Results of the Draconids 2011 observation with the BRAMS network

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Sept. 20-23
### Brams SpectraView

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![SpectraView Interface](image)

**Options:**  
- Darkside  
- Humo  
- Human  
- Isla  
- Joviano  
- Ophir  
- Usolo  

**Date:** 2011-10-08  
**Time:** 20:05
Draconid spectrograms

Hove
8 Oct. 2011
20h05-20h10 UT

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Draconid spectrograms

Ottignies
8 Oct. 2011
20h05-20h10 UT

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Draconid spectrograms

Epinay-sur-Orge
8 Oct. 2011
20h05-20h10 UT

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Manual countings

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Observability function (OF)

- The OF is a function that represents the sensitivity of a particular forward scatter setup to detect underdense meteors of a given shower on a given moment.
  - I.e. if the OF at t1 is twice as big as at t2 and the meteor activity is constant, then the setup will observe twice as much shower meteors at t1 in respect to t2.
- The OF is just a rough estimate; real meteor activity can only be obtained by flux density calculations (see *Proc. RMS 2005*).
OF revisited

- There are two steps in the calculation of the OF.
  1. Calculation of the place where shower meteors can reflect radio waves from transmitter to receiver. The result is a curve. This will be shown later.
  2. For any point on the curve the sensitivity of the system for underdense shower meteors occurring at this point is calculated. The OF is the sum of all these sensitivities.
History

- In 1996, Cis Verbeeck wrote a paper for the proceedings of the IMC in Appeldoorn.
  - *Calculating the sensitivity of a forward scatter setup for underdense shower meteors*
- For this paper, he wrote a code in C to calculate the OF. But after more than a decade, the compilers changed considerably, and we couldn’t compile the code anymore.
Recent work

3/1: Cis sent me the original code
13/1: First time recompiled
21/3: New code to calculate a 6th degree polynomial

16/4: First successful reproduction of the plots as showed in the paper
5/6: Calculation of the OF
31/7: Extended the code to use geographic and equator coordinates

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The BRAMS network
Typical curves for Dourbes-Uccle

Cut at 100 km altitude

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Typical curves for Dourbes-Uccle

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Draconids for Hove @ 20h

Distance: 93km
Phi: 61.09°
Theta: 35.59°
(Meteor height: 90km)
Draconids for Ottignies @ 20h

Distance: 117km
Phi: 58.03°
Theta: 35.51°

(Meteor height: 90km)

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Draconids for Epinay-sur-Orge @ 20h

Distance: 226km
Phi: 285.06°
Theta: 35.52°
(Meteor height: 90km)

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Conclusion & future work

- The OF is a rough estimate of the real number of meteors. Real meteor activity can only be obtained by flux density calculations.
- But it can give us also an idea where a simultaneous observed underdense shower meteor should have occurred.
- The source code and compiled software will be downloadable from our website after the IMC.
- Cis will extend the code to transform all the observations to the same coordinate system.
BRAMS: the website

http://brams.aeronomy.be

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Questions?

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