Space Weather Highlights
15 May - 21 May 2023

SWPC PRF 2490
22 May 2023

Solar activity varied from low to high levels. Region 3310 (S20, L=284, class/area=Cko/320 on 19 May) produced the strongest flare of the period, an M9.6 (R2-Moderate) flare at 16/1643 UTC before it fully rotated on to the visible disk from the SE limb. Of the 23 M-class flares (R1-R2 Minor-Moderate) recorded during the period, Region 3311 (N18, L=271, class/area=Ekc/420) was responsible for 21 of them, the largest of which was an M8.9 (R2) flare at 20/1235 UTC. Although the region was the most magnetically complex of the 18 numbered active regions observed on the visible disk during the reporting period, it was in a decaying trend by 21 May.

Other activity included Type II radio sweeps at 16/1731 UTC and 17/1522 UTC, two Tenflares on 20 May, and a filament eruption along side a CME-producing C4.3/Sf flare at 17/1530 UTC from Region 3309 (S18, L=052, class/area=Cro/020). The subsequent CME signatures in coronagraph were analyzed and modeled with anticipated effects at Earth suggested late on 21 May.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was mostly at background to moderate levels over the reporting period.

Geomagnetic field activity ranged from quiet to G2 (Moderate) geomagnetic storm levels. Quiet to unsettled levels were observed on 15-16 May and decreased to only quiet levels until of late on 19 May. Active levels were observed during the last synoptic period of 19 May and increased to G2 (Moderate) geomagnetic storm levels early on 20 May. Total magnetic field strength increased to a peak of 21 nT and Bz reached as far south as -17 nT during what appeared to be a CIR, with possible embedded transient, ahead of a negative polarity CH HSS. Bz was persistently southward during the first half 20 May but rotated northward just before midday. With the northward rotation, geomagnetic activity decreased to unsettled to active conditions. On 21 May, another enhancement in the solar wind from an expected CME that left the Sun on 17 May was observed which again resulted in G2 (Moderate) geomagnetic storm levels through the end of the reporting period. With the second enhancement, solar wind speeds increased to between 500-600 km/s and total magnetic field strength briefly reached 13 nT, while the Bz component was observed as far south as -10 nt.

Space Weather Outlook
22 May - 17 June 2023

Solar activity is expected to be at moderate to high, with a chance for very high, though 30 May, until Region 3311 rotates around the western limb or decays sufficiently to lower its flare potential. Low to moderate solar activity is expected for the remainder of the outlook period.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be high levels from 22 May - 02 Jun in response to recently elevated geomagnetic activity followed by enhanced solar wind from coronal hole influence over the next 6 days. Flux levels are likely to return to moderate levels from 03-17 Jun.

Geomagnetic field activity is expected to range from quiet to G1 (Minor) geomagnetic storm levels. G1 conditions are likely on 22 May due to persistent transient influence and 23-24 May in response to negative polarity coronal hole influence. Active conditions are anticipated on 02 Jun and 16 Jun with unsettled conditions likely on 25-26 May, 03-05 Jun, and 17 Jun due to multiple recurrent coronal holes. The remainder of the outlook period is likely to be at mostly quiet levels.

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 May	135	103	330	B9.5	3	0	0	0	0	0	0	0
16 May	134	106	220	B7.8	10	1	0	0	0	0	0	0
17 May	138	106	470	C1.0	10	0	0	2	0	0	0	0
18 May	151	121	575	C1.5	6	7	0	3	0	0	0	0
19 May	165	155	1100	C1.8	15	5	0	36	3	0	0	0
20 May	170	138	1150	C2.3	19	8	0	5	2	0	0	0
21 May	163	140	1110	C1.9	11	2	0	13	2	1	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 May	8.4e+04	2.1e+04	2.9e+06
16 May	6.8e+04	2.5e+04	2.2e+06
17 May	1.7e+05	4.3e+04	2.7e+06
18 May	7.8e+04	3.6e+04	2.4e+06
19 May	7.1e+04	2.5e+04	4.0e+06
20 May	5.1e+04	2.2e+04	1.1e+06
21 May	4.9e+04	2.2e+04	1.5e+07

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
15 May	6	1-0-1-1-3-2-2-2	4	2-1-0-0-1-2-2-2	6	1-1-1-0-1-2-3-2
16 May	10	3-3-3-2-2-2-2-2	7	2-3-3-0-2-2-1-1	8	3-2-3-1-2-1-2-2
17 May	5	1-1-1-2-2-2-2-0	2	2-2-0-0-0-0-1-0	4	1-1-1-1-1-1-1-1
18 May	8	1-1-1-2-3-0-4-1	1	1-1-0-0-0-0-0-0	3	1-1-1-1-1-0-1-1
19 May	10	1-0-1-2-3-2-3-4	2	0-0-0-0-0-1-2-2	9	1-0-1-1-2-2-3-4
20 May	26	4-5-5-3-4-3-3-3	0	5-5-5-5-0-0-0-0	35	6-6-5-4-4-3-3-3
21 May	19	2-3-2-2-3-4-4-5	36	0-0-2-4-5-6-4-4	12	3-3-2-2-3-4-6-6

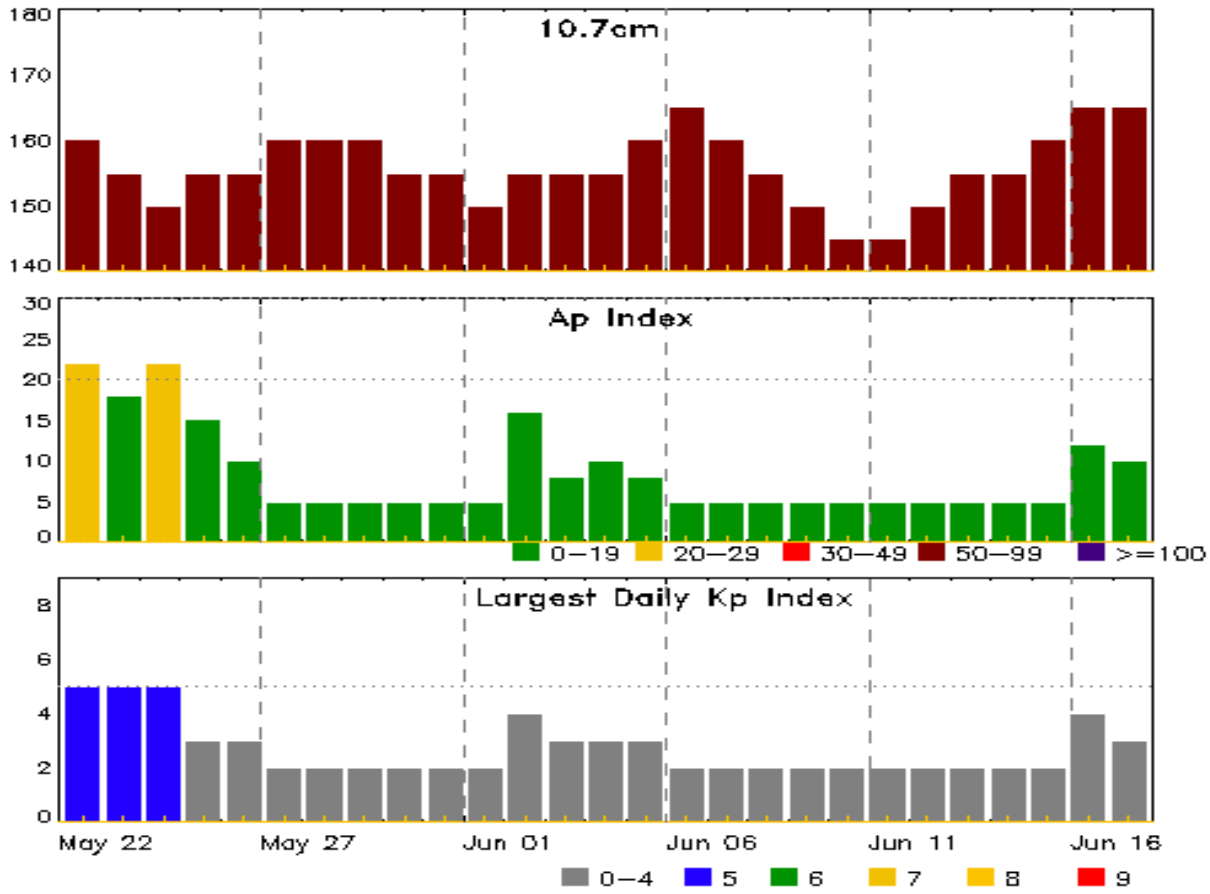
Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
16 May 1642	ALERT: X-ray Flux exceeded M5	16/1640
16 May 1657	SUMMARY: X-ray Event exceeded M5	16/1631 - 1651
16 May 1755	ALERT: Type II Radio Emission	16/1731
17 May 1546	ALERT: Type II Radio Emission	17/1522
19 May 0052	ALERT: X-ray Flux exceeded M5	19/0048
19 May 0123	SUMMARY: X-ray Event exceeded M5	19/0041 - 0054
19 May 1959	WARNING: Geomagnetic K = 4	19/2000 - 20/0000
19 May 2329	ALERT: Geomagnetic K = 4	19/2324
19 May 2351	EXTENDED WARNING: Geomagnetic K = 4	19/2000 - 20/0900
20 May 0046	WARNING: Geomagnetic K = 5	20/0100 - 0900
20 May 0150	ALERT: Geomagnetic K = 5	20/0150
20 May 0300	WARNING: Geomagnetic K = 6	20/0259 - 0900
20 May 0301	ALERT: Geomagnetic K = 6	20/0259
20 May 0423	ALERT: Geomagnetic K = 5	20/0420
20 May 0554	ALERT: Geomagnetic K = 6	20/0553
20 May 0734	ALERT: X-ray Flux exceeded M5	20/0730
20 May 0745	SUMMARY: 10cm Radio Burst	20/0731 - 0732
20 May 0809	ALERT: Geomagnetic K = 5	20/0805
20 May 0821	SUMMARY: X-ray Event exceeded M5	20/0716 - 0736
20 May 0855	EXTENDED WARNING: Geomagnetic K = 5	20/0100 - 1500
20 May 0858	EXTENDED WARNING: Geomagnetic K = 4	19/2000 - 20/1800
20 May 1237	ALERT: X-ray Flux exceeded M5	20/1234
20 May 1300	SUMMARY: X-ray Event exceeded M5	20/1225 - 1240
20 May 1501	ALERT: X-ray Flux exceeded M5	20/1456
20 May 1521	SUMMARY: X-ray Event exceeded M5	20/1454 - 1504
20 May 1755	EXTENDED WARNING: Geomagnetic K = 4	19/2000 - 21/0600
20 May 2211	WATCH: Geomagnetic Storm Category G1 predicted	
20 May 2310	ALERT: X-ray Flux exceeded M5	20/2305
20 May 2322	SUMMARY: 10cm Radio Burst	20/2302 - 2304

Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
20 May 2338	SUMMARY: X-ray Event exceeded M5	20/2252 - 2321
21 May 1559	WARNING: Geomagnetic K = 4	21/1600 - 2100
21 May 1610	ALERT: Geomagnetic K = 4	21/1610
21 May 2030	EXTENDED WARNING: Geomagnetic K = 4	21/1600 - 22/1200
21 May 2032	WARNING: Geomagnetic K = 5	21/2033 - 22/0600
21 May 2038	ALERT: Geomagnetic K = 5	21/2037
21 May 2044	WARNING: Geomagnetic K = 6	21/2045 - 22/0300
21 May 2105	ALERT: Geomagnetic K = 6	21/2059
21 May 2136	ALERT: Geomagnetic K = 5	21/2136
21 May 2205	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
22 May	160	22	5	05 Jun	160	8	3
23	155	18	5	06	165	5	2
24	150	22	5	07	160	5	2
25	155	15	3	08	155	5	2
26	155	10	3	09	150	5	2
27	160	5	2	10	145	5	2
28	160	5	2	11	145	5	2
29	160	5	2	12	150	5	2
30	155	5	2	13	155	5	2
31	155	5	2	14	155	5	2
01 Jun	150	5	2	15	160	5	2
02	155	16	4	16	165	12	4
03	155	8	3	17	165	10	3
04	155	10	3				

Energetic Events

	Time			X-ray		Optical Information			Peak Radio Flux		Sweep Freq Intensity	
Date	Begin	Max	Half Max	Class	Integ Flux	Imp/ Brtns	Location Lat	CMD	Rgn #	245	2695	II	IV
16 May	1631	1643	1651	M9.6	0.054				3310			
18 May	0613	0626	0638	M1.0	0.009				3311			
18 May	0648	0655	0702	M1.2	0.007				3311			
18 May	1132	1147	1200	M2.2	0.014				3311			
18 May	1239	1249	1256	M1.6	0.016				3311			
18 May	1732	1751	1801	M1.1	0.012				3311			
18 May	2012	2023	2051	M3.8	0.012				3311			
18 May	2051	2105	2116	M4.5	0.057				3311			
19 May	0041	0048	0054	M5.3	0.025	1N	N18E74		3311			
19 May	0305	0312	0323	M1.6	0.014	SN	N19E72		3311			
19 May	0449	0500	0510	M2.5	0.018	1N	N19E72		3311			
19 May	1945	2006	2014	M2.3	0.020	SF	N16E61		3311			
19 May	2014	2026	2038	M2.7	0.034				3311			
20 May	0649	0702	0712	M1.0	0.011	SF	N19E72		3311			
20 May	0716	0732	0736	M6.4	0.033	1N	N19E72		3311		140	
20 May	0918	0927	0932	M1.1	0.008				3312			
20 May	1048	1054	1110	M1.6	0.017				3311			
20 May	1225	1235	1240	M8.9	0.030				3311			
20 May	1454	1500	1504	M5.6	0.018				3311			
20 May	1857	1903	1907	M1.1	0.006				3311			
20 May	2252	2306	2321	M5.1	0.050	1F	N19E49		3311		170	
21 May	0218	0223	0233	M1.4	0.009	SN	N20E47		3311			
21 May	1549	1604	1618	M2.6	0.026	1N	N17E40		3311			

Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
15 May	0046	0051	0055	C3.4			3306
15 May	0730	0810	0933	C2.9			
15 May	0933	0938	0943	C2.3			3305
16 May	0421	0431	0440	C1.3			3305
16 May	0440	0444	0448	C1.2			3305
16 May	0942	0954	1011	C2.0			
16 May	1200	1214	1234	C4.5			
16 May	1339	1343	1347	C1.5			
16 May	1535	1542	1549	C1.0			
16 May	1631	1643	1651	M9.6			3310
16 May	1926	1936	1946	C1.0			3305
16 May	1958	2010	2028	C1.5			3305
16 May	2130	2149	2211	C1.9			3305
16 May	2220	2242	2321	C2.4			
17 May	0150	0156	0202	C1.7	SF	N11W13	3305
17 May	0336	0348	0354	C2.9			3310
17 May	0752	0758	0802	C2.1			3310
17 May	0823	0828	0832	C2.3			3310
17 May	1430	1443	1458	C6.4			
17 May	1510	U1522	A1606	C4.3	SF	S18W45	3309
17 May	1614	1628	1646	C7.4			
17 May	1834	1844	1854	C6.2			
17 May	1924	1938	1958	C5.0			
17 May	2138	2148	2201	C9.5			
18 May	0303	0321	0339	C8.6			
18 May	0407	0412	0416	C3.8			
18 May	0451	0457	0501	C2.2			
18 May	0613	0626	0638	M1.0			3311
18 May	0643	0643	0645		SF	S18E72	3310
18 May	0648	0655	0702	M1.2			3311
18 May	0825	0825	0827		SF	S17E67	3310
18 May	0947	1011	1013	C5.2			3311
18 May	1055	1105	1119	C4.2			3311
18 May	1132	1147	1200	M2.2			3311
18 May	1239	1249	1256	M1.6			3311
18 May	B1331	U1347	1349		SF	N11W39	3305
18 May	1543	1555	1603	C4.0			3311
18 May	1732	1751	1801	M1.1			3311

Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
18 May	2012	2023	2051	M3.8			3311
18 May	2051	2105	2116	M4.5			3311
19 May	0005	0015	0024	C5.1			3310
19 May	0011	0011	0015		SF	N18E74	3311
19 May	0011	0011	0021		SF	S19W64	3309
19 May	0015	0043	0141	M5.3	1N	N18E74	3311
19 May	0149	0150	0203		SF	N18E74	3311
19 May	0215	0219	0223		SF	N10W28	3308
19 May	0232	0233	0236		SF	S19W64	3309
19 May	0248	0258	0305	C6.9	SF	N19E72	3311
19 May	0304	0312	0341	M1.6	SN	N19E72	3311
19 May	0342	0343	0345		SF	N19E72	3311
19 May	0437	0437	0439	C2.9	SF	N19E72	3311
19 May	0442	0458	0519	M2.5	1N	N19E72	3311
19 May	0457	0457	0500		SF	S20W69	3309
19 May	B0514	U0531	0756		1F	N18E72	3311
19 May	0521	0521	0525		SF	N19E72	3311
19 May	0524	0525	0528		SF	N10W32	3308
19 May	0526	0526	0530		SF	N14W49	3301
19 May	0543	0545	0551		SF	S24E65	3310
19 May	0605	0605	0607		SF	N11W47	3305
19 May	0625	0630	0630	C3.2	SF	N19E72	3311
19 May	0643	0649	0658	C5.7	SF	N19E72	3311
19 May	0647	0647	0652		SF	N11W47	3305
19 May	0647	0647	0701		SF	N11W48	3301
19 May	0706	0708	0717		SF	N19E72	3311
19 May	0709	0713	0715		SF	N11W48	3301
19 May	0709	0709	0715		SF	N11W47	3305
19 May	0728	0742	0754	C4.7			3311
19 May	0733	0734	0736		SF	N19E72	3311
19 May	0737	0741	0747		SF	N19E72	3311
19 May	0752	0756	0759		SF	N13W55	3301
19 May	0757	0757	0809		SF	N18E72	3311
19 May	0923	0930	0936	C2.8	SF	N18E70	3311
19 May	1007	1017	1033	C4.0	SF	N18E70	3311
19 May	1217	1239	1300	C6.1	SF	N16E65	3311
19 May	1530	1535	1539	C2.9	SF	N16E64	3311
19 May	1534	1535	1538		SF	N10W53	3305

Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
19 May	1615	1631	1644	C5.9			3311
19 May	1710	1721	1724	C4.1			3311
19 May	1724	1729	1736	C5.3	SF	N16E63	3311
19 May	1905	1914	1922	C5.1			3312
19 May	1936	1943	1945	C3.2			3311
19 May	1945	2006	2014	M2.3	SF	N16E61	3311
19 May	1951	1952	1952		SF	N10W54	3305
19 May	2014	2026	2038	M2.7			3311
19 May	2037	2115	2146		SF	N16E61	3311
19 May	2312	2313	2318		SF	S20W81	3309
20 May	0013	0023	0029	C2.9			3312
20 May	0037	0047	0102	C2.7			3305
20 May	0224	0233	0237	C4.9			3311
20 May	0229	0231	0251		SF	N19E72	3311
20 May	0229	0230	0303		SF	N20E74	3313
20 May	0237	0240	0244	C5.4			3311
20 May	0308	0317	0322	C5.1	SF	N08W53	3305
20 May	0418	0424	0430	C3.2			3312
20 May	0436	0450	0457	C6.9			3312
20 May	0542	0553	0601	C3.2			3311
20 May	0649	0702	0712	M1.0	SF	N19E72	3311
20 May	0716	0732	0736	M6.4	1N	N19E72	3311
20 May	0851	0856	0907		SF	N08W53	3305
20 May	0918	0927	0932	M1.1			3312
20 May	1048	1054	1110	M1.6			3311
20 May	1225	1235	1240	M8.9			3311
20 May	1418	1425	1433	C7.2			3311
20 May	1454	1500	1504	M5.6			3311
20 May	1614	1618	1630	C3.3			3311
20 May	1648	1654	1658	C4.1			3311
20 May	1700	1705	1709	C4.9			3311
20 May	1737	1746	1759	C3.7			3311
20 May	1759	1808	1815	C4.7			3311
20 May	1842	1854	1857	C7.2			3311
20 May	1857	1903	1907	M1.1			3311
20 May	1937	1945	1957	C3.6			3312
20 May	1957	2017	2019	C5.1			3305
20 May	2019	2028	2034	C6.4			3305

Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
20 May	2057	2104	2114	C6.1			3311
20 May	2252	2306	2321	M5.1	1F	N19E49	3311
21 May	B0000	0000	0009		2N	N16E48	3311
21 May	B0000	2314	0012		1F	N19E49	3311
21 May	0014	0014	0018		SF	N19E49	3311
21 May	0059	0106	0114	C2.5			3305
21 May	0218	0223	0233	M1.4	SN	N20E47	3311
21 May	0351	0357	0405	C4.9	SF	N20E47	3311
21 May	0409	0413	0414		SF	N20E47	3311
21 May	0417	0419	0420		SF	N20E47	3311
21 May	0443	0443	0448		SF	N20E47	3311
21 May	0457	0503	0508	C3.0			3311
21 May	0510	0511	0513		SF	N20E47	3311
21 May	0530	0540	0604	C3.0			3311
21 May	0538	0545	0549		SF	N20E47	3311
21 May	0551	0555	0559		SF	N20E47	3311
21 May	0640	0649	0653	C4.1	SF	N07W80	3305
21 May	0740	0759	0812	C4.5			3305
21 May	0827	0834	0848	C4.9	SF	N20E47	3311
21 May	1120	1130	1145	C5.4			3305
21 May	1504	1517	1529	C4.6			3305
21 May	1549	1604	1618	M2.6	1N	N17E40	3311
21 May	1644	1647	1649		SF	N17E36	3311
21 May	2055	2101	2116	C4.3	SF	N00E00	3305
21 May	2136	2157	2213	C9.8			

Region Summary

	Location		Sunspot Characteristics					Flares							
		Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical				
Date	Lat CMD	Lon	10^{-6} hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4
			Region 3294												
02 May	S08E73	127	100	2	Hsx	1	A								
03 May	S08E59	125	120	2	Hsx	1	A								
04 May	S08E44	127	120	2	Hsx	1	A								
05 May	S08E30	127	120	2	Hsx	1	A								
06 May	S08E17	127	120	4	Hsx	2	A								
07 May	S08E04	127	120	4	Hsx	2	A								
08 May	S08W09	127	130	4	Hsx	1	A								
09 May	S08W21	125	130	2	Hsx	1	A								
10 May	S07W33	127	130	5	Cso	6	B								
11 May	S07W47	125	130	5	Cso	6	B	1	2			2			
12 May	S07W60	125	100	3	Cso	3	B								
13 May	S07W73	125	100	3	Hsx	2	A								
14 May	S07W87	125	10	1	Axx	1	A								
								1	2	0	0	2	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 127

			Region 3297												
02 May	N08E76	124	180	3	Hax	1	A	2							
03 May	N08E64	120	400	10	Dki	20	B	2							
04 May	N08E50	119	500	11	Eki	18	B								
05 May	N08E36	121	460	11	Ekc	18	B	1			2				
06 May	N08E23	121	460	11	Ekc	18	B	4			2				
07 May	N08E10	121	460	12	Ekc	18	B	1			1				
08 May	N08W04	122	510	13	Ekc	21	BG				2				
09 May	N10W15	119	500	12	Eki	20	BG				2				
10 May	N10W29	120	400	12	Eki	20	BG				3				
11 May	N10W43	121	320	12	Eki	14	BG								
12 May	N09W56	121	260	6	Cko	8	B	1			3				
13 May	N09W69	121	260	6	Cko	5	B	2							
14 May	N09W83	121	40	2	Cao	2	B	1			1				
								14	0	0	16	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 122

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 3299												
04 May	S06E69	101	30	4	Dao	6	B				1				
05 May	S06E55	102	50	5	Dao	4	B								
06 May	S06E42	102	60	7	Cao	7	B	1			1				
07 May	S06E29	102	60	7	Cao	7	B								
08 May	S07E15	103	10	6	Bxo	5	B								
09 May	S08E01	103	10	2	Bxo	5	B	2							
10 May	S08W13	104	plage												
11 May	S08W27	105	plage												
12 May	S08W40	105	plage												
13 May	S08W53	105	plage												
14 May	S08W67	105	plage												
15 May	S08W81	106	plage												
								3	0	0	2	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 103

			Region 3300												
09 May	N10W01	105	30	5	Cro	5	B								
10 May	N10W13	104	50	5	Dao	6	B								
11 May	N10W27	105	50	4	Dao	4	B								
12 May	N09W40	105	10	2	Axx	2	A								
13 May	N09W53	105	10	2	Axx	2	A								
14 May	N09W67	105	plage												
15 May	N09W81	106	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 105

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 3301												
09 May	N11E67	37	120	1	Hsx	2	A								
10 May	N11E54	37	120	1	Hsx	2	A								
11 May	N12E40	38	120	3	Hsx	3	A								
12 May	N14E27	38	120	3	Hax	3	A	1							
13 May	N14E14	38	120	3	Hax	3	A	1							
14 May	N14W00	38	120	3	Hax	4	A								
15 May	N14W14	39	100	3	Hax	4	A								
16 May	N14W27	39	30	4	Hrx	6	A								
17 May	N15W37	36	10	2	Axx	4	A								
18 May	N14W51	36	5	1	Axx	3	A								
19 May	N14W65	37	plage								4				
20 May	N14W79	38	plage												
								2	0	0	4	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 38

			Region 3302												
09 May	N18E72	32	60	1	Hsx	1	A								
10 May	N18E59	32	30	1	Cro	4	B								
11 May	N18E45	33	80	5	Cso	6	B								
12 May	N19E32	33	70	5	Cao	5	B	1							
13 May	N19E19	33	70	5	Cso	5	B								
14 May	N19E05	33	70	5	Cso	5	B								
15 May	N19W09	34	90	6	Dso	5	B								
16 May	N18W22	34	50	6	Hsx	4	A								
17 May	N18W33	32	50	2	Hsx	1	A								
18 May	N18W47	32	30	1	Hsx	1	A								
19 May	N18W58	30	50	2	Hsx	1	A								
20 May	N18W72	31	30	2	Hsx	1	A								
21 May	N18W85	31	30	2	Hsx	1	A								
								1	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 33

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 3303												
09 May	S10E54	50	30	2	Cro	3	B								
10 May	S10E41	50	30	2	Cro	4	B								
11 May	S10E27	51	10	5	Bxo	4	B								
12 May	S10E14	51	plage												
13 May	S10E01	51	plage												
14 May	S10W13	51	plage												
15 May	S10W27	52	plage												
16 May	S10W41	53	plage												
17 May	S10W55	54	plage												
18 May	S10W69	54	plage												
19 May	S10W83	55	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 51

			Region 3304												
11 May	N22E21	57	10	5	Bxo	8	B								
12 May	N22E08	57	10	8	Bxo	7	B	1			2				
13 May	N22W05	57	30	8	Cro	7	B								
14 May	N22W19	57	30	8	Cro	8	B								
15 May	N22W33	58	10	3	Bxo	3	B								
16 May	N20W47	59	10	1	Axx	2	A								
17 May	N20W61	60	plage												
18 May	N20W75	60	plage												
19 May	N20W89	61	plage												
								1	0	0	2	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 57

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 3305												
12 May	N10E38	27	30	7	Cao	3	B								
13 May	N10E25	27	30	7	Cro	8	B	2							
14 May	N10E11	27	70	7	Dai	14	B	1			1				
15 May	N10W03	28	110	10	Dai	24	BG	1							
16 May	N09W16	28	100	9	Dai	18	B	5							
17 May	N12W30	28	110	10	Dai	19	BG	1			1				
18 May	N12W43	28	100	9	Dsi	12	BG				1				
19 May	N12W57	29	240	10	Dai	18	B				5				
20 May	N12W71	30	250	10	Dki	15	B	4			2				
21 May	N12W84	30	210	10	Dai	7	B	6			2				
								20	0	0	12	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 28

			Region 3306												
14 May	S18W36	74	40	3	Cao	5	B				1				
15 May	S18W50	75	10	5	Bxo	5	B	1							
16 May	S18W64	76	10	2	Axx	2	A								
17 May	S18W78	77	plage												
								1	0	0	1	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 74

			Region 3307												
15 May	S09E36	349	10	2	Bxo	2	B								
16 May	S08E22	350	10	4	Axx	2	A								
17 May	S08E03	356	10	1	Axx	1	A								
18 May	S08W10	355	10	3	Bxo	5	B								
19 May	S09W20	352	10	1	Axx	1	A								
20 May	S09W34	353	plage												
21 May	S09W48	354	plage												
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 356

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 3308												
16 May	N12W00	12	10	1	Bxo	2	B								
17 May	N12W14	13	20	4	Cro	4	B								
18 May	N12W28	13	60	5	Cao	8	B								
19 May	N12W41	13	70	6	Cao	15	B				2				
20 May	N12W54	13	50	6	Cao	8	B								
21 May	N12W68	14	40	6	Cao	6	B								
								0	0	0	2	0	0	0	0
Still on Disk. Absolute heliographic longitude: 12															
			Region 3309												
17 May	S18W53	52	20	4	Cro	4	B	1			1				
18 May	S19W64	49	10	1	Axx	1	A								
19 May	S18W77	49	10	3	Bxo	3	B				4				
								1	0	0	5	0	0	0	0
Died on Disk. Absolute heliographic longitude: 52															
			Region 3310												
17 May	S20E74	285	250	5	Dho	3	B	3							
18 May	S20E59	286	250	5	Dho	5	B				2				
19 May	S20E48	284	320	7	Cko	8	B	1			1				
20 May	S20E34	285	310	5	Cko	6	B								
21 May	S20E20	286	300	6	Cko	4	B								
								4	0	0	3	0	0	0	0
Still on Disk. Absolute heliographic longitude: 286															
			Region 3311												
18 May	N18E76	269	110	10	Dao	6	B	3	7						
19 May	N17E60	272	330	13	Ekc	12	BD	12	5		20	3			
20 May	N18E47	272	410	14	Ekc	18	BGD	11	7		2	2			
21 May	N18E35	271	420	14	Ekc	31	BGD	4	2		11	2	1		
								30	21	0	33	7	1	0	0
Still on Disk. Absolute heliographic longitude: 271															

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 3312												
19 May	S25E70	262	40	5	Cro	6	B	1							
20 May	S25E57	262	30	4	Cai	6	B	4	1						
21 May	S25E44	262	30	5	Cro	9	B								
								5	1	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 262

			Region 3313												
19 May	N22E75	257	30	2	Hsx	1	A								
20 May	N22E63	256	50	1	Hsx	1	A				1				
21 May	N22E50	256	60	2	Hsx	1	A								
								0	0	0	1	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 256

			Region 3314												
20 May	N15E36	283	20	3	Bxo	3	B								
21 May	N15E25	281	20	1	Hrx	1	A								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 281

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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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