Space Weather Highlights **SWPC PRF 2468**
12 December - 18 December 2022 **19 December 2022**

Solar activity reached high levels on 14-16 Dec, and low levels were observed on 12-13 and 18 Dec. Region 3165 (S19, L=279, class/area=Ekc/340 on 15 Dec) produced the bulk of this period's M-flare activity. In total 29 M-class flares were observed this period, of which two exceeded R2 (Moderate) levels (an M6/2b flare at 14/1442 UTC and an M5 flare at 15/2240 UTC). No Earth-directed CMEs were observed this period.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at normal to moderate levels throughout the period.

Geomagnetic field activity was quiet to unsettled on 12-13 Dec, and quiet on 14-18 Dec. K-index calculations were unavailable due to an outage on 16-17 Dec.

Space Weather Outlook
19 December - 14 January 2023

Solar activity is expected to be low with a chance for R1-R2 (Minor-Moderate) events and a slight chance for R3 or greater events throughout the forecast period.

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 22-24 Dec, and 26 Dec-02 Jan. Normal to moderate levels are expected on 19-21, 25 Dec, and 03-14 Jan.

Geomagnetic field activity is likely to reach G1 (Minor) storm levels on 21, 25-28 Dec, and 03 Jan due to CH HSS influences. Active levels are likely on 19-20, 22, 29, 31 Dec. Quiet and quiet to unsettled levels are expected to prevail throughout the remainder of the forecast 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
12 December	151	142	1410	B7.6	5	0	0	0	0	0	0	0
13 December	153	159	1260	B8.1	3	0	0	3	1	0	0	0
14 December	165	174	1240	C1.7	10	11	0	8	2	1	0	0
15 December	166	140	1160	C3.0	14	6	0	9	2	0	0	0
16 December	-1	108	1020	C2.4	11	8	0	18	1	0	0	0
17 December	155	139	1290	C1.1	10	1	0	17	1	0	0	0
18 December	156	128	930	C1.3	9	0	0	5	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
12 December	4.7e+04	3.2e+04	5.1e+06
13 December	4.8e+04	3.2e+04	8.9e+06
14 December	6.0e+04	3.3e+04	1.1e+07
15 December	5.2e+04	3.2e+04	2.4e+06
16 December	4.5e+04	3.3e+04	1.9e+06
17 December	4.6e+04	3.3e+04	2.1e+06
18 December	5.7e+04	3.3e+04	2.0e+06

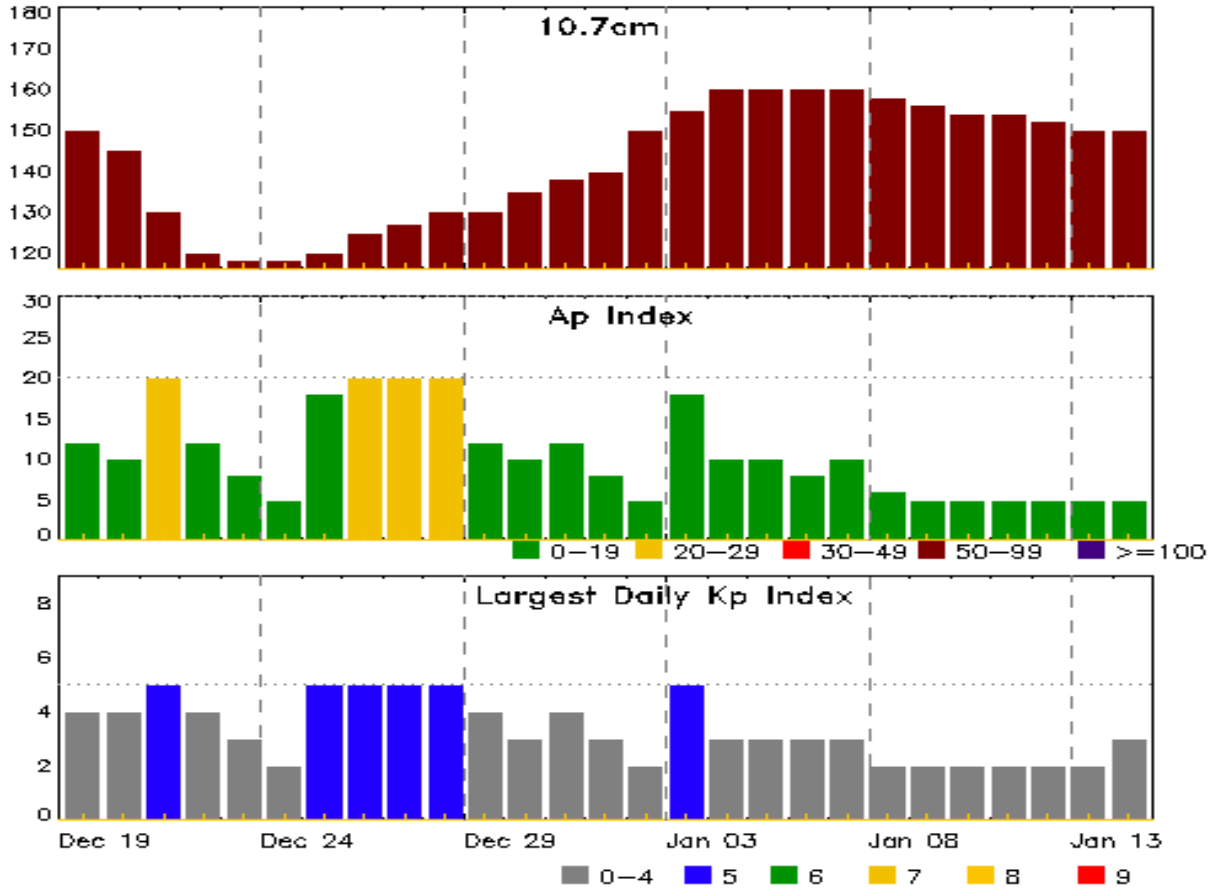
Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
12 December	5	2-1-1-1-2-2-1-2	4	2-1-1-0-1-2-1-1	6	3-2-1-1-1-1-1-2
13 December	3	2-0-0-0-2-2-1-1	3	2-1-1-1-1-2-0-0	4	3-0-0-1-1-1-1-1
14 December	3	0-1-0-0-2-2-1-2	2	0-0-0-0-0-2-1-1	4	0-1-1-0-1-2-2-2
15 December	4	1-1-1-1-2-1-2-1	5	1-1-3-2-2-0-1-0	5	1-2-2-1-1-1-1-1
16 December	0	2-0-0-0-0-0-0-0	0	0-0-0-0-0-0-0-0	9	2-*-*-*-*-*-*-*
17 December	2	0-0-0-0-1-2-1-0	0	0-0-0-0-0-0-0-0	3	*-*-0-1-1-0-1-0
18 December	2	0-0-0-1-2-1-1-1	3	0-0-0-3-1-0-0-1	3	1-0-0-1-1-1-1-2

Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
14 Dec 0434	ALERT: Type II Radio Emission	14/0358
14 Dec 0436	ALERT: Type IV Radio Emission	14/0358
14 Dec 0846	ALERT: Type II Radio Emission	14/0829
14 Dec 1444	ALERT: X-ray Flux exceeded M5	14/1441
14 Dec 1514	SUMMARY: X-ray Event exceeded M5	14/1431 - 1449
14 Dec 2037	ALERT: Type II Radio Emission	14/2010
14 Dec 2111	ALERT: Type IV Radio Emission	14/2032
14 Dec 2322	ALERT: Type IV Radio Emission	14/2146
15 Dec 0307	ALERT: Type II Radio Emission	15/0225
15 Dec 0437	ALERT: Type II Radio Emission	15/0409
15 Dec 2240	ALERT: X-ray Flux exceeded M5	15/2237
15 Dec 2240	ALERT: X-ray Flux exceeded M5	15/2237
15 Dec 2302	SUMMARY: X-ray Event exceeded M5	15/2220 - 2257
15 Dec 2302	SUMMARY: X-ray Event exceeded M5	15/2220 - 2257
18 Dec 2118	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
19 Dec	150	12	4	02 Jan	150	5	2
20	145	10	4	03	155	18	5
21	130	20	5	04	160	10	3
22	120	12	4	05	160	10	3
23	118	8	3	06	160	8	3
24	118	5	2	07	160	10	3
25	120	18	5	08	158	6	2
26	125	20	5	09	156	5	2
27	127	20	5	10	154	5	2
28	130	20	5	11	154	5	2
29	130	12	4	12	152	5	2
30	135	10	3	13	150	5	2
31	138	12	4	14	150	5	3
01 Jan	140	8	3				

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
14 Dec	0730	0740	0747	M2.4	0.017	1N	S20W39		3165				
14 Dec	0824	0831	0837	M1.1	0.008	1F	S20W39		3165	110		2	
14 Dec	0920	0927	0935	M1.3	0.009				3165				
14 Dec	1145	1159	1217	M1.1	0.015				3165				
14 Dec	1224	1231	1238	M4.1	0.020				3165				
14 Dec	1431	1442	1449	M6.3	0.031	2B	S20W49		3165	100			
14 Dec	1454	1459	1504	M3.2	0.018				3165				
14 Dec	1703	1712	1723	M2.2	0.016				3165				
14 Dec	2052	2058	2102	M2.2	0.011				3165				
14 Dec	2133	2139	2145	M1.3	0.005	SF	S22E12		3163	260			
14 Dec	2145	2153	2157	M1.9	0.012				3165				
14 Dec	2157	2206	2217	M4.5	0.043				3165				
15 Dec	0124	0137	0149	M1.6	0.016				3165				
15 Dec	0655	0707	0722	M2.3	0.024				3165				
15 Dec	0754	0758	0802	M1.0	0.004				3165	100			
15 Dec	1023	1030	1037	M1.6	0.013				3165	110			
15 Dec	1558	1610	1619	M1.0	0.011								
15 Dec	1635	1644	1647	M1.1	0.007				3165				
15 Dec	1647	1656	1712	M2.0	0.027				3165				
15 Dec	2220	2240	2257	M5.7	0.082				3165				
16 Dec	0130	0201	0230	M3.5	0.081				3165				
16 Dec	0630	0642	0654	M1.2	0.014	1F	S20W39		3165				
16 Dec	0726	0738	0747	M1.6	0.014								
16 Dec	0855	0905	0911	M1.5	0.009	SF	S20W39		3165	730			
16 Dec	0933	0943	0950	M1.1	0.011	SF	S22W01		3163				
16 Dec	1002	1019	1034	M4.0	0.043								
16 Dec	1424	1440	1504	M2.4	0.037				3165				
16 Dec	1534	1540	1545	M1.2	0.007				3165				
17 Dec	1940	1953	2001	M1.0	0.008	1N	N19E72		3169				

Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
12 Dec	0006	0035	0053	C3.4			3156
12 Dec	0053	0056	0100	C3.2			3153
12 Dec	0347	0353	0407	C1.7			3156
12 Dec	0921	0926	0931	C2.1			3156
12 Dec	1457	1509	1528	C3.0			3166
12 Dec	1931	1940	1945	B9.8			3153
13 Dec	0900	0904	0908	C1.7	SF	S15W72	3153
13 Dec	1944	1945	1959	C1.9	SF	S16W79	3153
13 Dec	2246	2252	2257		SF	S17W36	3165
13 Dec	2259	2325	2357	C2.9	1F	S14W79	3153
14 Dec	0023	0032	0044	C1.3			3153
14 Dec	0323	0332	0344	C2.5			3153
14 Dec	0402	0411	0420	C5.9			3153
14 Dec	0435	0439	0446	C2.2	SF	S20W39	3165
14 Dec	0501	0505	0510		SF	S20W39	3165
14 Dec	0537	0549	0617	C3.4	SF	S20W39	3165
14 Dec	0652	0654	0657		SF	S20W39	3165
14 Dec	0710	0734	0826	M2.4	1N	S20W39	3165
14 Dec	0824	0831	0837	M1.1	1F	S20W39	3165
14 Dec	0920	0927	0935	M1.3			3165
14 Dec	1024	1034	1040	C5.2			3165
14 Dec	1145	1159	1217	M1.1			3165
14 Dec	1224	1231	1238	M4.1			3165
14 Dec	1431	1442	1449	M6.3	2B	S20W49	3165
14 Dec	1454	1459	1504	M3.2			3165
14 Dec	1604	1609	1616	C3.7			3168
14 Dec	1703	1712	1723	M2.2			3165
14 Dec	1830	1834	1910		SF	S22E13	3163
14 Dec	1903	1911	1916	C3.8			3165
14 Dec	1925	1931	1932	C6.4	SF	S19E20	3163
14 Dec	2045	2047	2048		SF	S17E20	3163
14 Dec	2052	2058	2102	M2.2			3165
14 Dec	2133	2139	2145	M1.3			3165
14 Dec	2145	2153	2157	M1.9			3165
14 Dec	2157	2206	2217	M4.5			3165
14 Dec	2209	2222	2235		SF	S22E12	3163
14 Dec	2259	2316	2325		SF	S18E67	3168
14 Dec	2341	2345	2350	C7.3			3165

Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
15 Dec	0026	0031	0039		SF	S22E11	3163
15 Dec	0042	0053	0106	C6.3			3165
15 Dec	0124	0137	0149	M1.6			3165
15 Dec	0127	0127	0134		SF	S22E10	3163
15 Dec	0243	0251	0303	C3.9			3165
15 Dec	0303	0307	0314	C4.2	SF	S22E10	3163
15 Dec	0425	0443	0455	C4.5			3165
15 Dec	0455	0520	0540	C7.6			3165
15 Dec	0507	0510	0519		SF	S17E66	3168
15 Dec	0655	0707	0722	M2.3			3165
15 Dec	0754	0758	0802	M1.0			3165
15 Dec	0802	0810	0814	C9.2			3165
15 Dec	B0906	U1045	A1123		SF	S23W56	3165
15 Dec	1023	1030	1037	M1.6			3165
15 Dec	B1126	U1129	A1310		SF	S23W55	3165
15 Dec	1157	1206	1213	C6.0			3165
15 Dec	1308	1317	1333	C8.2			3165
15 Dec	1359	1415	1418	C9.1			3165
15 Dec	1418	1423	1429	C9.5			3165
15 Dec	1427	2237	A2350		1N	S20W56	3165
15 Dec	1524	1548	1911	C8.0	1N	S21E05	3163
15 Dec	1558	1610	1619	M1.0			
15 Dec	1635	1644	1647	M2.0			3165
15 Dec	1918	1924	1925		SF	S21E03	3163
15 Dec	1927	2136	2201	C6.4	SF	S21E05	3163
15 Dec	2153	2203	2212	C5.3			3165
15 Dec	2212	2218	2220	C6.7			3165
15 Dec	2220	2240	2257	M5.7			3165
15 Dec	2304	2315	2345		SF	S22W01	3163
16 Dec	0051	0057	0104		SF	S17E56	3168
16 Dec	0130	0201	0230	M3.5			3165
16 Dec	0252	0256	0302		SF	S22W01	3163
16 Dec	0617	0639	0647	M1.2	1F	S20W39	3165
16 Dec	0715	0719	0723	C5.1	SF	S20W39	3165
16 Dec	0726	0738	0747	M1.6			
16 Dec	0820	0820	0820		SF	S21W05	3163
16 Dec	0824	0835	0838		SF	S22W69	3165
16 Dec	0842	U0847	A0853		SF	S22W02	3163

Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
16 Dec	0855	0905	0911	M1.5	SF	S20W39	3165
16 Dec	0913	0915	0918		SF	S20W39	3165
16 Dec	0919	0929	0948	M1.1	SF	S22W01	3163
16 Dec	1002	1019	1034	M4.0			
16 Dec	1136	1140	1147	C8.5			
16 Dec	1323	1329	1335	C4.7	SF	S22W71	3165
16 Dec	1347	1353	1400	C5.8			
16 Dec	1424	1440	1504	M2.4			3165
16 Dec	1534	1540	1545	M1.2			3165
16 Dec	1622	1627	1718		SF	S21W75	3165
16 Dec	B1722	1726	1729		SF	S21W75	3165
16 Dec	1755	1806	1822	C4.3	SF	S20W78	3165
16 Dec	B1834	1835	1838		SF	S20W78	3165
16 Dec	1841	1843	1859		SF	S20W78	3165
16 Dec	1902	1911	1918	C9.1	SF	S21W77	3165
16 Dec	1930	1932	1953		SF	S20W10	3163
16 Dec	1959	2007	2015	C3.7			3165
16 Dec	2050	2104	2117	C8.9			3165
16 Dec	2209	2218	2234	C4.9	SF	S21W85	3165
16 Dec	2307	2316	2328	C5.4			3165
16 Dec	2331	2339	2344	C7.9			3165
17 Dec	0000	0434	0438	C8.7	SF	S20W39	3165
17 Dec	0220	0226	0230	C3.2			3165
17 Dec	0426	0434	0439	C2.5			3169
17 Dec	0519	0528	0536	C2.1			3160
17 Dec	0536	0553	0559	C2.8			3169
17 Dec	0552	0553	0555		SF	N24W50	3160
17 Dec	0758	0759	0801		SF	N00E00	3165
17 Dec	0847	0854	0858	C3.0	SF	S09W18	3166
17 Dec	0922	U0923	A1016		SF	S21W16	3163
17 Dec	1542	1554	1600	C2.0			3162
17 Dec	1551	1553	1557		SF	N20W54	3167
17 Dec	1555	1559	1607		SF	S20W23	3163
17 Dec	1600	1604	1609	C1.8			3169
17 Dec	1629	1633	1640		SF	S21E85	3166
17 Dec	1637	1638	1641		SF	S06W35	3166
17 Dec	1712	1716	1717		SF	S20W23	3163
17 Dec	1729	1736	1743	C5.0			3170

Flare List

	Time			Optical			
Date	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
17 Dec	1812	1814	1826		SF	S20W23	3163
17 Dec	1842	1846	1851		SF	S06W35	3166
17 Dec	1940	1953	2001	M1.0	1N	N19E72	3169
17 Dec	2149	2149	2152		SF	S06W37	3166
17 Dec	2158	2220	2247	C3.2			3167
17 Dec	2206	2215	2246		SF	N22W59	3167
17 Dec	2217	2220	2223		SF	S05W37	3166
17 Dec	B2218	2224	2226		SF	S22W27	3163
17 Dec	B2218	2220	2223		SF	S09W31	3166
18 Dec	0113	0122	0135	C5.4			3169
18 Dec	0442	0453	0506	C3.0			3169
18 Dec	0755	0756	0804		SF	S20W31	3163
18 Dec	0934	0942	0949	C2.4			3169
18 Dec	0935	0935	0947		SF	S14W59	3162
18 Dec	0944	0945	0947		SF	N20E65	3169
18 Dec	0959	1010	1016	C5.8	SF	S14W57	3162
18 Dec	1036	1036	1050		SF	N20E65	3169
18 Dec	1311	1316	1320	C2.3			3169
18 Dec	1406	1414	1419	C4.7			3169
18 Dec	1640	1645	1649	C3.8			3169
18 Dec	1953	2002	2015	C3.2			3162
18 Dec	2306	2313	2317	C2.0			3170

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 3153													
01 Dec	S19E70	329	270	4	Dko	2	B	4							
02 Dec	S17E59	328	750	12	Eko	6	BD	2							
03 Dec	S17E48	326	750	12	Eko	8	BG	2							
04 Dec	S17E33	327	1080	16	Fko	13	B	1			3				
05 Dec	S16E19	327	690	17	Fkc	13	B	3			5				
06 Dec	S16E08	325	660	15	Eko	27	B								
07 Dec	S18W05	326	370	17	Fko	14	B	1							
08 Dec	S17W20	327	740	17	Fko	13	BG	1							
09 Dec	S17W33	328	730	17	Fho	9	BG								
10 Dec	S17W45	327	700	17	Fho	5	B				1				
11 Dec	S17W59	327	690	17	Fho	5	B	2			3				
12 Dec	S17W72	327	670	16	Fho	5	B	1							
13 Dec	S15W85	327	400	17	Fho	7	B	3			2	1			
14 Dec	S17W95	324	10	1	Axx	2	A	3	1						
								23	1	0	14	1	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 326

		Region 3156													
02 Dec	N25E63	324	180	3	Hax	1	A	2							
03 Dec	N25E55	319	220	6	Dao	2	B	2							
04 Dec	N25E39	320	170	6	Cso	4	B	1							
05 Dec	N24E29	317	80	10	Hsx	2	A	1			1				
06 Dec	N25E13	321	50	1	Hsx	1	A								
07 Dec	N23E02	318	50	12	Cso	2	B								
08 Dec	N25W07	315	80	3	Hsx	1	A								
09 Dec	N25W25	320	80	3	Cso	2	B								
10 Dec	N25W39	321	70	2	Cso	6	B								
11 Dec	N28W54	322	80	5	Dso	5	B								
12 Dec	N28W66	321	150	7	Dso	8	B	3							
13 Dec	N26W80	322	80	6	Cso	6	B								
14 Dec	N26W95	322	100	2	Hax	1	A								
								9	0	0	1	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 318

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 3157													
02 Dec	N16E89	299	plage					1							
03 Dec	N16E75	299	120	2	Hax	1	A	5	1						
04 Dec	N16E61	300	210	8	Dso	6	B								
05 Dec	N17E09	217	170	10	Dao	5	B								
06 Dec	N17E33	300	150	9	Cso	7	B	1							
07 Dec	N16E19	301	130	10	Csi	10	B	3			3				
08 Dec	N16E07	300	150	10	Csi	9	BG	1			2				
09 Dec	N16W09	304	220	14	Esi	20	B	2							
10 Dec	N16W23	305	230	12	Esi	19	B				1				
11 Dec	N16W37	305	220	12	Esi	17	B								
12 Dec	N16W50	305	210	14	Csi	11	B								
13 Dec	N16W62	303	160	8	Cso	6	B								
14 Dec	N16W76	305	100	3	Hsx	1	A								
15 Dec	N16W90	306	plage												
								13	1	0	6	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 300

		Region 3159													
06 Dec	N30E65	269	20	1	Axx	1	A								
07 Dec	N28E51	269	10	1	Axx	1	A								
08 Dec	N28E37	271	10	1	Axx	1	A								
09 Dec	N29E25	270	plage												
10 Dec	N29E11	271	plage												
11 Dec	N29W03	271	plage												
12 Dec	N29W17	272	plage												
13 Dec	N29W31	273	plage												
14 Dec	N29W45	274	plage												
15 Dec	N29W59	275	plage												
16 Dec	N29W73	276	plage												
17 Dec	N29W87	276	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 271

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 3160													
06 Dec	N26E72	261	30	2	Hsx	1	A								
07 Dec	N20E60	260	80	1	Hsx	1	A								
08 Dec	N21E48	259	80	1	Hax	1	A								
09 Dec	N22E34	261	80	2	Hax	1	A								
10 Dec	N22E22	260	80	2	Hsx	1	A				1				
11 Dec	N22E08	260	80	2	Hsx	1	A								
12 Dec	N22W03	258	80	2	Hsx	1	A								
13 Dec	N22W16	258	80	2	Hsx	1	A								
14 Dec	N23W29	257	80	2	Hsx	1	A								
15 Dec	N23W42	258	70	2	Hsx	1	A								
16 Dec	N23W56	258	plage	1		1									
17 Dec	N23W69	258	50	1	Hsx	1	A	1			1				
18 Dec	N23W81	257	30	1	Hsx	1	A								
								1	0	0	2	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 258

		Region 3161													
08 Dec	N26W01	309	10	4	Dro	5	B								
09 Dec	N26W17	312	20	3	Dro	6	B								
10 Dec	N26W30	312	10	4	Bxo	4	B	2				1			
11 Dec	N26W44	312	plage								2				
12 Dec	N26W58	313	plage												
13 Dec	N26W72	314	plage												
14 Dec	N26W86	315	plage												
								2	0	0	2	1	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 309

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 3162												
09 Dec	S13E56	239	60	2	Hsx	1	A	2							
10 Dec	S13E43	239	70	2	Hsx	1	A								
11 Dec	S13E29	239	70	2	Hsx	1	A								
12 Dec	S13E16	239	80	2	Hsx	1	A								
13 Dec	S13E03	238	90	2	Hsx	1	A								
14 Dec	S13W10	237	80	2	Hsx	1	A								
15 Dec	S12W23	239	80	2	Cso	2	B								
16 Dec	S09W37	238	plage	2		1									
17 Dec	S14W51	240	40	2	Hsx	2	A	1							
18 Dec	S13W63	239	30	4	Cro	4	B	2			2				
								5	0	0	2	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 238

			Region 3163												
09 Dec	S20E78	218	plage					10							
10 Dec	S20E64	218	130	9	Dso	5	B	6			7				
11 Dec	S20E51	217	140	11	Eso	9	B	4			3				
12 Dec	S20E39	216	160	12	Eso	8	B								
13 Dec	S20E28	213	200	12	Eso	14	B								
14 Dec	S20E15	214	350	12	Ekc	22	BG				3				
15 Dec	S19E02	213	400	13	Ekc	23	BG	3			6	1			
16 Dec	S20W13	214	plage	12		14			1		5				
17 Dec	S20W26	215	530	12	Eki	22	BG				5				
18 Dec	S20W39	215	380	12	Eko	15	B				1				
								23	1	0	30	1	0	0	0

Still on Disk.
Absolute heliographic longitude: 213

			Region 3164												
11 Dec	S18W32	300	20	4	Dro	5	B								
12 Dec	S20W47	300	20	5	Dro	5	B								
13 Dec	S20W59	301	10	5	Bxo	2	B								
14 Dec	S20W73	301	10	5	Bxo	2	B								
								0	0	0	0	0	0	0	0

Died on Disk.
Absolute heliographic longitude: 300

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 3165												
11 Dec	S18W10	278	20	3	Cro	4	B								
12 Dec	S20W23	278	30	5	Dro	10	B								
13 Dec	S20W38	280	50	8	Dso	12	B				1				
14 Dec	S20W49	277	200	8	Dac	12	BG	6	10		4	2	1		
15 Dec	S19W63	279	340	11	Ekc	16	BD	11	5		2	1			
16 Dec	S20W77	278	plage	12		8		9	5		12	1			
17 Dec	S22W88	277	150	5	Dao	6	B	2			2				
								28	20	0	21	4	1	0	0

Crossed West Limb.
Absolute heliographic longitude: 278

			Region 3166												
11 Dec	S07E45	222	20	6	Cro	4	B	1			1				
12 Dec	S08E32	223	10	5	Bxo	3	B	1							
13 Dec	S09E16	225	10	1	Axx	1	A								
14 Dec	S09E02	227	30	6	Cro	6	B								
15 Dec	S08W11	226	80	8	Dao	15	B								
16 Dec	S08W25	227	plage	7		8									
17 Dec	S08W39	228	170	8	Dso	9	B	1			7				
18 Dec	S07W52	228	130	7	Dso	10	B								
								3	0	0	8	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 227

			Region 3167												
13 Dec	N20W01	243	180	6	Dai	9	B								
14 Dec	N20W12	240	190	7	Dao	15	B								
15 Dec	N21W26	241	120	8	Dso	10	B								
16 Dec	N20W40	242	plage	6		5									
17 Dec	N20W53	242	120	7	Cao	5	B	1			2				
18 Dec	N20W64	240	30	8	Cso	4	B								
								1	0	0	2	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 243

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 3168												
14 Dec	S16E68	161	90	2	Cso	1	B	1			1				
15 Dec	S15E53	162	70	4	Hsx	3	A				1				
16 Dec	S16E41	160	plage	1		1					1				
17 Dec	S16E28	161	50	1	Hsx	1	A								
18 Dec	S16E16	160	50	2	Hsx	1	A								
								1	0	0	3	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 160

			Region 3169												
17 Dec	N20E69	120	160	3	Dso	2	B	3	1			1			
18 Dec	N21E61	115	240	14	Dso	7	B	6			2				
								9	1	0	2	1	0	0	0

Still on Disk.
Absolute heliographic longitude: 115

			Region 3170												
17 Dec	S18E72	117	20	1	Hrx	1	A	1							
18 Dec	S19E64	112	40	8	Cso	6	B	1							
								2	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 112

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.

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