

No sign of the 2015 Daytime Sextantids through combined radio observations

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To investigate the presence or absence of the daytime Sextantids in the year 2015, the EurAstro Radio Station (EARS) in Munich (DE) performed a combined radio observation campaign together with the Radio Astronomy and Meteor Bologna (RAMBO) radio station located in Bologna (IT). The combined radio observations of EARS and RAMBO are in mutual agreement and confirm that, as in the year 2014, also in the year 2015 no evidence has existed of a meteor activity due the 2015 daytime Sextantids.

1 Introduction

DSX 221¹ also indicated as Sextantids is a daytime meteor shower having features not well-known. It was discovered by Weiss in September 1957, who recorded 30 meteors per hour. No more Sextantids were reported until 1961. The next shower was observed in 1969, so the hypothesis has been advanced that DSX 221 is a four year periodic meteor shower.

Following the invitation made by Rendtel at the IMC 2014 in Giron, France (Rendtel, 2014) to observe DSX 221 in the period 30 September – 05 October 2014 by any possible means, the EurAstro Radio Station (EARS) in Munich, Germany (48°07'58,0"N, 11°34'47.3"E) performed radio observation of DSX 221 in the recording period 30/09/2014, 07h00m UT – 05/10/2014, 16h00m UT (Tomezzoli and Verbeeck, 2015). The conclusion was that the meteor activity of DSX 221, if present at all, was at a much lower level than the sporadic meteor activity.

In order to investigate the presence or absence of the daytime Sextantids in the year 2015, EARS performed a combined radio observation campaign together with the Radio Astronomy and Meteor Bologna (RAMBO) radio station located in Bologna, Italy (44°30'28,9"N, 11°21'12,0"E).

2 EARS and RAMBO combined radio observation

EARS, based on the forward scattering principle and operated by Giancarlo Tomezzoli, adopted the same observation configuration adopted in the year 2014: radio beacon from the GRAVES radar (emitter at Broyes-lès-Pesmes, 47°20'51.72"N, 05°30'58.68"E, about 500 km from Munich), vertical antenna J-Pole 144, receiver ICOM 1500 (USB mode, 143.049 MHz), computer Pavillion dv6 (processor Intel Core Duo T2500) and SpecLab V26 b10 as recording software. The EARS radio observation in the recording period from 27/09/2015,

08h15m UT – 03/10/2015, 07h30m UT proceeded smoothly without problems. Meteor radio echoes were counted visually by Giancarlo Tomezzoli by looking at the JPG images recorded by SpecLab every 5 minutes.

RAMBO, based on the forward scattering principle and operated by Lorenzo Barbieri and others, adopted the following observation configuration: radio beacon from the GRAVES radar (about 500 km from Bologna), Yagi 7 elements antenna, Yaesu 897 receiver, Arduino microcontroller and homemade recording software. The RAMBO radio observation in the recording period from 28/09/2015, 00h00m UT – 04/10/2015, 00h00m UT proceeded smoothly without problems. Meteor radio echoes were counted by an ad hoc developed RAMBO software and plotted in graphic form by using Gnuplot².

The EARS observed hourly meteor radio echo rates in the EARS observing period are summarized in the diagrams of *Figure 1*. Evidently the meteors of DSX 221, if any, were superposed on the ever present sporadic meteors. To better characterize the meteor radio echoes in the recording period, an underdense radio echo from the images recorded by EARS was assumed as underdense reference radio echo to distinguish between recorded underdense strong and faint radio echoes. The results of

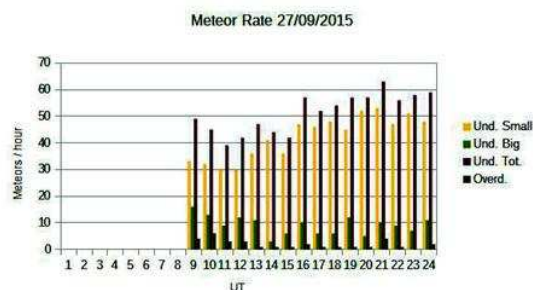


Figure 1a – EARS observed hourly meteor radio echo rates during the EARS recording period: 27 September 2015.

¹ <http://www.bbc.co.uk/dna/ptop/plain/A40721212>

² <http://www.gnuplot.info/>

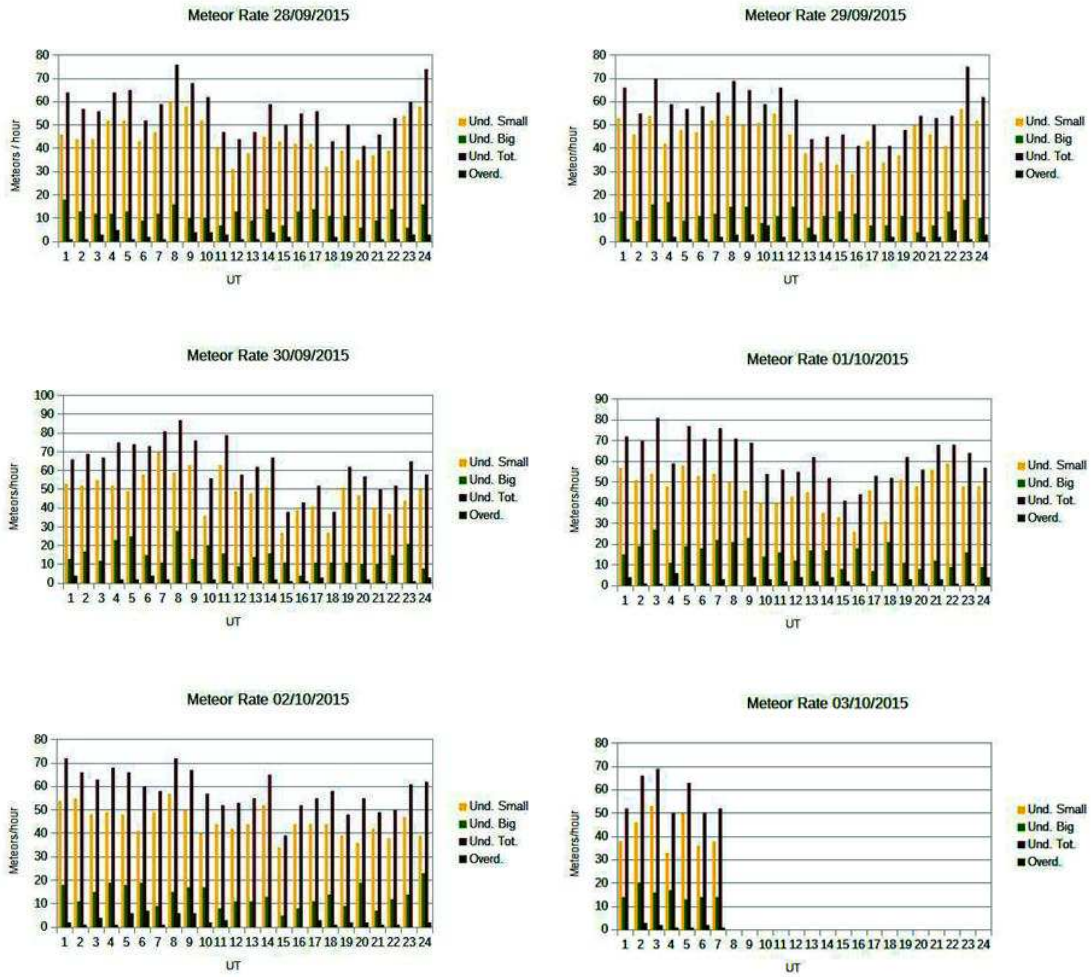


Figure 1b, 1c, 1d, 1e, 1f, 1g – EARS observed hourly meteor radio echo rates during the EARS recording period: 28 September – 3 October 2015.

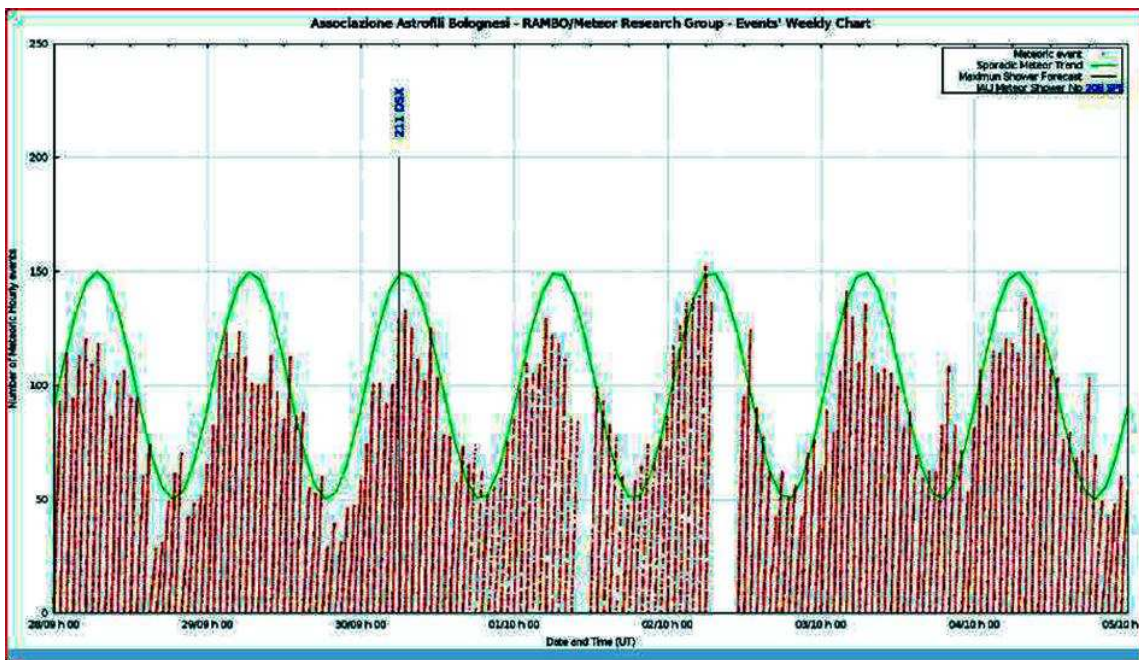


Figure 2 – RAMBO observed hourly meteor radio echo rates during the RAMBO recording period – the position of the expected maximum of DSX 221 is indicated.

the comparison are shown in *Figure 1*. Looking at the diagrams in *Figure 1*, it is possible to recognize that during the EARS recording period no maximum attributable to DSX 221 was detected.

The RAMBO observed hourly meteor radio echo rates in the RAMBO observing period are summarized in the diagram of *Figure 2*. Looking at the diagram in *Figure 2*, it is possible to recognize that during the RAMBO recording period no maximum attributable to DSX 221 was detected.

3 Conclusions

The combined radio observations of EARS and RAMBO are in mutual agreement and confirm that, as in the year 2014, also in the year 2015 no evidence has existed of a meteor activity due the 2015 daytime Sextantids.

References

- Rendtel J. (2014). “Daytime meteor showers”. In Rault J.-L. and Roggemans P., editors, *Proceedings of the International Meteor Conference*, Giron, France, 18-21 September 2014. IMO, pages 93–97.
- Tomezzoli G., Verbeeck C. (2015). “No sign of the 2014 Daytime Sextantids and mass indexes determination from radio observations”. In Rault J.-L. and Roggemans P., editors, *Proceedings of the International Meteor Conference*, Mistelbach, Austria, 27-30 August 2015. IMO, pages 165–170.



Mirel Birlan and Tudor Georgescu in a silent corner in the restaurant.