

Solar activity was at very low levels on 24-25 and 30 May while an increase to low levels occurred on 26-29 May. The majority of the flare activity was from Regions 2824 (N20, L=196, class/area Dho/250 on 27 May) and 2826 (N24, L=215, class/area Dko/280 on 27 May). The largest flare of the period was a C9/1f at 28/2313 UTC from Region 2824. Associated with this flare were Type II and Type IV radio sweeps along with a CME observed off the west limb in SOHO/LASCO C2 imagery beginning at 28/2312 UTC. WSA/ENLIL modelling of the CME showed the bulk of the plasma directed off the Sun-Earth line, however there was potential for a glancing blow late on 01 Jun to early on 02 Jun.

A greater than 10 MeV proton event (S1-Minor) began at 29/0300 UTC, reached a peak flux of 15 pfu at 29/0320 UTC and ended at 29/0540 UTC associated with the aforementioned C9 flare on 28 May.

The greater than 2 MeV electron flux at geosynchronous orbit reached high levels on 24-26 May and decreased to normal-moderate levels on 27-30 May. The largest flux of the period was 1,530 pfu observed at 25/1825 UTC.

Geomagnetic field activity ranged from quiet to G1 (Minor) geomagnetic storm levels. The period began with nominal solar wind conditions and quiet levels through early on 26 May. At 26/1148 UTC, an impulsive increase in solar wind speed from approximately 300-350 km/s was observed with a simultaneous increase in total field from 3-8 nT, marking the arrival of a possible conglomeration of CMEs from 22-23 May. Total field continued to increase to 16 nT through early on 27 May while solar wind speed increased to 400-450 km/s. The geomagnetic field responded with unsettled to G1 (Minor) storm levels the second half on 26 May, followed by quiet to active levels on 27 May. Solar wind speed continued between 380-490 km/s through the end of the period. Quiet conditions were once again observed on 28 May followed by quiet to unsettled levels on 29-30 May.

Space Weather Outlook **31 May - 26 June 2021**

Solar activity is expected to be at very low to low levels on 31 May - 11 Jun and again on 26 Jun. A slight chance for moderate (R1-Minor) flares exist on 12-25 Jun with the return of Region 2824 to the visible disk.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to reach high levels on 18-22 Jun due to coronal hole high speed stream (CH HSS) influence.

Geomagnetic field activity is expected to reach unsettled to active levels on 01-04 Jun due to a



combination of CH HSS effects as well as the potential for a glancing blow from the 28 May CME late on 01 Jun to early on 02 Jun. Unsettled to active levels are expected again on 16-17 Jun, with G1 (Minor) storm levels likely on 16 Jun due to recurrent CH HSS effects. Unsettled levels are likely on 26 Jun due to a possible reoccurring solar sector boundary crossing (SSBC).



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 May	73	29	190	A7.0	0	0	0	2	0	0	0	0
25 May	84	36	140	A8.4	0	0	0	3	0	0	0	0
26 May	88	34	490	B2.9	7	0	0	16	1	0	0	0
27 May	83	34	530	B2.4	3	0	0	4	0	0	0	0
28 May	77	28	530	B1.3	2	0	0	0	1	0	0	0
29 May	76	26	130	B2.1	3	0	0	1	0	0	0	0
30 May	74	27	70	B1.2	0	0	0	1	0	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 May	5.7e+04	4.5e+04
25 May	7.0e+04	4.6e+04	7.1e+07
26 May	2.5e+05	4.6e+04	2.9e+07
27 May	8.5e+04	4.5e+04	1.8e+06
28 May	5.4e+04	4.5e+04	1.7e+06
29 May	1.4e+07	3.6e+05	2.3e+06
30 May	7.8e+06	5.3e+04	2.1e+06

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	24 May	2	2-0-0-1-0-1-0-0	2	1-1-0-2-0-0-0-0	4
25 May	3	0-1-0-1-2-1-1-2	1	0-0-0-1-1-1-0-0	3	0-1-0-1-1-1-0-2
26 May	12	0-0-0-0-3-3-3-3	0	0-0-0-0-0-0-0-0	13	1-1-2-1-3-3-5-3
27 May	15	3-3-4-4-2-3-2-2	4	0-0-0-0-0-1-2-1	16	4-3-4-3-2-3-2-2
28 May	3	1-1-0-1-2-1-1-1	1	1-2-0-0-0-0-0-0	3	1-1-0-1-1-0-0-1
29 May	7	0-1-1-2-2-2-3-3	8	0-0-1-3-4-3-1-0	7	1-1-1-2-2-1-3-2
30 May	7	1-1-2-2-2-2-2-3	3	1-1-1-0-1-0-1-2	6	2-1-1-1-1-1-1-3

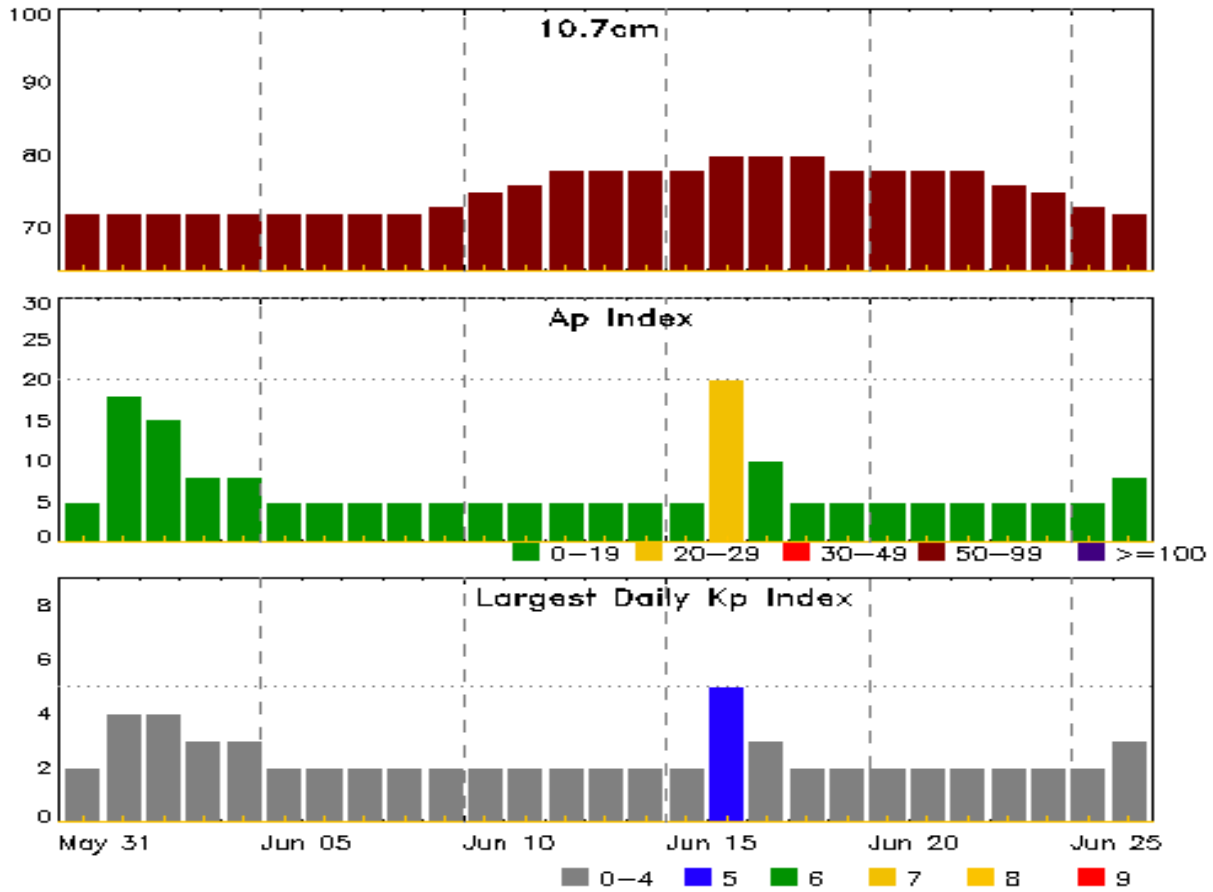


Alerts and Warnings Issued

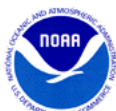
Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
24 May 0749	WATCH: Geomagnetic Storm Category G2 predicted	
24 May 1812	ALERT: Electron 2MeV Integral Flux \geq 1000pfu	24/1805
25 May 1243	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	24/1805
26 May 1203	WARNING: Geomagnetic Sudden Impulse expected	26/1250 - 1330
26 May 1318	SUMMARY: Geomagnetic Sudden Impulse	26/1252
26 May 1621	WARNING: Geomagnetic K = 4	26/1625 - 2359
26 May 1622	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	24/1805
26 May 1821	EXTENDED WARNING: Geomagnetic K = 4	26/1625 - 27/0559
26 May 1822	WARNING: Geomagnetic K = 5	26/1825 - 2359
26 May 1830	ALERT: Geomagnetic K = 4	26/1828
26 May 2028	ALERT: Geomagnetic K = 5	26/2028
27 May 0244	EXTENDED WARNING: Geomagnetic K = 4	26/1625 - 27/1200
27 May 0245	WARNING: Geomagnetic K = 5	27/0244 - 0900
29 May 0024	ALERT: Type II Radio Emission	28/2303
29 May 0025	ALERT: Type IV Radio Emission	28/2301
29 May 0043	WARNING: Proton 10MeV Integral Flux $>$ 10pfu	29/0042 - 1200
29 May 0319	ALERT: Proton Event 10MeV Integral Flux \geq 10pfu	29/0300
29 May 0831	SUMMARY: Proton Event 10MeV Integral Flux \geq 10pfu	29/0300 - 0540
29 May 0835	CANCELLATION: Proton 10MeV Integral Flux $>$ 10pfu	
29 May 0836	CANCELLATION: Proton Event 10MeV Integral Flux \geq 10pfu	



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 May	72	5	2	14 Jun	78	5	2
01 Jun	72	18	4	15 Jun	78	5	2
02 Jun	72	15	4	16 Jun	80	20	5
03 Jun	72	8	3	17 Jun	80	10	3
04 Jun	72	8	3	18 Jun	80	5	2
05 Jun	72	5	2	19 Jun	78	5	2
06 Jun	72	5	2	20 Jun	78	5	2
07 Jun	72	5	2	21 Jun	78	5	2
08 Jun	72	5	2	22 Jun	78	5	2
09 Jun	73	5	2	23 Jun	76	5	2
10 Jun	75	5	2	24 Jun	75	5	2
11 Jun	76	5	2	25 Jun	73	5	2
12 Jun	78	5	2	26 Jun	72	8	3
13 Jun	78	5	2				



Energetic Events

Date	Time			X-ray	Optical Information			Peak		Sweep Freq	
	Begin	Max	Half Max	Class	Integ Flux	Imp/ Brtns	Location Lat CMD	Rgn #	Radio Flux 245	2695	Intensity II

No Events Observed

Flare List

Date	Time			X-ray Class	Imp/ Brtns	Optical Location Lat CMD	Rgn #
	Begin	Max	End				
24 May	0024	0034	0038	B4.8	SF	N21W03	2824
24 May	0407	0423	0441	B3.5			2824
24 May	0811	0819	0823	B1.2			2824
24 May	0918	0936	0937	B3.6	SF	N19W02	2824
24 May	1309	1317	1322	B1.4			2824
24 May	1346	1357	1405	B2.1			2824
24 May	1615	1622	1626	B2.6			2824
24 May	1858	1905	1911	B1.4			
24 May	2233	2241	2249	B1.1			2824
25 May	0007	0027	0042	B1.4			2824
25 May	0204	0228	0240	B2.7			2824
25 May	0240	0249	0253	B2.9			2824
25 May	0943	0951	0955	B1.2			2824
25 May	1800	1807	1826	B2.8			2824
25 May	1826	1834	1841	B5.2			2826
25 May	1854	1902	1906	B5.1			2826
25 May	1909	1912	1914		SF	N25W46	2826
25 May	1933	1937	1941	B4.8	SF	N24W44	2826
25 May	2025	2029	2040	B3.3	SF	N25W48	2826
25 May	2323	2328	2334	B4.5			2826
26 May	0000	0014	0049		SF	N26W47	2826
26 May	0105	0105	0118		SF	N26W47	2826
26 May	0221	0245	0324	B4.2	SF	N23W48	2826
26 May	0324	0329	0333	B4.0			2826
26 May	B0457	U0556	0650	B5.7	1F	N23W51	2826
26 May	0552	0601	0615		SF	N23W50	2826
26 May	0632	0639	0648	B4.7	SF	N23W50	2826
26 May	0745	0746	0752	C1.1	SF	N23W50	2826
26 May	0854	0901	0905	B9.5	SF	N23W53	2826
26 May	0926	0932	0937	B7.6	SF	N23W53	2826
26 May	0946	0955	1000	C1.2			2826



Flare List

Date	Time			Optical			Rgn #
	Begin	Max	End	X-ray Class	Imp/Brtns	Location Lat CMD	
26 May	1014	1015	1017		SF	N23W54	2826
26 May	1029	1035	1039	B5.3			2824
26 May	1325	1333	1336		SF	N24W56	2826
26 May	1337	1342	1346	B5.0	SF	N24W56	2826
26 May	1406	1413	1417	B5.7			2826
26 May	1420	1430	1434	C1.0	SF	N25W57	2826
26 May	1441	1444	1449	B9.1	SF	N23W57	2826
26 May	1509	1517	1536	B6.3			2826
26 May	1615	1616	1619		SF	N23W58	2826
26 May	1631	1635	1650	B5.6	SF	N25W59	2826
26 May	1703	1714	1720	C1.2	SF	N23W58	2826
26 May	1822	1830	1834	C1.6			2824
26 May	1851	1858	1947	B7.0			2826
26 May	2026	2037	2052	C3.0			2826
26 May	2117	2124	2129	C3.8			2826
27 May	0058	0101	0117	B5.2			2824
27 May	0307	0313	0328	C1.4			2826
27 May	B0417	U0423	0431		SF	N18W43	2824
27 May	0437	0444	0453	B5.8			2826
27 May	0545	0555	0601	B4.4	SF	N23W66	2826
27 May	0620	0625	0634	B4.3			2826
27 May	0643	0648	0653	B8.9	SF	N23W66	2826
27 May	0730	0736	0749	B3.8			2826
27 May	0758	0808	0822	B9.8			2826
27 May	0859	0903	0908	B5.6			2824
27 May	0913	0920	0924	B5.4			2824
27 May	0939	0943	0956	B4.7			2826
27 May	1037	1046	1053	B4.0			2826
27 May	1127	1131	1141	B6.6			2824
27 May	1222	1230	1240	B7.5			2826
27 May	1418	1425	1429	B6.8			2826
27 May	1654	1703	1709	B8.1			2826
27 May	1853	1902	1909	B4.1			2826
27 May	1929	1938	1945	B6.3			2824
27 May	2144	2207	2218	C1.0			2824
27 May	2254	2315	2324	C7.6	SF	N21W53	2824
28 May	0345	0352	0357	B3.1			2826
28 May	0709	0717	0732	B1.9			2826



Flare List

Date	Time			X-ray Class	Optical		Rgn #
	Begin	Max	End		Imp/ Brtns	Location Lat CMD	
28 May	0815	0821	0826	B5.0			2826
28 May	0907	0915	0920	B2.2			2826
28 May	0947	0957	1001	C3.0			2826
28 May	1106	1113	1128	B1.9			2826
28 May	1130	1141	1147	B3.0			2826
28 May	1225	1231	1238	B2.9			2826
28 May	1311	1318	1325	B2.1			2824
28 May	1353	1400	1405	B4.8			2824
28 May	1925	1933	1937	B2.2			2826
28 May	2219	2313	0012	C9.4	1F	N21W63	2824
29 May	0000	0000	0049		SF	N21W63	2824
29 May	0319	0324	0332	C1.0			2826
29 May	0347	0352	0357	C1.1			2826
29 May	0539	0550	0557	C1.7			2826
29 May	0941	0946	0954	B4.2			2826
29 May	1640	1645	1651	B4.0			2824
29 May	2013	2021	2029	B2.8			2824
29 May	2229	2238	2248	B2.5			2824
30 May	0639	0645	0659	B1.8			2824
30 May	0827	0836	0842	B3.6			2824
30 May	1110	1116	1120	B3.1			2824
30 May	1312	1317	1321	B2.2			2824
30 May	1557	1603	1610	B3.7			2827
30 May	1803	1812	1819	B2.2			2827
30 May	1912	1915	1919	B2.4			2827
30 May	1952	2001	2008	B2.7			2824
30 May	2047	2053	2100	B1.4			2827
30 May	2100	2103	2107	B1.8			2827
30 May	2138	2143	2209	B1.3			2827
30 May	2250	2257	2303	B1.3			2824
30 May	2322	2329	2333	B2.9	SF	N15E33	2827



Region Summary

Date	Location		Sunspot Characteristics					Flares												
	Lat	CMD	Helio Lon	Area 10 ⁶ hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical								
									C	M	X	S	1	2	3	4				
Region 2824																				
18 May	N19E65		194	120	2	Cao	3	B	1			2								
19 May	N19E52		195	130	2	Hsx	3	A												
20 May	N19E39		194	150	2	Hsx	3	A				1								
21 May	N20E27		194	150	3	Hsx	3	A	1			5								
22 May	N21E13		195	190	5	Csi	9	BG	10	2		13	4							
23 May	N19W00		194	190	5	Csi	9	BG	4	1		9	2	1						
24 May	N19W13		194	180	6	Csi	8	BG				2								
25 May	N20W27		195	120	5	Cso	8	B												
26 May	N20W41		196	250	5	Cso	5	B	1											
27 May	N20W55		196	250	5	Dho	5	B	2			2								
28 May	N19W68		196	250	5	Dho	4	B	1				1							
29 May	N18W79		194	120	4	Cao	4	B				1								
									20	3	0	35	7	1	0	0				

Crossed West Limb.
Absolute heliographic longitude: 194

Region 2825																				
23 May	N16E53		141	10	1	Axx	1	A												
24 May	N17E39		142	10	1	Axx	1	A												
25 May	N17E25		143	plage																
26 May	N17E11		144	plage																
27 May	N17W03		144	plage																
28 May	N17W17		145	plage																
29 May	N17W31		146	plage																
30 May	N17W45		147	plage																
									0	0	0	0	0	0	0	0	0			

Still on Disk.
Absolute heliographic longitude: 144

Region 2826																				
25 May	N24W47		214	20	5	Cri	8	B				3								
26 May	N24W60		215	240	5	Dai	9	B	6			16	1							
27 May	N24W74		215	280	5	Dko	9	B	1			2								
28 May	N23W87		214	280	6	Dko	4	B	1											
									8	0	0	21	1	0	0	0	0			

Crossed West Limb.
Absolute heliographic longitude: 214



Region Summary - continued

Date	Location		Sunspot Characteristics				Flares								
	Lat CMD	Lon	Helio 10 ⁻⁶ hemi.	Area	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical			
									C	M	X	S	1	2	3

Region 2827

29 May	N11E44	71	10	2	Bxo	2	B											
30 May	N11E29	73	60	5	Cro	5	B					1						
								0	0	0	1	0	0	0	0			

Still on Disk.

Absolute heliographic longitude: 73

Region 2828

30 May	S32E33	69	10	1	Axx	2	A											
								0	0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 69



Preliminary Report and Forecast of Solar Geophysical Data (The Weekly)

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Notice: The 27-day Outlook, Satellite Environment, X-ray and Proton plots have been redesigned. Comments and suggestions are welcome SWPC.Webmaster@noaa.gov

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<https://www.swpc.noaa.gov/products/weekly-highlights-and-27-day-forecast> --

Current

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