

BAA Radio Astronomy Group.

2015 FEBRUARY

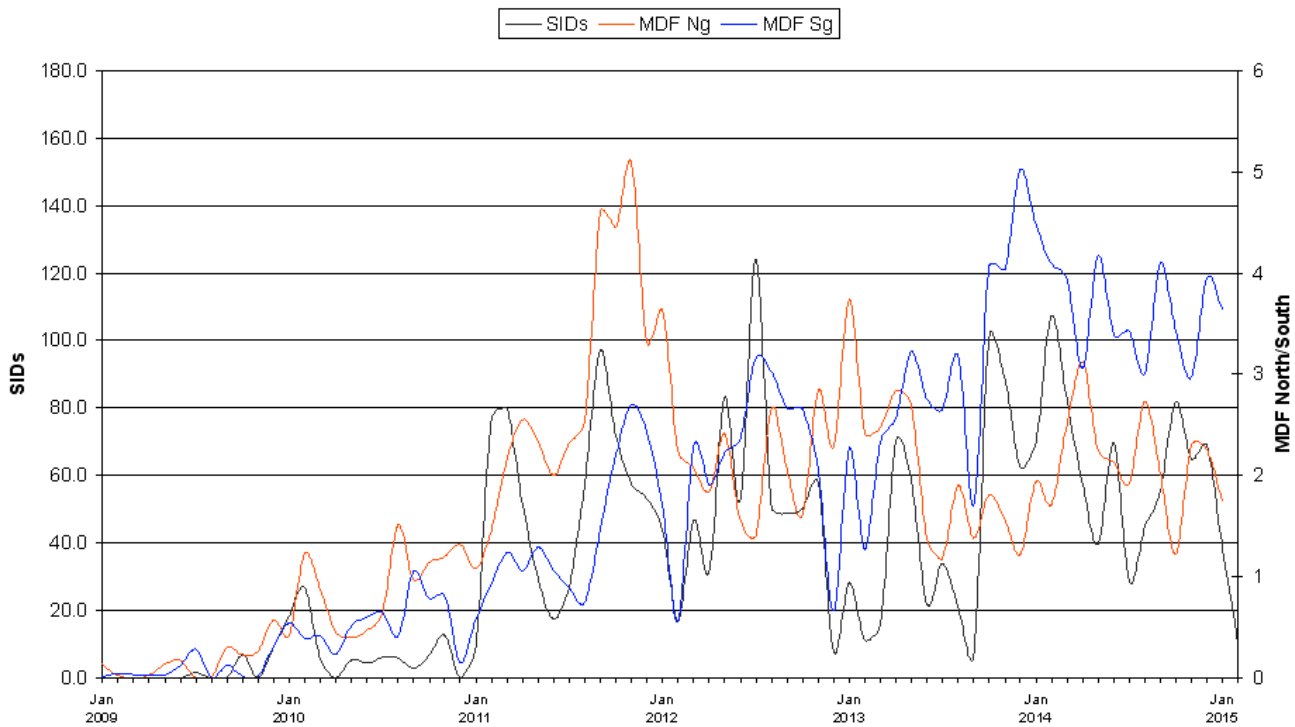
DAY	Xray class	Observers	John Cook (23.4kHz/22.1kHz)	Roberto Battaiola (18.3kHz)	Paul Hyde (22.1/23.4kHz)	Bob Middlefell (22.1kHz)	Mark Edwards (20.9/24.0/18.3kHz)
			Tuned radio frequency receiver, 0.58m frame aerial.	Modified AAVSO receiver.	Tuned radio frequency receiver, 0.96m frame aerial.	Tuned radio frequency receiver, 0.5m frame aerial.	Spectrum Lab / PC 2m loop aerial.
			START PEAK END (UT)	START PEAK END (UT)	START PEAK END (UT)	START PEAK END (UT)	START PEAK END (UT)
1	C3.2	2	11:29 11:32 11:38 1-				11:29 11:33 ? -
1	?	1					11:39 11:41 11:48 1-
3	C2.7	2			09:44 09:48 10:00 1-		09:45 09:48 09:54 1-
3	C3.9	3	10:48 10:51 11:04 1-				10:48 10:53 11:06 1-
4	C2.2	4	10:02 10:04 10:08 1-		10:06 10:09 10:19 1-		10:06 10:08 10:12 1-
20	C2.3	2			15:08 15:11 15:22 1-		15:07 15:17 15:42 2
28	C5.6	2	09:33 09:51 10:07 2				09:31 09:52 10:18 2+
28	C2.2	4	13:38 13:41 13:46 1-		13:38 13:41 13:50 1-		13:39 13:42 13:54 1-

DAY	Xray class	Observers	Colin Clements (23.4kHz/22.1kHz)	Steve Parkinson (Various)	John Elliott (18.3kHz)	John Wardle (19.6/23.4kHz)	Richard Kaye (Various)
			AAVSO receiver, 0.76m screened loop aerial.	Tuned radio frequency receiver, frame aerials.	Tuned radio frequency receiver, 0.5m frame aerial.	PC soundcard, 0.7m frame aerial.	Pre-amplifier + PC software receiver.
			START PEAK END (UT)	START PEAK END (UT)	START PEAK END (UT)	START PEAK END (UT)	START PEAK END (UT)
1	C3.2						
1	?						
3	C2.7						
3	C3.9			10:49 10:53 11:02 1-			
4	C2.2		10:04 10:08 10:15 1-				
20	C2.3						
28	C5.6						
28	C2.2			13:38 13:42 13:52 1-			



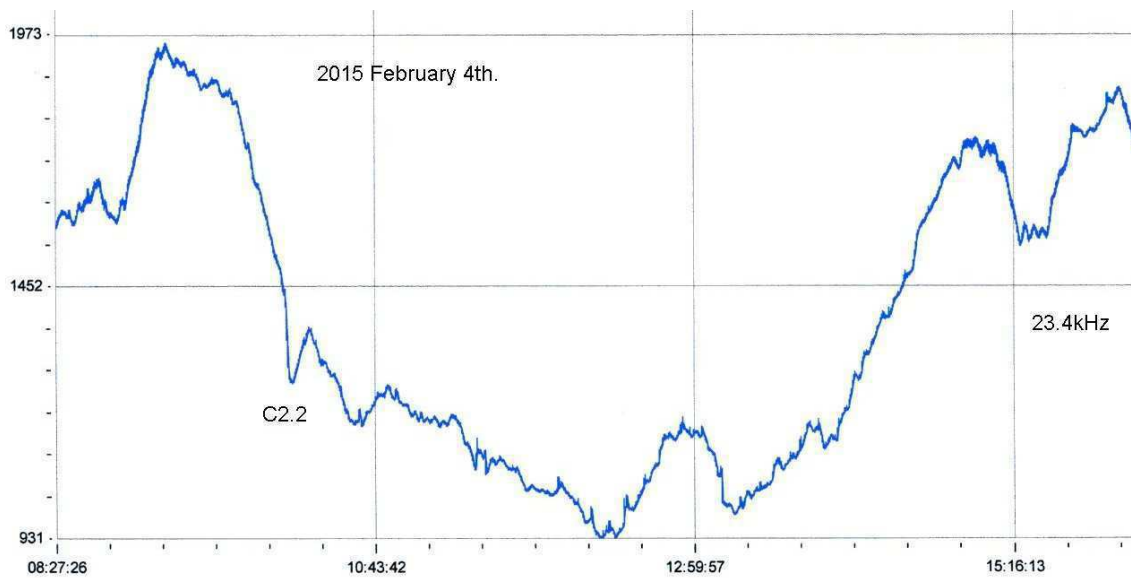
With just eight SIDs recorded, activity is at its lowest level since 2013 September. There are just two M-class flares in the GOES record for the month, the most energetic being M2.4 at 23:35 on the 9<sup>th</sup>. There were none of X-class. Background levels were below B9 all month, dipping to B4 or B5 by mid-month. There were a number of small flares during this period, but none caused any SIDs that we could record. General noise levels were also quite high, helping to hide the smaller SIDs.

Cycle 24 North/South solar activity.

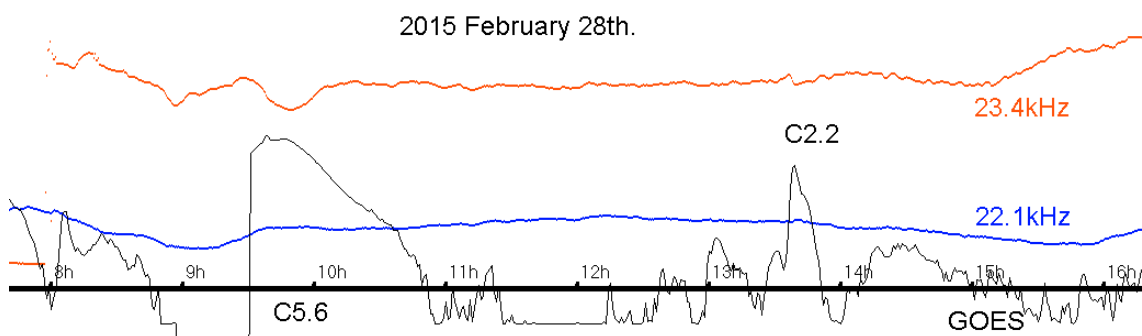


This activity chart is compiled from our own SID counts (black) with the Mean Daily Frequency Sunspot group counts from the Solar section. MDFNg (red) is the northern hemisphere count, and MDFSg (blue) is for the southern hemisphere. Numerous periods for flare and sunspot activity have been published over the years, with 33.5, 129 and 153 days being prominent. While it is difficult to see such periods in our data without some substantial analysis, a strong north/south division in activity does show clearly. For the first three years of the chart, the northern hemisphere dominates the sunspot counts. The strong SID peak in 2013 July does not match the peak in sunspot count, being delayed by over six months, but it does mark a point at which southern hemisphere sunspot activity is dominant. SID counts then fell away through 2013 January while northern hemisphere activity again dominated. For the last 18 months southern hemisphere activity has been dominant and SID counts have shown several peaks. The conclusion seems to be that southern hemisphere active areas in cycle 24 have been more flare-active than those in the north. My thanks to the Solar section for the MDF data.

The SID count used in this chart has been corrected for the variation in day length through the year. Counts during the short days of winter have been increased, while summer counts have been proportionally reduced to give an equivalent at the equinoxes. Small number statistics make this difficult, but the result is perhaps more realistic.



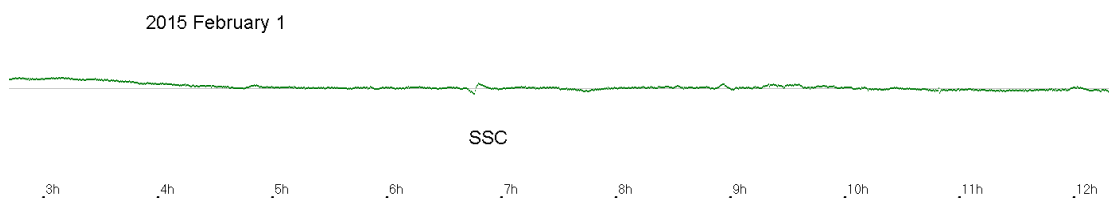
This recording from February 4<sup>th</sup> is by Colin Clements, and shows just how difficult it has been to spot the SIDs this month. The C2.2 flare at 10:04UT was the only significant event of the day, but is barely noticeable amongst the general noise present.



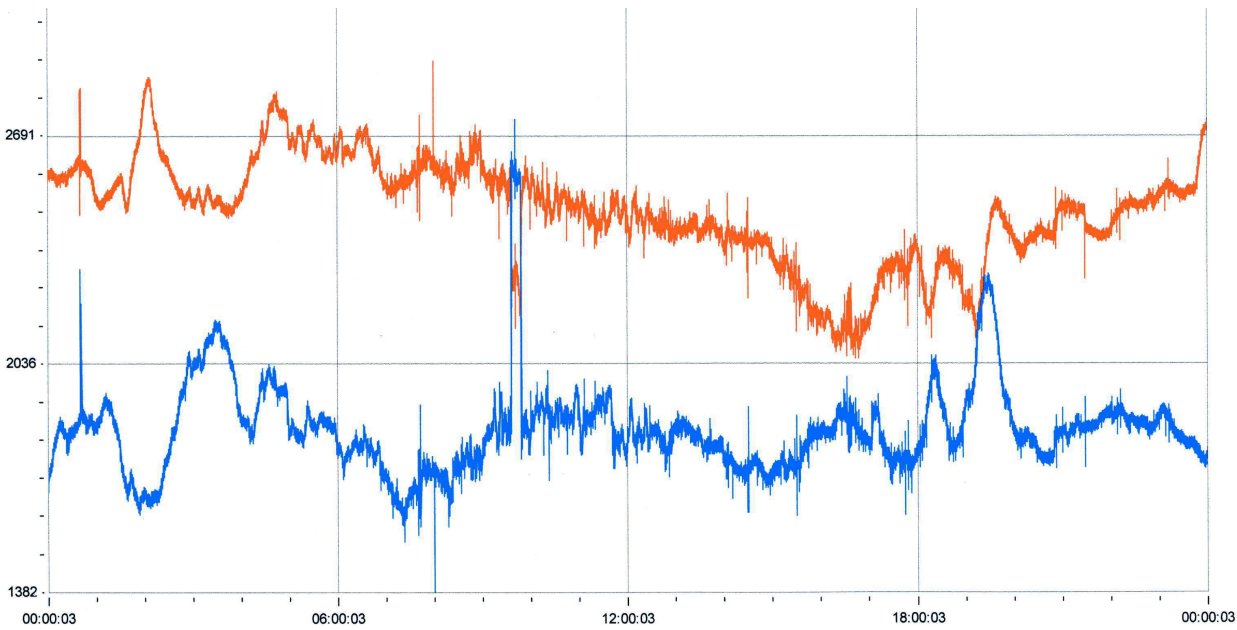
My own recording from the 28<sup>th</sup> (above) shows rather less noise, but that does not make the SIDs any easier to identify. The long C5.6 flare produced a very symmetrical dip in the 23.4kHz signal, and had no visible effect at 22.1kHz. The C2.2 later in the afternoon was much shorter, but produced a very small dip at 23.4kHz. A small rise at 22.1kHz is just visible.

## MAGNETIC OBSERVATIONS.

A well defined Sudden Storm Commencement was recorded at 06:42 on February 1<sup>st</sup>.

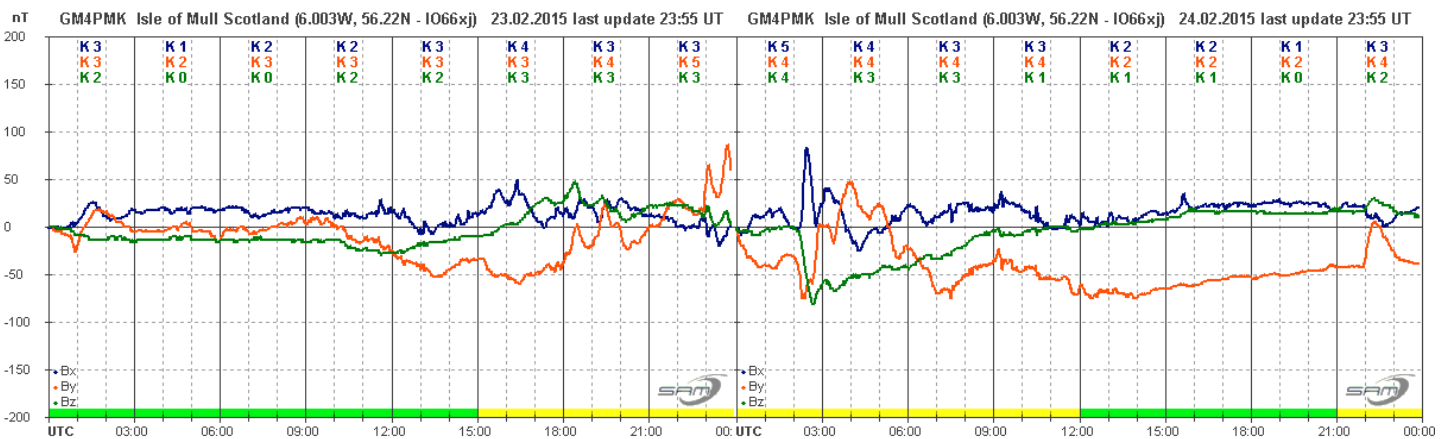


My own recording, above, shows a disturbance of about  $\pm 15$ nT. Conditions remained calm until about 20:30, when the storm itself began with a disturbance of about 115nT. The cause seems to have been the recurrent south-polar coronal hole high-speed stream. It lasted through most of February 2<sup>nd</sup>, settling down to a very rapid low level oscillation from 06UT until about 13UT. Further disturbance began later in the afternoon, fading out early on the 3<sup>rd</sup>.



This recording of February 2<sup>nd</sup> is by Colin Clements, and shows most of the activity. Red is the X-field, blue is the Y-field. Note some local interference just before 10UT.

An equatorial coronal hole was responsible for active conditions on February 23<sup>rd</sup> and 24<sup>th</sup>.



I have joined together two charts from Roger Blackwell, above. Note that the magnetometer sensor is reset at midnight, and so there is a discontinuity. This is from a 3-axis sensor, blue being Bx, red By and green Bz. Peak disturbance was around 03UT on the 24<sup>th</sup>, with a K-index of 5. The By trace shows a disturbance of about 200nT in total. My own magnetometer showed about 100nT, but is horizontally mounted and therefore does not measure the true field. Gonzalo Vargas (Bolivia) recorded this activity continuing into the 25<sup>th</sup>.

The rest of the activity shown in the Bartels diagram was much less significant, and all from CHSS effects. Although satellite images show several CME's, none were earth-directed. There were no SFEs in February.

Magnetic observations received from Colin Clements, Roger Blackwell, Gonzalo Vargas and John Cook.

Reports and observations to [jacook@jacook.plus.com](mailto:jacook@jacook.plus.com).

BARTELS DIAGRAM

ROTATION	KEY:	DISTURBED.	ACTIVE	SFE	B, C, M, X = FLARE MAGNITUDE.												Synodic rotation start (carrington's).	
2440	F	28 29 30 31	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23	2012 June													2125	23
2441	F	24 25 26 27 28 29 30	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	2012 July													2126	20
2442	F	21 22 23 24 25 26 27 28 29 30 31	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	2012 August													2127	16
2443	F	17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4 5 6 7 8 9 10 11 12	2012 September													2128	12
2444	F	13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	1 2 3 4 5 6 7 8 9	2012 October													2129	9
2445	F	10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4 5	2012 November													2130	5
2446	F	6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	1 2	2012 December													2131	2
2447	F	2131 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29																
2448	F	2132 30 31	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	2013 January														
2449	F	2133 26 27 28 29 30 31	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21	2013 February														
2450	F	2134 22 23 24 25 26 27 28	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	2013 March														
2451	F	2135 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	2013 April														
2452	F	2136 17 18 19 20 21 22 23 24 25 26 27 28 29 30	1 2 3 4 5 6 7 8 9 10 11 12 13	2013 May														
2453	F	2137 14 15	16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	2013 June														
2454	F	2138 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	1 2 3 4 5 6	2013 July														
2455	F	2139 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2	2013 August														
2456	F	2140 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29																
2457	F	2141 30 31	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	2013 September														
2458	F	2142 26 27 28 29 30	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	2013 October														
2459	F	2143 23 24 25 26 27 28 29 30 31	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	2013 November														
2460	F	2144 19 20 21 22 23 24 25 26 27 28 29 30	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	2013 December														
2461	F	2145 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4 5 6 7 8 9 10 11	2014 January														
2462	F	2146 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4 5 6 7	2014 February														
2463	F	2147 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4 5 6	2014 March														
2464	F	2148 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2	2014 April														
2465	F	2149 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29																
2466	F	2150 30 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26																
2467	F	2151 27 28 29 30 31	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	2014 June														
2468	F	2152 23 24 25 26 27 28 29 30	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19	2014 July														
2469	F	2153 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	2014 August														
2470	F	2154 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4 5 6 7 8 9 10 11	2014 September														
2471	F	2155 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	1 2 3 4 5 6 7 8	2014 October														
2472	F	2156 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4	2014 November														
2473	F	2157 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	1															
2474	F	2158 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28																
2475	F	2159 29 30 31	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24	2015 January														
2476	F	2160 25 26 27 28 29 30 31	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	2015 February														
2477	F	2161 21 22 23 24 25 26 27 28	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19	2015 March														