

Camelopardalids 2014, the radio view

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Observations of the predicted encounter with dust tails from comet 209P/Linear on 24th May 2014 were made using radio forward scatter.

1 Introduction

Several predictions had been made as to the possibility of the Earth encountering dust trails left by Comet 209P/LINEAR^{1,2}.

This had also led to claims of a possible "meteor storm". As the timing of the trail crossings were to occur in daylight at the author's location (~56 degrees north) it was decided to monitor the activity using radio forward scatter.

2 Equipment

The radio technique used is well established and described (Rendtel and Arlt, 2009). A 4 element Yagi antenna was mounted at approximately 10m above ground and orientated to an azimuth of 140 degrees. The antenna was connected to a Yaesu FT817 amateur radio receiver. The receiver was tuned to the GRAVES Radar frequency of 143.050 MHz.

3 Operation

The audio output was fed to a PC with soundcard running SPECTRAN audio processing software³.

The software was configured to take an image of the output screen every 30 seconds in order to build up a time lapse video of any activity. See Figure 1 taken from the video shown at IMC 2014, Giron, France.

Since there was some doubt as to whether anything may happen at all or if the timings might have been in error the system was set to run for 10 hours, approximately five hours or so either side of the predicted times.

¹ http://www.imcce.fr/langues/en/ephemerides/phenomenes/meteor/DATABASE/209_LINEAR/2014/

² <http://star.arm.ac.uk/~dja/209P/>

³ <http://www.webring.org/l/rd?ring=homeaudio;id=1:url=http%3A%2F%2Fwww.qsl.net%2Fi2phd%2Fspectran%2Findex.html>

4 Results

Once the observation period had completed the individual frames were inspected. The number of meteor "pings" detected was counted. The selection was arbitrary based on the noise level indicated by the software. This allowed the level under the cursor to be measured in a relative manner. To try and obtain a reasonable timing precision a bin size of 10 minutes (20 frames) was chosen, again arbitrary based on convenience of counting. This strategy resulted in 60 bins covering 0200UT to 1200UT. The result of the binning is shown in Figure 2.

It can be seen that although activity was increasing through the morning hours as normally occurs, the two highest counts were at the predicted times of the trail crossings. It should be noted that there is a slight difference in the corrected time as listed on the website of David Asher². This may be an expression of the particular binning method used here. Another reason for the slight timing discrepancy may be the fact that the meteors being observed were approximately 1000km+ distant. This would require an additional topocentric correction as the meteors were not directly "over" the observing location at the predicted times.

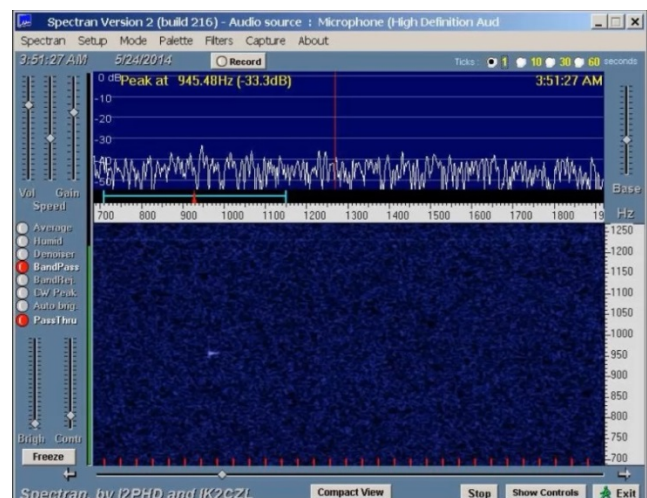


Figure 1 – A frame grab of the graphical output. This shows a strong "ping" in the lower panel.

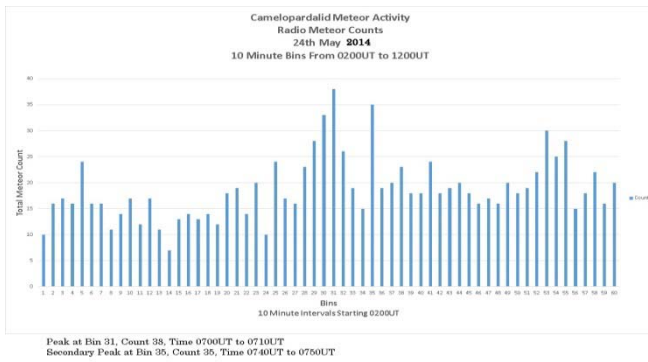


Figure 2 – Graph of count bins.

5 Conclusion

It can be concluded that the two predicted trail crossings did occur. They were, however, only slightly higher than the normal background activity and not a "storm".

References

Rendtel J. and Arlt R., editors (2009). *Handbook for Meteor Observers*. Third edition. IMO.