Space Weather Highlights
20 October - 26 October 2025

SWPC PRF 2617
27 October 2025

Solar activity was at moderate levels on 20 Oct with a single M-class flare observed. Region 4248 (N07, L=262, class/area=Eki/380 on 17 Oct) produced an M1.1 flare, the largest of the period, at 20/0527 UTC. Region 4262 (S12, L=132, class/area=Cai/150 on 22 Oct) produced a pair of long duration C-class flares. The first was a C4.7 that peaked at 22/0152 UTC, with the second being a C2.7 flare at 22/0909 UTC. Additionally, there were two far sided CMEs, likely originating from old Region 4246 (N24, L=290, class/area=Ekc/840 on 16 Oct). These events were observed in LASCO coronagraph imagery on 21/2024 UTC. Additionally, Type II (est. 2474 km/s) and Type IV radio sweeps were observed at 21/2011 UTC, likely associated with the far-sided events as well. There was also a weak CME observed in LASCO imagery on 23/1545 UTC, likely associated with a C2.1 flare at 23/1506 UTC from Region 4256 (S15, L=155, class/area=140/Dao on 18 Oct. This CME is expected to arrive at Earth on 27 Oct. Activity was at low levels from 21-26 Oct.

No proton events were observed at geosynchronous orbit. However, the 10 MeV proton flux levels were slightly elevated on 22-23 Oct following the far-sided CME eruptions. Conditions were at background levels on 20-21 Oct and 24-26 Oct.

The greater than 2 MeV electron flux at geosynchronous orbit was at normal to moderate levels from 20-26 Oct.

Geomagnetic field activity was at mostly quiet to unsettled levels from 20-26 Oct, with the exception of an isolated active period on 25 Oct, likely associated with residual CH HSS influence.

Space Weather Outlook
27 October - 22 November 2025

Solar activity is expected to be at moderate levels on 31 Oct - 15 Nov due to the return of Region 4246. Low levels are expected to prevail on 20 Oct - 30 Oct and 14 Nov - 22 Nov as multiple regions depart the visible disk.

No proton events are expected at geosynchronous orbit from 27 Oct - 22 Nov. However, depending on the complexity of returning Region 4246, an isolated proton event is possible.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at high levels from 31 Oct - 15 Nov due to responses from recurrent CH HSS influences. Moderate levels are expected on 27 - 30 Oct and 16 Nov - 22 Nov.

Geomagnetic field activity is expected to be at quiet to unsettled levels on 01 Nov - 06 Nov, 10 Nov - 14 Nov, and 16 Nov - 22 Nov. Active conditions are expected on 27 Oct and 31 Oct, 07 Nov - 09 Nov, and 15 Nov, with G1/G2 conditions likely on 28 Oct - 30 Oct due to recurrent

positive polarity CH HSS influence, mixed with possible weak influence from the CME that left the Sun on 23 Oct.

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
20 October	140	109	900	C1.2	5	1	0	0	0	0	0	0
21 October	133	107	480	B8.5	3	0	0	0	0	0	0	0
22 October	133	117	490	B8.8	5	0	0	1	0	0	0	0
23 October	130	92	490	B6.4	7	0	0	0	0	0	0	0
24 October	134	99	520	B5.8	7	0	0	3	0	0	0	0
25 October	127	89	420	B5.5	3	0	0	4	0	0	0	0
26 October	124	92	410	B4.7	2	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
20 October	1.0e+05	1.6e+04	1.3e+07
21 October	9.4e+04	1.6e+04	1.5e+07
22 October	3.1e+05	1.3e+05	1.8e+07
23 October	3.1e+05	5.7e+04	2.8e+07
24 October	2.1e+05	2.4e+04	1.9e+07
25 October	2.1e+05	2.0e+04	2.1e+07
26 October	1.8e+05	1.8e+04	1.9e+07

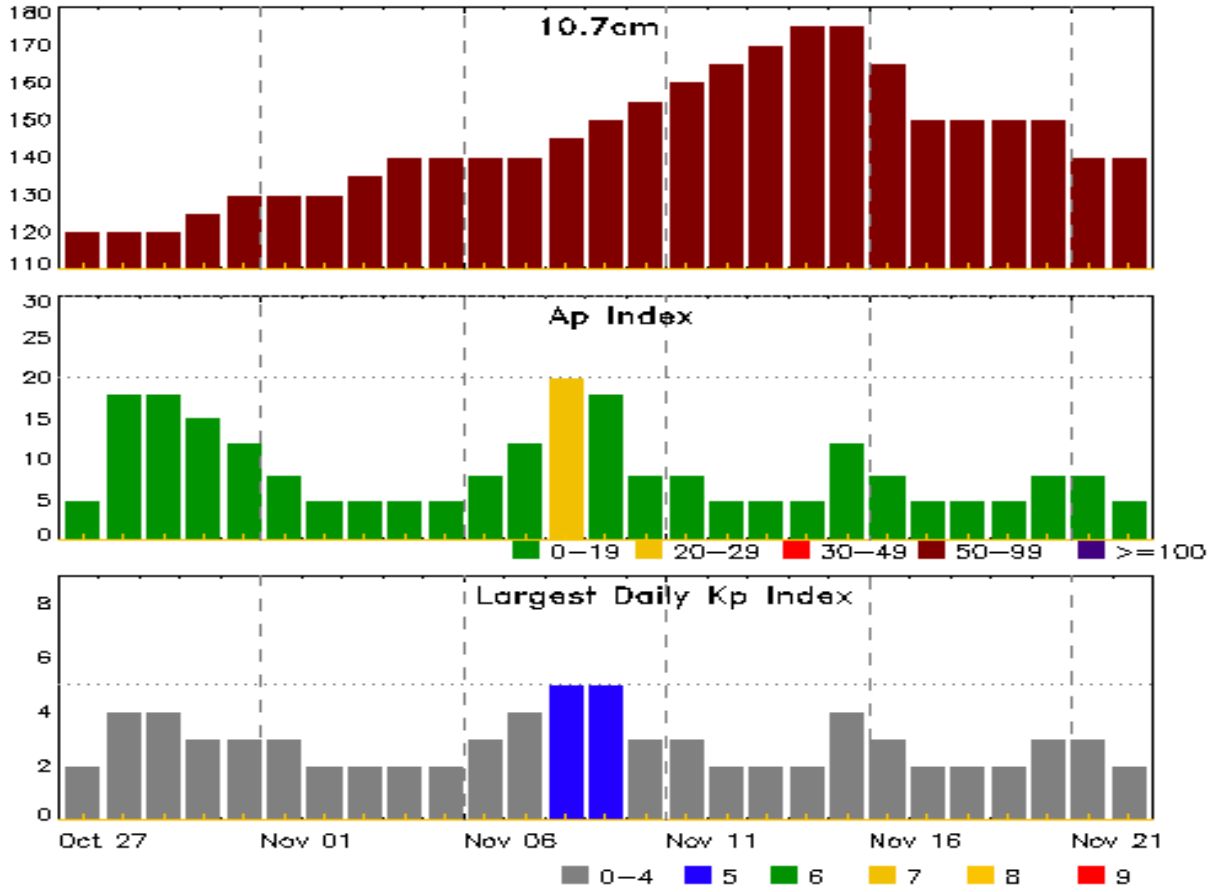
Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
20 October	6	2-2-2-2-2-1-1-2	7	2-3-2-2-2-1-1-1	8	3-3-2-2-2-1-1-2
21 October	8	3-3-2-0-2-2-2-2	7	3-2-2-1-1-1-2-2	9	3-3-2-1-1-2-2-2
22 October	3	0-0-1-1-2-2-1-1	1	1-0-0-0-1-1-0-0	4	1-1-1-1-1-1-1-2
23 October	4	1-1-0-1-1-2-2-2	3	0-0-0-0-1-2-2-1	6	2-1-0-1-1-1-2-2
24 October	8	2-2-2-2-2-2-3-1	8	2-2-2-3-3-1-2-1	10	3-2-2-2-2-2-3-2
25 October	9	2-3-3-2-3-1-1-1	12	1-4-4-4-2-1-0-0	9	3-4-3-2-2-1-1-1
26 October	4	0-1-1-2-1-2-1-1	1	0-0-1-1-0-0-0-0	4	1-1-1-1-0-1-1-1

Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
21 Oct 0456	WARNING: Geomagnetic K = 4	21/0455 - 1500
21 Oct 0909	CANCELLATION: Geomagnetic K = 4	
21 Oct 2108	ALERT: Type II Radio Emission	21/2007
21 Oct 2109	ALERT: Type IV Radio Emission	21/2011
25 Oct 0548	WARNING: Geomagnetic K = 4	25/0548 - 2359
25 Oct 0557	ALERT: Geomagnetic K = 4	
25 Oct 2055	WATCH: Geomagnetic Storm Category G1 predicted	
26 Oct 2017	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
27 Oct	120	5	2	10 Nov	155	8	3
28	120	18	4	11	160	8	3
29	120	18	4	12	165	5	2
30	125	15	3	13	170	5	2
31	130	12	3	14	175	5	2
01 Nov	130	8	3	15	175	12	4
02	130	5	2	16	165	8	3
03	135	5	2	17	150	5	2
04	140	5	2	18	150	5	2
05	140	5	2	19	150	5	2
06	140	8	3	20	150	8	3
07	140	12	4	21	140	8	3
08	145	20	5	22	140	5	2
09	150	18	5				

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
20 Oct		0510	0527	0538	M1.0		0.013		4248			

Flare List

	Time				Optical		
Date	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
20 Oct	0224	0234	0247	C5.9			4246
20 Oct	0510	0527	0538	M1.0			4248
20 Oct	0739	0748	0820	C3.5			4248
20 Oct	0947	0955	0959	C2.6			4248
20 Oct	1514	1545	1623	C3.0			4257
20 Oct	2316	2324	2333	C2.1			4248
21 Oct	0554	0600	0605	C1.3			4248
21 Oct	0636	0649	0659	C3.7			
21 Oct	2336	2347	2353	C1.5			
22 Oct	0019	0034	0051	C4.4	SF	S11E24	4257
22 Oct	0107	0152	0203	C4.7			4259
22 Oct	0631	0636	0641	C1.8			
22 Oct	0702	0720	0808	C4.2			
22 Oct	1325	1338	1345	C2.4			
23 Oct	0141	0159	0214	C2.4			
23 Oct	0411	0424	0429	C2.0			
23 Oct	0456	0508	0515	C3.2			4267
23 Oct	0841	0854	0859	C1.5			4267
23 Oct	1433	1443	1446	C1.2			4267
23 Oct	1446	1450	1454	C1.3			4267
23 Oct	1502	1506	1541	C2.1			4256
24 Oct	0241	0257	0306	C2.9	SF	S17W28	4256
24 Oct	0510	0518	0533	C1.0			4261
24 Oct	0821	0827	0833	C1.1			4267
24 Oct	0851	0856	0859	C1.3			4267
24 Oct	1253	1301	1304	C1.5			4267
24 Oct	1756	1759	1803		SF	N17E33	4266
24 Oct	1833	1840	1850	C1.3	SF	S15W35	4256
24 Oct	2000	2004	2009	C1.4			4267
25 Oct	0441	0453	0500	B8.6			4267

Flare List

	Time			Optical			
Date	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
25 Oct	1013	1023	1030	C1.6	SF	N02E51	4267
25 Oct	1101	1112	1128	C1.3	SF	S17W45	4256
25 Oct	1621	1628	1634	B9.5	SF	S19W48	4256
25 Oct	2258	2310	2315	C2.2	SF	N04E43	4267
26 Oct	0004	0013	0018	C1.2			4256
26 Oct	0124	0134	0142	C1.4			4256
26 Oct	0522	0529	0534	B9.4			4256
26 Oct	2137	2144	2147	B7.9			4256

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 4248													
09 Oct	N08E64	251	20	3	Cao	5	B								
10 Oct	N08E47	253	50	10	Dso	6	BG								
11 Oct	N07E29	257	50	6	Dso	7	B	1			1				
12 Oct	N06E15	259	150	8	Dai	21	BG	1			1				
13 Oct	N07E01	259	290	11	Eko	14	BGD	5			4				
14 Oct	N07W13	260	300	12	Eki	16	BGD	1	1		4	1			
15 Oct	N07W27	261	310	12	Eki	20	BGD				1				
16 Oct	N07W41	262	360	12	Eki	18	BG								
17 Oct	N07W54	262	380	11	Eki	10	BG	1							
18 Oct	N07W66	261	380	10	Dki	7	B					1			
19 Oct	N06W81	262	380	10	Dko	5	B								
20 Oct	N06W95	263	380	10	Dko	5	B	3	1						
								12	2	0	11	2	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 259

		Region 4249													
09 Oct	S18E64	249	10	2	Bxo	3	B	1							
10 Oct	S20E50	250	10	2	Axx	2	A								
11 Oct	S20E35	251	10	1	Axx	1	A								
12 Oct	S20E21	253	plage												
13 Oct	S20E06	254	plage												
14 Oct	S20W08	255	plage												
15 Oct	S20W22	256	plage												
16 Oct	S20W36	257	plage												
17 Oct	S20W50	258	plage												
18 Oct	S20W64	259	plage												
19 Oct	S20W78	259	plage												
								1	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 254

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 4250													
11 Oct	N07E31	255	40	5	Dai	8	B								
12 Oct	N06E20	254	40	4	Dso	4	B	1							
13 Oct	N07E06	254	20	4	Cro	3	B								
14 Oct	N07W07	254	20	4	Cro	2	B								
15 Oct	N07W21	255	10	1	Hrx	1	A								
16 Oct	N05W34	255	10	1	Axx	1	A								
17 Oct	N04W45	253	10	1	Axx	1	A								
								1	0	0	0	0	0	0	0

Died on Disk.
Absolute heliographic longitude: 254

		Region 4251													
12 Oct	N19E40	234	10	1	Hrx	1	A								
13 Oct	N19E26	234	10	1	Hrx	1	A								
14 Oct	N19E12	235	10	1	Axx	1	A								
15 Oct	N19W02	235	plage												
16 Oct	N19W15	236	plage												
17 Oct	N19W29	237	plage												
18 Oct	N19W43	238	plage												
19 Oct	N19W57	238	plage												
20 Oct	N19W71	239	plage												
21 Oct	N19W85	240	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 235

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 4252													
12 Oct	S13E66	208	60	2	Hsx	1	A								
13 Oct	S13E51	209	90	3	Hsx	1	A								
14 Oct	S13E38	209	90	3	Hsx	1	A								
15 Oct	S13E28	206	100	4	Cao	2	B								
16 Oct	S13E14	207	150	4	Cso	5	B				1				
17 Oct	S13E01	207	100	4	Cso	3	B								
18 Oct	S12W14	209	160	5	Cso	6	B								
19 Oct	S13W28	209	150	7	Cso	5	B								
20 Oct	S12W42	210	90	3	Hsx	1	A								
21 Oct	S10W55	210	110	5	Cso	3	B								
22 Oct	S13W68	210	110	3	Hsx	1	A								
23 Oct	S13W81	208	100	3	Hsx	1	A								
24 Oct	S13W94	209	100	3	Hsx	1	A								
								0	0	0	1	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 207

		Region 4254													
14 Oct	N10E74	173	40	2	Hsx	1	A								
15 Oct	N10E60	174	40	2	Hsx	1	A								
16 Oct	N10E46	175	60	2	Hsx	1	A								
17 Oct	N11E33	175	60	1	Hsx	1	A								
18 Oct	N10E20	175	90	2	Hsx	1	A								
19 Oct	N10E06	175	90	2	Hsx	1	A								
20 Oct	N10W08	176	80	2	Hsx	1	A								
21 Oct	N10W21	176	60	2	Hsx	1	A								
22 Oct	N10W33	175	60	2	Hsx	1	A								
23 Oct	N10W47	174	50	1	Hsx	1	A								
24 Oct	N10W60	175	50	1	Hsx	1	A								
25 Oct	N10W73	175	40	1	Hsx	1	A								
26 Oct	N11W87	176	30	1	Hsx	1	A								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 175

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 4255													
16 Oct	S08E38	183	10	5	Bxo	2	B								
17 Oct	S08E26	182	10	4	Bxo	2	B								
18 Oct	S08E12	183	plage												
19 Oct	S08W02	183	plage												
20 Oct	S08W16	184	plage												
21 Oct	S08W30	185	plage												
22 Oct	S08W44	186	plage												
23 Oct	S08W58	187	plage												
24 Oct	S08W72	187	plage												
25 Oct	S08W86	188	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 183

		Region 4256													
16 Oct	S16E66	155	40	7	Dao	5	B								
17 Oct	S15E52	156	60	6	Cso	6	B	1			3				
18 Oct	S15E40	155	140	6	Dao	6	B								
19 Oct	S15E26	155	100	6	Cao	4	B	1							
20 Oct	S15E12	156	30	2	Hrx	4	A								
21 Oct	S16W01	156	10	2	Axx	1	A								
22 Oct	S16W15	157	10	1	Axx	1	A								
23 Oct	S16W28	156	plage					1							
24 Oct	S16W42	157	plage					2			2				
25 Oct	S16W56	158	plage					1			2				
26 Oct	S16W70	159	plage					2							
								8	0	0	7	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 156

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 4257												
17 Oct	S08E75	133	60	2	Hsx	1	A								
18 Oct	S10E60	135	150	5	Hsx	2	A								
19 Oct	S10E48	133	210	7	Cao	4	B								
20 Oct	S09E35	133	110	6	Dso	3	B	1							
21 Oct	S10E23	132	70	4	Cso	2	B								
22 Oct	S09E08	134	80	3	Hsx	1	A	1			1				
23 Oct	S09W06	133	60	2	Hsx	1	A								
24 Oct	S09W20	135	60	1	Hsx	2	A								
25 Oct	S09W33	135	60	1	Hsx	1	A								
26 Oct	S08W47	136	70	2	Hsx	1	A								
								2	0	0	1	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 133

			Region 4258												
18 Oct	S16W40	235	10	4	Bxo	8	B								
19 Oct	S14W55	236	10	1	Axx	1	A								
20 Oct	S14W69	237	plage												
21 Oct	S14W83	238	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 235

			Region 4259												
19 Oct	S20E49	132	10	3	Bxo	2	B								
20 Oct	S20E35	133	10	1	Axx	1	A								
21 Oct	S20E22	133	10	1	Axx	1	A								
22 Oct	S20E09	133	10	2	Axx	3	A	1							
23 Oct	S20W03	131	plage												
24 Oct	S20W17	132	plage												
25 Oct	S20W31	133	plage												
26 Oct	S20W45	134	plage												
								1	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 131

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 4260												
19 Oct	S10E61	120	10	1	Hsx	1	A								
20 Oct	S09E47	121	10	1	Axx	1	A								
21 Oct	S10E33	122	plage												
22 Oct	S10E19	123	plage												
23 Oct	S10E05	124	plage												
24 Oct	S11W07	122	plage												
25 Oct	S11W21	123	plage												
26 Oct	S11W35	124	plage												
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 124

			Region 4261												
20 Oct	S05E67	101	40	4	Dao	2	B								
21 Oct	S06E54	101	50	4	Cso	3	B								
22 Oct	S06E40	102	40	3	Cso	3	B								
23 Oct	S06E25	101	30	2	Hsx	1	A								
24 Oct	S07E13	102	40	2	Hsx	1	A	1							
25 Oct	S07W00	102	40	3	Hsx	2	A								
26 Oct	S06W14	103	60	2	Hsx	1	A								
								1	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 102

			Region 4262												
20 Oct	S12E35	133	150	3	Hsx	1	A								
21 Oct	S12E22	133	150	4	Hsx	2	A								
22 Oct	S12E10	132	150	6	Cai	3	B								
23 Oct	S12W07	134	150	5	Hsx	3	A								
24 Oct	S13W19	134	160	4	Dai	7	B								
25 Oct	S14W33	135	60	3	Cao	5	B								
26 Oct	S12W48	137	60	3	Cso	3	B								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 134

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 4263												
21 Oct	N05W12	167	10	4	Bxo	3	B								
22 Oct	N06W27	169	10	2	Axx	1	A								
23 Oct	N06W42	171	plage												
24 Oct	N06W57	172	plage												
25 Oct	N06W72	174	plage												
26 Oct	N06W87	176	plage												
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 167

			Region 4264												
21 Oct	N07E55	100	10	1	Axx	1	A								
22 Oct	N07E39	101	10	1	Axx	1	A								
23 Oct	N07E24	103	10	1	Axx	1	A								
24 Oct	N07E09	106	plage												
25 Oct	N07W06	108	plage												
26 Oct	N07W21	110	plage												
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 108

			Region 4265												
22 Oct	N12W08	150	10	3	Bxo	2	B								
23 Oct	N12W23	150	plage												
24 Oct	N12W37	152	plage												
25 Oct	N12W51	153	plage												
26 Oct	N12W65	154	plage												
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 150

			Region 4266												
23 Oct	N15E43	84	10	1	Bxo	3	B								
24 Oct	N14E29	86	10	2	Cri	3	B				1				
25 Oct	N15E16	86	60	4	Dao	5	B								
26 Oct	N16E01	88	20	6	Dro	8	B								
								0	0	0	1	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 88

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 4267												
23 Oct	N01E67	59	80	2	Hsx	1	A	4							
24 Oct	N02E56	59	90	1	Hsx	1	A	4							
25 Oct	N01E45	57	140	3	Hsx	1	A	2			2				
26 Oct	N02E31	58	140	2	Hsx	1	A								
								10	0	0	2	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 58

			Region 4268												
24 Oct	S10E02	113	10	2	Bxo	3	B								
25 Oct	S10W12	114	plage												
26 Oct	S10W26	115	plage												
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 113

			Region 4269												
25 Oct	S11E41	59	20	2	Cro	4	B								
26 Oct	S12E27	62	30	6	Cro	7	B								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 62

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

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