

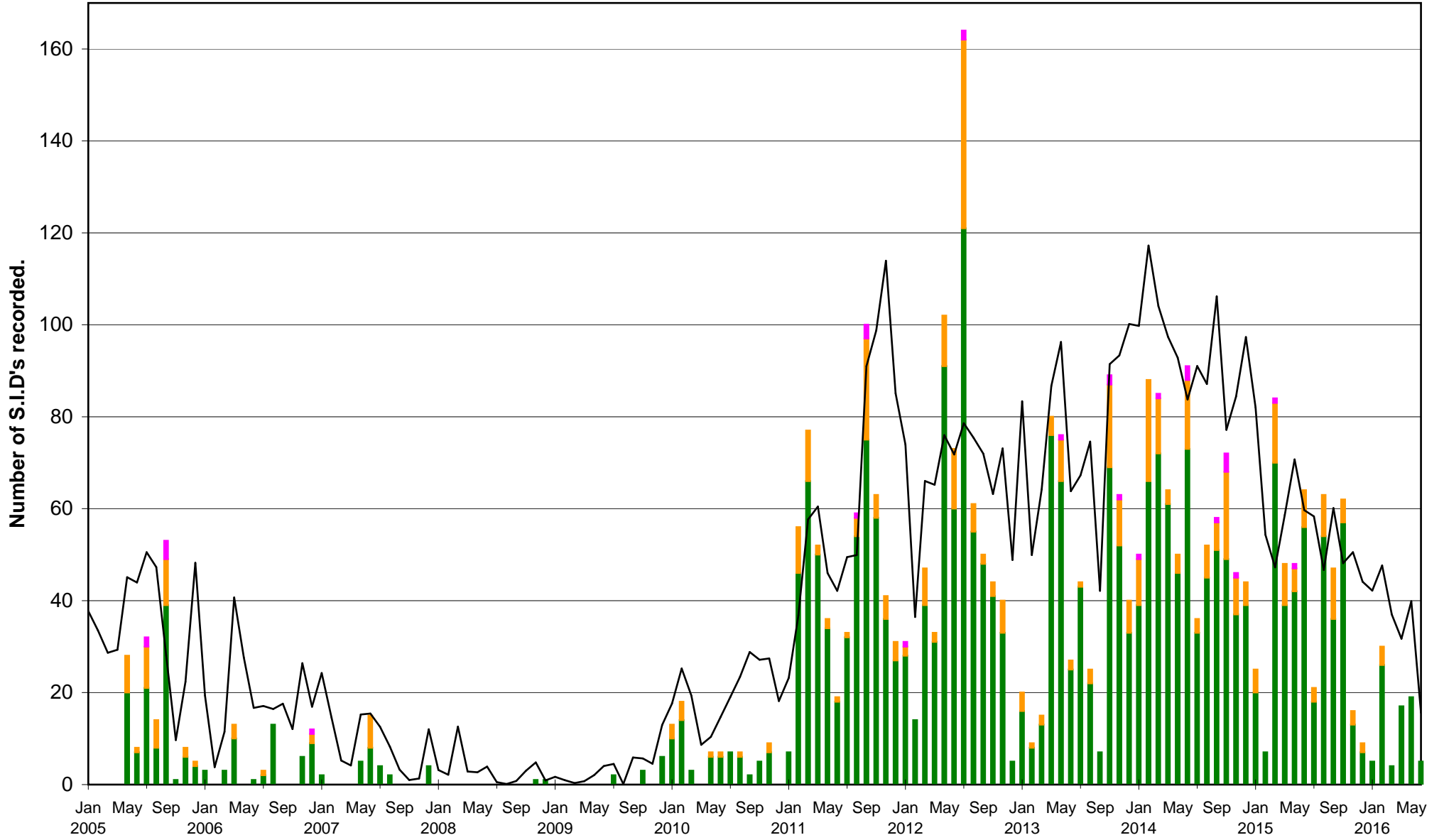
BAA Radio Astronomy Group.

2016 JUNE

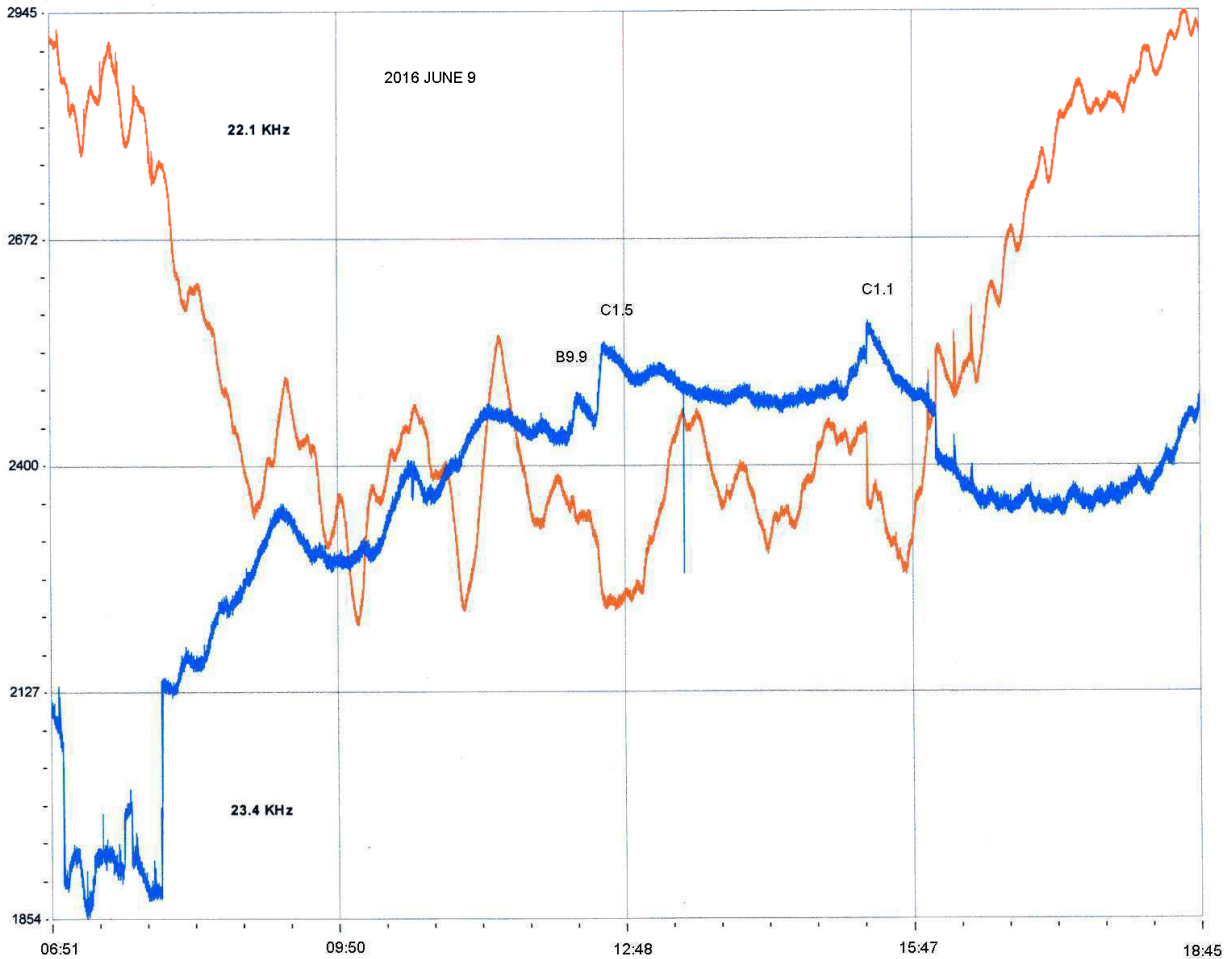
DAY	Xray class	Observers	John Cook (23.4kHz/22.1kHz)	Roberto Battaiola (20.9kHz)	Paul Hyde (22.1kHz)	Mark Edwards (20.9/24.0/18.3kHz)	Colin Clements (23.4kHz/22.1kHz)
			Tuned radio frequency receiver, 0.58m frame aerial.	Modified AAVSO receiver.	Spectrum Lab / PC 1.5m frame aerial.	Spectrum Lab / PC 2m loop aerial.	AAVSO receiver, 0.76m screened loop aerial.
			START PEAK END (UT)	START PEAK END (UT)	START PEAK END (UT)	START PEAK END (UT)	START PEAK END (UT)
9	B9.9	4	12:16 12:18 12:25 1-		12:12 12:22 ? -	12:15 12:20 ? -	12:13 12:20 12:29 1-
9	C1.5	4	12:31 12:34 12:54 1		12:30 12:36 12:58 1+	12:31 12:37 12:55 1	12:29 12:36 12:54 1
9	?	1				15:06 15:10 ? -	
9	C1.1	3			15:06 15:18 16:05 2+	15:12 15:16 15:32 1	15:17 15:18 15:50 2
11	B9.7	1				20:55 20:57 21:06 1-	
12	C1.8	1				20:32 20:40 20:57 1	
13	C3.0	1				<b>05:35 05:49 06:01 1+</b>	
19	C1.7	2			11:47 12:01 12:26 2	11:50 12:03 12:29 2	

DAY	Xray class	Observers	Steve Parkinson (Various)	John Wardle (19.6/23.4kHz)	Phil Rourke (23.4kHz)	Jim Barber	John Elliott (18.3kHz)
			Tuned radio frequency receiver, frame aeriels.	PC soundcard, 0.7m frame aerial.	Spectrum Lab, 0.6m frame aerial.	Spectrum Lab, 0.6m frame aerial.	Tuned radio frequency receiver, 0.5m frame aerial.
			START PEAK END (UT)	START PEAK END (UT)	START PEAK END (UT)	START PEAK END (UT)	START PEAK END (UT)
9	B9.9						
9	C1.5						
9	?						
9	C1.1						
11	B9.7						
12	C1.8						
13	C3.0						
19	C1.7						

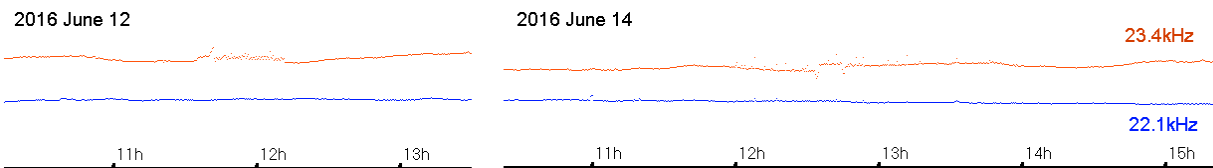
# VLF flare activity 2005/16.



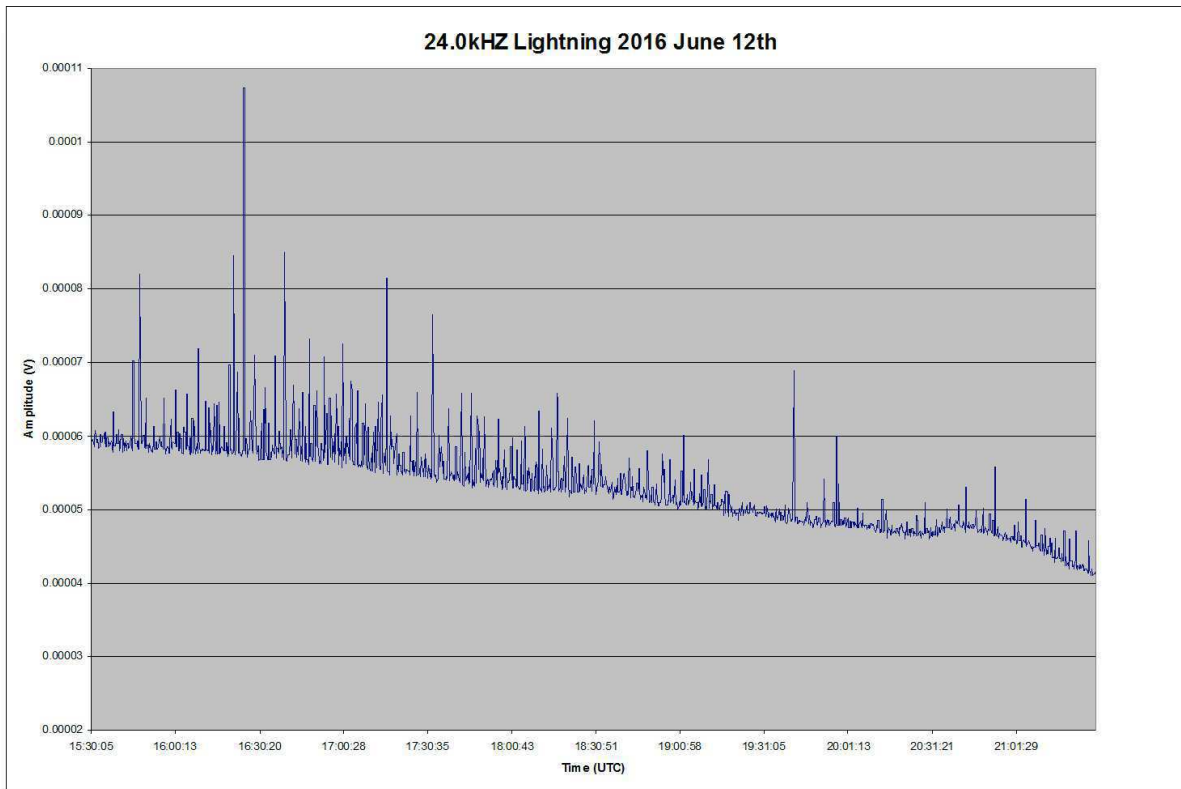
Solar activity fell dramatically in June, with a total of just eight SIDs recorded. They were all from fairly weak flares, the most energetic in the SWPC record being C6.5 at 22:28UT on the 11<sup>th</sup>. Our strongest was the C3.0 at 05:49 on the 13<sup>th</sup>. Strangely this did not produce a detectable SID for most observers, only being recorded at 20.9kHz on the path from St. Assise in France. The B9.9 flare on the 9<sup>th</sup> gave a much wider response, being better timed nearer to midday.



This chart by Colin Clements shows the SIDs at 23.4kHz (blue trace), although they have been lost in the very unstable 22.1kHz signal (red). Colin noted instability and oscillations on several occasions through the month, both signals being effected on the 12<sup>th</sup> and 16<sup>th</sup>. This instability is most noticeable when solar activity is low, allowing local weather patterns to influence the lower ionosphere. Thunderstorms can also have a strong effect at VLF, and much of the UK experienced such storms in June.



These charts show my own recordings during local thunderstorms. I sample at 5 second intervals and average over five samples to smooth the charts, so the effect is fairly mild. On these occasions an indoor loop aerial is a real advantage, as I am aware of observers having outdoor aerials and amplifiers destroyed by lightning.

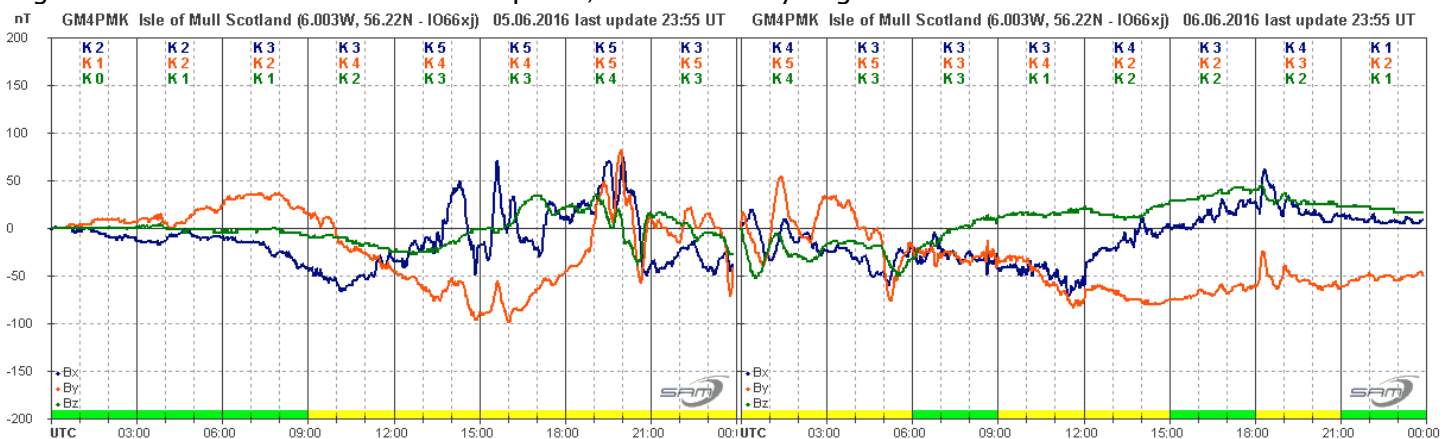


This is the storm on the 12<sup>th</sup> recorded by Mark Edwards at 24kHz. Mark averages over 10 second periods, but still has a forest of spikes.

The BAA solar section reported a total of seven days in June with R (relative sunspot number) at zero. This is the first spotless period of cycle 24 since 2011 January.

### MAGNETIC OBSERVATIONS.

With the low flare count in June, there were no major Earth-directed CMEs. There were however plenty of coronal holes producing increased wind speeds. The most active period was on the 5<sup>th</sup> and 6<sup>th</sup>, with a 20 degree wide hole in the northern hemisphere, as recorded by Roger Blackwell:



Several larger holes were present over the 13<sup>th</sup> and 14<sup>th</sup>, although with much less effect on the Earth's magnetic field. A number of smaller coronal holes were present around the 21<sup>st</sup> to 27<sup>th</sup>, again with only mild effects recorded.

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

