455	0502	C4.8			3376
27 Jul	0610	0622	0639	C3.9			3387
27 Jul	0724	0731	0736	C5.6	SF	N22W74	3376
27 Jul	0743	0745	0749		SF	N12E58	3386
27 Jul	0910	0912	0915		SF	N22W85	3376
27 Jul	0927	0942	0944	C9.1			3376
27 Jul	0931	0949	1004	M1.9	SF	N21W88	3376
27 Jul	1125	1127	1132	C2.7			3376
27 Jul	1222	1229	1234	C3.2			3376
27 Jul	1240	1240	1251		SF	S07W55	3377
27 Jul	1251	1259	1305	C2.4	SF	N26E85	3387
27 Jul	B1336	1341	1352		SF	S11W58	3377

Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
27 Jul	1341	1356	1356		SF	N12E62	3386
27 Jul	1344	1349	1354	C5.1	SF	N21W88	3376
27 Jul	1407	1511	1526		SF	N13E55	3386
27 Jul	1451	1508	1538		SF	S09E19	3380
27 Jul	1646	1653	1703	C3.5			3376
27 Jul	1730	1732	1734		SF	N13E54	3386
27 Jul	2044	2051	2101	C2.7			3376
27 Jul	2204	2234	2305	M1.7	SF	S21E68	3388
28 Jul	0133	0146	0220	C7.4			3376
28 Jul	0151	0209	0240		SF	S11E10	3380
28 Jul	0549	0549	0559		SF	S11E10	3380
28 Jul	0626	0634	0640	C6.7			3376
28 Jul	0750	0758	0803	C3.3			3376
28 Jul	1051	1101	1110	C3.9	SF	S09E09	3380
28 Jul	1248	1253	1304		SF	S11E07	3380
28 Jul	1339	1344	1354	C3.0			3390
28 Jul	1351	U1400	A1406	C2.9	SF	N12E41	3386
28 Jul	B1358	1359	1424		SF	N14E41	3386
28 Jul	B1358	1400	1413		SF	S08E06	3380
28 Jul	1444	1451	1505	C7.8	SN	S16E81	3390
28 Jul	1525	1526	1530		SF	N15E41	3386
28 Jul	1539	1558	1613	M4.1			3376
28 Jul	1552	1555	1610		SF	N15E41	3386
28 Jul	1616	1616	1621		SF	N26E69	3387
28 Jul	1806	1808	1809		SF	N00E00	3390
28 Jul	1820	1821	1822		SF	S18E81	3390
28 Jul	2002	2006	2010	C2.2			3387
28 Jul	2042	2058	2110	C5.9			3390
29 Jul	0105	0108	0126		SF	S08E70	3389
29 Jul	0542	0542	0546		SF	S09E61	3389
29 Jul	0556	0602	0608	C2.2	SF	S08E70	3389
29 Jul	0650	0650	0653		SF	S18E72	3390
29 Jul	0655	0734	0812	C6.7			
29 Jul	0709	0709	0715		SF	N24E56	3387
29 Jul	0843	0843	0846		SF	N10E24	3386
29 Jul	0906	0906	0911		SF	S08E70	3389
29 Jul	1018	1036	1052	C9.2	SF	S18E68	3390
29 Jul	1026	1027	1037		SF	N12E30	3386

Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
29 Jul	1242	1245	1255		SF	S09E57	3389
29 Jul	1310	1320	1325	C5.5	SF	S09W08	3380
29 Jul	B1442	1445	1451		SF	N10E24	3386
29 Jul	1531	1532	1540		SF	S09W08	3380
29 Jul	1611	1624	1637	M1.4	1N	S11W08	3380
29 Jul	1702	1705	1709		SF	S19E65	3390
29 Jul	1757	1757	1801		SF	N15W52	3379
29 Jul	2002	2010	2016	C2.8			3386
29 Jul	2002	2008	2023		SF	N09E21	3386
29 Jul	2323	2340	2356	C4.9			3379
30 Jul	0306	0311	0314		SF	S18E63	3390
30 Jul	0339	0340	0345		SF	N11E22	3386
30 Jul	0401	0401	0403		SF	N24E38	3387
30 Jul	0401	0401	0403		SF	N11E22	3386
30 Jul	0432	0446	0453	C5.6			3382
30 Jul	0440	0455	0528		1F	N19W57	3382
30 Jul	B0442	0448	0530		1F	N15W52	3383
30 Jul	0445	0447	0518		SF	N19W61	3382
30 Jul	0453	0456	0500	C6.4			3382
30 Jul	0532	0533	0534		SF	S11W10	3380
30 Jul	0618	0618	0621		SF	N09E14	3386
30 Jul	0643	0644	0646		SF	S10W13	3380
30 Jul	0745	0745	0750		SF	N12W62	3379
30 Jul	0801	0814	0818	M1.8	1F	S16E55	3390
30 Jul	0818	0822	0826	M1.8			3390
30 Jul	0920	0921	0925		SF	N10E13	3386
30 Jul	0928	0935	0935		SF	N11E22	3386
30 Jul	1105	1106	1107		SF	N09W68	3379
30 Jul	1200	1201	1204		SF	S11W21	3380
30 Jul	1220	1220	1231		SF	S11W21	3380
30 Jul	1225	1227	1229		SF	N12E17	3386
30 Jul	1307	1316	1320	C4.0	SF	S11W20	3380
30 Jul	B1347	1437	1459		SF	S10W21	3380
30 Jul	1352	1357	1407		SF	S17E53	3390
30 Jul	1515	1615	1645		SF	S12W22	3380
30 Jul	1534	1535	1540		SF	N14E13	3386
30 Jul	1830	1831	1843		SF	S10W23	3380
30 Jul	2029	2029	2033		SF	S20E51	3390

Flare List

	Time			Optical			
Date	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
30 Jul	2217	2221	2230	C1.7	SF	S09W26	3380

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 3372													
11 Jul	N22E75	276	270	2	Hkx	3	A		3		3				
12 Jul	N24E65	272	650	14	Eki	13	B	3	2		8	1			
13 Jul	N24E53	271	650	15	Eko	16	B	11	1		8	3			
14 Jul	N24E39	272	770	15	Eko	11	BD	3			4	1			
15 Jul	N24E26	272	660	17	Fko	13	BGD	2	2		3	1			
16 Jul	N23E13	272	700	16	Fko	18	BGD	3	2		5	1			
17 Jul	N23E01	270	700	16	Fho	21	BD	2			3				
18 Jul	N23W12	270	560	17	Fho	20	BG	1	1		3				
19 Jul	N24W24	269	500	17	Fho	15	B	1			2				
20 Jul	N23W37	269	380	16	Fko	13	BG	1			1				
21 Jul	N23W51	269	340	15	Eko	9	B				5				
22 Jul	N25W64	269	280	14	Eko	7	B	2	1		6	1	1		
23 Jul	N24W78	270	260	13	Cko	4	B	1				1			
24 Jul	N24W91	270	120	2	Hsx	1	A	2			3				
								32	12	0	54	9	1	0	0

Crossed West Limb.
Absolute heliographic longitude: 270

		Region 3373													
14 Jul	N08E66	245	120	7	Dao	6	B								
15 Jul	N07E52	246	180	9	Dso	6	B	1			5				
16 Jul	N07E39	246	240	10	Dai	20	B	2			1				
17 Jul	N07E25	246	450	11	Ekc	20	BD	6			6				
18 Jul	N07E13	244	500	12	Ekc	18	BG	3			6				
19 Jul	N08W02	246	550	14	Ekc	24	BG								
20 Jul	N08W15	247	520	14	Ekc	21	BG	2			4				
21 Jul	N08W30	248	550	14	Ekc	22	BGD	2			5				
22 Jul	N08W43	248	480	15	Ekc	20	B	1	1		1	1			
23 Jul	N09W57	249	400	15	Ekc	23	B	1			9	1			
24 Jul	N08W71	250	240	11	Eao	13	BG	3			4				
25 Jul	N08W86	251	150	7	Dao	3	B	1							
								22	1	0	41	2	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 246

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 3374												
14 Jul	S09E69	242	30	1	Hsx	1	A								
15 Jul	S08E55	243	30	1	Hsx	1	A								
16 Jul	S08E41	244	20	1	Hsx	1	A	1							
17 Jul	S16E27	244	30	1	Hrx	1	A								
18 Jul	S08E15	243	20	1	Hrx	2	A								
19 Jul	S07E01	244	10	1	Hrx	1	A								
20 Jul	S08W12	244	10	1	Axx	1	A								
21 Jul	S08W26	244	plage												
22 Jul	S08W40	245	plage												
23 Jul	S08W53	245	plage												
24 Jul	S08W67	246	plage												
25 Jul	S08W82	247	plage												
								1	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 244

			Region 3376												
17 Jul	N24E43	228	30	5	Dro	11	B								
18 Jul	N23E29	228	180	7	Dso	15	BG	1			4				
19 Jul	N25E16	229	150	7	Dso	7	B	2			3				
20 Jul	N25E03	229	130	6	Dso	8	B				2				
21 Jul	N25W11	229	100	6	Cso	9	B								
22 Jul	N23W26	231	60	3	Hsx	1	A								
23 Jul	N23W39	231	60	2	Hsx	1	A	1			4		1		
24 Jul	N23W53	232	70	4	Dao	4	B				12				
25 Jul	N23W68	233	120	5	Dai	6	B	2	1		12		1		
26 Jul	N23W82	234	120	6	Dao	7	B	6	3		6	2			
27 Jul	N22W96	235	140	8	Dao	5	B	12	1		7				
								24	5	0	50	2	2	0	0

Crossed West Limb.
Absolute heliographic longitude: 229

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 3377												
17 Jul	S09E71	200	30	2	Dso	1	B	1			2				
18 Jul	S09E60	198	210	6	Dso	2	B								
19 Jul	S09E47	198	240	6	Dso	4	B								
20 Jul	S09E34	198	240	7	Dso	5	B	1			1				
21 Jul	S09E20	198	210	7	Dso	5	B								
22 Jul	S08E07	198	200	7	Dao	4	B				1				
23 Jul	S09W06	198	200	7	Dso	3	B								
24 Jul	S09W21	199	260	8	Dho	5	B								
25 Jul	S09W35	200	260	5	Dho	3	B								
26 Jul	S09W49	201	230	4	Dao	3	B								
27 Jul	S09W62	201	220	3	Dso	2	B				2				
28 Jul	S08W74	200	200	3	Dso	2	B								
29 Jul	S08W87	200	140	3	Dso	2	B								
								2	0	0	6	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 198

			Region 3378												
19 Jul	S26E13	232	30	7	Dro	6	B								
20 Jul	S26W01	233	30	7	Cro	7	B								
21 Jul	S26W14	232	30	8	Cro	8	B								
22 Jul	S26W27	232	40	8	Cso	4	B								
23 Jul	S26W42	234	40	2	Hax	2	A								
24 Jul	S26W56	235	30	2	Hax	1	A								
25 Jul	S28W70	235	40	2	Hax	1	A								
26 Jul	S28W84	236	50	1	Hax	1	A								
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 233

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 3379												
19 Jul	N16E70	175	180	10	Dso	3	B								
20 Jul	N16E63	169	260	16	Fho	6	B	1							
21 Jul	N16E48	170	270	17	Fho	8	B								
22 Jul	N16E35	170	260	17	Fho	7	B								
23 Jul	N16E23	169	280	17	Fho	10	BG	1			1				
24 Jul	N14E05	174	280	10	Dko	5	B	1			3		1		
25 Jul	N14W10	175	260	6	Dko	8	B								
26 Jul	N14W24	176	255	6	Cko	8	B				1				
27 Jul	N14W37	176	200	4	Cso	7	B								
28 Jul	N14W50	176	180	3	Hsx	1	A								
29 Jul	N14W63	176	180	3	Hsx	1	A	1			1				
30 Jul	N14W76	175	180	2	Hsx	1	A				2				
								4	0	0	8	0	1	0	0

Still on Disk.
Absolute heliographic longitude: 174

			Region 3380												
23 Jul	S11E69	123	60	3	Cso	4	B	1			1				
24 Jul	S11E54	125	120	6	Cao	6	B	2			6				
25 Jul	S11E39	126	230	5	Cao	7	B	3	1		2	1			
26 Jul	S11E25	127	110	6	Cso	10	B	3			2	1	1		
27 Jul	S12E12	127	110	5	Cso	7	B	1			2				
28 Jul	S10E01	125	200	8	Cai	14	B	1			5				
29 Jul	S10W12	125	230	9	Dai	16	B	1	1		2	1			
30 Jul	S10W25	124	240	9	Dac	21	B	2			9				
								14	2	0	29	3	1	0	0

Still on Disk.
Absolute heliographic longitude: 125

			Region 3381												
24 Jul	S18W57	236	10	3	Bxo	4	B								
25 Jul	S18W71	236	10	2	Axx	1	A								
26 Jul	S18W85	237	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 236

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 3382												
24 Jul	N19E10	169	10	2	Hsx	1	A								
25 Jul	N18W05	170	20	2	Hax	1	A								
26 Jul	N18W19	171	20	2	Hrx	1	A								
27 Jul	N19W32	171	10	1	Axx	1	A								
28 Jul	N19W46	172	plage												
29 Jul	N19W60	173	plage												
30 Jul	N19W74	173	plage					2			1	1			
								2	0	0	1	1	0	0	0

Still on Disk.
Absolute heliographic longitude: 170

			Region 3383												
24 Jul	N14E20	159	5	1	Axx	1	A								
25 Jul	N14E05	160	10	3	Bxo	3	B								
26 Jul	N14W09	161	10	3	Axx	1	A					1			
27 Jul	N15W22	161	plage												
28 Jul	N15W36	162	plage												
29 Jul	N15W50	163	plage												
30 Jul	N15W64	163	plage									1			
								0	0	0	0	2	0	0	0

Still on Disk.
Absolute heliographic longitude: 160

			Region 3384												
25 Jul	S14E54	111	10	6	Bxo	4	B								
26 Jul	S14E40	112	10	6	Bxo	4	B				1				
27 Jul	S15E29	110	20	7	Bxo	4	B								
28 Jul	S16E17	109	10	3	Axx	3	A								
29 Jul	S16E03	110	plage												
30 Jul	S16W11	110	plage												
								0	0	0	1	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 110

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 3385												
26 Jul	S16W16	168	40	4	Cao	5	B								
27 Jul	S15W35	174	20	1	Hrx	1	A								
28 Jul	S15W50	176	20	1	Hrx	1	A								
29 Jul	S15W64	177	10	1	Axx	1	A								
30 Jul	S15W78	177	10	1	Axx	1	A								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 168

			Region 3386												
26 Jul	N11E60	92	110	4	Dao	7	B				2				
27 Jul	N12E47	92	180	7	Dsi	11	B				4				
28 Jul	N12E34	92	360	8	Dki	18	B	1			4				
29 Jul	N12E20	93	300	9	Dki	12	B	1			4				
30 Jul	N12E07	92	320	10	Dki	12	B				7				
								2	0	0	21	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 92

			Region 3387												
27 Jul	N20E66	73	60	3	Hax	2	A	2			1				
28 Jul	N20E54	72	120	3	Cao	4	B	1			1				
29 Jul	N20E42	71	120	3	Cao	5	B				1				
30 Jul	N21E29	70	120	3	Cso	5	B				1				
								3	0	0	4	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 70

			Region 3388												
27 Jul	S23E62	77	30	4	Cso	3	B		1		1				
28 Jul	S23E49	77	60	8	Cso	3	B								
29 Jul	S23E36	77	60	8	Cso	5	B								
30 Jul	S23E21	78	30	3	Hsx	2	A								
								0	1	0	1	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 78

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 3389												
27 Jul	S09E72	67	20	2	Hsx	1	A								
28 Jul	S09E60	66	40	2	Hsx	1	A								
29 Jul	S09E47	66	40	2	Hsx	1	A	1			5				
30 Jul	S11E35	64	40	4	Hsx	3	A								
								1	0	0	5	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 64

			Region 3390												
28 Jul	S18E70	56	20	2	Hrx	1	A	3			2				
29 Jul	S19E58	55	30	3	Cro	3	B	1			3				
30 Jul	S19E46	53	20	4	Cro	3	B		2		3	1			
								4	2	0	8	1	0	0	0

Still on Disk.
Absolute heliographic longitude: 53

			Region 3391												
29 Jul	N25E75	38	30	1	Hsx	1	A								
30 Jul	N25E63	36	50	2	Hsx	1	A								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 36

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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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