Space Weather Highlights **SWPC PRF 2542**
13 May - 19 May 2024 **20 May 2024**

Solar activity ranged from low to high levels during the period. High levels were reached 13-15 May; moderate levels 16-17 May; and low levels on 18 May. Levels returned to moderate by 19 May. There were at least 15 M-class flares and 5 X-class flares during the reporting week - sub-peaks and re-enhancements made firm correlations difficult. Region 3664 (S17, L=347, Fkc/BGD on 11 May) was the primary X-class flare producer and erupted with the largest solar flare thus far in solar cycle 25, an X8.7 at 14/1651 UTC as it reached the western limb. Nineteen sunspot groups littered the solar disk, with Region 3664 rotating beyond the limb 14 May. Even though Region 3664 rotated beyond the limb, it continued producing M and X-class flares on 15 May, to include an X3.4 flare at 15/0818 UTC. Another active region just beyond the east limb was the source of an X2.9 flare on 15/1438 UTC. This region rotated into view on 16 May and was designated as Region 3685 (S13 L=152, Ehi/BG on 16 May.

Radio activity was aplenty during the week - main highlights include Region 3664 eruption of solar radio bursts on 14 May that included Castelli U signature bursts twice, once with an X1.7 flare at 14/0209 UTC and again with the X8.7 flare. The first radio burst was the more massive, with a peak frequency flux centered on 245 MHz of 63,000 sfu. Tenflares were also observed, as well as Type II and IV radio sweeps with each of these events. Radio activity of note continued on 15 May with early activity still from well beyond the limb Region 3664, however, later on 15 May, the source region shifted to the east limb, with Type II and IV sweeps associated with the X2.9 flare from soon to be assigned Region 3685.

Many CMEs were noted through the week, most were sourced to Region 3664 and were determined to be misses ahead of Earth. However, even though an asymmetric halo CME on 13 May from Region 3664 was analyzed and modeled as mainly a miss, possible shock arrival and glancing or near-proximity influences were possible on 14-15 May due to its fast speed. Additionally, on 14 May, a filament eruption centered over the far northeastern solar disk was modeled and a glancing blow was suggested by 17 May. Yet another filament eruption occurred from a source location in the northwest quadrant on 16 May. This associated CME analysis and model results suggested a glancing blow possible on 20 May.

A proton event was observed at geosynchronous orbit. The event began on 13 May as the greater than 10 MeV levels reached 10 pfu at 13/1400 UTC and breached 100 pfu by 14/0335 UTC. These events were most likely associated with flare and CME activity from region 3664. Peak flux reached was 121 pfu on 14/0505 UTC and decreased below 10 pfu at 16/1455 UTC.

The greater than 2 MeV electron flux reached 1,000 pfu on 15/1525 UTC with a peak flux of 1,500 pfu at 15/1840 UTC and returned to normal levels on 16 May.

Geomagnetic field activity ranged from quiet to G2 (Moderate) storm levels. 13 May began with G2 levels in response to continued CME influences as solar wind speeds were still highly elevated and near 850 km/s with total IMF strength between 5-10 nT and favorable periods of

southward Bz component. Solar wind speed slowly declined and eventually reached near 450 km/s on 15 May, while the total IMF strength weakened and returned to more ambient levels. This led to a period of mainly quiet to unsettled levels 14-15 May. Another enhancement in the solar wind field occurred on 16 May due to CME effects (likely from one of Region's 3664 CMEs of 13 May) as total field intensified to 17 nT, while the Bz component shifted southward - this led to G1 (Minor) to G2 storm levels. Yet another CME arrival disturbed and enhanced the IMF again, with a favorable southward connection on 17 May that led to G1-G2 storm levels again. The origin of this CME is somewhat in doubt, but the most likely candidate is one of the CMEs from Region 3664 on 14 May. The solar wind field gradually returned to a less disturbed and more ambient, background state on 18 May with quiet to active levels noted and quiet to unsettled conditions on 19 May.

Space Weather Outlook
20 May - 15 June 2024

Solar activity is likely to be moderate (R1-R2; Minor-Moderate), with a slight chance for high levels (R3; Strong) through 21 May as Region 3685 (S13 L=155, Ehi/BG as of 18 May) continues to produce low-level M-class flares (R1). The region will take some time to rotate to the western limb - rotating beyond the limb by 30 May. Meanwhile eight other regions will rotate beyond the limb beginning 21 May through 26 May. A good number of former spot regions are timed to rotate back into Earth-view through much of the outlook period - the most anticipated is former Region 3664 (S17, L=347, Fkc/BGD on 11 May) that is expected to return by 26-27 May. The litany of returning regions, to include 3664, could lead to increasing solar activity levels back to moderate to high levels as early as 26 May.

There will be a slight chance of S1 (Minor) solar radiation storms through 30 May until Region 3685 rotates beyond the western limb. If Region 3664 survives to its return to the visible solar disk 26-27 May, there is a possibility of an increase to a chance of an S1 storm by 7-15 June.

The greater than 2 MeV electron flux is likely to be normal to moderate with a chance for high levels 20 May - 15 Jun.

Geomagnetic activity is anticipated to be at quiet to active conditions, with likely G1 (Minor) storm levels 20 May due to CME effects. Conditions are expected to wane on 21 May and primarily quiet to active levels are expected. A period of quiet conditions follows 22-23 May, with CH HSS effects leading back to active levels 24-25 May. The remainder of the period is anticipated to be primarily a mix of quiet to active conditions in varying response to occasional recurrent CH HSS effects.

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
13 May	215	207	1800	C3.9	7	7	0	13	0	0	0	0
14 May	220	185	860	C4.8	2	1	3	3	0	1	0	0
15 May	216	173	810	C3.4	5	2	1	6	0	0	0	0
16 May	207	208	860	C2.2	7	1	0	4	0	0	0	0
17 May	204	168	1020	C1.8	8	1	0	17	1	1	0	0
18 May	194	166	1180	C1.5	4	0	0	6	2	0	0	0
19 May	201	154	990	C1.6	4	3	0	2	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
13 May	1.6e+07	1.6e+06	2.4e+07
14 May	2.8e+07	5.7e+06	5.2e+07
15 May	2.8e+07	2.2e+06	6.3e+07
16 May	3.1e+07	1.0e+06	7.3e+06
17 May	1.4e+07	3.2e+05	2.9e+06
18 May	1.5e+07	6.6e+04	2.9e+06
19 May	7.0e+06	4.4e+04	9.7e+06

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
13 May	24	5-5-4-3-3-3-2-3	35	5-6-5-5-3-3-3-2	30	6-6-4-3-3-3-3-3
14 May	8	2-2-1-2-3-2-2-2	7	1-2-1-3-3-1-2-0	6	2-2-2-2-2-2-2-1
15 May	10	1-2-3-2-3-2-3-2	10	2-2-3-3-3-2-2-2	10	2-2-3-2-2-2-3-3
16 May	19	2-3-5-4-4-3-2-2	31	3-4-6-6-3-3-2-2	27	3-3-6-5-5-3-2-1
17 May	16	2-2-2-2-3-4-4-4	33	2-3-2-1-4-6-6-5	29	2-3-2-2-3-5-6-5
18 May	14	3-3-2-4-4-2-2-1	28	3-4-5-5-0-0-0-1	12	4-3-2-3-3-2-1-1
19 May	10	1-3-0-3-3-2-3-2	13	2-2-2-4-4-3-2-1	5	1-3-2-2-3-2-2-2

Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
13 May 0120	ALERT: Geomagnetic K = 5	
13 May 0133	SUMMARY: Proton Event 10MeV Integral Flux >= 10pfu	10/1335 - 12/1235
13 May 0259	ALERT: Geomagnetic K = 6	
13 May 0328	ALERT: Geomagnetic K = 5	
13 May 0402	ALERT: Geomagnetic K = 6	
13 May 0942	ALERT: X-ray Flux exceeded M5	13/0939
13 May 0949	ALERT: Type II Radio Emission	13/0906
13 May 0950	ALERT: Type IV Radio Emission	13/0916
13 May 1025	SUMMARY: 10cm Radio Burst	13/0917 - 1009
13 May 1112	SUMMARY: X-ray Event exceeded M5	13/0848 - 1057
13 May 1328	WARNING: Proton 10MeV Integral Flux > 10pfu	13/1328 - 2359
13 May 1408	ALERT: Proton Event 10MeV Integral Flux >= 10pfu	13/1407
13 May 1455	EXTENDED WARNING: Geomagnetic K = 5	10/1700 - 13/2100
13 May 2103	WATCH: Geomagnetic Storm Category G2 predicted	
13 May 2127	EXTENDED WARNING: Proton 10MeV Integral Flux > 10pfu	13/1328 - 14/2359
13 May 2356	EXTENDED WARNING: Geomagnetic K = 4	10/1700 - 14/2359
14 May 0210	ALERT: X-ray Flux exceeded M5	14/0206
14 May 0220	SUMMARY: 10cm Radio Burst	14/0205 - 0206
14 May 0236	SUMMARY: X-ray Event exceeded X1	14/0203 - 0219
14 May 0246	ALERT: Type II Radio Emission	14/0207
14 May 0300	ALERT: Type IV Radio Emission	14/0220
14 May 0417	ALERT: Proton Event 10MeV Integral Flux >= 100pfu	14/0335
14 May 1252	ALERT: X-ray Flux exceeded M5	14/1249
14 May 1312	SUMMARY: X-ray Event exceeded X1	14/1240 - 1305
14 May 1314	ALERT: Type II Radio Emission	14/1245
14 May 1650	ALERT: X-ray Flux exceeded M5	14/1647
14 May 1709	ALERT: Type IV Radio Emission	14/1647
14 May 1713	SUMMARY: 10cm Radio Burst	14/1646 - 1653

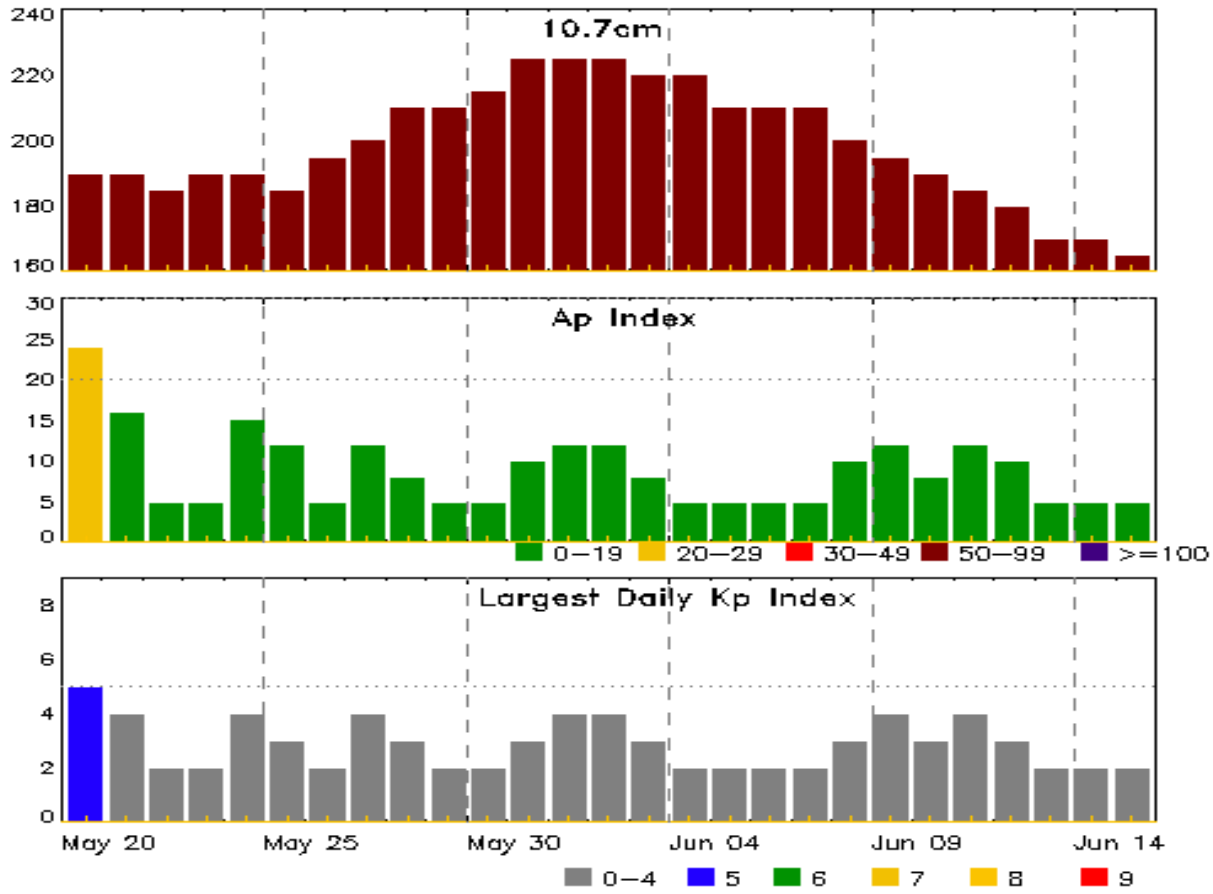
Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
14 May 1714	ALERT: Type II Radio Emission	14/1653
14 May 1716	SUMMARY: X-ray Event exceeded X1	14/1646 - 1702
14 May 1843	ALERT: Type II Radio Emission	14/1730
14 May 2016	EXTENDED WARNING: Proton 10MeV Integral Flux > 10pfu	13/1328 - 15/2359
15 May 0832	ALERT: X-ray Flux exceeded M5	15/0830
15 May 0846	SUMMARY: 10cm Radio Burst	15/0830 - 0835
15 May 0903	ALERT: Type IV Radio Emission	15/0827
15 May 0905	SUMMARY: X-ray Event exceeded X1	15/0818 - 0852
15 May 1149	SUMMARY: 10cm Radio Burst	15/1039 - 1048
15 May 1329	SUMMARY: Proton Event 10MeV Integral Flux >= 100pfu	14/0315 - 0650
15 May 1427	ALERT: X-ray Flux exceeded M5	15/1424
15 May 1508	ALERT: Type II Radio Emission	15/1427
15 May 1509	ALERT: Type IV Radio Emission	15/1427
15 May 1513	SUMMARY: X-ray Event exceeded X1	15/1420 - 1451
15 May 1533	ALERT: Electron 2MeV Integral Flux >= 1000pfu	15/1525
15 May 2053	ALERT: Type II Radio Emission	15/2037
15 May 2146	EXTENDED WARNING: Proton 10MeV Integral Flux > 10pfu	13/1328 - 16/1500
16 May 0457	WARNING: Geomagnetic K = 4	16/0456 - 1200
16 May 0526	WARNING: Geomagnetic Sudden Impulse expected	16/0545 - 0615
16 May 0628	ALERT: Geomagnetic K = 4	
16 May 0633	WARNING: Geomagnetic K = 5	16/0632 - 1800
16 May 0638	EXTENDED WARNING: Geomagnetic K = 4	16/0456 - 1800
16 May 0643	SUMMARY: Geomagnetic Sudden Impulse	16/0620
16 May 0739	ALERT: Geomagnetic K = 5	
16 May 0822	WARNING: Geomagnetic K = 6	16/0821 - 1500
16 May 0838	ALERT: Geomagnetic K = 6	
16 May 1150	ALERT: Geomagnetic K = 5	
16 May 1422	EXTENDED WARNING: Proton 10MeV Integral Flux >	13/1328 - 16/2359

Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
-	10pfu	-
16 May 1508	ALERT: Geomagnetic K = 5	
16 May 1737	EXTENDED WARNING: Geomagnetic K = 4	16/0456 - 17/0600
17 May 1137	SUMMARY: Proton Event 10MeV Integral Flux >= 10pfu	13/1400 - 16/1455
17 May 1257	WARNING: Geomagnetic Sudden Impulse expected	17/1315 - 1345
17 May 1300	WARNING: Geomagnetic K = 4	17/1300 - 2100
17 May 1304	WARNING: Geomagnetic K = 5	17/1305 - 1800
17 May 1342	SUMMARY: Geomagnetic Sudden Impulse	17/1325
17 May 1645	ALERT: Geomagnetic K = 4	
17 May 1705	ALERT: Geomagnetic K = 5	
17 May 1749	EXTENDED WARNING: Geomagnetic K = 4	17/1300 - 18/0300
17 May 1749	EXTENDED WARNING: Geomagnetic K = 5	17/1305 - 2359
17 May 1834	ALERT: Geomagnetic K = 5	
17 May 1902	WARNING: Geomagnetic K = 6	17/1901 - 2359
17 May 1929	ALERT: Geomagnetic K = 6	
17 May 2105	ALERT: X-ray Flux exceeded M5	17/2102
17 May 2133	SUMMARY: X-ray Event exceeded M5	17/2033 - 2126
17 May 2139	ALERT: Type II Radio Emission	17/2103
17 May 2143	ALERT: Type IV Radio Emission	17/2111
17 May 2156	EXTENDED WARNING: Geomagnetic K = 5	17/1305 - 18/0600
17 May 2156	EXTENDED WARNING: Geomagnetic K = 4	17/1300 - 18/1200
17 May 2235	ALERT: Geomagnetic K = 5	
17 May 2301	EXTENDED WARNING: Geomagnetic K = 6	17/1901 - 18/0600
18 May 0556	EXTENDED WARNING: Geomagnetic K = 5	17/1305 - 18/1200
18 May 1952	WATCH: Geomagnetic Storm Category G1 predicted	
19 May 1320	WARNING: Geomagnetic K = 4	19/1320 - 2359

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
20 May	190	24	5	03 Jun	220	8	3
21	190	16	4	04	220	5	2
22	185	5	2	05	210	5	2
23	190	5	2	06	210	5	2
24	190	15	4	07	210	5	2
25	185	12	3	08	200	10	3
26	195	5	2	09	195	12	4
27	200	12	4	10	190	8	3
28	210	8	3	11	185	12	4
29	210	5	2	12	180	10	3
30	215	5	2	13	170	5	2
31	225	10	3	14	170	5	2
01 Jun	225	12	4	15	165	5	2
02	225	12	4				

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
13 May	0123	0133	0138	M1.2	0.009	SF	S20W72	3664				
13 May	0806	0820	0823	M1.2	0.005	SF	S19W80	3664				
13 May	0823	0829	0833	M1.4	0.006			3664				
13 May	0848	0944	1057	M6.6	0.330	SF	S20W81	3664	2800	1200	2	2
13 May	1256	1311	1323	M3.7	0.046			3664	230			
13 May	1732	1747	1823	M1.0	0.029	SF	S10E43	3674				
13 May	2148	2159	2207	M1.5	0.012			3664				
14 May	0203	0209	0219	X1.7	0.110			3664	35000	250	2	
14 May	1240	1255	1305	X1.2	0.100			3664	420	160	2	
14 May	1646	1651	1702	X8.7	0.560			3664			2	1
14 May	1725	1738	1818	M4.4	0.120	2N	N19E72	3682	6500	150	2	
15 May	1356	1406	1410	M2.9	0.025			3685				
15 May	1410	1417	1420	M3.2	0.030			3685				
15 May	1420	1438	1451	X2.9	0.360			3685		110	1	1
16 May	0750	0804	0810	M1.0	0.008			3685	100			
17 May	2033	2108	2126	M7.2	0.100	2B	S12E62	3685	170		2	2
19 May	1337	1344	1348	M1.9	0.005	1N	S10E36	3685	1800			
19 May	1747	1756	1800	M2.5	0.007	1B	S10E34	3685	3600			
19 May	2153	2159	2203	M1.6	0.006	1N	S09E34	3685				

Flare List

	Time			Optical			
Date	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
13 May	0025	0032	0036	C6.4			3664
13 May	0106	0109	0114	C9.4			3664
13 May	0123	0133	0138	M1.2	SF	S20W72	3664
13 May	0241	0246	0255	C5.8			3664
13 May	0311	0312	0313		SF	S20W72	3664
13 May	0400	0403	0407	C5.0			3664
13 May	0544	0547	0553	C5.3			3664
13 May	0553	0557	0601	C5.3			3664
13 May	0721	0735	0745	C6.4	SF	S20E06	3676
13 May	0806	0820	0823	M1.2	SF	S19W80	3664
13 May	0823	0829	0833	M1.4			3664
13 May	0848	0944	1057	M6.6	SF	S20W81	3664

Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
13 May	1037	1037	1040		SF	S21E05	3676
13 May	1037	U1050	A1107		SF	S07E45	3674
13 May	1044	U1044	1055		SF	S08E40	3673
13 May	1256	1311	1323	M3.7			3664
13 May	1347	1405	1424		SF	S20E03	3676
13 May	1525	1525	1529		SF	S18W79	3664
13 May	1526	1527	1529		SF	S19W84	3664
13 May	1732	1747	1823	M1.0	SF	S10E43	3674
13 May	1833	1833	1836		SF	N18E12	3672
13 May	2148	2159	2207	M1.5			3664
14 May	0203	0209	0219	X1.7			3664
14 May	1240	1255	1305	X1.2			3664
14 May	1516	1528	1540	C9.6			3664
14 May	1646	1651	1702	X8.7			3664
14 May	1725	1738	1818	M4.4	2N	N19E72	3682
14 May	1953	1956	2019		SF	S11E52	3679
14 May	2126	2127	2140		SF	S11E47	3679
14 May	2302	2314	2339	C7.2	SF	S12E48	3679
15 May	0156	0156	0200		SF	N22W36	3671
15 May	0417	0425	0433	C5.5	SF	S10E44	3679
15 May	0443	0456	0507		SF	N22W38	3671
15 May	0620	0625	0629	C5.7			
15 May	0711	0720	0722	C5.8			3670
15 May	0722	0742	0813	C9.9			3670
15 May	0813	0816	0820	C9.9			3664
15 May	1356	1406	1410	M2.9			3685
15 May	1410	1417	1420	M3.2			3685
15 May	1420	1438	1451	X2.9			3685
15 May	1835	1836	1839		SF	S22W03	3683
15 May	2037	2038	2040		SF	S19W29	3676
15 May	2329	2332	2350		SF	S08E34	3679
16 May	0024	0024	0027		SF	N18E36	3680
16 May	0458	0506	0510	C4.0			3672
16 May	0605	0615	0621	C4.3			3679
16 May	0750	0804	0810	M1.0			3685
16 May	1242	1242	1246		SF	S12E06	3674
16 May	1248	1252	1259	C3.3	SF	S12E05	3674
16 May	1441	1451	1504	C3.6			3679

Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
16 May	1630	1640	1651	C4.5	SF	S06E20	3679
16 May	1827	1837	1853	C3.8			3679
16 May	2027	2034	2047	C4.8			3685
17 May	0133	0146	0153	C8.7	1N	S07E12	3679
17 May	0503	0508	0512	C3.1			3679
17 May	0646	0647	0657		SF	S08E15	3679
17 May	0705	0706	0714		SF	S10W07	3674
17 May	0715	0721	0735	C2.5			3685
17 May	0807	0807	0810		SF	N18E34	3682
17 May	0834	0842	0846		SF	S09E14	3679
17 May	0842	0848	0853		SF	N19E35	3682
17 May	1045	1047	1053		SF	S23W24	3683
17 May	1204	1221	1237	C3.7			
17 May	1237	1247	1252	C4.8	SF	N22W67	3671
17 May	1300	1301	1321		SF	S07E18	3679
17 May	1320	1327	1334	C3.1	SF	S08E12	3679
17 May	1347	1347	1353		SF	S09W09	3674
17 May	1351	1354	1413		SF	S23W26	3683
17 May	1602	1603	1607		SF	S23W27	3683
17 May	1607	1614	1619		SF	S23W27	3683
17 May	1951	1956	2001	C2.8			3686
17 May	1953	1954	2006		SF	S24W29	3683
17 May	2009	2015	2019	C2.7			3685
17 May	2010	2014	2030		SF	N15E24	3682
17 May	2014	2014	2017		SF	S10E58	3685
17 May	2033	2108	2126	M7.2	2B	S12E62	3685
17 May	2145	2146	2149		SF	S09E02	3679
18 May	0321	0333	0346	C3.8	SF	S11E04	3679
18 May	0413	0419	0438		SF	S10E03	3679
18 May	0504	0510	0534		SF	N16E20	3682
18 May	0532	0538	0544	C7.2	1N	S09E03	3679
18 May	1913	1924	1934		SF	S14W24	3674
18 May	1927	1928	1932		SF	N15E17	3682
18 May	1933	1938	1942	C4.1	1N	S15E46	3685
18 May	2010	2016	2021	C3.9	SF	S15E46	3685
19 May	0850	0854	0909	C2.5			3672
19 May	0859	0859	0903		SF	S21W55	3676
19 May	0952	1004	1023	C2.4			

Flare List

	Time			Optical			
Date	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
19 May	1231	1235	1239	C2.4	SF	S14E39	3685
19 May	1312	1319	1323	C2.3			
19 May	1337	1344	1348	M1.9	1N	S10E36	3685
19 May	1747	1756	1800	M2.5	1B	S10E34	3685
19 May	2153	2159	2203	M1.6	1N	S09E34	3685

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 3664												
01 May	S18E64	355	40	4	Dao	5	B								
02 May	S18E52	354	120	8	Dai	13	B	6	1		10				
03 May	S18E41	352	240	11	Eai	16	BG	3	1		9	1			
04 May	S19E28	352	310	11	Ekc	20	BD	1			7	1			
05 May	S19E14	352	580	11	Ekc	20	BD	3	3		11	1			
06 May	S19E02	350	560	13	Ekc	22	BGD	2			6				
07 May	S20W09	349	630	16	Fkc	37	BGD	1	4		15	1	1		
08 May	S19W24	350	1200	20	Fkc	62	BGD	2	6	3	4	1	2	2	
09 May	S19W34	348	1090	20	Fkc	81	BGD		9	2	10	6	1	1	
10 May	S17W48	347	2400	20	Fkc	58	BGD	3	10	1	9	2	3		
11 May	S18W62	349	2100	23	Fkc	43	BGD	2	5	2	8	1	4		
12 May	S19W75	349	1920	18	Fkc	28	BGD	4	7	1	14	1			
13 May	S19W87	348	1170	24	Fkc	15	BGD	6	6		6				
								33	52	9	109	15	11	3	0

Crossed West Limb.
Absolute heliographic longitude: 350

			Region 3665												
02 May	S05E71	335	10	1	Axx	1	A								
03 May	S05E57	336	10	1	Hrx	1	A								
04 May	S05E44	336	10	1	Hrx	1	A								
05 May	S05E30	336	10	1	Axx	1	A								
06 May	S05E15	338	plage												
07 May	S05W00	340	plage												
08 May	S05W15	342	plage												
09 May	S05W30	344	plage												
10 May	S05W45	345	plage												
11 May	S05W60	347	plage												
12 May	S05W75	349	plage												
13 May	S05W90	351	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 340

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 3667												
04 May	N28E73	307	80	3	Hsx	1	A								
05 May	N27E59	307	130	3	Hsx	1	A								
06 May	N27E44	308	130	3	Hsx	1	A								
07 May	N26E32	307	150	3	Hsx	1	A								
08 May	N26E20	306	150	3	Hsx	1	A								
09 May	N27E07	307	130	2	Hsx	1	A								
10 May	N28W05	304	140	3	Hsx	1	A								
11 May	N27W18	305	140	3	Hsx	1	A								
12 May	N27W32	306	90	3	Hax	2	A								
13 May	N27W46	307	80	3	Hsx	4	A								
14 May	N27W60	308	80	3	Hsx	4	A								
15 May	N27W74	308	120	2	Hsx	1	A								
16 May	N28W88	309	50	3	Hsx	1	A								
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 304

			Region 3668												
05 May	S17E29	337	40	4	Cao	6	B								
06 May	S17E13	339	50	7	Dao	11	B				1				
07 May	S16E01	338	30	6	Cso	6	B								
08 May	S15W13	339	30	4	Cao	5	B								
09 May	S15W27	341	plage												
10 May	S15W41	341	plage												
11 May	S15W55	342	plage												
12 May	S15W69	343	plage												
13 May	S15W83	344	plage												
								0	0	0	1	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 338

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 3669													
05 May	S08E43	323	10	1	Hrx	1	A								
06 May	S08E29	323	10		Axx	1	A								
07 May	S09E15	324	10	1	Axx	1	A								
08 May	S09E01	326	plage												
09 May	S09W13	327	plage												
10 May	S09W27	327	plage												
11 May	S09W41	328	plage												
12 May	S09W55	329	plage												
13 May	S09W69	330	plage												
14 May	S09W83	331	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 326

		Region 3670													
06 May	N17E66	286	20		Hax	1	A								
07 May	N16E55	284	40	2	Hsx	1	A								
08 May	N16E43	282	40	5	Cso	2	B								
09 May	N16E31	283	40	3	Hsx	1	A								
10 May	N17E14	285	50	3	Hax	6	A				1				
11 May	N18E02	285	30	3	Cso	4	B				1				
12 May	N19W09	283	20	3	Cso	2	B								
13 May	N19W23	284	20	3	Dao	5	BG								
14 May	N19W37	285	20	3	Dao	5	BG								
15 May	N20W51	285	10	6	Dao	7	BG	2							
16 May	N21W62	283	20	5	Dao	2	BG								
17 May	N21W76	284	10	5	Bxo	2	B								
								2	0	0	2	0	0	0	0

Died on Disk.
Absolute heliographic longitude: 285

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 3671												
09 May	N20E33	281	40	50	Hax	1	A								
10 May	N19E17	281	30	40	Hsx	1	A								
11 May	N24E04	283	30	8	Cro	7	B								
12 May	N24W10	284	30	5	Dro	8	B				1				
13 May	N24W24	285	20	5	Dro	6	B								
14 May	N23W38	286	20	5	Cro	6	B								
15 May	N23W52	286	30	5	Cro	7	B				2				
16 May	N21W64	285	10	5	Bxo	5	B								
17 May	N21W78	286	10	5	Bxo	2	B	1			1				
								1	0	0	4	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 283

			Region 3672												
09 May	N18E58	256	30	4	Cro	5	B								
10 May	N18E45	254	140	8	Cai	9	B								
11 May	N18E30	257	90	5	Dao	4	B	1			2				
12 May	N18E17	257	80	6	Cso	4	B								
13 May	N19E03	258	60	6	Cso	4	B				1				
14 May	N19W11	259	60	6	Cso	4	B								
15 May	N19W23	257	40	1	Hax	1	A								
16 May	N18W37	258	50	6	Cao	5	B	1							
17 May	N18W51	259	40	2	Hsx	1	A								
18 May	N20W59	256	20	2	Hsx	21	A								
19 May	N19W73	254	10	1	Axx	1	A	1							
								3	0	0	3	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 258

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 3673												
11 May	S09E54	233	30	2	Hsx	1	A								
12 May	S10E41	233	30	2	Hsx	1	A	1							
13 May	S11E27	234	10	1	Hsx	1	A				1				
14 May	S09E13	235	10	1	Hrx	1	A								
15 May	S09W01	235	20	1	Hrx	1	A								
16 May	S08W14	235	20	1	Hax	1	A								
17 May	S08W28	236	20	1	Hsx	1	A								
18 May	S08W39	234	10	1	Hrx	1	A								
19 May	S08W53	234	plage												
								1	0	0	1	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 235

			Region 3674												
11 May	S14E64	223	80	5	Cso	3	B								
12 May	S14E53	221	110	6	Cso	3	B								
13 May	S11E39	222	90	5	Cao	6	B		1		2				
14 May	S12E25	223	140	7	Cso	11	B								
15 May	S13E11	223	120	7	Cso	10	B								
16 May	S12W03	222	130	7	Cso	18	B	1			2				
17 May	S12W17	222	120	7	Cso	8	B				2				
18 May	S12W27	221	180	6	Csi	13	B				1				
19 May	S13W40	221	120	5	Csi	7	B								
								1	1	0	7	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 222

			Region 3675												
11 May	S15W29	316	30	3	Cro	5	B								
12 May	S14W43	317	60	5	Dsi	5	B				4				
13 May	S05W57	318	140	6	Dsi	13	BG								
14 May	S15W71	319	30	4	Dro	8	BG								
15 May	S14W86	320	20	3	Dro	2	B								
								0	0	0	4	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 316

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 3676												
12 May	S22E09	265	80	6	Dai	10	BG		1		4				
13 May	S21W05	266	100	8	Dsi	12	BGD	1			3				
14 May	S22W19	267	120	8	Cso	9	BG								
15 May	S22W34	268	90	7	Cso	4	BG				1				
16 May	S20W47	268	90	2	Cso	5	BG								
17 May	S20W61	269	100	3	Hax	1	A								
18 May	S20W72	267	80	2	Hax	1	A								
19 May	S21W83	264	10	1	Axx	1	A				1				
								1	1	0	9	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 266

			Region 3677												
12 May	S02W38	312	10	1	Axx	1	A								
13 May	S02W53	314	plage												
14 May	S02W67	315	plage												
15 May	S02W82	316	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 312

			Region 3678												
12 May	N08E65	209	10	1	Hsx	1	A								
13 May	N09E51	210	10	1	Hrx	1	A								
14 May	N09E37	211	10	1	Axx	3	A								
15 May	N09E22	212	plage												
16 May	N09E08	213	plage												
17 May	N09W06	214	plage												
18 May	N09W20	215	plage												
19 May	N09W34	215	plage												
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 214

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 3679												
12 May	S09E73	201	20	1	Hsx	1	A		1		1				
13 May	S08E59	202	60	7	Dao	4	BG								
14 May	S09E46	202	230	6	Dso	6	BG	1			3				
15 May	S09E32	202	240	9	Dso	7	BGD	1			2				
16 May	S10E18	203	230	11	Eso	13	BG	4			1				
17 May	S10E04	204	230	11	Eso	13	BG	3			5	1			
18 May	S08W07	202	260	11	Eho	13	BG	2			2	1			
19 May	S08W18	199	170	12	Esi	11	BG								
								11	1	0	14	2	0	0	0

Still on Disk.
Absolute heliographic longitude: 204

			Region 3680												
13 May	N17E65	196	30	5	Dao	3	B								
14 May	N18E51	197	10	1	Dao	3	B								
15 May	N17E36	198	10	1	Axx	2	A								
16 May	N18E22	199	10	1	Axx	2	A				1				
17 May	N18E08	200	10	1	Axx	2	A								
18 May	N18W06	201	plage												
19 May	N18W20	201	plage												
								0	0	0	1	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 201

			Region 3681												
13 May	S07W20	281	10	2	Axx	3	A								
14 May	S07W35	283	plage												
15 May	S07W50	284	plage												
16 May	S07W64	285	plage												
17 May	S07W79	287	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 281

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 3682												
14 May	N15E59	189	130	4	Dao	5	BG		1				1		
15 May	N13E44	190	80	7	Cso	6	BG								
16 May	N16E30	191	30	5	Cro	7	BG								
17 May	N16E16	192	10	1	Axx	1	A				3				
18 May	N15E02	193	10	1	Axx	1	A				2				
19 May	N15W12	193	plage												
								0	1	0	5	0	1	0	0

Still on Disk.
Absolute heliographic longitude: 193

			Region 3683												
15 May	S23W08	242	30	5	Dro	5	B				1				
16 May	S23W21	242	30	7	Dro	8	B								
17 May	S23W35	242	60	8	Dso	8	B				5				
18 May	S23W46	241	120	7	Dsi	14	B								
19 May	S24W58	239	110	8	Dai	17	B								
								0	0	0	6	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 242

			Region 3684												
16 May	S06E51	170	10	2	Bxo	4	B								
17 May	S06E36	172	plage												
18 May	S06E21	174	plage												
19 May	S06E10	171	10	3	Bxo	3	B								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 171

			Region 3685												
15 May	S13E78	157	plage						2	1					
16 May	S13E64	157	180	7	Dso	7	BG	1	1						
17 May	S13E50	158	220	7	Dso	7	BG	2	1		1		1		
18 May	S13E42	155	380	12	Ehi	10	BG	2			1	1			
19 May	S13E29	152	420	13	Ehi	17	BG	1	3		1	3			
								6	7	1	3	4	1	0	0

Still on Disk.
Absolute heliographic longitude: 152

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 3686												
17 May	S07E66	140	190	2	Hax	2	A	1							
18 May	S06E54	141	120	2	Hax	2	A								
19 May	S06E39	142	130	3	Hax	2	A								
								1	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 142

			Region 3687												
19 May	N15E01	180	10	3	Bxo	5	B								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 180

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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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