

Update on recent-past and near-future meteor shower outbursts on the Earth and on Mars

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A meteor shower outburst has been predicted on Earth on May 29th 2014 by several authors (Lyytinen and Jenniskens 2006, Ye and Wiegert 2014, Vaubaillon 2014), caused by comet 209P/LINEAR (2004 CB). At the time we are writing this abstract, we are still two months ahead of the event. If observed, the shower will radiate from a point in Camelopardalids. The event is predicted to be observable during the night in North America. The influence of planetary resonances are examined for this particular outburst.

Similarly, a meteor "hurricane" has been predicted at Mars on the 19th October 2014 by a close encounter with comet C/2013 A1 (Moorhead et al. 2014, Vaubaillon et al. 2014). This event is thought to be a real threat for spacecraft orbiting Mars. It will be observable from the Martian orbit (Christou et al. 2007, 2008) and from the surface of Mars where permitted by the geometry. Observation from Earth might also be possible with small telescopes provided that the comet ejects large particles.

In this presentation we will review these predictions in the light of recent observation regarding the meteor shower at Earth and updated physical parameters of the comet. We will provide conclusions regarding the future of meteor-shower-forecasting methods.

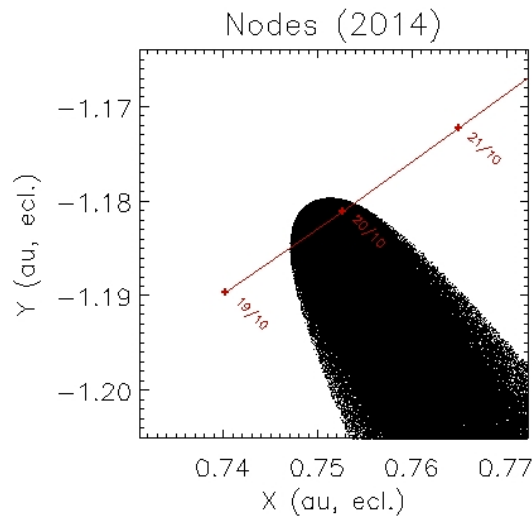


Figure: Prediction of a meteor shower "hurricane" on Mars on October 19th 2014 by Vaubaillon et al. 2014.

Acknowledgements: CINES, AS GRAM

References: E. Lyytinen and P. Jenniskens, in Jenniskens 2006, Meteor showers and their parent bodies; Q. Ye and P. Wiegert, 2014, MNRAS, 437, 4, 3283–3287; J. Vaubaillon, 2014, www.imcce.fr/langues/en/ephemerides/phenomenes/meteor/DATABASE/209_LINEAR/2014/index.php; A. Moorhead et al., 2014, *Icarus*, 231, 13–21; J. Vaubaillon et al. 2014, MNRAS, DOI: 10.1093/mnras/stu160; A. Christou et al., 2007, *PSS*, 55, 14, 2049–2062; A. Christou et al., 2008, *EMP*, 102, 1-4, 125–131.