

Solar activity was dominated by Regions 2242 (S28, L=238, class/area Ekc/1080 on 19 Dec) and 2241 (S09, L=215, class/area Ekc/720 on 19 Dec). Region 2242 produced an X1/3b flare on 20 December at 0028 UTC. Associated with this event was a Type II radio sweep (est. speed 900 km/s), a 2300 sfu Tenflare, and a coronal mass ejection (CME) directed off the SW limb. This was the largest flare of the week. The same region also produced an M8/2b flare on 17 December at 1901 UTC accompanied by Type II (est. speed 910 km/s) and Type IV radio sweeps, as well as a 320 sfu Tenflare. The majority of the ejecta from the associated CME had a southerly trajectory. However, it had a weak Earthward component and model output suggested arrival at Earth late on 19 December. The third largest flare of the week was an M6/2n flare from Region 2141 on 18 December at 2158 UTC accompanied by a Type-II radio sweep (est. speed 664 km/s) and an asymmetric full halo CME first observed in SOHO/LASCO C3 imagery at 19/0104 UTC. WSA-Enlil model output suggested an arrival of this CME midday on 21 December. There were six other low-level M-class flares during the week, evenly split between Regions 2241 and 2242.

No proton events were observed at geosynchronous orbit, although the greater than 10 MeV proton flux was enhanced on 21 December, reaching a peak value of 3.2 pfu at 21/2015 UTC in conjunction with the passage of the CME from 18 December.

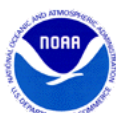
The greater than 2 MeV electron flux at geosynchronous orbit was at normal to moderate levels.

Geomagnetic field activity was mostly quiet to unsettled until 21 December when active conditions were recorded. The ACE satellite observed a pair of discontinuities in the solar wind field on 21 December. The first discontinuity at 21/0235 UTC was weak and possibly indicated the arrival of a glancing blow from the 17 December CME. Total field increased slightly from 6 nT to 8 nT while the Bz component mostly remained southward to -8 nT for about 16 hours. No significant increase in solar wind speeds was observed as they remained steady at about 350 km/s. At about 21/1824 UTC, the second stronger discontinuity was observed. This second discontinuity probably signaled the arrival of the 18 December CME. Total field increased sharply from 9 nT to 17 nT while the Bz component dipped further southward to -13 nT. Wind speeds increased from approximately 350 km/s to about 450 km/s. Subsequent increases were also observed in density and temperature. The magnetosphere responded with active conditions.

Space Weather Outlook **22 December - 17 January 2015**

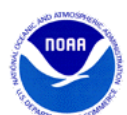
Solar activity is expected to be at low to moderate levels, with a continued threat of an X-class event through 28 December. The chance of an X-class event returns 05-17 January with the return of Regions 2242 and 2241.

There is a chance for a greater than 10 MeV proton event at geosynchronous orbit through 28 December from Regions 2242 and 2241. There is a slight chance of an event 12-17 January associated with the return of these regions.



The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at normal to moderate levels.

Geomagnetic field activity is expected to be at unsettled to minor storm levels on 22 December. Activity is expected to decrease to mostly quiet to unsettled levels afterwards. Active conditions are possible on 28 December through 11 January associated with recurrent high speed solar wind streams. These features will bring a chance for an isolated minor storm period on 03 January and 08 January.



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
15 December	169	152	1230	B8.9	2	0	0	16	0	0	0	0
16 December	185	169	1530	B9.2	12	0	0	18	1	0	0	0
17 December	192	154	1560	C1.2	5	4	0	17	2	1	0	0
18 December	213	168	1870	C1.4	7	1	0	28	1	1	0	0
19 December	216	156	2080	C1.2	10	1	0	31	2	0	0	0
20 December	203	120	1750	C1.3	5	0	1	12	1	0	1	0
21 December	206	159	1590	C1.3	6	2	0	7	3	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
	15 December	2.5e+05	1.7e+04	3.7e+03		2.6e+07
16 December	2.2e+05	1.3e+04	3.3e+03		1.9e+07	
17 December	9.9e+04	1.8e+04	3.0e+03		2.4e+07	
18 December	1.1e+05	2.2e+04	2.9e+03		2.0e+07	
19 December	1.2e+05	1.5e+04	2.7e+03		1.8e+07	
20 December	1.2e+05	1.8e+04	2.7e+03		1.3e+07	
21 December	6.2e+06	8.7e+04	2.6e+03		9.2e+06	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	15 December	11	1-2-2-3-3-3-2-3	29	1-2-5-5-6-4-3-1	15
16 December	7	1-1-0-1-3-2-2-3	18	1-1-2-4-6-3-2-1	8	1-1-1-2-3-2-2-3
17 December	6	2-2-2-1-2-2-1-1	7	2-3-3-2-1-2-1-0	8	3-3-2-1-1-2-2-1
18 December	5	1-1-0-2-2-2-1-2	3	1-0-0-1-2-2-1-1	5	1-1-1-1-1-2-2-2
19 December	6	2-1-2-2-2-2-1-1	8	0-1-2-4-2-3-1-1	8	3-2-2-2-1-2-2-2
20 December	6	2-2-1-2-2-2-1-2	2	0-0-0-0-0-1-0-1	9	3-2-2-2-2-2-1-3
21 December	10	2-2-2-2-3-2-3-3	28	1-4-4-4-6-4-3-3	14	3-3-3-2-3-2-4-4

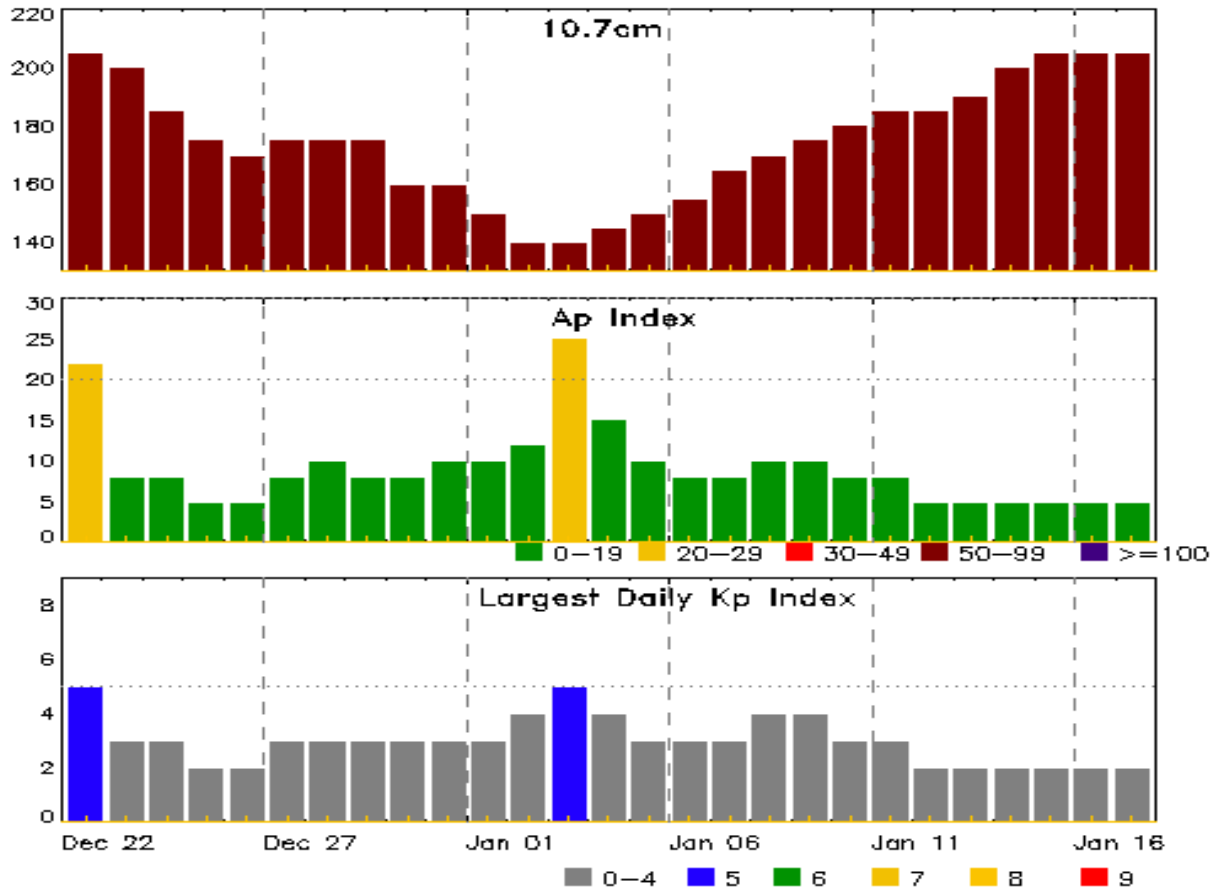


Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
15 Dec 1324	EXTENDED WARNING: Geomagnetic K = 4	14/1700 - 15/2100
15 Dec 1431	ALERT: Electron 2MeV Integral Flux >= 1000pfu	15/1430
15 Dec 2334	WARNING: Geomagnetic K = 4	15/2333 - 16/1200
17 Dec 0439	ALERT: X-ray Flux exceeded M5	17/0438
17 Dec 0454	SUMMARY: 10cm Radio Burst	17/0431 - 0438
17 Dec 0538	ALERT: Type IV Radio Emission	17/0454
17 Dec 0542	SUMMARY: X-ray Event exceeded M5	17/0425 - 0520
17 Dec 0550	ALERT: Type II Radio Emission	17/0449
18 Dec 2157	ALERT: X-ray Flux exceeded M5	18/2155
18 Dec 2227	SUMMARY: 10cm Radio Burst	18/2150 - 2204
18 Dec 2242	SUMMARY: X-ray Event exceeded M5	18/2141 - 2225
18 Dec 2258	ALERT: Type II Radio Emission	18/2222
19 Dec 1315	WATCH: Geomagnetic Storm Category G2 predicted	
20 Dec 0022	ALERT: X-ray Flux exceeded M5	20/0020
20 Dec 0100	SUMMARY: X-ray Event exceeded X1	20/0011 - 0055
20 Dec 0150	ALERT: Type II Radio Emission	20/0050
20 Dec 0238	SUMMARY: 10cm Radio Burst	20/0018 - 0100
21 Dec 1432	WARNING: Geomagnetic K = 4	21/1431 - 22/1900
21 Dec 1833	WARNING: Geomagnetic Sudden Impulse expected	21/1848 - 1948
21 Dec 1833	EXTENDED WARNING: Geomagnetic K = 4	21/1431 - 22/1300
21 Dec 1840	CANCELLATION: Geomagnetic K = 4	
21 Dec 1841	WARNING: Geomagnetic K = 4	21/1840 - 23/0100
21 Dec 1924	SUMMARY: Geomagnetic Sudden Impulse	21/1916
21 Dec 2035	ALERT: Geomagnetic K = 4	21/2035



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
22 Dec	205	22	5	05 Jan	150	10	3
23	200	8	3	06	155	8	3
24	185	8	3	07	165	8	3
25	175	5	2	08	170	10	4
26	170	5	2	09	175	10	4
27	175	8	3	10	180	8	3
28	175	10	3	11	185	8	3
29	175	8	3	12	185	5	2
30	160	8	3	13	190	5	2
31	160	10	3	14	200	5	2
01 Jan	150	10	3	15	205	5	2
02	140	12	4	16	205	5	2
03	140	25	5	17	205	5	2
04	145	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
17 Dec	0057	0110	0120	M1.5	0.014	1N	S25E10	2242				
17 Dec	0141	0150	0157	M1.1	0.008	SN	S11E33	2241				
17 Dec	0425	0451	0520	M8.7	0.190	2B	S20E09	2242	100	320	3	1
17 Dec	1854	1901	1920	M1.4	0.016	1N	S10E24	2241				
18 Dec	2141	2158	2225	M6.9	0.100	2N	S11E15	2241	550	240	2	1
19 Dec	0931	0944	0954	M1.3	0.011	1N	S19W27	2242				
20 Dec	0011	0028	0055	X1.8	0.270	3B	S21W24	2242	120	2300	1	
21 Dec	0718	0732	0751	M1.2	0.018	1N	S21W48	2242				
21 Dec	1124	1217	1257	M1.0	0.046			2241				

Flare List

Date	Time			X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
	Begin	Max	End				
15 Dec	0125	0126	0130		SF	S11E56	2241
15 Dec	0134	0140	0144	C7.0	SF	S21E34	2242
15 Dec	0153	0218	0239		SF	S22E34	2242
15 Dec	0319	0320	0321		SF	N33E34	2236
15 Dec	0323	0324	0326		SF	N33E34	2236
15 Dec	0403	0408	0411		SF	S21E36	2242
15 Dec	0445	0446	0448		SF	S11E55	2241
15 Dec	0452	0458	0500		SF	S21E36	2242
15 Dec	0526	0527	0535		SF	S21E36	2242
15 Dec	0624	0624	0628		SF	S11E55	2241
15 Dec	0731	0733	0737		SF	S11E54	2241
15 Dec	0734	0735	0743		SF	S21E35	2242
15 Dec	1240	1243	1251	C1.5			2239
15 Dec	2116	2121	2123	C4.5			2242
15 Dec	2225	2240	2245		SF	S21E29	2242
15 Dec	2246	2308	2310		SF	S18E27	2242
15 Dec	2313	2313	2320		SF	S20E24	2242
15 Dec	2351	2351	2356		SF	S19E28	2242
16 Dec	0002	0005	0009	C1.3	SF	S20E24	2242
16 Dec	0050	0051	0052		SF	S10E45	2241
16 Dec	0152	0201	0216		SF	S22E28	2242
16 Dec	0233	0238	0240	C5.3	1F	S22E23	2242



Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/Brtns	Location Lat CMD	Rgn #
16 Dec	0415	0416	0420		SF	S11E44	2241
16 Dec	0443	0448	0452	C3.5	SF	S20E26	2242
16 Dec	0513	0513	0524		SF	N29E25	2236
16 Dec	0536	0539	0542	C1.8	SF	S20E26	2242
16 Dec	0549	0557	0603	C1.8	SF	S20E26	2242
16 Dec	0607	0614	0616	C2.7	SF	S22E20	2242
16 Dec	0618	0625	0628		SF	S11E45	2241
16 Dec	0636	0642	0651		SF	S11E45	2241
16 Dec	0654	0656	0658		SF	S11E45	2241
16 Dec	0806	0820	0905	C4.0	SF	S09E42	2241
16 Dec	0925	0926	0928		SF	S18E21	2242
16 Dec	1005	1012	1040	C4.1	SF	S19E21	2242
16 Dec	1030	1031	1033		SF	S09E38	2241
16 Dec	1106	1109	1111	C2.1			2242
16 Dec	1134	1140	1144	C5.6			2242
16 Dec	1700	1707	1716	C2.9	SF	S08E55	2241
16 Dec	1903	1913	1922	C4.7			2241
16 Dec	2235	2237	2241		SF	S17E14	2242
17 Dec	0043	0045	0102		SF	N32E17	2236
17 Dec	0044	0100	0114		SF	S16E39	2241
17 Dec	0055	0100	0213	M1.5	1N	S25E10	2242
17 Dec	0115	0118	0118		SF	S11E36	2241
17 Dec	0130	0150	0255	M1.1	SN	S11E33	2241
17 Dec	0258	0301	0317		SF	S11E33	2241
17 Dec	0423	0442	0638	M8.7	2B	S20E09	2242
17 Dec	0456	0508	0517		SF	S11E33	2241
17 Dec	0809	0810	0834		SF	S22E11	2242
17 Dec	0857	0900	0924		SF	S19E04	2242
17 Dec	0911	0914	0917		SF	S10E30	2241
17 Dec	1428	1428	1431		SF	S18E03	2242
17 Dec	1456	1501	1506	C9.8			2242
17 Dec	1551	1601	1621	C6.7			2241
17 Dec	B1755	1758	1819		SF	S10E24	2241
17 Dec	1756	1811	1841		SF	S19E00	2242
17 Dec	1854	1859	2003	M1.4	1N	S10E24	2241
17 Dec	1927	1930	1934	C8.6			2241
17 Dec	2036	2039	2047		SF	S19W03	2242
17 Dec	2102	2126	2134	C7.1			2242



Flare List

Date	Time			X-ray Class	Optical		Rgn #
	Begin	Max	End		Imp/ Brtns	Location Lat CMD	
17 Dec	2104	2105	2128		SF	N32E03	2236
17 Dec	2107	2128	2203		SF	S19W02	2242
17 Dec	2236	2236	2239		SF	S18W03	2242
17 Dec	2243	2247	2252	C3.2	SF	S20E02	2242
18 Dec	0157	0203	0207		SF	S18E00	2242
18 Dec	0208	0211	0224		SF	S18E00	2242
18 Dec	0231	0237	0247	C5.6	SF	S18E00	2242
18 Dec	0251	0256	0301		SF	S11E18	2241
18 Dec	0344	0344	0347		SF	S20W07	2242
18 Dec	0358	0400	0400		SF	S19W03	2242
18 Dec	0403	0414	0442		SF	S19W03	2242
18 Dec	0502	0502	0504		SF	S11E17	2241
18 Dec	0505	0507	0507		SF	S19W03	2242
18 Dec	0510	0510	0516		SF	N11E21	2240
18 Dec	0525	0525	0528		SF	S13E23	2241
18 Dec	0711	0714	0716		SF	S20E01	2242
18 Dec	0728	U0744	A0813		SF	S17W06	2242
18 Dec	0815	U0817	A0830		SF	S09E14	2241
18 Dec	0853	0907	0915	C5.6	SF	S17W06	2242
18 Dec	0957	0958	1014		SF	S20W08	2242
18 Dec	1025	1029	1038		SF	S09E14	2241
18 Dec	1053	1056	1101		SF	S18W07	2242
18 Dec	1119	1119	1124		SF	S08E12	2241
18 Dec	1128	1136	1138		SF	S18W06	2242
18 Dec	1139	1140	1203		SF	S18W06	2242
18 Dec	1208	1210	1227		SF	S19W07	2242
18 Dec	1239	U1239	A1323	C7.2	SF	S16W10	2242
18 Dec	1359	U1359	1429		SF	S11E14	2241
18 Dec	1448	1451	1527		SF	S10E12	2241
18 Dec	1540	1546	1610	C5.3			2241
18 Dec	1541	1546	1754		1F	S21W08	2242
18 Dec	1544	1546	1553		SF	S13E11	2241
18 Dec	1619	1623	1628	C6.8	SF	S10E10	2241
18 Dec	1644	1651	1659	C7.3			2242
18 Dec	1742	1743	1749		SF	S10E10	2241
18 Dec	1934	1943	1952	C7.9			2241
18 Dec	2141	2158	2225	M6.9	2N	S11E15	2241
19 Dec	0209	0213	0218	C4.2	SF	S17W18	2242



Flare List

Date	Time			X-ray Class	Optical		Rgn #
	Begin	Max	End		Imp/ Brtns	Location Lat CMD	
19 Dec	0250	0255	0257		SF	S15W21	2242
19 Dec	0259	0259	0304		SF	S17W21	2242
19 Dec	0332	0343	0351	C4.0	SF	S16W21	2242
19 Dec	0355	0356	0402		SF	S17W21	2242
19 Dec	0406	0406	0431		SF	S17W19	2242
19 Dec	0610	0610	0613		SF	S18W15	2242
19 Dec	0747	0749	0813		SF	S09E04	2241
19 Dec	0814	0816	0822		SF	S10E03	2241
19 Dec	0828	0828	0832		SF	S17W19	2242
19 Dec	0843	0847	0858		SF	S16W21	2242
19 Dec	0931	0944	0954	M1.3	1N	S19W27	2242
19 Dec	0933	0938	0959		SF	S25W28	2235
19 Dec	0935	0941	0949		SF	S20W45	2235
19 Dec	1041	1042	1043		SF	S20W24	2242
19 Dec	1206	1208	1211		SF	S21W21	2242
19 Dec	1255	U1303	A1328		SF	S21W22	2242
19 Dec	1348	1352	1355	C2.5	SF	S19W26	2242
19 Dec	1411	1411	1413		SF	S20W24	2242
19 Dec	1443	1447	1456	C1.9	SF	S20W23	2242
19 Dec	1458	1500	1507		SF	S19W24	2242
19 Dec	1508	1526	1548		SF	S22W25	2242
19 Dec	1606	1610	1613	C2.7	SF	S18W28	2242
19 Dec	1622	1627	1725	C5.3	SF	S20W21	2242
19 Dec	1721	1724	1733		SF	S04E60	
19 Dec	1722	1725	1729	C2.8	SF	S18W23	2242
19 Dec	1735	1845	1930	C9.5			2242
19 Dec	1752	1753	1803		SF	S11W04	2241
19 Dec	2015	2021	2025		SF	S18W23	2242
19 Dec	2134	2138	2145	C1.7	SF	S19W25	2242
19 Dec	2156	2159	2222		SF	S20W23	2242
19 Dec	2223	2230	2255	C3.2	1F	S16W28	2242
19 Dec	2335	2336	2340		SF	S05E56	
19 Dec	2342	2345	2350		SF	S19W28	2242
20 Dec	0011	0028	0055	X1.8	3B	S21W24	2242
20 Dec	0428	0428	0432		SF	S05E54	2244
20 Dec	0449	0452	0456		SF	S05E54	2244
20 Dec	1136	1141	1148	C2.3			2242
20 Dec	1303	1305	1307		SF	S19W40	2242



Flare List

Date	Time			Optical			Rgn #
	Begin	Max	End	X-ray Class	Imp/Brtns	Location Lat CMD	
20 Dec	1333	1333	1337		SF	S19W40	2242
20 Dec	1401	1409	1411		SF	S20W38	2242
20 Dec	1445	1450	1459		SF	S13W44	2237
20 Dec	1501	1506	1511	C2.9	SF	S19W41	2242
20 Dec	1547	1553	1559	C2.0	SF	S17W42	2242
20 Dec	1647	1844	1930		1F	S17W43	2242
20 Dec	2024	2024	2032		SF	S02E46	2244
20 Dec	2029	2035	2049	C5.6	SF	S18W44	2242
20 Dec	2140	2143	2146	C2.9			2242
20 Dec	2230	2232	2240		SF	S18W47	2242
20 Dec	2302	2304	A2353		SF	S18W47	2242
21 Dec	0000	0228	0934		1N	S17W48	2242
21 Dec	0024	0030	0038	C4.2			2242
21 Dec	0205	0245	0304	C6.7			2242
21 Dec	0447	0455	0508	C5.4	SF	S02E42	2244
21 Dec	0718	0732	0751	M1.2	1N	S21W48	2242
21 Dec	0942	0942	0944		SF	S17W48	2242
21 Dec	0946	0947	1015		SF	S17W48	2242
21 Dec	1124	1217	1257	M1.0			2241
21 Dec	1313	1327	1336		SF	S22W50	2242
21 Dec	1543	1601	1613	C3.1	1F	S19W54	2242
21 Dec	1614	1651	1658	C5.2			2242
21 Dec	1723	1755	1819	C5.1			2242
21 Dec	2229	2229	2234		SF	S17W58	2237
21 Dec	2340	2340	2341		SF	S13W67	2237
21 Dec	2347	2349	2355		SF	N18W72	2239



Region Summary

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				
<i>Region 2227</i>																				
02 Dec	S03E71		2	60	5	Hsx	1	A												
03 Dec	S05E59		1	110	1	Hsx	1	A												
04 Dec	S04E45		3	80	1	Hsx	1	A												
05 Dec	S03E32		2	120	2	Hsx	1	A												
06 Dec	S04E18		3	100	3	Hsx	1	A												
07 Dec	S04E07		1	100	4	Hax	2	A				1								
08 Dec	S04W07		2	150	3	Cso	3	B												
09 Dec	S04W21		3	150	3	Cso	3	B												
10 Dec	S03W34		1	120	5	Cao	4	B												
11 Dec	S03W47		1	120	5	Cao	7	B												
12 Dec	S04W60		2	140	2	Hsx	1	A				3								
13 Dec	S04W72		1	150	2	Hsx	1	A	3			5	2							
14 Dec	S04W87		3	80	2	Hax	1	A	2			4								
									5	0	0	13	2	0	0	0	0			

Crossed West Limb.
 Absolute heliographic longitude: 1

<i>Region 2229</i>																				
06 Dec	S23E22		359	10	3	Bxo	3	B												
07 Dec	S23E09		359	plage																
08 Dec	S23W05		360	plage																
09 Dec	S23W19		360	plage																
10 Dec	S23W32		360	plage																
11 Dec	S23W45		360	plage																
12 Dec	S23W59		1	plage																
13 Dec	S23W73		2	plage																
14 Dec	S23W87		3	plage																
									0	0	0	0	0	0	0	0	0			

Crossed West Limb.
 Absolute heliographic longitude: 360



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 2230																					
06 Dec	S14E57	324	10	2	Axx	1	A														
07 Dec	S14E43	325	plage																		
08 Dec	S15E36	322	30	3	Cri	5	B	1				1									
09 Dec	S14E22	319	100	5	Dao	8	BG	12				14	3								
10 Dec	S15E08	319	130	7	Dai	20	BG	1				2									
11 Dec	S16W06	320	170	7	Dac	23	BG	1				1									
12 Dec	S16W19	321	180	8	Dac	18	BG	1				2									
13 Dec	S15W32	321	190	7	Dac	21	BG														
14 Dec	S15W45	321	160	7	Dsc	8	B					2									
15 Dec	S15W60	323	150	6	Cao	6	B														
16 Dec	S14W74	322	80	2	Hax	1	A														
17 Dec	S14W88	324	60	3	Hax	1	A														
								16	0	0	22	3	0	0	0						

Crossed West Limb.
 Absolute heliographic longitude: 320

Region 2231																					
07 Dec	S05E13	355	40	5	Dao	8	B	2				2									
08 Dec	S05W01	356	50	6	Dai	11	B	1													
09 Dec	S03W13	355	10	6	Bxo	5	B														
10 Dec	S03W28	357	plage																		
11 Dec	S03W43	358	plage																		
13 Dec	S03W73	2	plage																		
14 Dec	S03W88	4	plage																		
								3	0	0	2	0	0	0	0	0					

Crossed West Limb.
 Absolute heliographic longitude: 356



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 2232																		
07 Dec	N10E76	292	80	5	Dao	4	B											
08 Dec	N11E60	295	180	8	Dsi	5	B											
09 Dec	N10E49	293	240	9	Dai	11	B											
10 Dec	N10E37	290	240	9	Dao	7	B					1						
11 Dec	N10E23	291	120	9	Dao	9	B	1										
12 Dec	N10E10	292	50	8	Cao	11	B											
13 Dec	N10W02	291	30	8	Cro	9	B					1						
14 Dec	N09W17	293	10	7	Bxo	4	B					1						
15 Dec	N10W31	294	10	7	Bxo	2	B											
16 Dec	N10W45	294	plage															
17 Dec	N10W59	295	plage															
18 Dec	N10W73	296	plage															
19 Dec	N10W87	297	plage															
								1	0	0	3	0	0	0	0	0		

Crossed West Limb.
 Absolute heliographic longitude: 291

Region 2233																		
09 Dec	N02E14	328	10	2	Axx	3	A											
10 Dec	N03E02	325	10	1	Bxo	2	B											
11 Dec	N03W13	328	plage															
12 Dec	N03W28	330	plage															
13 Dec	N03W43	332	plage															
14 Dec	N03W58	334	plage															
15 Dec	N03W73	336	plage															
16 Dec	N03W88	337	plage															
								0	0	0	0	0	0	0	0	0	0	

Crossed West Limb.
 Absolute heliographic longitude: 325



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 2234																	
10 Dec	N05E18	309	30	2	Cro	3	B					1					
11 Dec	N04E03	311	30	6	Dac	11	BG	3				5					
12 Dec	N04W12	314	110	8	Dao	9	BG	1				1					
13 Dec	N04W27	316	100	7	Cao	9	B										
14 Dec	N04W43	319	110	3	Cso	4	B										
15 Dec	N04W57	320	70	2	Hsx	1	A										
16 Dec	N05W71	320	90	1	Hsx	2	A										
17 Dec	N05W84	320	80	3	Hsx	1	A										
								4	0	0	7	0	0	0	0		

Crossed West Limb.

Absolute heliographic longitude: 311

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		

Still on Disk.

Absolute heliographic longitude: 264



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 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											
								2	0	0	6	0	0	0	0	0		

Still on Disk.

Absolute heliographic longitude: 240

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						
								3	0	0	9	1	0	0	0	0		

Still on Disk.

Absolute heliographic longitude: 250



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 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														

Still on Disk.

Absolute heliographic longitude: 253

Region 2239																	
14 Dec	N14E25	251	50	6	Cai	9	B										
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										

Still on Disk.

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										
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										

Still on Disk.

Absolute heliographic longitude: 217



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	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								
								16	5	0	44	2	1	0	0		

Still on Disk.

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					
								44	5	1	82	9	1	1	0		

Still on Disk.

Absolute heliographic longitude: 237

Region 2243

19 Dec	N09E28	180	10	1	Axx	1	A										
20 Dec	N09E14	183	plage														
21 Dec	N09W00	184	plage														
								0	0	0	0	0	0	0	0	0	

Still on Disk.

Absolute heliographic longitude: 184

Region 2244

20 Dec	S05E38	159	50	3	Cao	3	B				3						
21 Dec	S04E28	156	160	8	Dao	11	B	1			1						
								1	0	0	4	0	0	0	0		

Still on Disk.

Absolute heliographic longitude: 156



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

Region 2245

21 Dec	N08E60	124	30	3	Cao	6	B	0	0	0	0	0	0	0	0
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Still on Disk.
 Absolute heliographic longitude: 124

Region 2246

21 Dec	N17E78	106	70	2	Hsx	1	A	0	0	0	0	0	0	0	0
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Still on Disk.
 Absolute heliographic longitude: 106

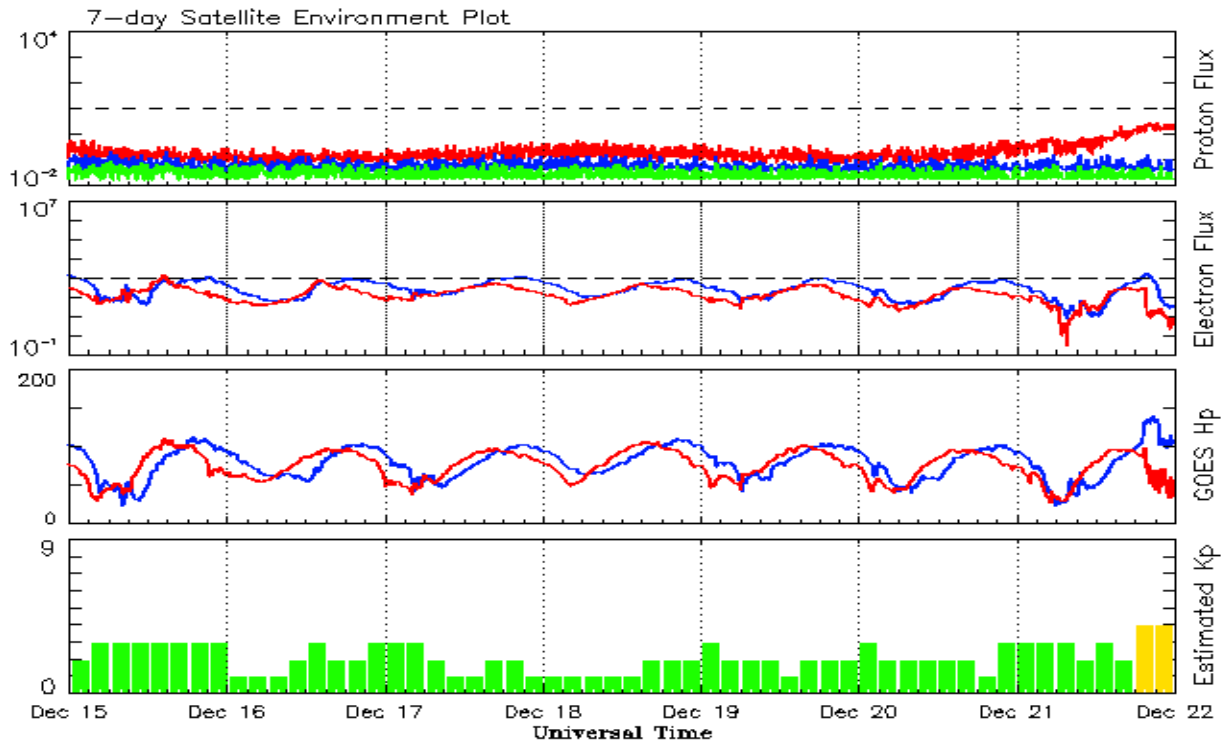


Recent Solar Indices (preliminary)
Observed monthly mean values

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 15 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.

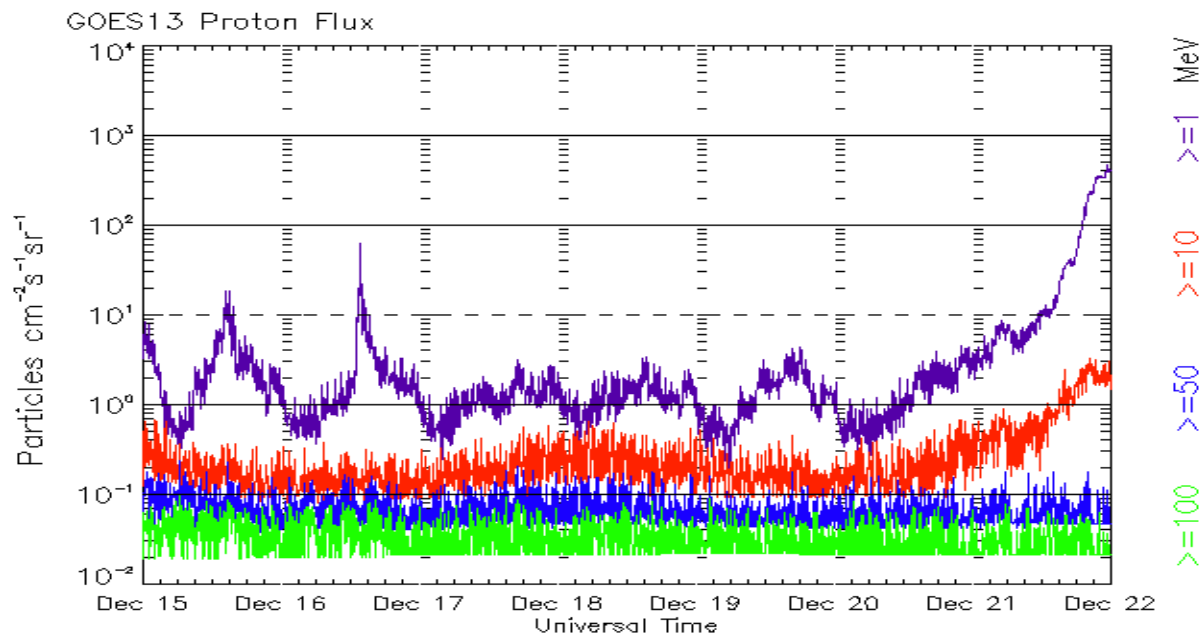
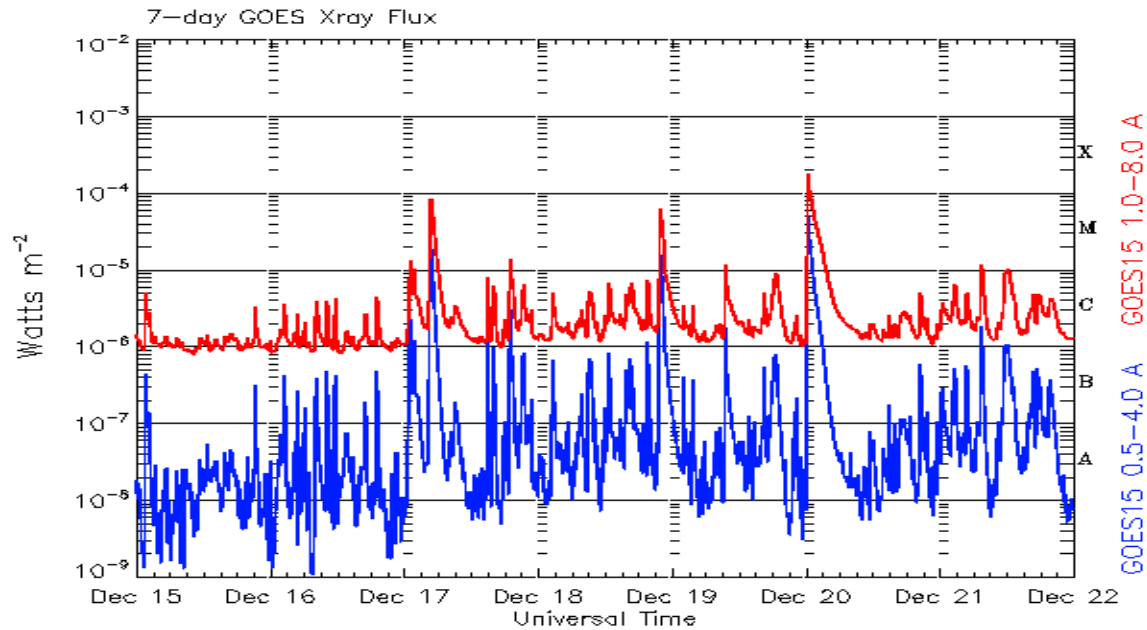
The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV by the SWPC Primary GOES satellite.

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.

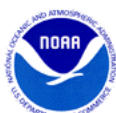




*Weekly GOES Satellite X-ray and Proton Plots
Week Beginning 15 December 2014*

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.



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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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