

Solar activity was at low to moderate levels. Low levels occurred on 30-31 Oct and 03-04 Nov. Moderate levels were reached on 01-02 and 05 Nov with four impulsive M1 flares observed from Region 3474 (S18, L=326, class/area Dki/460 on 31 Oct) and one impulsive M1 flare observed from 3480 (S09, L=204, class/area Dai/180 on 04 Nov).

Three geoeffective CMEs were observed during the highlight period. At 31/1918 UTC, a 25 degree long filament, centered near S38E25, erupted with an associated CME off the SE limb. At 02/0230 UTC, dimming was observed near N28E30 with an associated CME off the NE limb. At about 03/0430 UTC, a 33 degree long filament, centered at N26W29, erupted with an associated CME off the NW limb. All three of these CMEs produced significant geomagnetic activity on 04 and 05 Nov, mentioned later in this report.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at high levels on 30 Oct to 04 Nov with a maximum flux of 9,840 pfu observed at 04/1700 UTC. Low to moderate levels were observed on 05 Nov.

Geomagnetic field activity was at quiet to unsettled levels on 30 Oct to early 02 Nov with isolated active intervals observed on 30 Oct. This activity was the result of positive polarity CH HSS influence. Quiet levels were observed for the majority of 02 Nov through about midday on 04 Nov.

The solar wind environment became enhanced at around 04/1100 UTC with the apparent arrival of a CME, believed to be from 31 Oct. An additional stronger enhancement was observed at about 05/0810 UTC, believed to be the result of influence from a CME that left the Sun on 02 Nov. A third enhancement was observed in solar wind data beginning at 05/1146 UTC, believed to have been associated with the 03 Nov CME.

A geomagnetic sudden impulse was observed across the global magnetometer network following the arrival of a pair of interplanetary shocks. The Wingst magnetometer registered a 24 nT sudden impulse at 05/0905 UTC following the first shock. The Niemeck magnetometer registered a 22 nT deviation at 05/1232 UTC following the second shock.

Total magnetic field strength (Bt) increased from 16 nT to 24 nT during shock passage at 05/0810 UTC. It continued to increase to 34 nT at 05/0838 UTC. Bt increased further to 45 nT, just after the third shock arrival at 05/1146 UTC. The Bz component was mostly southward, with a maximum deflection to -27 nT observed at 05/0858 UTC. Solar wind speeds increased from about 320 km/s to a maximum of about 530 km/s at 05/2227 UTC.



**Space Weather Outlook**  
**06 November - 02 December 2023**

Solar activity is expected to be at low levels, with a varying chance for M-class activity on 06-16 Nov and again on 29 Nov-02 Dec. Mostly low levels are expected from 17-28 Nov.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at high levels on 09-14 Nov and 26 Nov-02 Dec. Normal to moderate levels are expected on 15-25 Nov.

Geomagnetic field activity is expected to be at active to moderate storm levels on 06 Nov due to transitory CME influence. Unsettled to active levels are anticipated on 07-11 Nov, 14-16 Nov and 22-28 Nov, all due to recurrent CH HSS influence. Mostly quiet levels are expected on 12-13 Nov, 17-21 Nov and 29 Nov-02 Dec.



### *Daily Solar Data*

Date	Radio Flux 10.7cm	Sun spot No.	Sunspot Area (10 <sup>-6</sup> hemi.)	X-ray Background Flux	Flares							
					X-ray			Optical				
					C	M	X	S	1	2	3	4
30 October	140	62	220	B7.0	2	0	0	4	0	0	0	0
31 October	147	116	670	B7.7	7	0	0	1	0	0	0	0
01 November	159	105	680	C1.5	5	2	0	4	0	0	0	0
02 November	158	113	820	C1.4	7	2	0	4	1	0	0	0
03 November	156	106	850	B9.1	3	0	0	0	0	0	0	0
04 November	155	95	870	B9.3	3	0	0	3	0	0	0	0
05 November	155	81	780	B9.6	6	2	0	3	1	0	0	0

### *Daily Particle Data*

Date	Proton Fluence (protons/cm <sup>2</sup> -day-sr)		Electron Fluence (electrons/cm <sup>2</sup> -day-sr)	
	>1 MeV	>10 MeV	>2MeV	
	30 October	9.0e+05	1.9e+04	8.0e+07
31 October	6.0e+05	1.8e+04	6.8e+07	
01 November	5.1e+05	1.8e+04	8.5e+07	
02 November	2.7e+05	1.8e+04	1.1e+08	
03 November	5.1e+05	2.5e+04	1.3e+08	
04 November	3.4e+06	2.3e+04	1.6e+08	
05 November	1.9e+07	2.1e+04	1.1e+06	

### *Daily Geomagnetic Data*

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	30 October	10	3-2-1-3-3-2-2-2	31	5-2-1-6-6-3-2-2	12
31 October	6	2-2-1-2-2-2-1-1	18	2-2-3-5-5-3-1-1	9	3-2-2-3-3-1-2-2
01 November	6	2-2-1-2-2-2-2-1	13	1-2-3-4-4-3-1-1	9	2-3-2-3-2-2-1-2
02 November	4	2-2-1-1-1-1-1-1	4	1-1-2-2-2-1-0-1	7	3-3-2-2-1-1-1-1
03 November	3	1-0-1-1-1-2-1-1	3	0-1-2-2-2-0-0-0	4	1-1-2-1-1-0-1-1
04 November	12	1-1-2-1-2-4-4-3	8	0-1-2-2-2-2-3-3	14	1-1-2-1-2-3-5-4
05 November	30	2-2-1-5-5-5-5-4	58	3-2-2-6-5-7-7-4	15	3-2-1-6-6-7-6-5



## *Alerts and Warnings Issued*

<b>Date &amp; Time of Issue UTC</b>	<b>Type of Alert or Warning</b>	<b>Date &amp; Time of Event UTC</b>
30 Oct 1145	EXTENDED WARNING: Geomagnetic K = 4	28/0515 - 30/1800
30 Oct 1336	CONTINUED ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	29/1520
31 Oct 1242	CONTINUED ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	29/1520
01 Nov 1218	CONTINUED ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	29/1520
02 Nov 0417	CONTINUED ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	29/1520
02 Nov 1301	ALERT: Type II Radio Emission	02/1227
03 Nov 0546	CONTINUED ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	29/1520
04 Nov 0500	CONTINUED ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	29/1520
04 Nov 1708	WATCH: Geomagnetic Storm Category G2 predicted	
04 Nov 1901	WARNING: Geomagnetic K = 4	04/1900 - 05/0600
04 Nov 1947	ALERT: Geomagnetic K = 4	04/1945
04 Nov 2020	WARNING: Geomagnetic K = 5	04/2020 - 05/0600
04 Nov 2059	ALERT: Geomagnetic K = 5	04/2055
05 Nov 0826	WARNING: Geomagnetic Sudden Impulse expected	05/0845 - 0930
05 Nov 0828	WARNING: Geomagnetic K = 4	05/0845 - 2359
05 Nov 0839	WARNING: Geomagnetic K = 5	05/0845 - 1800
05 Nov 0932	SUMMARY: Geomagnetic Sudden Impulse	05/0905
05 Nov 1003	ALERT: Geomagnetic K = 4	05/1002
05 Nov 1020	ALERT: Geomagnetic K = 5	05/1018
05 Nov 1033	WARNING: Geomagnetic K = 6	05/1033 - 1500
05 Nov 1106	ALERT: Geomagnetic K = 6	05/1105
05 Nov 1210	WARNING: Geomagnetic Sudden Impulse expected	05/1220 - 1300
05 Nov 1241	ALERT: Geomagnetic K = 5	05/1240
05 Nov 1258	SUMMARY: Geomagnetic Sudden Impulse	05/1232
05 Nov 1409	ALERT: Geomagnetic K = 6	05/1405

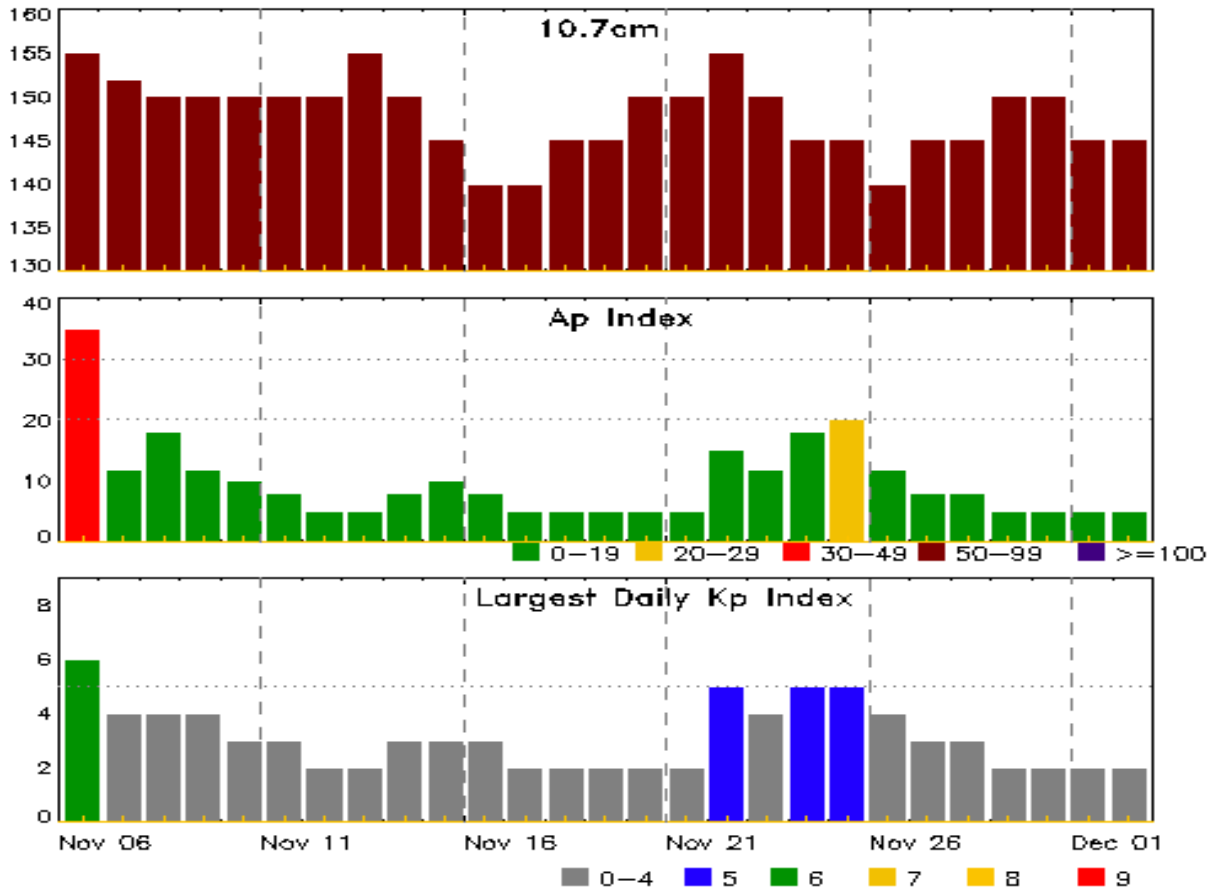


### *Alerts and Warnings Issued*

<b>Date &amp; Time of Issue UTC</b>	<b>Type of Alert or Warning</b>	<b>Date &amp; Time of Event UTC</b>
05 Nov 1447	EXTENDED WARNING: Geomagnetic K = 5	05/0845 - 06/0600
05 Nov 1447	EXTENDED WARNING: Geomagnetic K = 6	05/1033 - 2359
05 Nov 1447	EXTENDED WARNING: Geomagnetic K = 4	05/0845 - 06/1200
05 Nov 1530	ALERT: Geomagnetic K = 5	05/1528
05 Nov 1610	ALERT: Geomagnetic K = 6	05/1605
05 Nov 1636	WARNING: Geomagnetic K $\geq$ 7	05/1635 - 2359
05 Nov 1740	ALERT: Geomagnetic K = 7	05/1735
05 Nov 1839	ALERT: Geomagnetic K = 5	05/1832
05 Nov 2007	ALERT: Geomagnetic K = 6	05/2000
05 Nov 2229	EXTENDED WARNING: Geomagnetic K = 4	05/0845 - 06/1800
05 Nov 2230	EXTENDED WARNING: Geomagnetic K = 6	05/1033 - 06/0900
05 Nov 2230	EXTENDED WARNING: Geomagnetic K = 5	05/0845 - 06/1200
05 Nov 2340	ALERT: Geomagnetic K = 5	05/2340



## 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
06 Nov	155	35	6	20 Nov	150	5	2
07	152	12	4	21	150	5	2
08	150	18	4	22	155	15	5
09	150	12	4	23	150	12	4
10	150	10	3	24	145	18	5
11	150	8	3	25	145	20	5
12	150	5	2	26	140	12	4
13	155	5	2	27	145	8	3
14	150	8	3	28	145	8	3
15	145	10	3	29	150	5	2
16	140	8	3	30	150	5	2
17	140	5	2	01 Dec	145	5	2
18	145	5	2	02	145	5	2
19	145	5	2				



### *Energetic Events*

Date	Time			X-ray		Optical Information			Peak		Sweep Freq			
	Begin	Max	Half Max	Class	Integ Flux	Imp/ Brtns	Location	Rgn #	Radio Flux	245	2695	Intensity	II	IV
01 Nov	0607	0626	0649	M1.1	0.001				3480					
01 Nov	1137	1226	1300	M1.4	0.039				3480					
02 Nov	1218	1222	1226	M1.6	0.003	SB	S19W31		3474	23000				
02 Nov	1908	1921	1928	M1.0	0.007				3480					
05 Nov	1134	1143	1147	M1.8	0.005	1N	S09E53		3480					
05 Nov	1424	1432	1436	M1.6	0.004				3480				140	

### *Flare List*

Date	Time			X-ray Class	Imp/ Brtns	Optical		Rgn #
	Begin	Max	End			Location	Lat CMD	
30 Oct	0345	0349	0353	C1.4				3474
30 Oct	0808	0809	0818		SF	N20W02		3472
30 Oct	0955	0958	1005		SF	S17E06		3474
30 Oct	1936	1940	1942		SF	S17E05		3474
30 Oct	2306	2315	2319	C1.9	SF	S17E03		3474
31 Oct	0010	0023	0031	C5.7				3473
31 Oct	0104	0113	0119	C1.8				3474
31 Oct	0222	0229	0233	C2.2				3474
31 Oct	0736	0750	0800	C2.0				3473
31 Oct	1502	1506	1510	C1.3				
31 Oct	2016	2024	2029	C3.9				3477
31 Oct	2149	2158	2202	C5.0	SF	S18W10		3474
01 Nov	0020	0041	0108	C6.9				3480
01 Nov	0607	0626	0649	M1.1				3480
01 Nov	0846	0908	0916	C3.0				3480
01 Nov	0916	0929	0933	C3.1				3480
01 Nov	1137	1226	1300	M1.4				3480
01 Nov	1735	1735	1739		SF	S15W19		3474
01 Nov	1927	1929	1933		SF	S15W19		3474
01 Nov	2000	2008	2021	C2.7	SF	N18W37		3472
01 Nov	2150	2200	2207	C2.6				3480
01 Nov	2245	2245	2248		SF	N24W37		3472
02 Nov	0147	0158	0202	C3.9	SF	S15W32		3474
02 Nov	0515	0522	0529	C4.9				3480
02 Nov	0612	0625	0639	C6.4				3480



## *Flare List*

Date	Time			X-ray Class	Imp/ Brtns	Optical		Rgn #
	Begin	Max	End			Location Lat CMD		
02 Nov	1111	1119	1128	C3.9				3480
02 Nov	1205	1211	1215	C2.2	SF	S19W31		3474
02 Nov	1218	1222	1226	M1.6	SB	S19W31		3474
02 Nov	1908	1921	1928	M1.0				3480
02 Nov	2010	2018	2022	C2.7	SF	S19W34		3474
02 Nov	2238	2250	2259	C4.2	1F	N16W17		3473
03 Nov	0118	0132	0202	C4.5				3480
03 Nov	0527	0616	0718	C3.3				3473
03 Nov	2228	2238	2305	C3.4				3480
04 Nov	0354	0407	0425	C2.4	SF	N15W36		3473
04 Nov	0734	0735	0736		SF	S19W60		3474
04 Nov	0807	0820	0835	C2.1				3472
04 Nov	0944	0952	0957	C1.7				3472
04 Nov	1044	1047	1050		SF	N20W72		3472
05 Nov	1024	1024	1034		SF	S11E22		3477
05 Nov	1045	1053	1058	C1.346				3480
05 Nov	1134	1143	1147	M1.8	1N	S09E53		3480
05 Nov	1321	1328	1332	C2.1	SF	N20W88		3472
05 Nov	1424	1432	1436	M1.6				3480
05 Nov	1733	1741	1746	C4.4				3480
05 Nov	2003	2010	2015	C2.5				3480
05 Nov	2107	2117	2120	C1.9				3472
05 Nov	2120	2134	2138	C9.3	SF	S08E47		3480





## Region Summary

Date	Location		Sunspot Characteristics				Flares																
	Lat CMD	Lon	Helio 10 <sup>-6</sup> hemi.	Area	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical											
									C	M	X	S	1	2	3	4							
<b>Region 3471</b>																							
22 Oct	S22E19	50	10			Axx	1	A															
23 Oct	S22E05	52	plage																				
24 Oct	S23W06	49	10	3		Bxo	2	B															
25 Oct	S23W20	50	40	5		Cao	5	B	1														
26 Oct	S23W33	50	30	5		Dro	9	B	2			1											
27 Oct	S23W46	50	20	4		Cro	5	BG															
28 Oct	S23W57	48	10	4		Bxo	6	B	1			1											
29 Oct	S23W71	49	plage																				
30 Oct	S23W85	50	plage																				
									4	0	0	2	0	0	0	0	0						

Crossed West Limb.

Absolute heliographic longitude: 52

### Region 3472

26 Oct	N20E43	334	30	4		Cro	6	B													
27 Oct	N19E29	335	10	5		Cro	3	B													
28 Oct	N20E15	336	10	3		Bxo	2	B													
29 Oct	N20E01	337	10	5		Cao	5	B													
30 Oct	N21W12	337	40	8		Dso	8	B				1									
31 Oct	N20W25	336	30	8		Dro	20	B													
01 Nov	N20W39	337	30	8		Bxi	10	B	1			2									
02 Nov	N20W52	337	60	7		Dai	11	B													
03 Nov	N21W67	339	30	7		Cao	5	B													
04 Nov	N21W77	336	60	4		Cao	3	B	2			1									
									3	0	0	4	0	0	0	0	0				

Died on Disk.

Absolute heliographic longitude: 337



### *Region Summary - continued*

Date	Location		Sunspot Characteristics					Flares															
	Lat CMD	Lon	Helio 10 <sup>6</sup> hemi.	Area	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical											
									C	M	X	S	1	2	3	4							
<b>Region 3473</b>																							
26 Oct	N13E62	315	10	3	Bxo	1	B	3															
27 Oct	N16E57	303	10	2	Bxo	4	B	1															
28 Oct	N16E44	307	30	3	Cro	5	B	2				2											
29 Oct	N16E32	306	30	4	Cao	5	B																
30 Oct	N16E20	305	50	7	Dso	9	BG																
31 Oct	N16E09	302	30	7	Dro	12	B	2															
01 Nov	N16W03	301	20	6	Bxo	7	B																
02 Nov	N16W18	303	10	1	Axx	1	A	1					1										
03 Nov	N17W31	303	10	1	Axx	1	A	1															
04 Nov	N17W45	304	plage					1				1											
05 Nov	N17W59	304	plage																				
								11	0	0	3	1	0	0	0	0							

Still on Disk.  
Absolute heliographic longitude: 301

<b>Region 3474</b>																							
27 Oct	S17E37	323	10	1	Bxo	3	B																
28 Oct	S17E25	326	10	4	Bxo	5	B					1											
29 Oct	S17E12	326	20	7	Dai	8	BG	8				5											
30 Oct	S18W02	327	130	7	Dai	15	BG	2				3											
31 Oct	S18W15	326	460	8	Dki	30	BG	3				1											
01 Nov	S18W29	327	430	8	Dki	23	BG					2											
02 Nov	S18W42	327	400	9	Dkc	20	BG	3	1			4											
03 Nov	S18W57	329	330	10	Dho	16	BG																
04 Nov	S18W68	326	240	9	Dso	5	B					1											
05 Nov	S18W82	327	200	7	Cso	2	B																
								16	1	0	17	0	0	0	0	0							

Still on Disk.  
Absolute heliographic longitude: 327

<b>Region 3475</b>																							
28 Oct	N13W51	42	20	2	Cro	2	B																
29 Oct	N13W65	43	10	2	Axx	3	A																
30 Oct	N13W80	45	plage																				
								0	0	0	0	0	0	0	0	0							

Crossed West Limb.  
Absolute heliographic longitude: 42



### *Region Summary - continued*

Date	Location		Sunspot Characteristics				Flares										
	Lat CMD	Lon	Helio 10 <sup>-6</sup> hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical						
								C	M	X	S	1	2	3	4		
<b>Region 3476</b>																	
31 Oct	S15E09	302	30	3	Cro	3	B										
01 Nov	S15W04	302	30	4	Cro	3	B										
02 Nov	S15W19	304	10	3	Bxo	2	B										
03 Nov	S15W33	305	plage														
04 Nov	S15W47	306	plage														
05 Nov	S15W61	306	plage														
								0	0	0	0	0	0	0	0	0	0

Still on Disk.  
Absolute heliographic longitude: 302

<b>Region 3477</b>																	
31 Oct	S12E80	231	120	2	Hsx	1	A	1									
01 Nov	S15E66	232	160	3	Hsx	1	A										
02 Nov	S15E53	232	300	9	Cko	4	B										
03 Nov	S15E42	230	310	9	Cko	5	B										
04 Nov	S15E30	228	350	11	Cko	4	B										
05 Nov	S15E18	227	350	11	Cko	8	B					1					
								1	0	0	1	0	0	0	0	0	0

Still on Disk.  
Absolute heliographic longitude: 227

<b>Region 3478</b>																	
01 Nov	N12E71	227	10	1	Hrx	1	A										
02 Nov	N12E57	228	20	2	Hrx	1	A										
03 Nov	N12E43	229	10	1	Axx	1	A										
04 Nov	N12E30	228	10	1	Axx	1	A										
05 Nov	N12E17	228	10	1	Axx	1	A										
								0	0	0	0	0	0	0	0	0	0

Still on Disk.  
Absolute heliographic longitude: 228

<b>Region 3479</b>																	
02 Nov	N22E08	277	20	4	Cao	4	B										
03 Nov	N21W05	277	10	1	Axx	1	A										
04 Nov	N22W14	272	20	2	Cro	4	B										
05 Nov	N22W28	273	10	3	Bxo	3	B										
								0	0	0	0	0	0	0	0	0	0

Still on Disk.  
Absolute heliographic longitude: 277



### *Region Summary - continued*

Date	Location		Sunspot Characteristics					Flares															
	Lat	CMD	Helio Lon	Area 10 <sup>-6</sup> hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical											
									C	M	X	S	1	2	3	4							
<b>Region 3480</b>																							
01 Nov	S11E93		208	plage						4	2												
02 Nov	S11E78		208	plage						3	1												
03 Nov	S11E64		208	150	7	Dac	7	B		2													
04 Nov	S09E54		204	180	7	Dai	7	B															
05 Nov	S09E40		205	180	9	Dai	6	B		4	2		1	1									
										13	5	0	1	1	0	0	0	0					

Still on Disk.

Absolute heliographic longitude: 205

#### **Region 3481**

04 Nov	N20E48		210	10	1	Axx	1	A													
05 Nov	N20E34		211	plage																	
										0	0	0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 211

#### **Region 3482**

05 Nov	N02E68		177	30	1	Hrx	1	A													
										0	0	0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 177



## ***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

The Weekly has been published continuously since 1951 and is available online since 1997.

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

Current

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