

Solar activity reached moderate levels on 19-22 Dec due to low level M-class activity from Regions 3924 (S18, L=317, class/area Eko/300 on 18 Dec), 3928 (S13, L=175, class/area Dki/260 on 22 Dec), 3930 (S20, L=258, class/area Cai/100 on 20 Dec), and 3932 (S17, L=480, class/area Ekc/480 on 22 Dec). The largest flare was an M3.8 at 19/1534 UTC from Region 3928. Slight to moderate growth was observed in sunspot regions 3928, 3932, and 3933 (S07, L=174, class/area Dko/260 on 22 Dec) beginning on 21 Dec in the SE quadrant. Other activity included a CME off the NNE limb at 20/2324 UTC associated with flaring in the vicinity of N22E08. Subsequent modelling indicated the potential for a grazing early to midday on 24 Dec. No further Earth-directed CMEs were observed.

No proton events were observed at geosynchronous orbit, however three proton enhancements occurred from 16/1820-17/0630 UTC with a maximum of 0.41 pfu at 17/0210 UTC, 17/1840-17/2130 UTC with a maximum of 0.72 pfu at 17/1915 UTC, and again from 20/1015 UTC till the end of the reporting period with a current maximum of 5.25 pfu at 22/0625 UTC. The early enhancements could be related to a large CME just beyond the SE limb occurring at 15/1441 UTC. The enhancement on 20 Dec could be attributed to a large prominence eruption just beyond the SW limb at 19/1241 UTC.

The greater than 2 MeV electron flux at geosynchronous orbit was at normal to moderate levels with a peak flux of 757 pfu observed at 21/1955 UTC.

Geomagnetic field activity ranged from quiet to G1 (Minor) storm levels. The solar wind began the period near nominal levels on 16 Dec with solar wind speed near 400 km/s and total field slightly enhanced ranging from 5-10 nT. The geomagnetic field was at quiet to unsettled levels. At 17/0442 UTC, a shock arrival was observed at the ACE spacecraft, likely due to influences associated with CMEs that occurred on 13-15 Dec. Total field increased to a maximum of 30 nT at 17/0633 UTC before declining to around 10 nT at 17/1600 UTC. Solar wind speed increased to a maximum of 701 km/s at 17/0821 UTC before declining to 500-600 km/s by 17/1930 UTC. A further decline in solar wind speed to around 440 km/s was observed around midday on 19 Dec. The geomagnetic field responded with mostly active to G1 (Minor) storming on 17 Dec followed by quiet to active levels on 18-19 Dec. Quiet to active levels continued through 21 Dec as the solar wind likely transitioned into a negative polarity CH HSS with solar wind speeds increasing to near 700 km/s by 22/1315 UTC before slowly decreasing to near 580 km/s by the end of the period. Quiet to unsettled levels were observed on 22 Dec.

## **Space Weather Outlook**

### **23 December - 18 January 2025**

Solar activity is expected to continue at low to moderate (R1-R2, Minor-Moderate) levels throughout the period with a chance for X-class flares (R3, Strong) through 01 Jan, primarily due to the growth and increased complexity of Regions 3928, 3932, and 3933.



There is a slight chance for a greater than 10 MeV proton event reaching the S1 (Minor) level through 03 Jan due to the flare potential of Regions 3928, 3932, and 3933.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to continue at normal to moderate levels with a chance for high levels on 23-25 Dec due to HSS influence.

Geomagnetic field activity is expected to reach unsettled to active levels on 23-27 Dec due to HSS influence couple with a possible grazing from the 20 Dec CME around midday on 24 Dec. Unsettled to active levels are expected again on 05-06 Jan, 10-12 Jan, and 16-18 Jan due to recurrent CH HSS effects.



### 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
16 December	167	90	750	C1.3	6	0	0	3	0	0	0	0
17 December	170	88	680	C1.3	7	0	0	5	0	0	0	0
18 December	174	82	860	C1.7	6	0	0	0	0	0	0	0
19 December	175	96	880	C2.0	11	3	0	3	0	0	0	0
20 December	184	148	1310	C1.6	9	2	0	4	0	0	0	0
21 December	195	152	1360	C2.0	9	1	0	7	1	0	0	0
22 December	223	176	1710	C2.2	11	3	0	8	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	
16 December	2.1e+06	1.6e+04	1.3e+06	
17 December	1.5e+07	1.9e+04	1.3e+06	
18 December	1.3e+06	1.6e+04	5.5e+06	
19 December	2.8e+05	1.8e+04	1.1e+07	
20 December	2.4e+05	2.8e+04	1.0e+07	
21 December	4.8e+05	2.1e+05	2.1e+07	
22 December	9.4e+05	3.4e+05	2.4e+07	

### Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
16 December	11	1-3-3-3-1-2-3-3	30	0-2-6-6-4-3-4-2	14	1-3-3-3-2-3-4-4
17 December	20	3-4-4-4-3-4-2-3	31	3-6-5-4-4-4-3-2	29	4-5-5-4-4-4-2-3
18 December	12	3-1-2-3-2-4-3-1	18	3-1-2-4-4-4-4-2	15	4-2-3-3-3-3-4-1
19 December	9	4-2-1-1-2-3-1-2	8	3-2-1-2-3-2-1-2	11	4-3-2-1-2-2-2-3
20 December	10	3-2-1-1-3-2-3-3	12	3-2-0-2-4-3-3-2	13	4-3-1-2-3-3-3-2
21 December	13	3-3-1-3-3-2-3-3	11	2-2-2-3-3-3-3-2	16	3-3-2-3-3-3-4-3
22 December	15	2-1-2-3-4-4-3-3	23	2-1-2-5-5-4-4-3	9	2-2-2-3-3-3-3-3

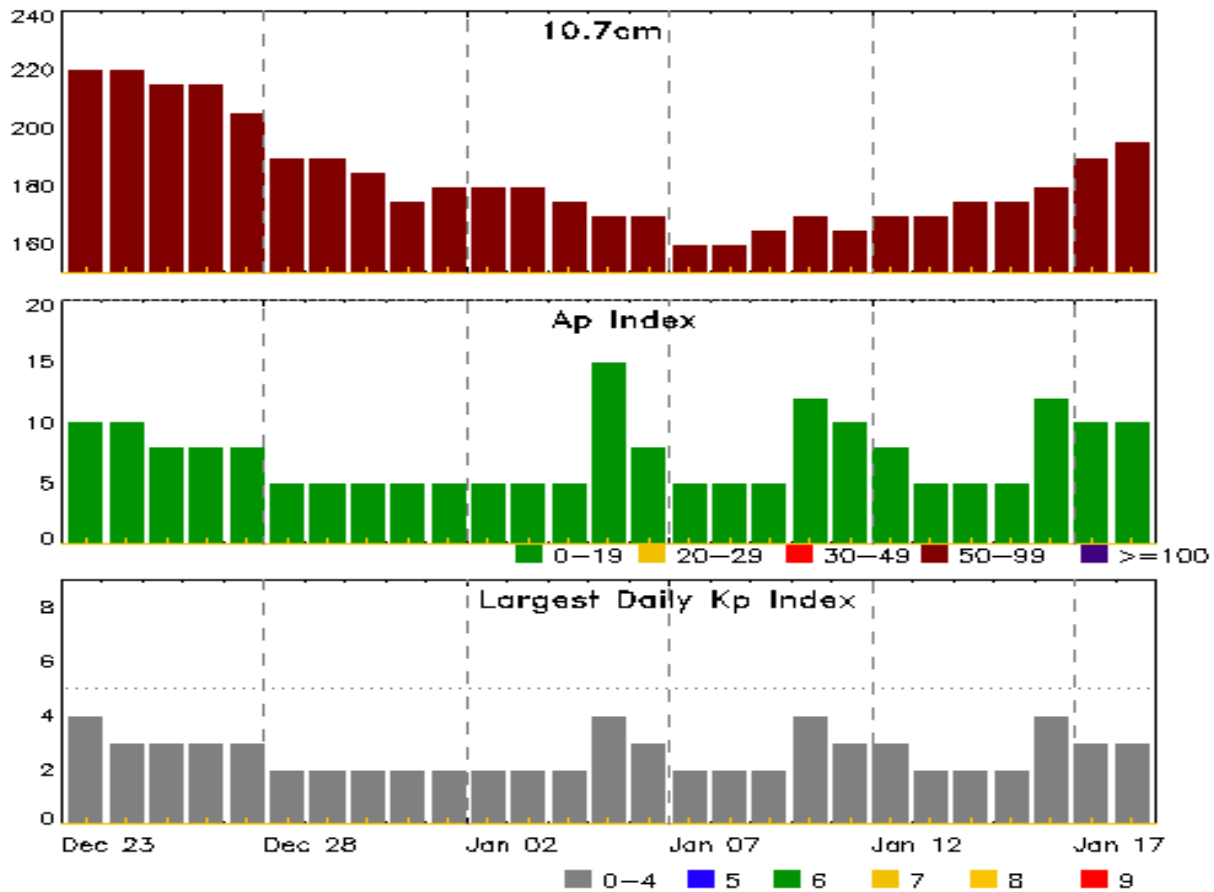


### *Alerts and Warnings Issued*

<b>Date &amp; Time of Issue UTC</b>	<b>Type of Alert or Warning</b>	<b>Date &amp; Time of Event UTC</b>
16 Dec 1935	WARNING: Geomagnetic K = 4	16/1935 - 2359
16 Dec 2059	ALERT: Geomagnetic K = 4	
16 Dec 2341	EXTENDED WARNING: Geomagnetic K = 4	16/1935 - 17/1500
17 Dec 0412	WARNING: Geomagnetic K = 5	17/0411 - 1200
17 Dec 0450	WARNING: Geomagnetic Sudden Impulse expected	17/0515 - 0600
17 Dec 0503	WARNING: Geomagnetic K = 6	17/0503 - 1200
17 Dec 0521	ALERT: Geomagnetic K = 5	
17 Dec 0526	SUMMARY: Geomagnetic Sudden Impulse	17/0519
17 Dec 0807	ALERT: Geomagnetic K = 5	
17 Dec 1151	EXTENDED WARNING: Geomagnetic K = 5	17/0411 - 1800
17 Dec 1151	EXTENDED WARNING: Geomagnetic K = 4	16/1935 - 17/2100
17 Dec 1754	EXTENDED WARNING: Geomagnetic K = 4	16/1935 - 18/0600
17 Dec 1754	EXTENDED WARNING: Geomagnetic K = 5	17/0411 - 2359
18 Dec 0554	EXTENDED WARNING: Geomagnetic K = 4	16/1935 - 18/1200
18 Dec 1154	EXTENDED WARNING: Geomagnetic K = 4	16/1935 - 18/1800
18 Dec 1755	EXTENDED WARNING: Geomagnetic K = 4	16/1935 - 18/2359
18 Dec 2357	EXTENDED WARNING: Geomagnetic K = 4	16/1935 - 19/0900
20 Dec 0058	WARNING: Geomagnetic K = 4	20/0057 - 0900
20 Dec 0301	ALERT: Geomagnetic K = 4	
20 Dec 1030	ALERT: Type II Radio Emission	20/1013
20 Dec 1129	SUMMARY: 10cm Radio Burst	20/1118 - 1118
21 Dec 0135	WARNING: Geomagnetic K = 4	21/0133 - 1200
21 Dec 0245	SUMMARY: 10cm Radio Burst	21/0037 - 0038
21 Dec 2026	ALERT: Type II Radio Emission	21/1939
21 Dec 2026	ALERT: Type IV Radio Emission	21/1942
21 Dec 2102	WARNING: Geomagnetic K = 4	21/2059 - 2359
21 Dec 2102	ALERT: Geomagnetic K = 4	
21 Dec 2354	EXTENDED WARNING: Geomagnetic K = 4	21/2059 - 22/0900
22 Dec 2302	WARNING: Geomagnetic K = 4	22/2302 - 23/0900



## 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
23 Dec	220	10	4	06 Jan	170	8	3
24	220	10	3	07	160	5	2
25	215	8	3	08	160	5	2
26	215	8	3	09	165	5	2
27	205	8	3	10	170	12	4
28	190	5	2	11	165	10	3
29	190	5	2	12	170	8	3
30	185	5	2	13	170	5	2
31	175	5	2	14	175	5	2
01 Jan	180	5	2	15	175	5	2
02	180	5	2	16	180	12	4
03	180	5	2	17	190	10	3
04	175	5	2	18	195	10	3
05	170	15	4				



### ***Energetic Events***

Date	Time			X-ray		Optical Information			Peak		Sweep Freq	
	Begin	Max	Half	Class	Integ Flux	Imp/ Brtns	Location Lat CMD	Rgn #	Radio Flux		Intensity	
			Max						245	2695	II	IV
19 Dec	1021	1038	1057	M1.6	0.002	SF	S19W72	3924				
19 Dec	1527	1534	1539	M3.8	0.012			3928				
19 Dec	1856	1900	1904	M1.7	0.004			3928				
20 Dec	0720	0726	0735	M2.1	0.012			3924				
20 Dec	1115	1118	1122	M2.5	0.005			3928			220	
21 Dec	0033	0038	0042	M1.9	0.005			3932	4700		230	
22 Dec	0403	0410	0414	M1.0	0.003			3932	530			
22 Dec	1406	1414	1423	M1.0	0.008			3930				
22 Dec	2039	2049	2054	M1.1	0.005	1N	S19E39	3932	2900			

### ***Flare List***

Date	Time			X-ray Class	Optical		
	Begin	Max	End		Imp/ Brtns	Location Lat CMD	Rgn #
16 Dec	0446	0451	0455	C2.4			3920
16 Dec	0455	0501	0505	C2.0			3922
16 Dec	0718	0732	0742	C4.5			
16 Dec	0918	0923	0928	C1.9	SF	S17W29	3924
16 Dec	1245	1304	1330		SF	S16W34	3924
16 Dec	1603	1603	1608		SF	S19W38	3924
16 Dec	2137	2149	2156	C3.8			3917
16 Dec	2233	2240	2245	C2.1			3917
17 Dec	0003	0005	0006		SF	S19W09	3922
17 Dec	0122	0130	0135	C4.5			3917
17 Dec	0401	0412	0432	C3.6			3917
17 Dec	0446	0452	0456	C4.0			3917
17 Dec	0744	0752	0759	C2.2	SF	N10E17	3925
17 Dec	1348	1348	1350		SF	S18W44	3924
17 Dec	1804	1812	1825	C2.6	SF	N21W66	3920
17 Dec	2016	2021	2025	C2.1			3922
17 Dec	2134	2146	2156	C5.9			3927
17 Dec	2300	2301	2312		SF	S20W28	3922
18 Dec	0103	0115	0123	C4.1			3927
18 Dec	0722	0734	0747	C8.2			3927
18 Dec	1406	1418	1432	C2.6			3927
18 Dec	1451	1456	1500	C2.4			



## *Flare List*

Date	Time			X-ray Class	Optical		Rgn #
	Begin	Max	End		Imp/ Brtns	Location Lat CMD	
18 Dec	2021	2023	2027	C5.0			3927
18 Dec	2347	2352	2356	C3.8			3927
19 Dec	0130	0135	0139	C3.1			3927
19 Dec	0236	0248	0256	C5.0			3927
19 Dec	0519	0522	0533		SF	S14E77	3927
19 Dec	0730	0737	0748	C4.6			3927
19 Dec	0915	0919	0931	C5.0	SF	S12E68	3927
19 Dec	1021	1038	1057	M1.6	SF	S19W72	3924
19 Dec	1343	1352	1400	C7.1			3928
19 Dec	1425	1432	1440	C7.6			3928
19 Dec	1503	1507	1511	C5.9			3928
19 Dec	1527	1534	1539	M3.8			3928
19 Dec	1702	1716	1725	C5.9			
19 Dec	1746	1810	1827	C7.2			3924
19 Dec	1856	1900	1904	M1.7			3928
19 Dec	2114	2123	2125	C3.1			3924
19 Dec	2125	2133	2140	C3.4			3924
20 Dec	0133	0140	0144	C2.6	SF	S16E77	3928
20 Dec	0154	0201	0208	C2.6			
20 Dec	0543	0546	0551	C2.7			3928
20 Dec	0654	0704	0714	C3.0			3924
20 Dec	0720	0726	0735	M2.1			3924
20 Dec	0855	0901	0906	C9.4	SF	S14E73	3928
20 Dec	1003	1011	1017	C9.4			3932
20 Dec	1034	1038	1043	C2.9			3928
20 Dec	1115	1118	1122	M2.5			3928
20 Dec	1507	1508	1513		SF	S19E56	3928
20 Dec	1646	1649	1653	C4.5	SF	S19E70	3932
20 Dec	2236	2245	2256	C4.8			3929
21 Dec	0033	0038	0042	M1.9			3932
21 Dec	0408	0413	0417	C5.2			3932
21 Dec	0716	0724	0729	C3.3			3927
21 Dec	0729	0736	0743	C4.5			3932
21 Dec	1128	1132	1136	C3.6			3932
21 Dec	2012	2019	2028	C4.9			3930
21 Dec	2014	2017	2049		SF	S17E53	3932
21 Dec	2017	2022	2049		SF	S20W47	3930
21 Dec	2030	2037	2047	C8.3			3927



## *Flare List*

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
21 Dec	2032	2034	2114		1N	S06E35	3933
21 Dec	2105	2114	2123	C5.0	SF	S12E34	3928
21 Dec	2128	2134	2145		SF	S20W47	
21 Dec	2158	2206	2227	C6.7	SF	S20W47	3930
21 Dec	2258	2305	2310	C9.5			3932
21 Dec	2311	2313	2324		SF	S19W47	3930
21 Dec	2320	2324	2330		SF	S07E29	3933
22 Dec	0033	0042	0051	C7.2			3930
22 Dec	0301	0308	0317	C3.4			3930
22 Dec	0317	0325	0339	C5.2			3930
22 Dec	0403	0410	0414	M1.0			3932
22 Dec	0523	0527	0531	C5.4			3930
22 Dec	0632	0652	0711	C6.2			3927
22 Dec	0711	0721	0728	C5.5			3928
22 Dec	0805	0805	0910		SF	S20W52	3930
22 Dec	1021	1031	1035	C9.6	SN	S16E44	3932
22 Dec	1241	1243	1247		SF	S16E44	3932
22 Dec	1343	1350	1358	C4.1	SF	S17E42	3932
22 Dec	1402	1404	1406		SF	N15E61	3934
22 Dec	1406	1414	1423	M1.0			3930
22 Dec	1716	1724	1729	C4.3			3928
22 Dec	1720	1725	1734		SF	S17E39	3932
22 Dec	1721	1721	1727		SF	S13E29	3928
22 Dec	1928	1936	1942	C3.5	SF	S21W60	3930
22 Dec	2039	2049	2054	M1.1	1N	S19E39	3932
22 Dec	2310	2321	2332	C4.4			3930





## Region Summary

Date	Location		Sunspot Characteristics					Flares							
	Lat CMD	Helio	Area 10 <sup>-6</sup> hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical				
		Lon						C	M	X	S	1	2	3	4
<i>Region 3917</i>															
04 Dec	S09E61	10	30	4	Cao	5	B		1		1				
05 Dec	S08E51	8	90	7	Dri	6	BG	2	1		1				
06 Dec	S08E37	9	180	8	Dao	7	BG	6	1		1				
07 Dec	S07E24	9	200	8	Dac	12	BD	8	2		5				
08 Dec	S07E11	9	210	10	Dac	15	B	3			1				
09 Dec	S08W02	8	220	10	Dao	12	BG	4							
10 Dec	S08W14	7	230	11	Eac	20	BG	3			1				
11 Dec	S08W28	8	280	9	Dki	23	BG	1			1				
12 Dec	S08W42	9	290	9	Dkc	16	BGD	5			2				
13 Dec	S08W56	10	260	6	Dkc	13	BGD	9	1		4				
14 Dec	S07W70	11	270	7	Dko	9	BG	3							
15 Dec	S07W83	10	260	7	Dko	6	B	9			1				
16 Dec	S07W96	10	160	4	Cao	4	B	2							
								55	6	0	18	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 8

### Region 3919

08 Dec	S14E08	12	50	4	Cso	2	B								
09 Dec	S14W06	12	10	2	Bxo	2	B								
10 Dec	S14W20	13	plage												
11 Dec	S14W34	14	plage												
12 Dec	S14W48	15	plage												
13 Dec	S14W62	16	plage												
14 Dec	S13W76	17	plage												
15 Dec	S13W90	17	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 12



### *Region Summary - continued*

Date	Location	Sunspot Characteristics						Flares							
	Lat CMD	Helio	Area 10 <sup>-6</sup> hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical				
		Lon						C	M	X	S	1	2	3	4
Region 3920															
08 Dec	N22E52	326	90	9	Csi	6	B								
09 Dec	N22E38	329	70	7	Cso	6	B	1							
10 Dec	N22E24	329	60	7	Dso	12	B	8			3	1			
11 Dec	N22E10	330	250	11	Eki	21	BD	6	1			1			
12 Dec	N22W02	329	250	13	Eki	18	BD	1							
13 Dec	N23W16	330	260	12	Eki	14	BD	1			1				
14 Dec	N22W29	330	180	12	Eao	12	BG								
15 Dec	N22W42	329	160	11	Eao	6	B	2				1			
16 Dec	N23W55	329	140	8	Dao	5	B	1							
17 Dec	N22W67	328	90	2	Hsx	1	A	1			1				
18 Dec	N22W81	329	60	2	Hsx	1	A								
19 Dec	N22W93	328	40	1	Hsx	1	A								
								21	1	0	5	3	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 329

### **Region 3921**

09 Dec	S07E12	355	20	1	Hrx	1	A								
10 Dec	S07W01	354	10	1	Hrx	1	A								
11 Dec	S06W13	353	10	1	Axx	1	A								
12 Dec	S06W28	355	10	1	Axx	1	A								
13 Dec	S06W42	356	plage												
14 Dec	S06W56	357	plage												
15 Dec	S06W71	358	plage					1							
16 Dec	S06W86	360	plage												
								1	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 354

### *Region Summary - continued*

Date	Location	Sunspot Characteristics						Flares							
	Lat CMD	Helio	Area 10 <sup>-6</sup> hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical				
		Lon						C	M	X	S	1	2	3	4
Region 3922															
10 Dec	S17E59	294	20	3	Cro	4	B	6	3						
11 Dec	S18E48	292	50	6	Cso	5	B	1	1		1				
12 Dec	S18E36	291	30	6	Cao	3	B	1	2						
13 Dec	S18E22	292	20	5	Cso	5	B	3	2		3				
14 Dec	S18E09	292	plage					1							
15 Dec	S18W03	290	30	4	Cso	5	B	1			1				
16 Dec	S18W16	290	50	6	Dai	10	B	1							
17 Dec	S18W27	288	140	8	Dai	12	B	1			2				
18 Dec	S19W40	288	200	8	Dai	8	B								
19 Dec	S19W53	288	230	8	Dai	8	BG								
20 Dec	S19W64	285	250	11	Eko	10	B								
21 Dec	S19W78	286	240	10	Dao	5	B								
22 Dec	S19W91	286	120	10	Dao	2	B								
								15	8	0	7	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 290

### **Region 3924**

12 Dec	S20E12	315	30	5	Cro	3	B								
13 Dec	S20W02	316	50	6	Dao	10	BG	1							
14 Dec	S19W16	317	200	9	Dai	23	BG	2			1				
15 Dec	S19W29	316	190	10	Dsi	18	BG	3			3				
16 Dec	S19W42	316	280	13	Eki	18	BG	1			3				
17 Dec	S19W57	318	280	13	Eko	21	BG				1				
18 Dec	S18W69	317	300	13	Eko	8	BG								
19 Dec	S19W82	317	280	11	Eko	4	BG	3	1		1				
20 Dec	S19W95	317	160	7	Dao	2	B	1	1						
								11	2	0	9	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 316



### *Region Summary - continued*

Date	Location	Sunspot Characteristics						Flares								
	Lat CMD	Helio	Area 10 <sup>-6</sup> hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical					
		Lon						C	M	X	S	1	2	3	4	
Region 3925																
14 Dec	N10E49	252	10	2	Axx	2	A									
15 Dec	N10E36	251	10	1	Axx	1	A									
16 Dec	N09E20	254	plage													
17 Dec	N10E05	256	10	6	Bxo	1	B	1				1				
18 Dec	N10W10	258	10	1	Axx	1	A									
19 Dec	N10W22	257	10	1	Axx	1	A									
20 Dec	N10W32	254	10	1	Axx	1	A									
21 Dec	N10W46	254	plage													
22 Dec	N10W60	255	plage													
								1	0	0		1	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 256

<b>Region 3926</b>															
15 Dec	S20E67	220	110	3	Hsx	1	A								
16 Dec	S20E56	218	120	9	Cso	3	B								
17 Dec	S21E41	220	160	9	Cso	3	B								
18 Dec	S21E28	220	140	2	Hsx	1	A								
19 Dec	S20E16	222	100	2	Hsx	1	A								
20 Dec	S20E04	219	150	3	Hax	2	A								
21 Dec	S20W10	218	120	3	Hax	2	A								
22 Dec	S21W23	218	100	3	Hsx	1	A								
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 219

<b>Region 3927</b>															
17 Dec	S08E89	173	plage					1							
18 Dec	S08E69	179	150	10	Dai	3	B	5							
19 Dec	S10E57	178	140	9	Dai	7	BG	4			2				
20 Dec	S11E44	178	280	13	Eki	10	BG								
21 Dec	S08E25	183	100	2	Hsx	1	A	2							
22 Dec	S08E11	184	90	2	Hsx	1	A	1							
								13	0	0	2	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 184



### *Region Summary - continued*

	Location		Sunspot Characteristics					Flares							
		Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical				
Date	Lat CMD	Lon	10 <sup>-6</sup> hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4
Region 3928															
19 Dec	S14E60	175	80	5	Dao	4	B	3	2						
20 Dec	S17E49	173	150	10	Dai	6	BG	4	1		1				
21 Dec	S14E34	174	220	9	Dai	12	B	1			1				
22 Dec	S13E20	175	260	9	Dki	18	BG	2			1				
								10	3	0	3	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 175

### **Region 3929**

20 Dec	N17E31	191	20	2	Hsx	1	A	1							
21 Dec	N17E18	190	10	1	Axx	1	A								
22 Dec	N17E04	191	10	1	Axx	1	A								
								1	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 191

### **Region 3930**

20 Dec	S20W36	258	100	3	Cai	5	B								
21 Dec	S22W49	257	80	5	Cai	5	B	2			2				
22 Dec	S22W62	257	90	6	Dai	7	B	6	1		2				
								8	1	0	4	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 258

### **Region 3931**

20 Dec	N23E32	190	10	2	Bxo	3	B								
21 Dec	N24E18	190	20	4	Bxo	3	B								
22 Dec	N25E05	190	10	1	Axx	1	A								
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 190

### **Region 3932**

20 Dec	S18E62	160	180	7	Dai	8	B	2			1				
21 Dec	S17E54	154	310	13	Ekc	12	B	4	1		1				
22 Dec	S17E42	153	480	12	Ekc	17	BG	2	2		4	1			
								8	3	0	6	1	0	0	0

Still on Disk.

Absolute heliographic longitude: 153



### ***Region Summary - continued***

Location		Sunspot Characteristics						Flares							
Date	Lat CMD	Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical				
		Lon	10 <sup>-6</sup> hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4

#### ***Region 3933***

21 Dec	S08E34	174	200	10	Dao	7	B				1	1			
22 Dec	S07E21	174	260	9	Dko	9	B								
								0	0	0	1	1	0	0	0

Still on Disk.

Absolute heliographic longitude: 174

#### ***Region 3934***

21 Dec	N12E60	148	60	9	Dro	4	B								
22 Dec	N13E47	148	150	17	Fao	8	B				1				
								0	0	0	1	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 148

#### ***Region 3935***

22 Dec	S18E67	128	140	3	Hsx	1	A								
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 128



## ***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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