Space Weather Highlights **SWPC PRF 2411**
08 November - 14 November 2021 **15 November 2021**

Solar activity reached moderate levels (R1-Minor) at 09/1702 UTC due to a long duration M2 flare from Region 2891 (N17, L=212, class/area Dki/350 on 29 Oct). Region 2891 had rotated around the west limb at the time of the event, as a result this CME was not Earth-directed. Solar activity was low on 08 and 13 Nov. Solar activity was very low on 10-12, 14 Nov. There were no notable CMEs observed during the reporting period.

The greater then 10 MeV proton flux at geosynchronous orbit increased from background levels to 2.6 pfu at 09/2125 UTC. This increase was in response to the aforementioned M2 flare from Region 2891. Proton flux values remained below S1 (Minor) levels throughout the reporting period.

The greater than 2 MeV electron flux at geosynchronous orbit reach high levels on 08-09 and 13-14 Nov. A peak flux of 3,319 pfu was observed at 08/1850 UTC by the GOES-16 spacecraft. Moderate levels were observed throughout the remainder of the reporting period.

Geomagnetic field activity reached unsettled levels on 08-10 Nov due to residual solar wind effects from the CME that arrived on 04 Nov. Quiet conditions were observed throughout the remainder of the reporting period.

Space Weather Outlook
15 November - 11 December 2021

Solar activity is expected to be very low with a chance for C-class flaring throughout the outlook period. There is a chance for moderate levels on 20 Nov - 03 Dec with the return of M-flare producing Region 2891 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 15-16 Nov with moderate levels anticipated throughout the reminder of the outlook period.

Geomagnetic field activity is expected to reach active levels on 16-17, 28-29 Nov due to recurrent CH HSS influence. Quiet to unsettled conditions are expected throughout the remainder of the outlook period.

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
08 November	88	41	310	B1.3	2	0	0	2	0	0	0	0
09 November	92	40	410	B1.3	0	1	0	1	0	0	0	0
10 November	88	37	410	B1.5	0	0	0	0	0	0	0	0
11 November	85	39	300	A9.0	0	0	0	0	0	0	0	0
12 November	83	39	220	A7.2	0	0	0	0	0	0	0	0
13 November	81	24	110	A7.7	1	0	0	1	0	0	0	0
14 November	78	23	170	A5.6	0	0	0	0	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
08 November	1.4e+06	4.0e+04	1.3e+08
09 November	1.2e+06	6.1e+04	8.6e+07
10 November	5.1e+06	8.0e+04	2.1e+07
11 November	2.0e+06	5.0e+04	2.9e+07
12 November	6.7e+05	4.5e+04	3.5e+07
13 November	7.5e+05	4.4e+04	5.6e+07
14 November	1.2e+06	4.4e+04	5.0e+07

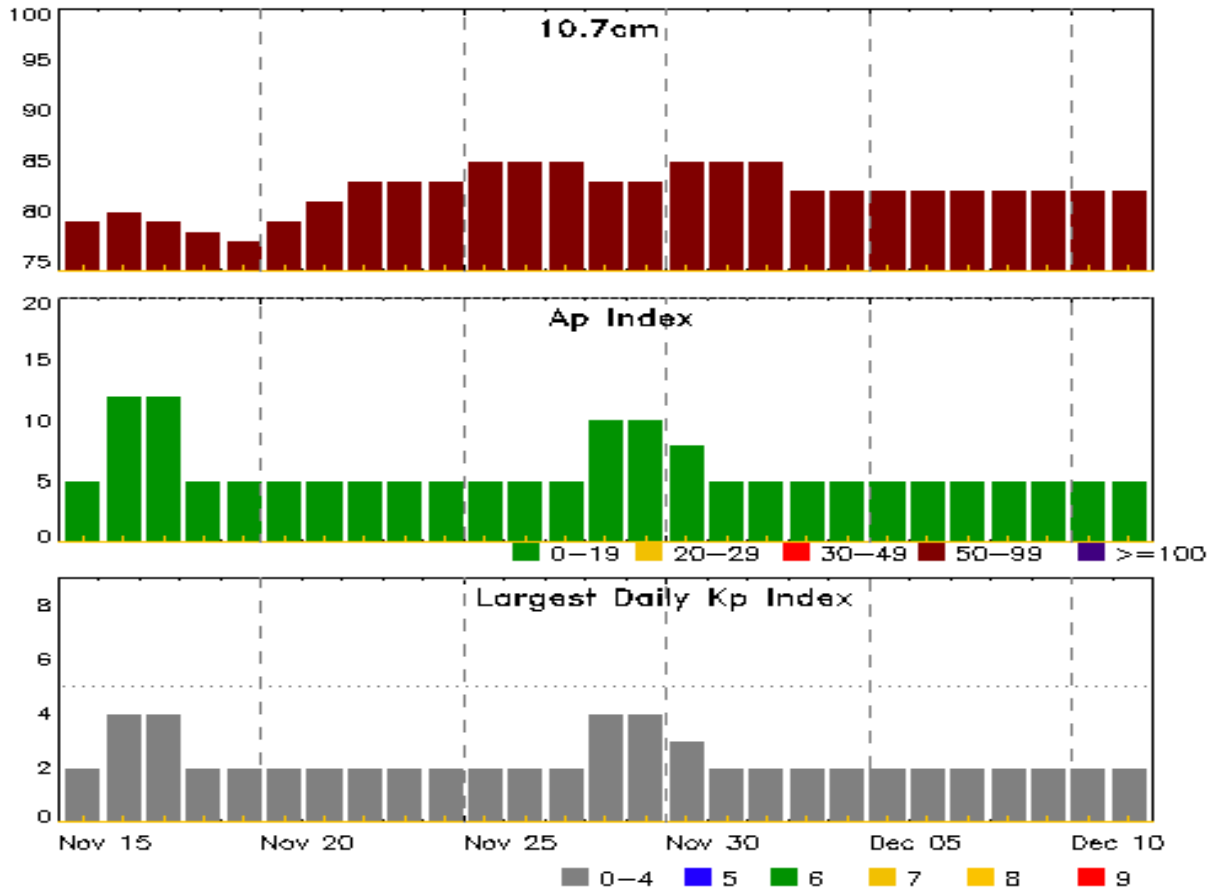
Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
08 November	3	0-0-0-0-2-1-2-2	2	0-0-0-0-0-1-2-2	5	0-0-0-1-1-1-2-3
09 November	6	2-2-2-0-1-2-2-2	5	1-2-2-2-1-0-1-2	7	2-2-2-1-1-1-2-3
10 November	5	2-2-2-1-2-1-1-1	9	2-1-4-3-3-1-0-0	8	3-2-3-1-1-1-2-1
11 November	3	0-0-0-1-2-2-1-0	10	0-0-1-3-5-2-1-0	4	1-0-1-1-2-1-1-1
12 November	3	2-2-1-0-1-1-1-0	0	0-0-0-0-0-0-0-0	4	1-2-1-1-1-0-0-1
13 November	0	0-0-0-0-1-0-0-0	0	0-0-0-1-0-0-0-0	3	0-1-1-1-0-0-1-1
14 November	2	1-0-0-0-1-1-0-1	1	0-0-0-2-1-0-0-0	5	1-1-1-1-1-1-0-1

Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
08 Nov 0802	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	05/1425
09 Nov 1111	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	05/1425
10 Nov 0242	WARNING: Geomagnetic K = 4	10/0242 - 0900
13 Nov 2050	ALERT: Electron 2MeV Integral Flux >= 1000pfu	13/2025
14 Nov 1257	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	13/2025

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
15 Nov	79	5	2	29 Nov	83	10	4
16	80	12	4	30	85	8	3
17	79	12	4	01 Dec	85	5	2
18	78	5	2	02	85	5	2
19	77	5	2	03	82	5	2
20	79	5	2	04	82	5	2
21	81	5	2	05	82	5	2
22	83	5	2	06	82	5	2
23	83	5	2	07	82	5	2
24	83	5	2	08	82	5	2
25	85	5	2	09	82	5	2
26	85	5	2	10	82	5	2
27	85	5	2	11	82	5	2
28	83	10	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
09 Nov		1547	1702	1737	M2.0		0.057		2891			

Flare List

	Time				Optical			
Date	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
08 Nov	0150	0208	0217	B2.9			2895
08 Nov	0221	0231	0238	B3.5			2895
08 Nov	0452	0510	0521	B7.3			2895
08 Nov	0729	0751	0810	C1.2	SF	N25E59	2895
08 Nov	0834	0834	0843		SF	N25E59	2895
08 Nov	0914	0930	0941	C1.0			2895
08 Nov	1042	1048	1055	B2.1			2895
08 Nov	1927	1934	1939	B3.1			
08 Nov	1946	1953	2004	B2.3			2894
08 Nov	2008	2013	2017	B2.3			2895
08 Nov	2244	2251	2255	B3.4			2895
09 Nov	0154	0214	0228	B5.8	SF	N25E59	2895
09 Nov	0740	0749	0754	B1.9			2894
09 Nov	0847	0902	0912	B2.0			
09 Nov	1547	1702	1737	M2.0			2891
10 Nov	0406	0414	0422	B4.8			
10 Nov	0626	0632	0639	B3.5			
10 Nov	1301	1311	1319	B2.9			
10 Nov	1410	1416	1424	B2.1			
10 Nov	1628	1641	1646	B2.1			
10 Nov	1755	1803	1810	B3.4			
10 Nov	1859	1906	1912	B2.0			
10 Nov	2027	2037	2046	B2.1			
10 Nov	2247	2254	2304	B1.7			
10 Nov	2331	2338	2343	B1.4			
11 Nov	0339	0344	0348	B1.8			
11 Nov	0350	0356	0401	B2.3			
11 Nov	0413	0424	0430	B3.8			2895
11 Nov	0709	0721	0731	B1.5			
11 Nov	0900	0908	0914	B1.7			

Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
11 Nov	1521	1529	1538	B1.4			
11 Nov	1806	1828	1838	B4.3			2895
11 Nov	2218	2228	2244	B1.6			2895
12 Nov	1908	1922	1930	B1.1			
12 Nov	1930	1934	1947	B1.2			2894
12 Nov	1947	2008	2020	B1.6			2894
12 Nov	2224	2301	2334	B6.5			2894
13 Nov	0249	0256	0300	B1.6			2894
13 Nov	0300	0304	0311	B1.7			2895
13 Nov	0555	0603	0608	B1.5			2894
13 Nov	0833	0843	0847	C1.2	SF	S28W26	2894
13 Nov	1454	1506	1519	B1.6			2895
14 Nov	1224	1231	1236	B1.2			
14 Nov	1831	1845	1853	B1.6			

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 2													
15 Jun	S24W08	57	0		Axx	1	A								
16 Jun	S24W21	57	plage												
17 Jun	S24W34	57	plage												
18 Jun	S24W47	57	plage												
19 Jun	S24W60	57	plage												
20 Jun	S24W73	57	plage												
21 Jun	S24W86	57	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 57

		Region 2891													
26 Oct	N20E78	214	280		Dso	4	B	5	2						
27 Oct	N17E67	212	250	4	Cao	4	B	4			1				
28 Oct	N18E56	210	220	9	Cai	10	B	4			6				
29 Oct	N17E41	212	350	9	Dki	16	B	3	1		2	2			
30 Oct	N16E29	211	240	11	Eac	20	B	6			4	1			
31 Oct	N17E16	210	200	9	Dac	20	B	2			3				
01 Nov	N16E03	210	230	8	Dai	17	B	2			1				
02 Nov	N16W13	212	120	8	Dai	10	B	1	1		2	1			
03 Nov	N16W26	213	100	9	Dao	7	B				1				
04 Nov	N16W40	214	90	4	Cao	7	BD								
05 Nov	N16W51	211	30	2	Dro	6	B	1							
06 Nov	N16W64	211	10	1	Axx	1	A								
07 Nov	N16W77	211	plage												
								28	4	0	20	4	0	0	0

Died on Disk.
Absolute heliographic longitude: 210

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 2893												
31 Oct	N16E70	156	120	2	Hsx	1	A								
01 Nov	N15E57	155	180	2	Hsx	1	A								
02 Nov	N16E44	155	160	2	Hsx	1	A								
03 Nov	N17E30	157	160	3	Hsx	2	A								
04 Nov	N17E17	157	120	2	Hsx	1	A								
05 Nov	N17E05	155	150	3	Cso	3	B								
06 Nov	N16W08	155	140	2	Hsx	4	A								
07 Nov	N18W22	156	120	2	Hsx	4	A								
08 Nov	N18W33	154	110	2	Hsx	1	A								
09 Nov	N16W47	155	130	2	Hsx	1	A								
10 Nov	N16W60	154	130	2	Hsx	1	A								
11 Nov	N21W76	157	110	2	Hsx	1	A								
12 Nov	N16W89	157	70	2	Hsx	1	A								
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 155

			Region 2894												
04 Nov	S27E80	95	plage					2							
05 Nov	S27E66	95	100	2	Hsx	1	A	1							
06 Nov	S27E55	92	180	7	Cso	6	B	2			1				
07 Nov	S27E42	91	120	9	Cso	4	B								
08 Nov	S26E28	92	150	6	Cso	4	B								
09 Nov	S30E14	93	150	2	Hsx	2	A								
10 Nov	S26E01	93	150	1	Hsx	1	A								
11 Nov	S27W09	91	160	2	Hax	3	A								
12 Nov	S27W17	85	130	9	Dao	5	BG								
13 Nov	S28W33	87	100	8	Cso	3	B	1			1				
14 Nov	S28W50	91	110	2	Hsx	2	A								
								6	0	0	2	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 93

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 2895												
08 Nov	N26E50	70	50	6	Dao	6	B	2			2				
09 Nov	N24E36	71	130	5	Dso	7	B				1				
10 Nov	N24E21	73	130	4	Dso	5	B								
11 Nov	N22E08	72	30	6	Cro	5	B								
12 Nov	N23W06	74	20	4	Bxo	3	B								
13 Nov	N22W20	74	10	1	Axx	1	A								
14 Nov	N22W34	76	plage												
								2	0	0	3	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 74

			Region 2896												
14 Nov	S18E72	329	60	1	Hsx	1	A								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 329

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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