

Solar activity ranged from very low to moderate levels. Very low levels occurred on 07 Nov. Low levels were observed on 03-06 Nov. Moderate levels were reached at 01/0145 UTC due to an M1/1f flare from Region 2887 (S25, L=278, class/area Dki/440 on 24 Oct). Associated with this flare were Type-II (626 km/s) and Type-IV radio emissions. A CME was observed by SOHO/LASCO C2 imagery at 01/0200 UTC. Region 2887 also produced a CME, off the SW limb, at 01/1824 UTC from a long duration C1 flare at 01/1801 UTC. This was followed by what appeared to be a double CME event off the W and SW limb at 01/2124 UTC associated with a C4/Sf flare at 01/2133 UTC. Moderate levels were again reached at 02/0301 UTC due to a long duration M1/1f flare from Region 2891 (N17, L=212, class/area Dki/350 on 29 Oct). Associated with this flare were a 10 cm radio burst (110 pfu) and a halo CME, first observed in SOHO/LASCO C2 imagery, at 02/0248 UTC. WSA ENLIL modeling of these multiple CME events from 01-02 Nov showed an Earth-directed component with an estimated arrival on 04 Nov.

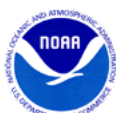
The greater than 10 MeV proton flux at geosynchronous orbit remained elevated above background levels near 2-3 pfu on 01-03 Nov due to persistent effects from the X1/2n flare on 28 Oct. It nearly reached S1 (Minor) levels late on 03 Nov with the arrival of the 01 Nov CME(s). Proton flux returned to background levels on 04 Nov and remained there throughout the remainder of the reporting period.

The greater than 2 MeV electron flux at geosynchronous orbit reached high levels on 05-07 Nov in response to the 01 Nov CME(s). Moderate levels were observed on 01-04 Nov.

Geomagnetic field activity reached active levels on 01-02 Nov due to influence from a positive-polarity, northern crown extension CH HSS. Total field increased to a maximum of 15 nT at 01/1953 UTC followed by an increase in solar wind speed from approximately 335 km/s to near 630 km/s. The Bz component was between +15/-12 nT and the phi angle was mostly oriented in a positive sector. The geomagnetic field returned to quiet levels on 03 Nov as HSS conditions slowly waned. Solar wind speeds were steady near 520 km/s and Bt was less than 5nT. A sudden impulse was observed at 03/1957 UTC with a deviation of 21nT measured at the FRD magnetometer in response to the shock arrival of the 01-02 Nov CME(s). Geomagnetic field levels escalated to G1-G3 (Minor-Strong) storm conditions on 03-04 Nov in response. Solar wind speed increased from approximately 520 km/s to near 770 km/s. Total field increased to a maximum of 23 nT at 03/0648 UTC while a prolonged period of southward Bz of -12 to -18 nT was observed between 04/0430-0830 UTC. Active conditions were observed on 05-07 Nov as CME effects waned.

Space Weather Outlook
08 November - 04 December 2021

Solar activity is expected to be very low with a chance for C-class flaring on 08-15 Nov and



01-04 Dec. Solar activity is expected to be at low levels with a chance for M-class flare activity on 16-30 Nov due to the return of Region 2887.

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 08-09 Nov due to persistent CME effects. Normal to moderate levels are anticipated 10 Nov - 04 Dec.

Geomagnetic field activity is expected to reach active levels on 15, 28-29 Nov in response to recurrent CH HSS influence. Quiet to unsettled levels are expected for 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
01 November	98	53	570	B1.9	4	1	0	2	1	0	0	0
02 November	97	42	400	B3.9	2	1	0	2	1	0	0	0
03 November	89	41	300	B1.7	1	0	0	1	0	0	0	0
04 November	94	28	210	B2.0	3	0	0	0	0	0	0	0
05 November	93	40	280	B1.5	2	0	0	0	0	0	0	0
06 November	82	41	330	B1.5	2	0	0	2	0	0	0	0
07 November	88	28	240	B1.1	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	
	01 November	1.0e+07	2.9e+05	2.9e+06
02 November	1.3e+07	2.2e+05	4.6e+06	
03 November	5.8e+07	2.7e+05	5.0e+06	
04 November	2.9e+07	6.1e+04	2.3e+07	
05 November	9.2e+06	3.9e+04	4.5e+07	
06 November	2.7e+06	3.9e+04	5.5e+07	
07 November	2.9e+05	3.9e+04	1.0e+08	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	01 November	8	2-2-1-1-1-2-3-3	11	2-2-2-5-1-1-2-2	10
02 November	12	4-4-2-3-2-1-2-1	27	2-3-3-6-6-2-2-1	17	4-4-3-4-3-2-2-2
03 November	14	2-0-1-0-1-1-3-6	14	1-1-3-2-3-1-3-5	21	3-1-2-1-1-0-4-7
04 November	42	6-3-6-6-5-3-2-2	131	5-5-8-9-8-5-3-2	69	6-5-7-7-6-4-2-2
05 November	9	1-3-2-1-3-3-2-2	16	2-3-1-0-3-5-4-3	13	2-4-3-1-3-4-3-3
06 November	13	4-3-2-3-2-3-2-2	23	3-2-4-6-3-3-3-2	18	4-3-3-3-1-4-3-3
07 November	4	3-1-0-1-1-1-1-0	4	3-1-0-0-1-0-2-0	27	4-1-0-1-1-1-1-0



Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
01 Nov 0201	SUMMARY: 10cm Radio Burst	01/0129 - 0134
01 Nov 0208	ALERT: Type IV Radio Emission	01/0130
01 Nov 0209	ALERT: Type II Radio Emission	01/0129
01 Nov 2140	WARNING: Geomagnetic K = 4	01/2135 - 02/0300
01 Nov 2140	ALERT: Geomagnetic K = 4	01/2140
01 Nov 2141	SUMMARY: 10cm Radio Burst	01/2111 - 2125
01 Nov 2150	WATCH: Geomagnetic Storm Category G1 predicted	
02 Nov 0146	EXTENDED WARNING: Geomagnetic K = 4	01/2135 - 02/0900
02 Nov 0311	SUMMARY: 10cm Radio Burst	02/0236 - 0237
02 Nov 0521	WARNING: Geomagnetic K = 5	02/0521 - 1500
02 Nov 0526	EXTENDED WARNING: Geomagnetic K = 4	01/2135 - 02/1800
02 Nov 1902	WATCH: Geomagnetic Storm Category G1 predicted	
03 Nov 1318	WATCH: Geomagnetic Storm Category G2 predicted	
03 Nov 1949	WARNING: Geomagnetic Sudden Impulse expected	04/2005 - 2105
03 Nov 1952	WARNING: Geomagnetic K = 4	03/2005 - 04/0600
03 Nov 1957	SUMMARY: Geomagnetic Sudden Impulse	03/1957
03 Nov 2002	WARNING: Geomagnetic K = 5	03/2005 - 04/0600
03 Nov 2102	WARNING: Proton 10MeV Integral Flux > 10pfu	03/2101 - 04/1200
03 Nov 2109	ALERT: Geomagnetic K = 4	03/2100
03 Nov 2134	WARNING: Geomagnetic K = 6	03/2135 - 04/0300
03 Nov 2138	ALERT: Geomagnetic K = 5	03/2124
03 Nov 2205	ALERT: Geomagnetic K = 6	03/2146
03 Nov 2205	WARNING: Geomagnetic K \geq 7	03/2204 - 04/0300
04 Nov 0001	ALERT: Geomagnetic K = 7	03/2359
04 Nov 0122	ALERT: Geomagnetic K = 5	04/0120
04 Nov 0154	ALERT: Geomagnetic K = 6	04/0154
04 Nov 0244	EXTENDED WARNING: Geomagnetic K = 4	03/2005 - 04/1500
04 Nov 0244	EXTENDED WARNING: Geomagnetic K = 6	03/2135 - 04/1500
04 Nov 0244	EXTENDED WARNING: Geomagnetic K = 5	03/2005 - 04/1500

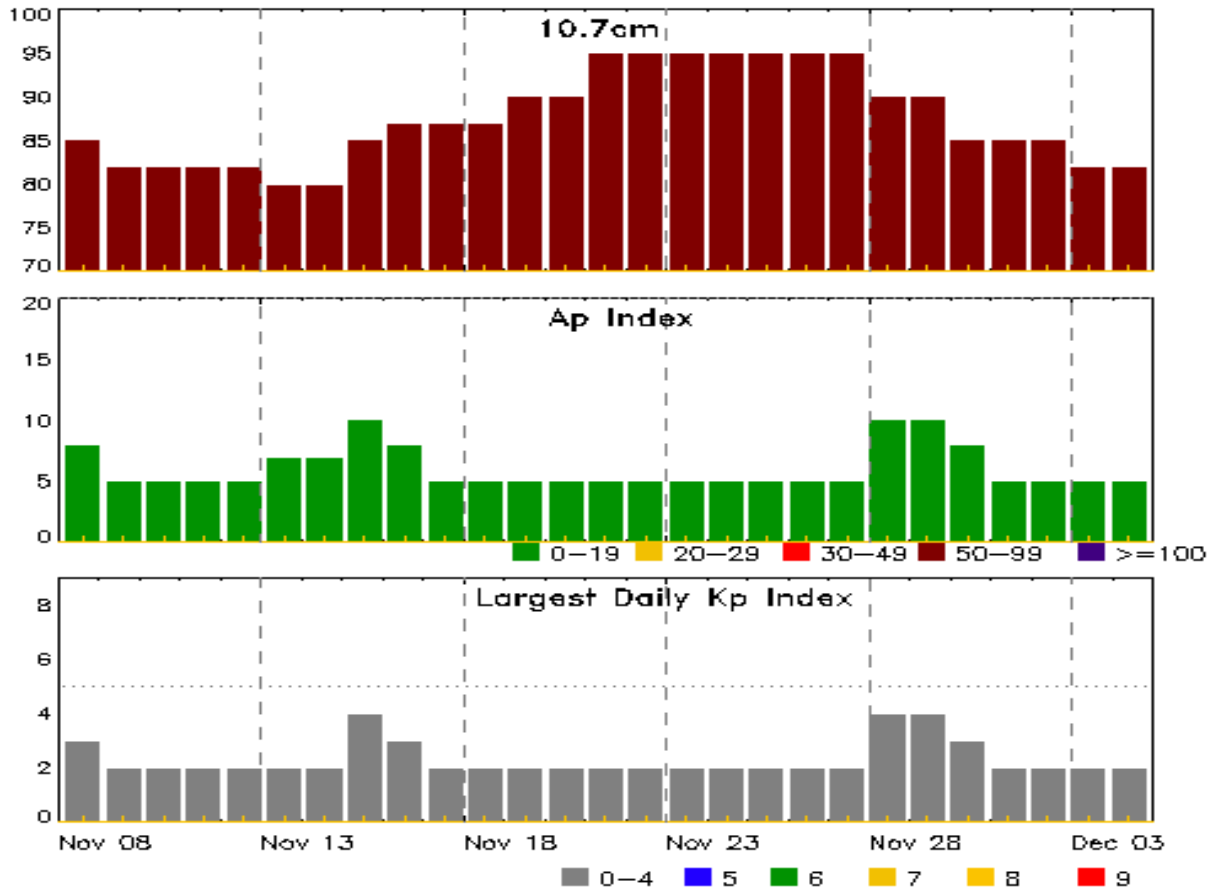


Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
04 Nov 0244	EXTENDED WARNING: Geomagnetic K \geq 7	03/2204 - 04/0900
04 Nov 0426	ALERT: Geomagnetic K = 5	04/0424
04 Nov 0645	CANCELLATION: Proton 10MeV Integral Flux > 10pfu	
04 Nov 0711	ALERT: Geomagnetic K = 5	04/0708
04 Nov 0733	ALERT: Geomagnetic K = 6	04/0730
04 Nov 0848	EXTENDED WARNING: Geomagnetic K \geq 7	03/2204 - 04/1500
04 Nov 0848	ALERT: Geomagnetic K = 7	04/0848
04 Nov 0926	ALERT: Geomagnetic K = 5	04/0925
04 Nov 0927	ALERT: Geomagnetic K = 6	04/0926
04 Nov 0934	ALERT: Geomagnetic K = 7	04/0934
04 Nov 1331	ALERT: Geomagnetic K = 5	04/1328
04 Nov 1412	EXTENDED WARNING: Geomagnetic K = 4	03/2005 - 05/0300
04 Nov 1413	EXTENDED WARNING: Geomagnetic K = 5	03/2005 - 04/2100
04 Nov 1435	EXTENDED WARNING: Geomagnetic K = 6	03/2135 - 04/1800
04 Nov 1453	ALERT: Geomagnetic K = 6	04/1439
05 Nov 0517	WARNING: Geomagnetic K = 4	05/0517 - 1200
05 Nov 0603	ALERT: Geomagnetic K = 4	05/0559
05 Nov 1157	EXTENDED WARNING: Geomagnetic K = 4	05/0517 - 2100
05 Nov 1502	ALERT: Electron 2MeV Integral Flux \geq 1000pfu	05/1425
05 Nov 2046	EXTENDED WARNING: Geomagnetic K = 4	05/0517 - 06/1200
06 Nov 1148	EXTENDED WARNING: Geomagnetic K = 4	05/0517 - 06/1800
06 Nov 1755	EXTENDED WARNING: Geomagnetic K = 4	05/0517 - 06/2359
06 Nov 1834	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	05/1425
07 Nov 0151	WARNING: Geomagnetic K = 4	07/0150 - 1200
07 Nov 0200	ALERT: Geomagnetic K = 4	07/0200
07 Nov 0608	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	05/1425



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
08 Nov	85	8	3	22 Nov	95	5	2
09	82	5	2	23	95	5	2
10	82	5	2	24	95	5	2
11	82	5	2	25	95	5	2
12	82	5	2	26	95	5	2
13	80	7	2	27	95	5	2
14	80	7	2	28	90	10	4
15	85	10	4	29	90	10	4
16	87	8	3	30	85	8	3
17	87	5	2	01 Dec	85	5	2
18	87	5	2	02	85	5	2
19	90	5	2	03	82	5	2
20	90	5	2	04	82	5	2
21	95	5	2				



Energetic Events

Date	Time			X-ray	Optical Information				Peak		Sweep Freq	
	Begin	Max	Half	Class	Integ Flux	Imp/ Brtns	Location	Rgn #	Radio Flux		Intensity	
			Max						245	2695	II	IV
01 Nov	0057	0145	0210	M1.5	0.032	1F	S29W45	2887	160	210	1	2
02 Nov	0120	0301	0350	M1.7	0.075	1F	N14E01	2891	190	110		

Flare List

Date	Time			X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
	Begin	Max	End				
01 Nov	0057	0145	0210	M1.5	1F	S29W45	2887
01 Nov	1323	1331	1342	B5.1			2887
01 Nov	1728	1801	1844	C1.3			2887
01 Nov	2035	2044	2048	C2.1	SF	N16E11	2891
01 Nov	2105	2133	2151	C4.0			2887
01 Nov	2112	2114	2127		SF	S29W62	2887
01 Nov	2335	2340	2344	C4.5			2891
02 Nov	0120	0301	0350	M1.7	1F	N14E01	2891
02 Nov	0522	0522	0553		SF	N14E01	2891
02 Nov	0737	0740	0744	C2.0	SF	N19E01	2891
02 Nov	1255	1305	1316	C1.0			2887
02 Nov	2109	2113	2117	B4.7			2887
03 Nov	0010	0016	0020	B7.2			
03 Nov	0056	0111	0132	B4.4			2891
03 Nov	0815	0830	0905	B4.1			
03 Nov	1403	1417	1432	B3.5			
03 Nov	1432	1438	1442	B3.3			2891
03 Nov	1443	1450	1457	B4.3			2887
03 Nov	1500	1513	1518	B5.4			2887
03 Nov	1837	1843	1847	B2.8			2887
03 Nov	2056	2117	2140	C5.2			2887
03 Nov	2236	2237	2242		SF	N17W22	2891
04 Nov	0954	1006	1020	B3.4			2894
04 Nov	1034	1055	1109	C3.5			2894
04 Nov	1158	1205	1209	B5.6			
04 Nov	1225	1235	1241	C1.0			2887
04 Nov	1330	1346	1414	B5.2			2891
04 Nov	1441	1453	1502	C2.9			2894
04 Nov	1821	1830	1841	B4.6			2894



Flare List

Date	Time			X-ray Class	Optical		Rgn #
	Begin	Max	End		Imp/ Brtns	Location Lat CMD	
04 Nov	2338	2350	0011	B3.2			2894
05 Nov	0144	0153	0157	B3.7			2894
05 Nov	0833	0849	0906	B4.4			2894
05 Nov	1018	1023	1027	B2.5			2887
05 Nov	1159	1203	1209	B3.1			2894
05 Nov	1305	1323	1336	B8.8			2894
05 Nov	1521	1530	1534	C1.6			2891
05 Nov	1550	1555	1559	B9.5			
05 Nov	1623	1633	1639	B7.6			2891
05 Nov	1854	1905	1914	B2.3			
05 Nov	1935	1943	1947	B7.3			2891
05 Nov	2136	2157	2216	C2.3			2894
05 Nov	2310	2316	2323	B3.9			2894
06 Nov	0100	0110	0122	B3.1			
06 Nov	0122	0140	0142	B3.3			
06 Nov	0142	0223	0243	B4.8			
06 Nov	0243	0247	0251	B6.8			
06 Nov	0322	0347	0356	C1.1			2894
06 Nov	0407	0418	0428	B9.4			2894
06 Nov	0524	0531	0539	B4.0			2894
06 Nov	0649	0700	0709	B3.5			
06 Nov	0715	0720	0724	B3.9			
06 Nov	0731	0743	0750	B9.0	SF	S27E63	2894
06 Nov	0928	0934	0942	B4.5			2894
06 Nov	1035	1044	1054	B2.9			
06 Nov	1229	1239	1244	C1.7			2894
06 Nov	1513	1517	1522	B2.6			
06 Nov	1547	1553	1557	B2.7			
06 Nov	1645	1649	1657	B2.2			
06 Nov	1951	1956	2017	B3.2			
06 Nov	2201	2208	2212	B6.6	SF	S26E49	2984
06 Nov	2322	2339	2342	B2.8			2891
06 Nov	2324	2340	2342	B3.0			2891
06 Nov	2342	2349	2358	B4.0			2891
06 Nov	2342	2349	2358	B3.7			2891
07 Nov	0003	0008	0014	B4.4			2894
07 Nov	0120	0125	0132	B1.4			2894
07 Nov	0629	0637	0648	B1.9			2894



Flare List

Date	Time			Optical			Rgn #
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	
07 Nov	0648	0651	0656	B2.1			2894
07 Nov	0754	0808	0822	B2.2			2894
07 Nov	0956	1035	1125	B7.1			
07 Nov	1622	1626	1631	B1.6			
07 Nov	1832	1837	1842	B1.7			
07 Nov	2236	2240	2247	B1.5			



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 2887																							
22 Oct	S24E65	280	150	5	Dao	7	B																
23 Oct	S26E53	279	420	8	Dki	11	B						2										
24 Oct	S25E40	278	440	9	Dki	14	B																
25 Oct	S26E27	279	330	7	Dki	20	BG						1										
26 Oct	S26E15	277	370	8	Dhi	20	B	2															
27 Oct	S26E04	275	250	8	Dhi	26	BG	9				3	3										
28 Oct	S26W08	274	320	9	Dkc	28	BG	5	2	1		7	3	1									
29 Oct	S26W21	274	250	10	Dhi	22	BG	2				2											
30 Oct	S28W33	273	210	10	Dso	13	BG	1															
31 Oct	S28W47	273	150	8	Cso	8	B	2				2											
01 Nov	S27W64	276	160	6	Cso	5	BG	2	1			1	1										
02 Nov	S26W78	277	120	1	Hax	1	A	1															
03 Nov	S25W91	278	40	1	Hsx	2	A	1															
								25	3	1		18	7	1	0	0							

Crossed West Limb.

Absolute heliographic longitude: 275

Region 2888

24 Oct	S15E66	253	20	1	Hsx	1	A														
25 Oct	S14E52	254	10		Axx	1	A														
26 Oct	S13E39	253	10	1	Axx	1	A														
27 Oct	S12E27	252	plage																		
28 Oct	S12E13	253	plage																		
29 Oct	S12W01	254	plage																		
30 Oct	S12W15	255	plage																		
31 Oct	S12W29	255	plage																		
01 Nov	S12W43	256	plage																		
02 Nov	S12W57	257	plage																		
03 Nov	S12W71	258	plage																		
04 Nov	S12W85	259	plage																		
												0	0	0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 254



Region Summary - continued

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 2889																		
25 Oct	S25E58	248	10	5	Bxo	3	B											
26 Oct	S23E43	249	20	4	Bxo	4	B	3										
27 Oct	S24E31	248	40	4	Bxo	6	B	2			1							
28 Oct	S23E17	249	30	6	Bxo	4	B											
29 Oct	S23E03	250	10	3	Bxo	3	B											
30 Oct	S23W10	250	10	1	Axx	1	A											
31 Oct	S24W21	250	0		Axx	1	A											
01 Nov	S24W35	248	plage															
02 Nov	S24W49	249	plage															
03 Nov	S24W63	250	plage															
04 Nov	S24W77	251	plage															
								5	0	0	1	0	0	0	0	0		

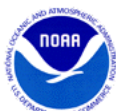
Died on Disk.

Absolute heliographic longitude: 250

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	0		

Still on Disk.

Absolute heliographic longitude: 210



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	4	
Region 2892																	
30 Oct	N27W15	255	10	3	Bxo	2	B										
31 Oct	N26W29	255	10	3	Bxo	3	B										
01 Nov	N26W43	256	plage														
02 Nov	N26W57	257	plage														
03 Nov	N26W71	258	plage														
04 Nov	N26W85	259	plage														
								0	0	0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 255

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										
								0	0	0	0	0	0	0	0	0	0

Still on Disk.
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	5	0	0	1	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 91



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

Published every Monday by the Space Weather Prediction Center.

U.S. Department of Commerce
NOAA / National Weather Service
Space Weather Prediction Center
325 Broadway, Boulder CO 80305

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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<https://www.ngdc.noaa.gov/stp/satellite/goes-r.html> -- NCEI GOES data
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