

Space Weather Highlights
22 December - 28 December 2014

SWPC PRF 2052
29 December 2014

Solar activity ranged from low to moderate (R1-minor) levels. The period began with an M1/1f at 22/0149 UTC from Region 2242 (S18, L=238, class/area Ekc/1080 on 19 Dec). Weak to mid-level C-class activity was observed on 23-26 December from Regions 2241 (S09, L=215, class/area Ekc/720 on 19 Dec), 2242, 2244 (S04, L=156, class/area Dao/190 on 22 Dec), 2245 (N09, L=122, class/area Cao/050 on 23 Dec), 2248 (S19, L=083, class/area Dso/160 on 27 Dec) and 2249 (S10, L=164, class/area Dac/210 on 27 Dec). On 27 December at 0216 UTC, Region 2249 produced an M2/2b flare. The period ended with weak C-class activity from Region 2251 (S12, L=046, class/area Cao/030 on 28 Dec).

No proton events were observed at geosynchronous orbit. However, protons were enhanced to about 3 pfu on 22 December and again on 23 December, thought to have originated from significant flare activity observed on 20 and 21 December.

The greater than 2 MeV electron flux at geosynchronous orbit was at normal levels on 22-24 December and moderate levels on 25-28 December.

Geomagnetic field activity ranged from quiet to isolated minor storm (G1-minor) levels. The period began with active to minor storm levels early on 22 December and continued with unsettled to active levels through 24 December. This period of activity was due to a series of coronal mass ejections (CMEs) observed at Earth at about 21/1800 UTC, at 22/1500 UTC and again at 23/1100 UTC. 25 and 26 December saw activity continue at quiet to active levels due to periods of prolonged negative Bz observed at the ACE satellite. Quiet to unsettled periods were observed on 27 December. Activity increased to quiet to active levels due to a co-rotating interaction region (CIR) in advance of a negative polarity coronal hole high speed stream (CH HSS).

Space Weather Outlook
29 December - 24 January 2015

Solar activity is expected to be at low levels with a chance for moderate (R1-minor) levels through 30 December as Region 2249 exits the disk. Predominately low level activity is expected from 31 December through 04 January. Low to moderate (R1-minor) levels are expected to return by 05 January and persist through 19 January due to the return of old Regions 2242 (S18, L=240) and 2241 (S08, L=218). Mostly low levels are expected for the remainder of the outlook period.

No proton events are expected at geosynchronous orbit in the absence of any significant flare activity.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at moderate to high levels on 29 December through 17 January and again on 21-24 January. Normal levels are expected on 18-20 January.



Geomagnetic field activity is expected to be at unsettled to active levels on 29 December, 31 December through 05 January, 08-11 January, 21-22 January and 24 January. Minor storm levels are possible on 03 and 18 January. This activity is due to a series of CH HSS and periods of prolonged negative Bz. The remainder of the outlook period is expected to be at predominately quiet levels.



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
22 December	179	113	1330	C1.1	3	1	0	10	2	0	0	0
23 December	166	128	1030	B9.7	9	0	0	5	1	0	0	0
24 December	151	86	480	C1.0	5	0	0	7	0	1	0	0
25 December	145	100	460	C1.1	3	0	0	2	0	0	0	0
26 December	137	92	280	B6.9	10	0	0	11	0	0	0	0
27 December	134	111	580	B5.2	2	1	0	3	1	1	0	0
28 December	133	108	520	B4.3	5	0	0	10	1	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	>100 MeV	>0.6 MeV	>2MeV	>4 MeV
	22 December	2.3e+07	8.2e+04	2.0e+03		5.3e+05
23 December	3.2e+07	1.1e+05	2.3e+03		4.5e+05	
24 December	3.6e+06	2.2e+04	2.3e+03		7.9e+05	
25 December	1.5e+06	1.8e+04	2.6e+03		1.1e+07	
26 December	8.5e+05	1.7e+04	2.4e+03		7.1e+06	
27 December	4.4e+05	1.5e+04	2.5e+03		9.9e+06	
28 December	9.8e+05	2.2e+04	2.6e+03		1.6e+07	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	22 December	13	4-3-4-2-2-3-1-1	28	5-5-5-5-2-3-1-1	20
23 December	8	1-0-0-4-2-2-2-3	10	0-0-1-3-2-1-2-5	13	1-0-1-4-2-2-3-4
24 December	12	3-3-2-2-3-2-3-3	24	3-2-4-4-5-5-3-2	17	4-3-2-2-4-3-3-3
25 December	9	2-1-1-0-3-3-3-3	16	1-1-1-0-5-4-3-4	13	2-2-2-1-3-3-4-4
26 December	15	4-3-2-2-2-3-4-3	22	3-5-4-3-2-2-4-4	17	4-4-2-2-2-2-4-3
27 December	5	2-2-1-2-1-2-1-1	10	3-2-3-3-3-2-1-0	7	3-2-2-2-2-1-1-1
28 December	8	2-2-2-1-2-2-3-2	9	0-1-2-2-3-2-4-2	11	3-2-1-1-1-2-4-3

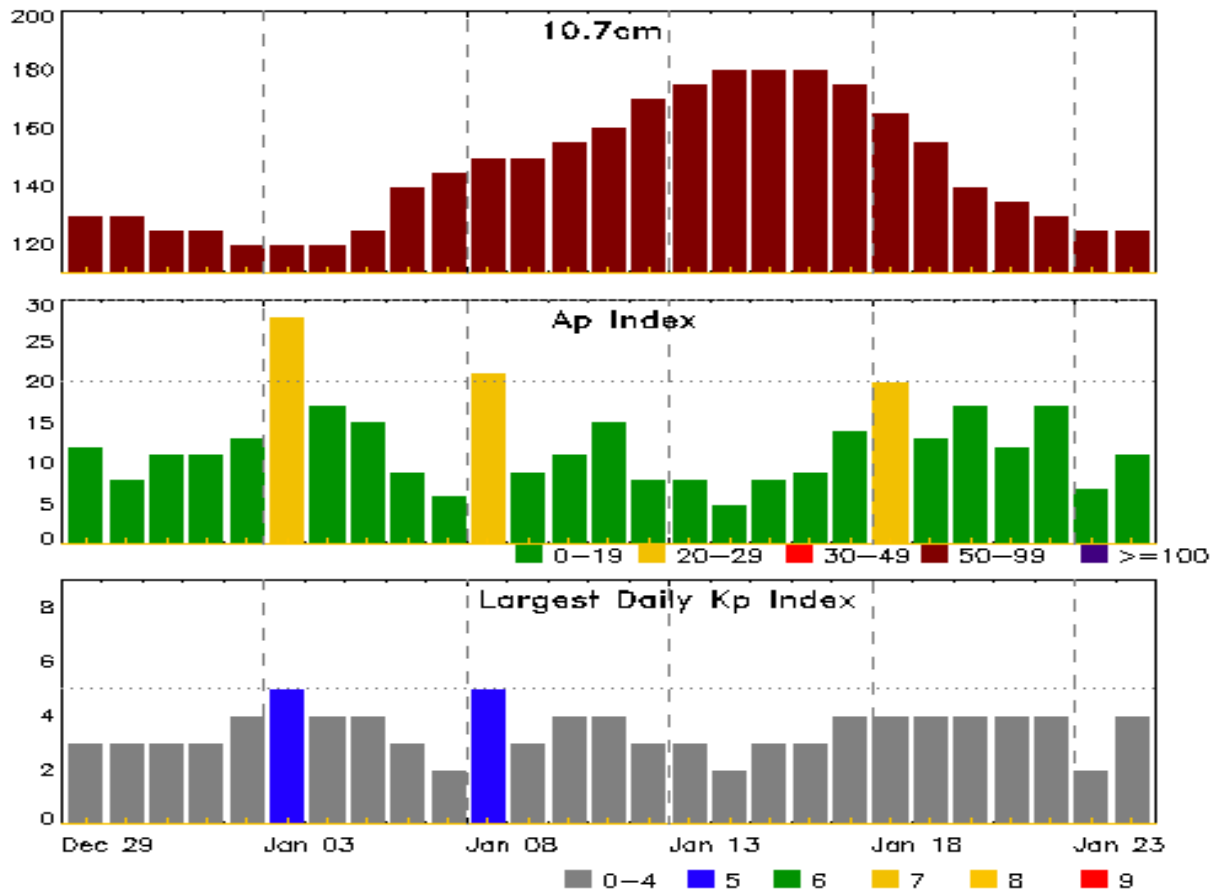


Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
22 Dec 0228	WARNING: Geomagnetic K = 5	22/0230 - 1300
22 Dec 0245	ALERT: Geomagnetic K = 5	22/0245
22 Dec 1630	WARNING: Geomagnetic K = 5	22/1630 - 2300
22 Dec 2120	WATCH: Geomagnetic Storm Category G1 predicted	
22 Dec 2255	EXTENDED WARNING: Geomagnetic K = 5	22/1630 - 23/1400
22 Dec 2256	EXTENDED WARNING: Geomagnetic K = 4	21/1840 - 23/1400
23 Dec 1045	WARNING: Geomagnetic Sudden Impulse expected	23/1100 - 1140
23 Dec 1101	WARNING: Geomagnetic K = 6	23/1101 - 1700
23 Dec 1124	WARNING: Proton 10MeV Integral Flux > 10pfu	23/1124 - 2100
23 Dec 1134	ALERT: Geomagnetic K = 4	23/1134
23 Dec 1225	SUMMARY: Geomagnetic Sudden Impulse	23/1117
23 Dec 1312	EXTENDED WARNING: Geomagnetic K = 4	21/1840 - 24/0700
23 Dec 1312	EXTENDED WARNING: Geomagnetic K = 5	22/1630 - 23/2300
23 Dec 2043	WATCH: Geomagnetic Storm Category G1 predicted	
23 Dec 2255	EXTENDED WARNING: Geomagnetic K = 5	22/1630 - 24/0700
24 Dec 0651	EXTENDED WARNING: Geomagnetic K = 4	21/1840 - 24/1800
24 Dec 0655	EXTENDED WARNING: Geomagnetic K = 5	22/1630 - 24/1500
24 Dec 1739	EXTENDED WARNING: Geomagnetic K = 4	21/1840 - 25/0700
25 Dec 1612	WARNING: Geomagnetic K = 4	25/1612 - 26/0100
25 Dec 2105	ALERT: Geomagnetic K = 4	25/2100
25 Dec 2319	EXTENDED WARNING: Geomagnetic K = 4	25/1612 - 26/1400
26 Dec 1916	WARNING: Geomagnetic K = 4	26/1915 - 27/1400
26 Dec 2000	ALERT: Geomagnetic K = 4	26/2000
28 Dec 1945	WARNING: Geomagnetic K = 4	28/1945 - 29/1400
28 Dec 2001	ALERT: Geomagnetic K = 4	28/2000



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
29 Dec	130	12	3	12 Jan	170	8	3
30	130	8	3	13	175	8	3
31	125	11	3	14	180	5	2
01 Jan	125	11	3	15	180	8	3
02	120	13	4	16	180	9	3
03	120	28	5	17	175	14	4
04	120	17	4	18	165	20	4
05	125	15	4	19	155	13	4
06	140	9	3	20	140	17	4
07	145	6	2	21	135	12	4
08	150	21	5	22	130	17	4
09	150	9	3	23	125	7	2
10	155	11	4	24	125	11	4
11	160	15	4				



Energetic Events

Date	Time			X-ray	Optical Information			Peak	Sweep Freq			
	Begin	Max	Half Max	Class	Integ Flux	Imp/ Brtns	Location Lat CMD	Rgn #	Radio Flux		Intensity	
									245	2695	II	IV
22 Dec	0133	0149	0159	M1.0	0.011	1F	S19W54	2242				
27 Dec	0203	0216	0224	M2.2	0.014	2B	S11W48	2249				

Flare List

Date	Time			X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
	Begin	Max	End				
22 Dec	0110	0112	0114		SF	S18W58	2242
22 Dec	0118	0149	0234	M1.0	1F	S19W54	2242
22 Dec	0427	0454	0524	C8.7	SF	S20W56	2242
22 Dec	0432	0452	0600		1F	S20W56	2242
22 Dec	0752	0755	0801		SF	S07E23	2244
22 Dec	0843	0844	0848		SF	S15W36	2241
22 Dec	0845	0845	0848		SF	S20W65	2242
22 Dec	0950	0950	0954		SF	S21W65	2242
22 Dec	1000	1005	1009		SF	S21W65	2242
22 Dec	1058	U1103	1128	C7.0	SF	S21W67	2242
22 Dec	1107	1107	1112		SF	S04E22	2244
22 Dec	2115	2225	2239	C5.7	SF	S13W44	2241
23 Dec	0035	0052	0104	C2.1	SF	S16E01	
23 Dec	0339	0358	0414	C1.4			2244
23 Dec	0445	0506	0608	C2.1			2242
23 Dec	0739	0742	0746	C1.5	SF	S21W67	2242
23 Dec	0807	0817	0838	C1.8	1F	S13W54	2241
23 Dec	0915	0917	0927		SF	N08E43	2245
23 Dec	1945	1951	1959	C2.3			2241
23 Dec	2122	2124	2127	C2.2	SF	S19W88	2242
23 Dec	2129	2131	2138	C2.5			2242
23 Dec	2244	2244	2250	C4.9	SF	S19W88	2242
24 Dec	0039	0040	0042		SF	S11W62	2241
24 Dec	0230	0237	0243	C3.7	2N	S12W61	2241
24 Dec	0411	0435	0455	C3.0			2242
24 Dec	0414	0418	0420		SF	S13W60	2241
24 Dec	1012	1012	1014		SF	S15W69	2241
24 Dec	1033	1042	1100		SF	N10E31	2245
24 Dec	1259	1300	1355	C1.8	SF	N08E29	2245



Flare List

Date	Time			X-ray Class	Optical		Rgn #
	Begin	Max	End		Imp/ Brtns	Location Lat CMD	
24 Dec	1320	1327	1347	C2.0			2245
24 Dec	2213	2226	2239		SF	S12W19	
24 Dec	2249	2323	2331		SF	S13W19	
24 Dec	2346	2359	0017	C2.4			2242
25 Dec	0204	0214	0215		SF	S13W22	
25 Dec	0519	0523	0526	C4.0			2242
25 Dec	0719	0719	0725		SF	S13W25	
25 Dec	1200	1211	1227	C4.3			2248
25 Dec	1905	1911	1916	C1.7			2248
26 Dec	0220	0220	0221		SF	S20E51	2248
26 Dec	0518	0525	0536		SF	S12W37	2249
26 Dec	0623	0623	0627		SF	S12W37	2249
26 Dec	0633	0634	0646		SF	S12W37	2249
26 Dec	0714	0717	0723		SF	S13W38	2249
26 Dec	0727	0727	0731		SF	S13W39	2249
26 Dec	0801	0828	0852	C1.7	SF	S13W40	2249
26 Dec	0837	0841	0843	C1.5			2249
26 Dec	0854	0930	0943	C2.1			2249
26 Dec	0901	0904	0909		SF	S13W40	2249
26 Dec	0910	U1021	A1139		SF	S13W40	2249
26 Dec	0924	0929	0940		SF	S21E42	2248
26 Dec	1021	1023	1032		SF	S21E42	2248
26 Dec	1117	1124	1128	C2.4			2249
26 Dec	1134	1138	1144	C1.9			2248
26 Dec	1347	1350	1357	C1.4			
26 Dec	1504	1516	1525	C3.7			2249
26 Dec	1800	1807	1815	C6.5			2249
26 Dec	2105	2144	2215	C2.3			2249
26 Dec	2350	2356	0006	C1.6			2249
27 Dec	0203	0216	0224	M2.2	2B	S11W48	2249
27 Dec	0400	0605	0803	C1.9	1F	S11W49	2249
27 Dec	0807	0824	0828		SF	S12W51	2249
27 Dec	0834	0835	0840		SF	S12W51	2249
27 Dec	0906	U0912	A0921		SF	S13W51	2249
27 Dec	1459	1505	1509	C1.3			2248
28 Dec	0039	0107	0122		SF	S12W60	2249
28 Dec	0135	0137	0144		SF	S12W62	2249
28 Dec	0153	0203	0204		SF	S12W62	2249



Flare List

Date	Time			X-ray Class	Optical		Rgn #
	Begin	Max	End		Imp/ Brtns	Location Lat CMD	
28 Dec	0222	0223	0226		SF	S12W62	2249
28 Dec	0231	0231	0236		SF	S12W62	2249
28 Dec	0309	0312	0318		SF	S12W62	2249
28 Dec	0731	0734	0737	B9.9			2249
28 Dec	0807	0807	0811		SF	S13E59	2251
28 Dec	0956	1007	1024	C1.7	SF	S20E23	2248
28 Dec	1333	1340	1349	C2.3			2248
28 Dec	1750	1759	1809	C3.3	SF	S19E18	2248
28 Dec	2017	2019	2022		SF	S11E52	2251
28 Dec	2107	2118	2157	C1.3	1F	S11E52	2251
28 Dec	2248	2258	2304	C1.1			



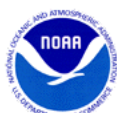
Region Summary

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 2235																		
10 Dec	S07E63	265	140	4	Hsx	1	A											
11 Dec	S12E55	260	220	9	Dsc	3	B	1				1						
12 Dec	S08E35	267	90	3	Hsx	1	A	1				1						
13 Dec	S08E23	266	100	3	Hsx	1	A											
14 Dec	S08E09	267	130	3	Cso	4	B											
15 Dec	S07W03	264	160	5	Cao	5	B											
16 Dec	S07W17	265	160	3	Cao	6	B											
17 Dec	S07W29	264	90	3	Cao	4	B											
18 Dec	S07W44	265	60	1	Cao	4	B											
19 Dec	S07W56	266	60	2	Cao	4	B					2						
20 Dec	S08W70	266	70	2	Hax	1	A											
21 Dec	S08W83	267	60	2	Hax	1	A											
								2	0	0	4	0	0	0	0	0		

Crossed West Limb.
 Absolute heliographic longitude: 264

Region 2236																		
11 Dec	N29E72	243	120	7	Dso	2	B	1										
12 Dec	N29E61	241	180	6	Dao	5	B	1										
13 Dec	N30E48	241	200	9	Dao	3	B											
14 Dec	N30E34	242	180	6	Cao	6	B					1						
15 Dec	N31E23	240	170	10	Cao	4	B					2						
16 Dec	N29E08	240	120	3	Cao	4	B					1						
17 Dec	N32W04	240	80	3	Cao	2	B					2						
18 Dec	N32W17	240	100	2	Hax	1	A											
19 Dec	N30W32	242	90	2	Hax	1	A											
20 Dec	N28W43	240	80	2	Hax	1	A											
21 Dec	N30W56	240	60	2	Hax	2	A											
22 Dec	N29W68	238	70	2	Hax	1	A											
23 Dec	N30W82	239	50	2	Hsx	1	A											
								2	0	0	6	0	0	0	0	0		

Crossed West Limb.
 Absolute heliographic longitude: 240



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 2237																		
12 Dec	S14E52	250	90	9	Dso	4	B											
13 Dec	S15E41	248	120	14	Eso	7	B	1				2						
14 Dec	S14E28	248	60	8	Cso	4	B	2				4	1					
15 Dec	S13E11	250	40	2	Hsx	1	A											
16 Dec	S13W02	250	80	2	Hsx	1	A											
17 Dec	S11W14	249	40	2	Hsx	1	A											
18 Dec	S13W27	249	30	1	Hax	2	A											
19 Dec	S13W41	251	20	1	Hrx	2	A											
20 Dec	S13W55	252	plage										1					
21 Dec	S13W69	253	plage										2					
22 Dec	S13W83	253	plage															
								3	0	0	9	1	0	0	0	0		

Crossed West Limb.
Absolute heliographic longitude: 250

Region 2238																		
12 Dec	N01E56	245	10	2	Bxo	3	B											
13 Dec	N01E41	248	plage															
14 Dec	N01E26	250	plage															
15 Dec	N01E11	252	plage															
16 Dec	N01W04	253	plage															
17 Dec	N01W19	255	plage															
18 Dec	N01W34	257	plage															
19 Dec	N01W49	259	plage															
20 Dec	N01W64	261	plage															
21 Dec	N01W79	263	plage															
								0	0	0	0	0	0	0	0	0	0	

Crossed West Limb.
Absolute heliographic longitude: 253



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 2239																		
14 Dec	N14E25		251	50	6	Cai	9	B					1					
15 Dec	N14E12		251	60	6	Dai	10	B	1									
16 Dec	N13W02		251	80	7	Dai	13	B										
17 Dec	N13W15		250	80	8	Dso	7	B										
18 Dec	N15W28		250	30	1	Cso	3	B										
19 Dec	N15W42		252	40	7	Dao	9	B										
20 Dec	N14W55		252	50	6	Cso	5	B										
21 Dec	N15W67		251	10	3	Bxo	2	B					1					
22 Dec	N15W81		251	plage														
									1	0	0	2	0	0	0	0	0	

Crossed West Limb.

Absolute heliographic longitude: 251

Region 2240																		
14 Dec	N11E58		218	40	2	Hax	2	A										
15 Dec	N10E44		219	60	2	Hax	1	A										
16 Dec	N10E33		216	70	5	Cao	3	B										
17 Dec	N12E19		216	40	4	Cso	2	B										
18 Dec	N10E04		217	60	1	Cso	2	B					1					
19 Dec	N11W04		214	60	9	Cso	4	B										
20 Dec	N10W18		214	50	10	Cao	4	B										
21 Dec	N10W34		218	20	1	Hax	1	A										
22 Dec	N10W50		219	10	1	Axx	1	A										
23 Dec	N10W64		221	plage														
24 Dec	N10W78		222	plage														
									0	0	0	1	0	0	0	0	0	

Crossed West Limb.

Absolute heliographic longitude: 217



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 2241																							
13 Dec	S11E72	217	plage					3	1		3												
14 Dec	S11E59	217	100	7	Dac	7	BG	5			8	1											
15 Dec	S10E45	218	150	9	Dai	7	BG				4												
16 Dec	S10E30	218	220	11	Eac	24	BG	3			8												
17 Dec	S10E19	216	390	12	Ekc	20	BGD	2	2		7	1											
18 Dec	S09E04	217	620	13	Ekc	36	BGD	3	1		11			1									
19 Dec	S09W06	215	720	13	Ekc	21	BGD				3												
20 Dec	S11W21	216	660	12	Ekc	12	BGD																
21 Dec	S10W33	217	550	12	Ehc	19	BGD		1														
22 Dec	S10W47	216	450	11	Ehi	16	BG	1			2												
23 Dec	S08W61	218	330	11	Cko	9	BG	2					1										
24 Dec	S08W77	221	260	3	Cko	2	B	1			3			1									
25 Dec	S08W89	220	150	3	Hsx	1	A																
								20	5	0	49	3	2	0	0								

Crossed West Limb.

Absolute heliographic longitude: 217

Region 2242

14 Dec	S20E38	238	100	6	Dac	16	BG	7	1		4										
15 Dec	S19E24	239	360	6	Dkc	15	BGD	1			10										
16 Dec	S19E11	237	630	9	Dkc	25	BGD	9			9	1									
17 Dec	S18W01	237	700	11	Ekc	26	BGD	3	2		8	1	1								
18 Dec	S18W16	238	970	12	Ekc	50	BGD	4			16	1									
19 Dec	S18W29	238	1080	15	Ekc	34	BGD	10	1		24	2									
20 Dec	S19W44	240	790	16	Fkc	24	BGD	5		1	8	1			1						
21 Dec	S18W57	240	630	13	Ekc	26	BGD	5	1		3	3									
22 Dec	S17W71	241	490	11	Ekc	12	BG	2	1		6	2									
23 Dec	S16W85	242	310	10	Dkc	5	BG	5			3										
								51	6	1	91	11	1	1	0						

Crossed West Limb.

Absolute heliographic longitude: 237



Region Summary - continued

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

Region 2243

19 Dec	N09E28	180	10	1	Axx	1	A											
20 Dec	N09E14	183	plage															
21 Dec	N09W00	184	plage															
22 Dec	N09W14	184	plage															
23 Dec	N09W28	185	plage															
24 Dec	N09W42	186	plage															
25 Dec	N09W56	187	plage															
26 Dec	N09W70	188	plage															
27 Dec	N09W84	189	plage															
									0	0	0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 184

Region 2244

20 Dec	S05E38	159	50	3	Cao	3	B											
21 Dec	S04E28	156	160	8	Dao	11	B	1										
22 Dec	S04E14	156	190	7	Dao	7	BG											
23 Dec	S03W00	157	130	8	Dao	20	BG	1										
24 Dec	S02W12	156	60	9	Dao	16	B											
25 Dec	S03W26	157	40	8	Dro	8	B											
26 Dec	S04W41	159	0		Axx	1	A											
27 Dec	S04W54	159	plage															
28 Dec	S04W69	160	plage															
									2	0	0	6	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 157

Region 2245

21 Dec	N08E60	124	30	3	Cao	6	B											
22 Dec	N08E47	123	30	5	Cro	5	B											
23 Dec	N09E35	122	50	7	Cao	9	B											
24 Dec	N10E23	121	20	5	Bxo	5	B	2										
25 Dec	N09E08	123	10	7	Bxo	7	B											
26 Dec	N09W06	123	0		Axx	1	A											
27 Dec	N09W20	125	plage															
28 Dec	N09W34	125	plage															
									2	0	0	3	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 123



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 2246																		
21 Dec	N17E78	106	70	2	Hsx	1	A											
22 Dec	N16E62	108	90	2	Hsx	1	A											
23 Dec	N17E49	108	70	2	Hsx	1	A											
24 Dec	N18E36	108	70	1	Hsx	1	A											
25 Dec	N17E24	107	60	2	Hsx	1	A											
26 Dec	N17E10	108	60	2	Hsx	1	A											
27 Dec	N19W04	107	80	2	Hsx	2	A											
28 Dec	N18W17	108	80	2	Hsx	1	A											
										0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 107

Region 2247																		
23 Dec	S24E59	98	60	1	Hax	2	A											
24 Dec	S23E46	98	20	1	Hsx	1	A											
25 Dec	S24E34	97	40	2	Hax	3	A											
26 Dec	S24E21	96	10	1	Hrx	1	A											
27 Dec	S22E06	97	10	1	Hrx	2	A											
28 Dec	S24W07	98	10	3	Axx	3	A											
										0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 97

Region 2248																		
23 Dec	S20E75	82	30	4	Hsx	1	A											
24 Dec	S20E60	84	50	1	Hsx	1	A											
25 Dec	S20E47	84	70	2	Hax	2	A	2										
26 Dec	S21E35	82	60	3	Dao	5	BG	1			3							
27 Dec	S19E22	83	160	7	Dso	18	BG	1										
28 Dec	S19E07	84	120	7	Dso	9	B	3			2							
								7	0	0	5	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 84



Region Summary - continued

Date	Location		Sunspot Characteristics					Flares								
	Lat	CMD	Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical				
			Lon	10 ⁶ hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4
Region 2249																
25 Dec	S12W33		164	90	6	Dao	8	BG								
26 Dec	S12W47		165	140	6	Dac	8	BG	8			8				
27 Dec	S10W61		164	210	6	Dac	12	BG	1	1		3	1	1		
28 Dec	S12W74		165	200	9	Dac	13	BG				6				
									9	1	0	17	1	1	0	0

Still on Disk.
 Absolute heliographic longitude: 164

Region 2250																
26 Dec	N08W28		146	10	4	Bxo	5	B								
27 Dec	N10W41		144	20	6	Cso	5	B								
28 Dec	N08W55		146	20	7	Cao	4	B								
									0	0	0	0	0	0	0	0

Still on Disk.
 Absolute heliographic longitude: 146

Region 2251																
27 Dec	S11E58		47	20		Hrx	1	A								
28 Dec	S12E45		46	30	4	Cao	7	B	1			2	1			
									1	0	0	2	1	0	0	0

Still on Disk.
 Absolute heliographic longitude: 46

Region 2252																
27 Dec	S19E77		28	80	3	Hsx	1	A								
28 Dec	S20E62		29	60	3	Hax	1	A								
									0	0	0	0	0	0	0	0

Still on Disk.
 Absolute heliographic longitude: 29

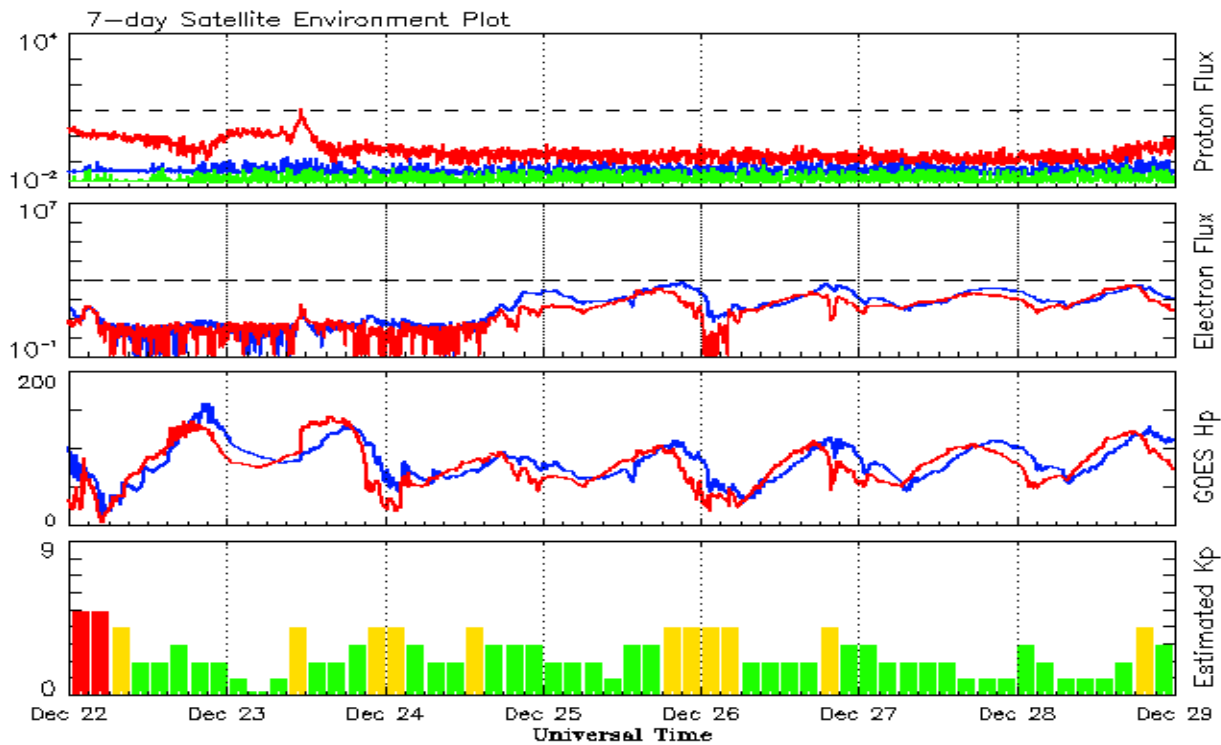


Recent Solar Indices (preliminary)
Observed monthly mean values

Month	Sunspot Numbers					Radio Flux		Geomagnetic	
	Observed values		Ratio	Smooth values		Penticton	Smooth	Planetary	Smooth
	SEC	RI	RI/SEC	SEC	RI	10.7 cm	Value	Ap	Value
2012									
December	60.4	40.8	0.68	88.0	59.6	108.4	120.1	3	7.5
2013									
January	99.8	62.9	0.63	87.1	58.7	127.1	118.9	4	7.5
February	60.0	38.1	0.63	86.7	58.4	104.4	118.0	5	7.4
March	81.0	57.9	0.71	85.7	57.6	111.2	117.1	9	7.4
April	112.8	72.4	0.64	86.7	57.9	125.0	116.6	5	7.2
May	125.5	78.7	0.63	90.5	59.9	131.3	118.1	10	7.0
June	80.1	52.5	0.66	94.4	62.6	110.2	120.9	13	7.1
July	86.1	57.0	0.66	97.9	65.5	115.6	123.9	9	7.3
August	90.2	66.0	0.73	103.7	68.9	114.7	127.9	9	7.6
September	55.0	37.0	0.67	111.0	73.0	102.7	132.3	5	7.8
October	127.1	85.6	0.67	114.3	74.9	132.3	134.7	7	7.8
November	125.7	77.6	0.62	114.6	75.3	148.4	135.4	5	7.9
December	118.2	90.3	0.76	115.4	75.9	147.7	135.9	5	7.5
2014									
January	125.9	81.8	0.65	117.7	77.3	158.6	137.3	6	7.1
February	174.6	102.3	0.59	119.5	78.4	170.3	138.6	12	6.9
March	141.1	91.9	0.65	123.2	80.8	149.9	140.8	6	7.2
April	130.5	84.7	0.65	124.8	81.9	144.3	143.5	9	7.5
May	116.8	75.2	0.64	122.3	80.5	130.0	144.7	7	7.9
June	107.7	71.0	0.66			122.2		7	
July	113.6	72.5	0.64			137.3		5	
August	106.2	74.7	0.70			124.7		9	
September	127.4	87.6	0.69			146.1		11	
October	92.0	60.6	0.66			153.7		10	
November	101.8	70.1	0.69			155.3		10	

Note: Values are final except for the most recent 6 months which are considered preliminary.
Cycle 24 started in Dec 2008 with an RI=1.7.





*Weekly Geosynchronous Satellite Environment Summary
Week Beginning 22 December 2014*

The proton flux plot contains the five-minute averaged integral proton flux (protons/cm²-sec -sr) as measured by the SWPC Primary GOES satellite, near West 75, for each of three energy thresholds: greater than 10, 50, and 100 MeV.

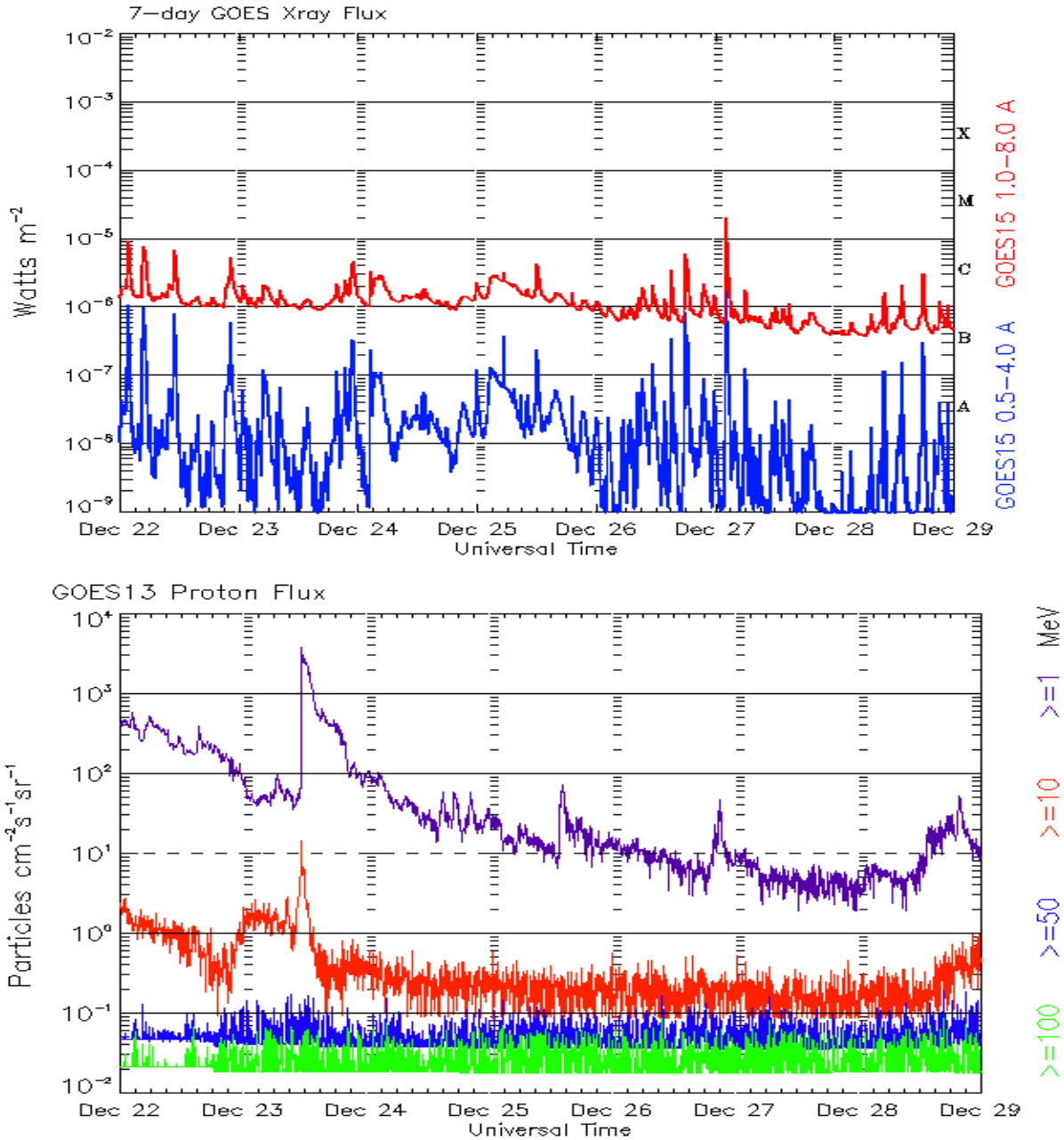
The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV by the SWPC Primary GOES satellite.

The Hp plot contains the five minute averaged Hp magnetic field component in nanoteslas (nT) as by the SWPC Primary GOES satellite. The Hp component is parallel to the spin axis of the satellite, which is nearly parallel to the Earth's rotation axis.

The Estimated 3-hour Planetary Kp-index is derived at the NOAA Space Weather Prediction Center using data from the following ground-based magnetometers: Boulder, Colorado; Chambon la Foret, France; Fredericksburg, Virginia; Fresno, California; Hartland, UK; Newport, Washington; Sitka, Alaska. These data are made available thanks to the cooperative efforts between SWPC and data providers around the world, which currently includes the U.S. Geological Survey, the British Geological Survey, and the Institut de Physique du Globe de Paris.

The data included here are those now available in real time at the SWPC and are incomplete in that they do not include the full set of parameters and energy ranges known to cause satellite operating anomalies. The proton and electron fluxes and Kp are 'global' parameters that are applicable to a first order approximation over large areas. H parallel is subject to more localized phenomena and the measurements generally are applicable to within a few degrees of longitude of the measuring satellite.





*Weekly GOES Satellite X-ray and Proton Plots
Week Beginning 22 December 2014*

The x-ray plots contains five-minute averages x-ray flux (Watt/m²) as measure by the SWPC primary GOES X-ray satellite, usually at West 105 longitude, in two wavelength bands, 0.05 - 0.4 and 0.1 - 0.8 nm. The letters A, B, C, M and X refer to x-ray event levels for the 0.1 - 0.8 nm band.

The proton plot contains the five-minute averaged intergral flux units (pfu = protons/cm² -sec -sr) as measured by the primary SWPC GOES Proton satellite for each of the energy thresholds: >1, >10, >30, and >100 MeV. The P10 event threshold is 10 pfu at greater than 10 MeV.



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.

<http://spaceweather.gov/weekly/> -- Current and previous year

<http://spaceweather.gov/ftpmenu/warehouse.html> -- Online archive from 1997

<http://spaceweather.gov/ftpmenu/> -- Some content as ascii text

<http://spaceweather.gov/SolarCycle/> -- Solar Cycle Progression web site

<http://spaceweather.gov/contacts.html> -- Contact and Copyright information

http://spaceweather.gov/weekly/Usr_guide.pdf -- User Guide

