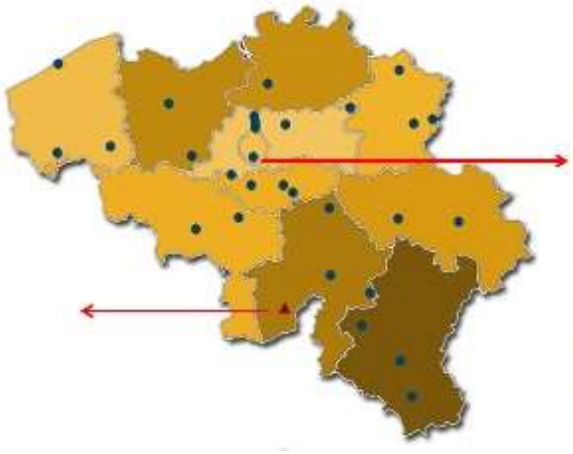
BRAMS radio observations: activity of some recent major meteor showers

Cis Verbeeck, Hervé Lamy, Stijn Calders, Cédric Tétard, Antonio Martínez Picar

IMC 2018, Pezinok, Aug 30 – Sep 2, 2018

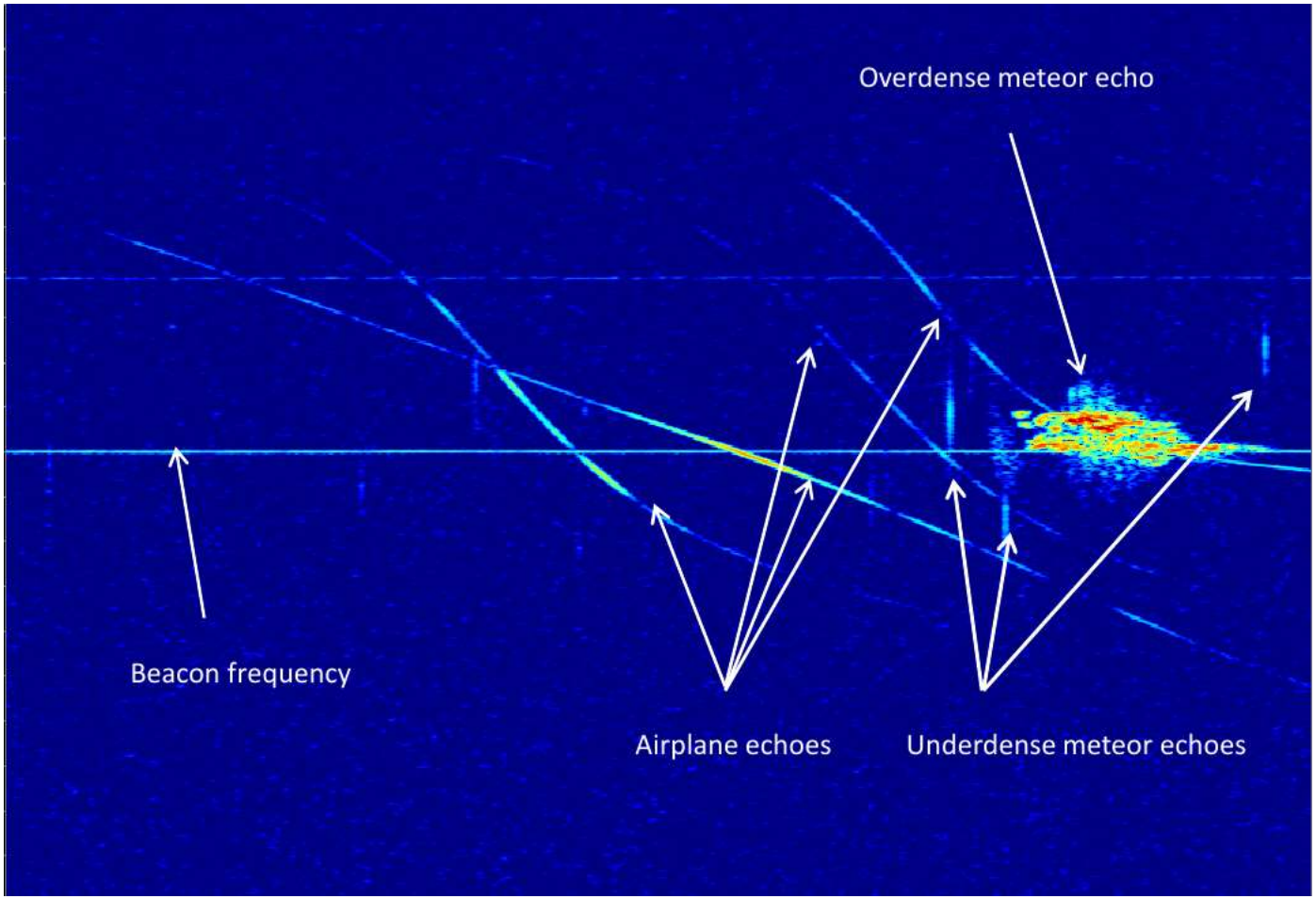
BRAMS network



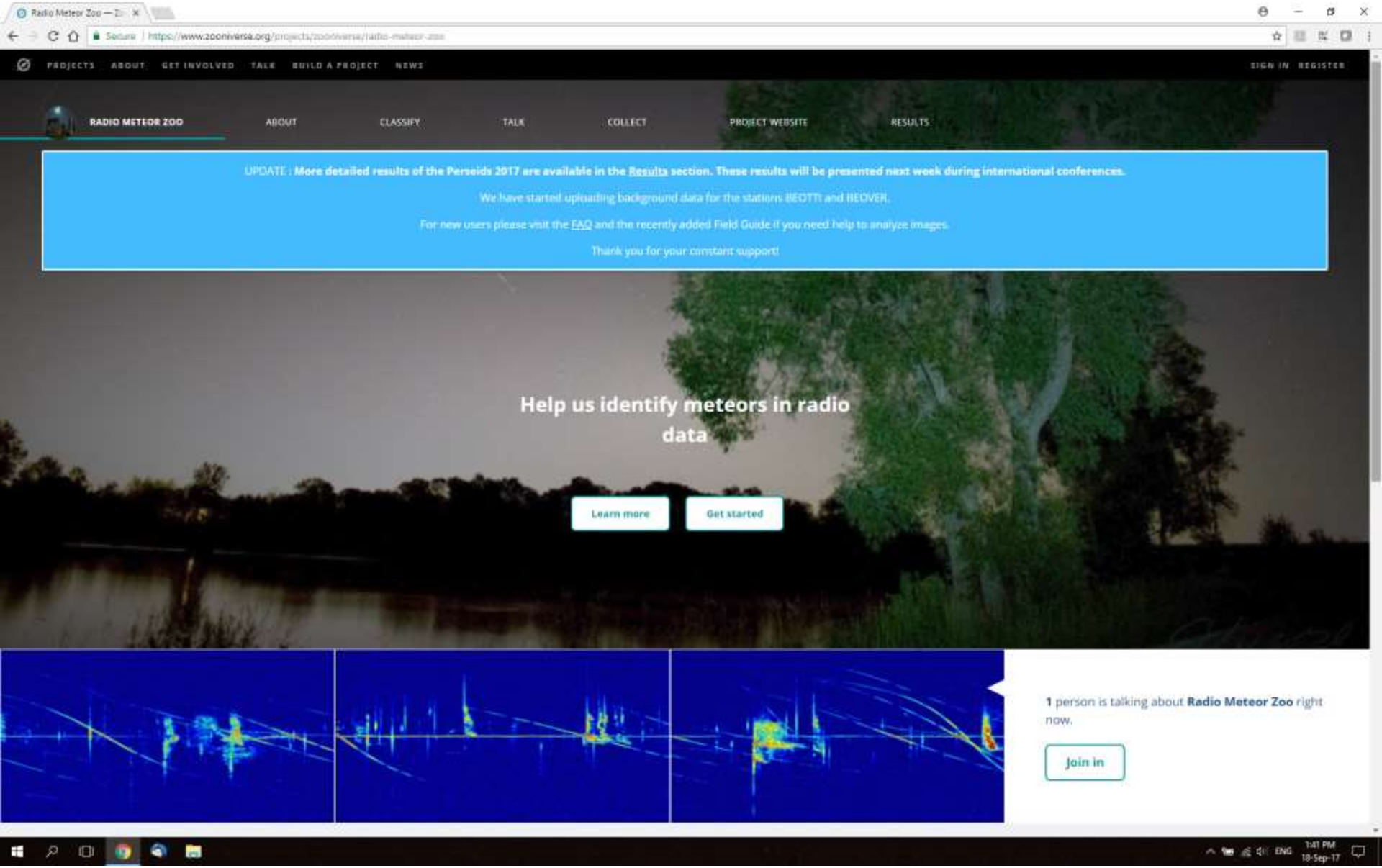
- One transmitter at Dourbes (left)
- Frequency: 49.970 MHz
- Power: 150 W
- 26 receiver stations in Belgium

Spectrograms

Vertical axis: frequency (BW=200 Hz)



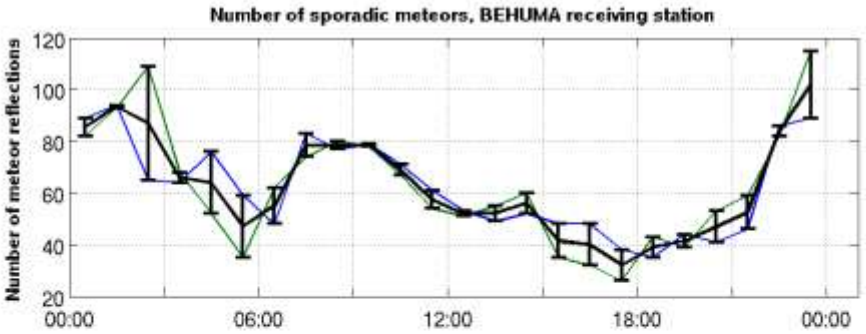
Horizontal axis: time (duration = 5 minutes)

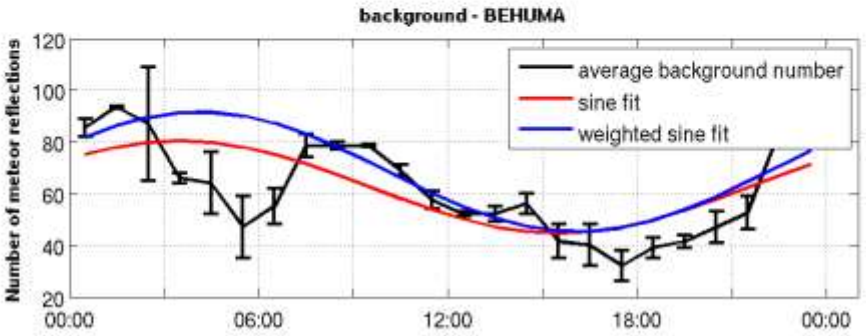


www.radiometeorzoo.org

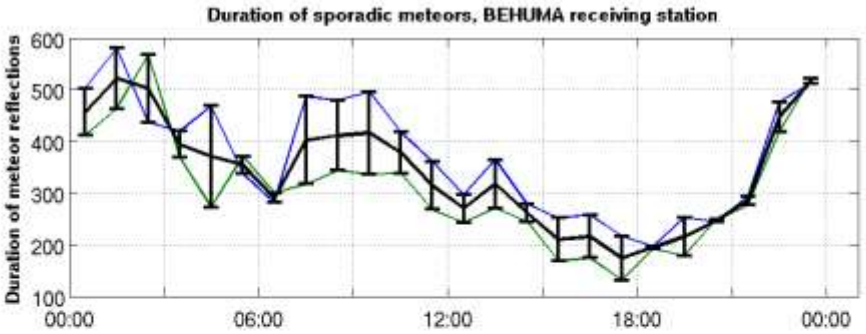
Perseids 2018, Humain: sporadic background

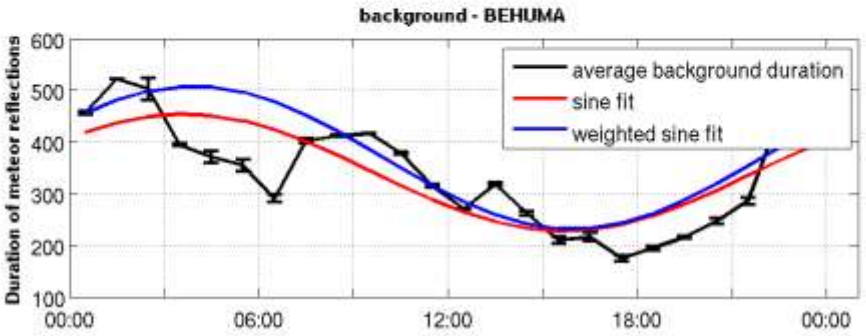
Number of meteor reflections





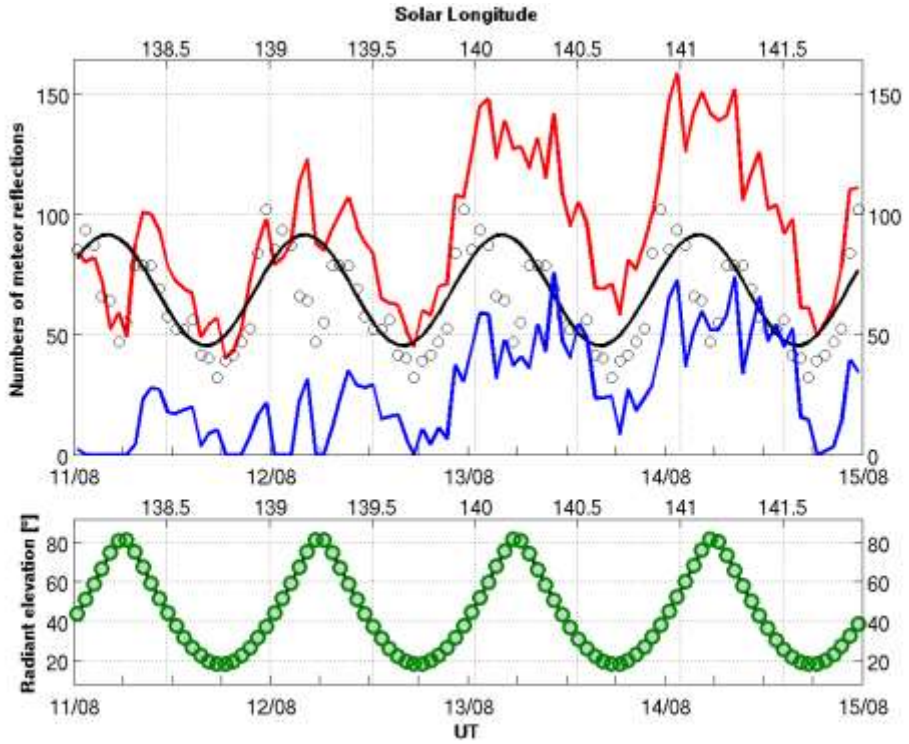
Total duration of meteor reflections



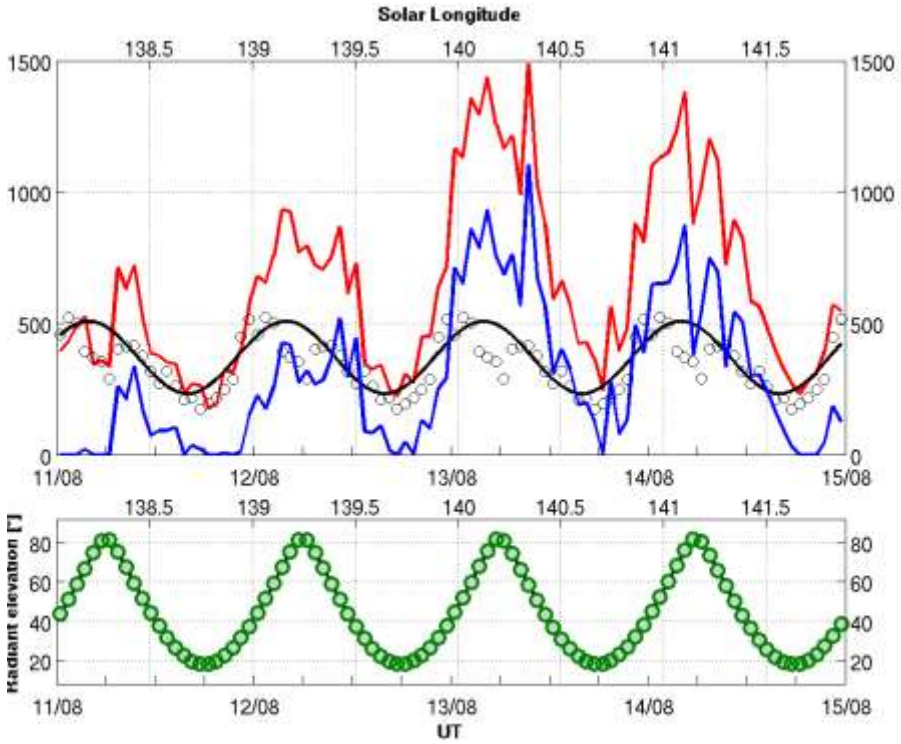


Perseids 2018, Humain

Number of meteor reflections

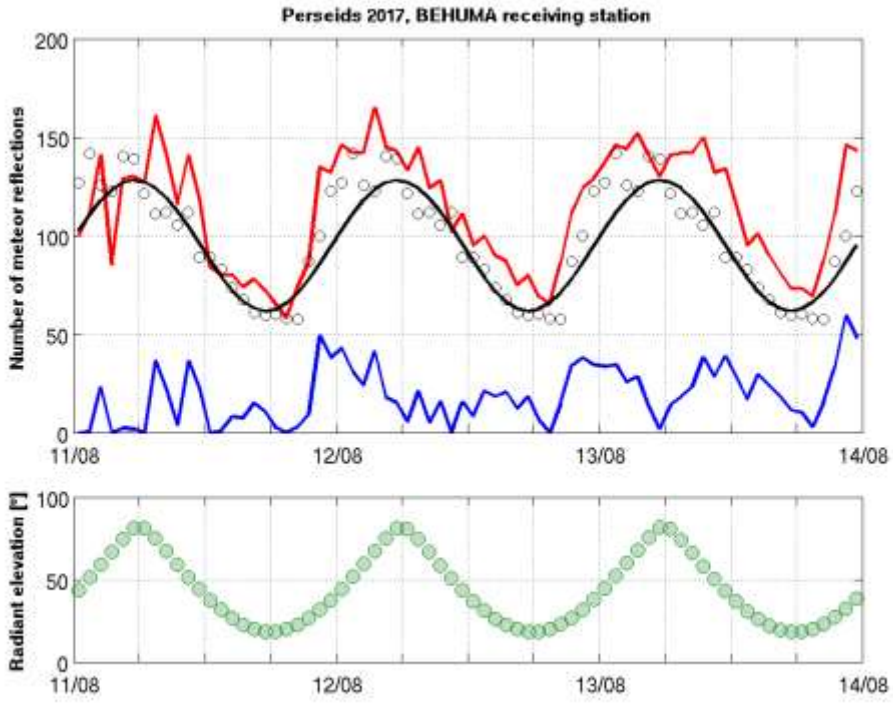


Total duration of meteor reflections

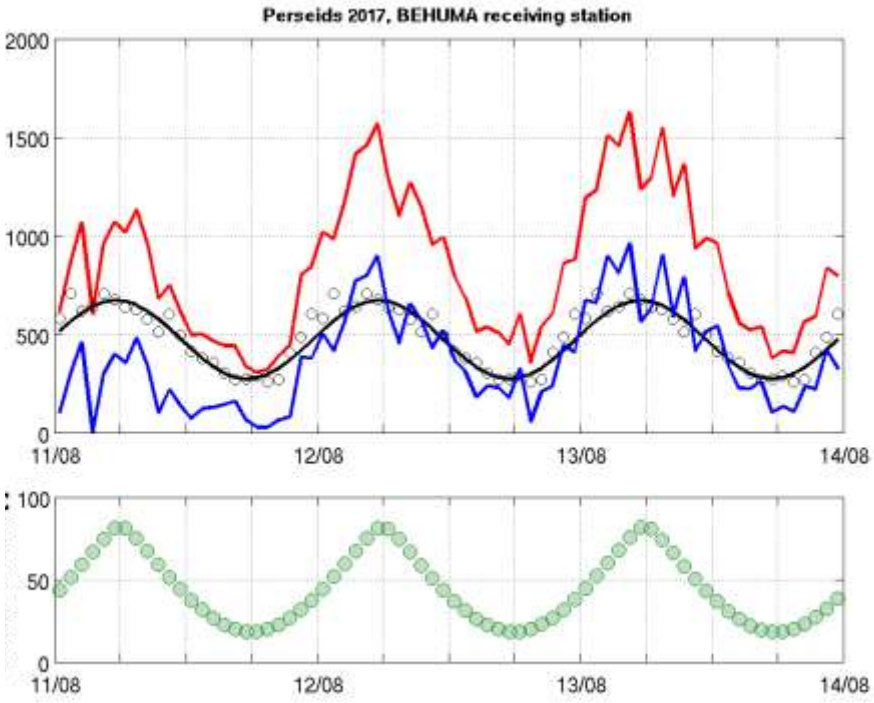


Perseids 2017, Humain

Number of meteor reflections

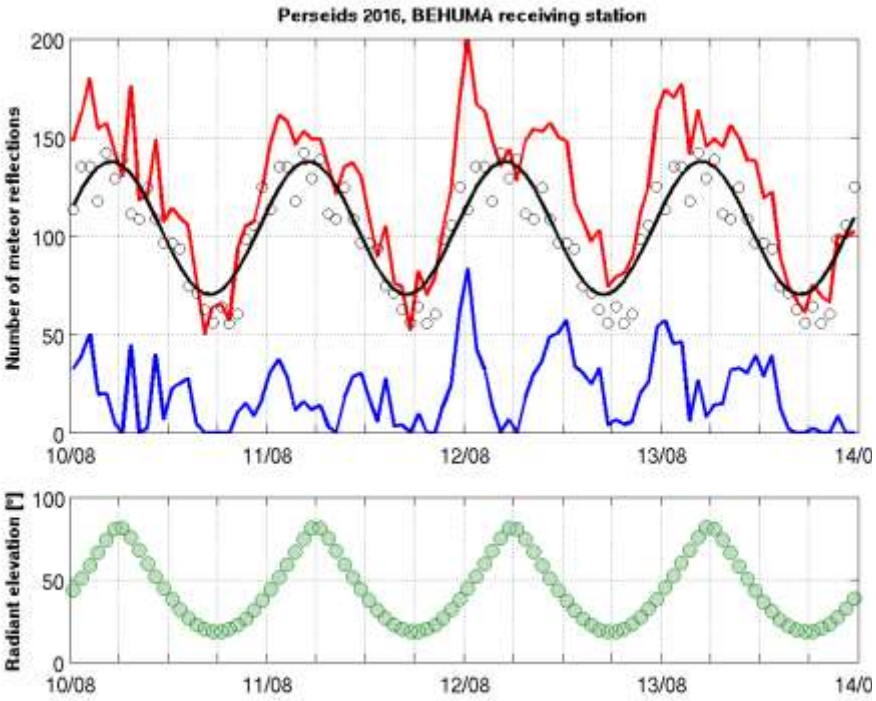


Total duration of meteor reflections

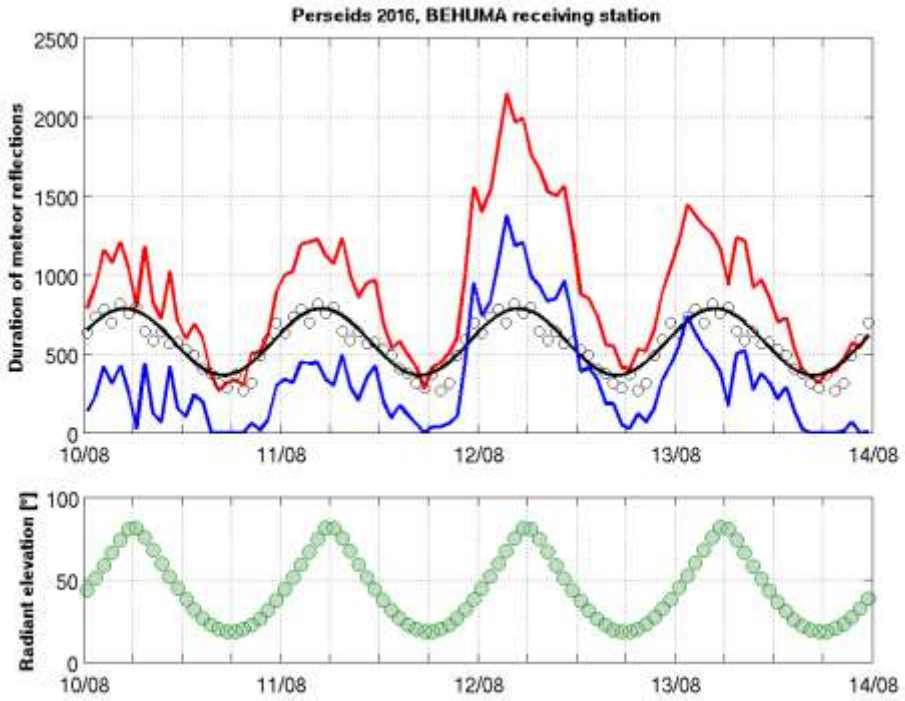


Perseids 2016, Humain

Number of meteor reflections

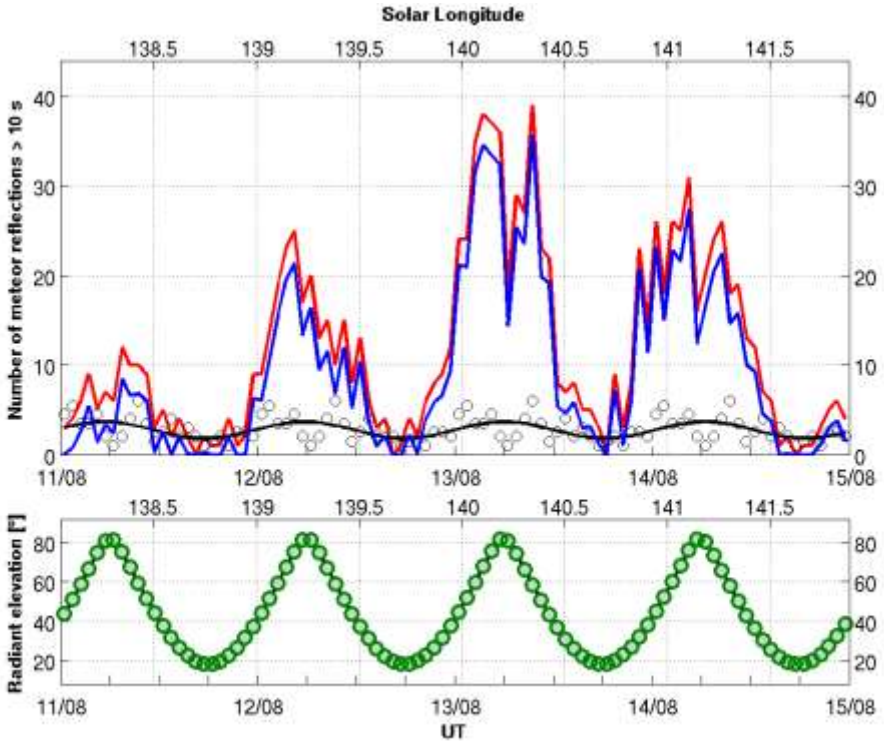


Total duration of meteor reflections

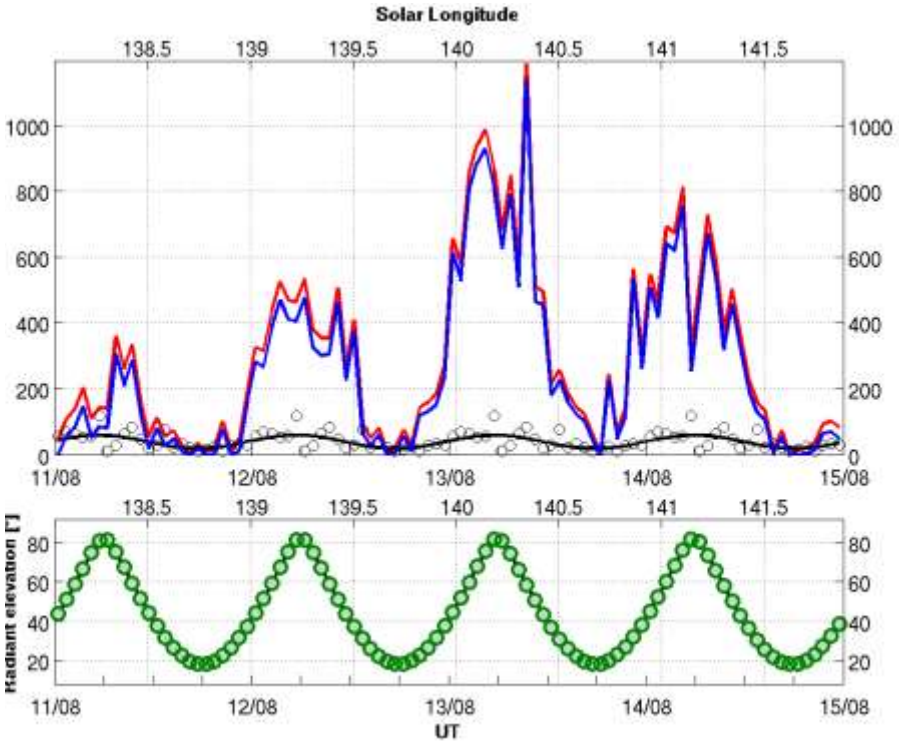


Perseids 2018, Humain

Number of meteor reflections > 10 s

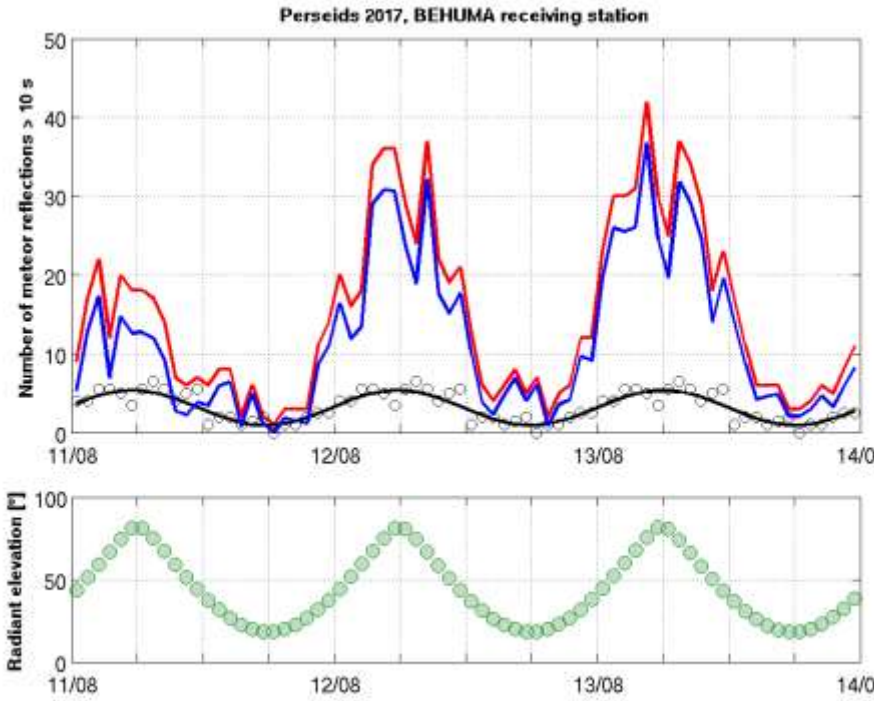


Total duration of meteor reflections > 10 s

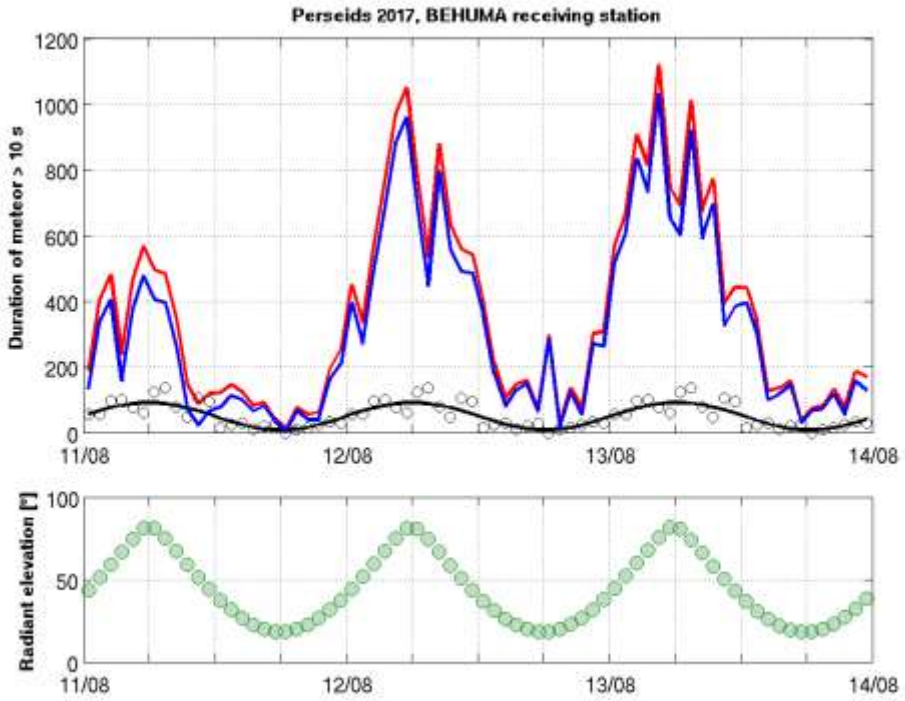


Perseids 2017, Humain

Number of meteor reflections > 10 s

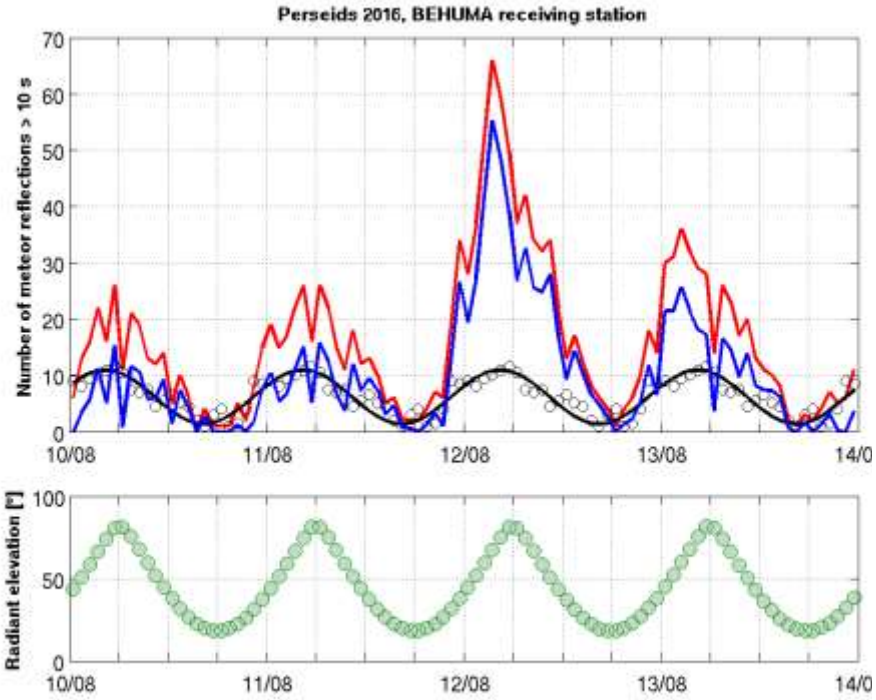


Total duration of meteor reflections > 10 s

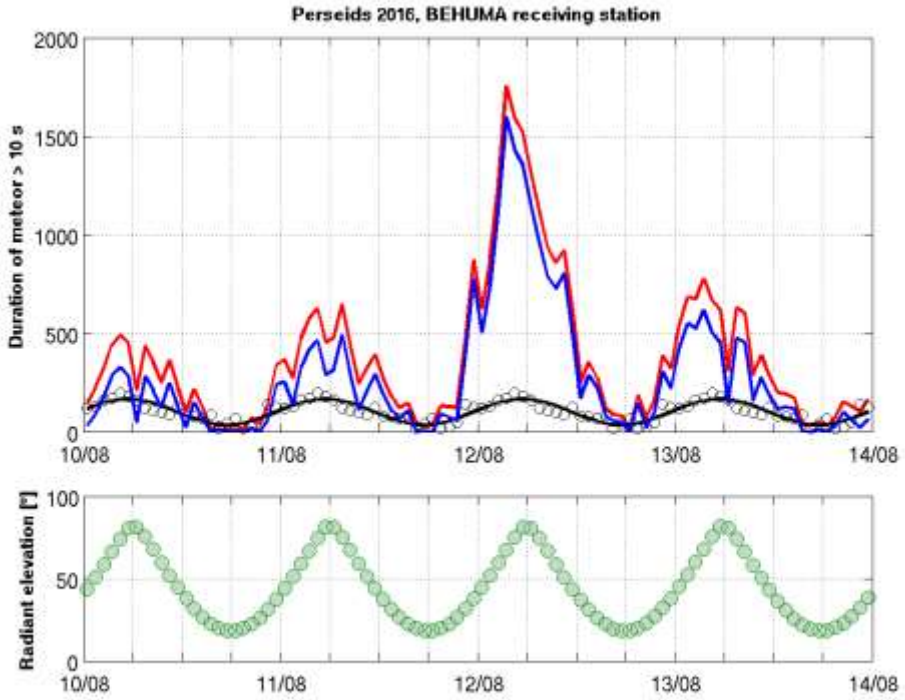


Perseids 2016, Humain

Number of meteor reflections > 10 s

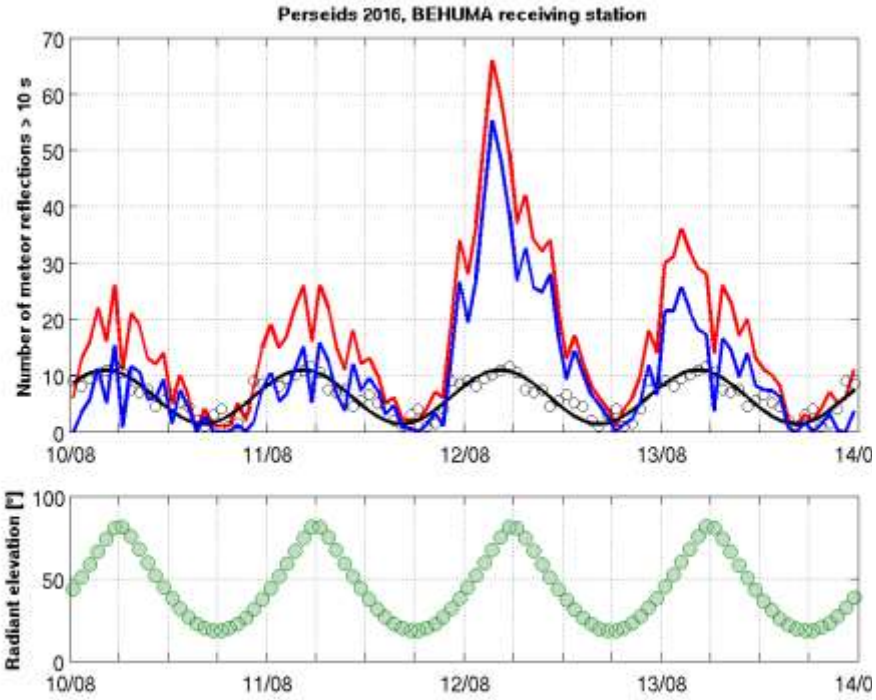


Total duration of meteor reflections > 10 s

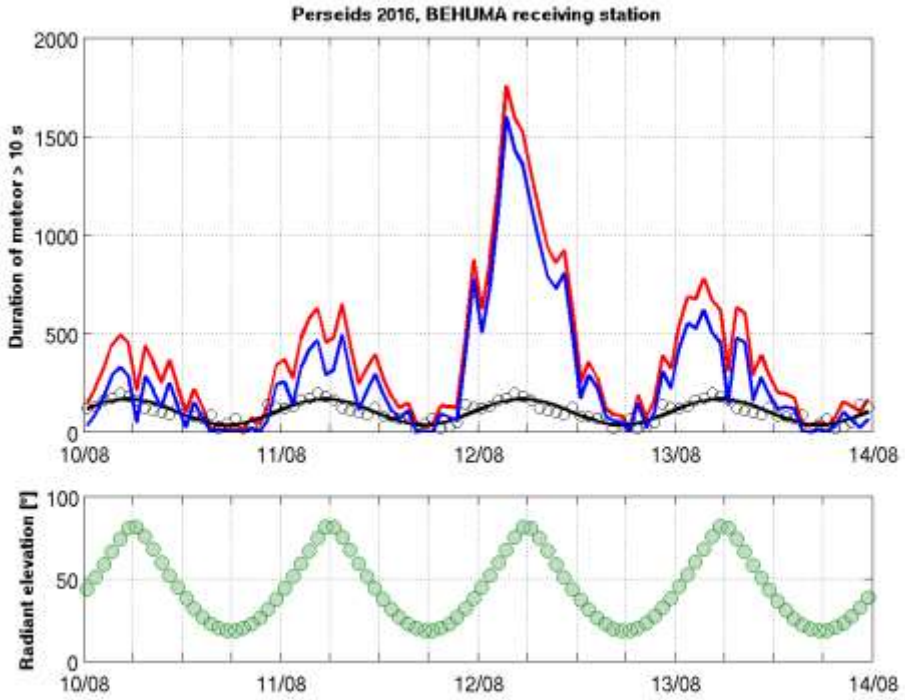


Perseids 2016, Humain

Number of meteor reflections > 10 s

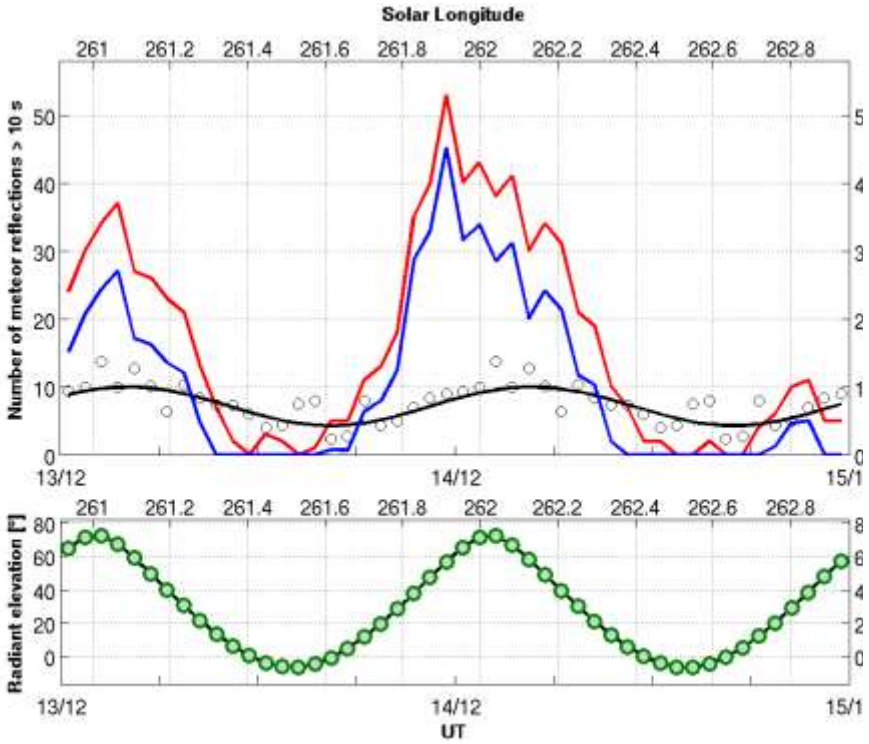


Total duration of meteor reflections > 10 s

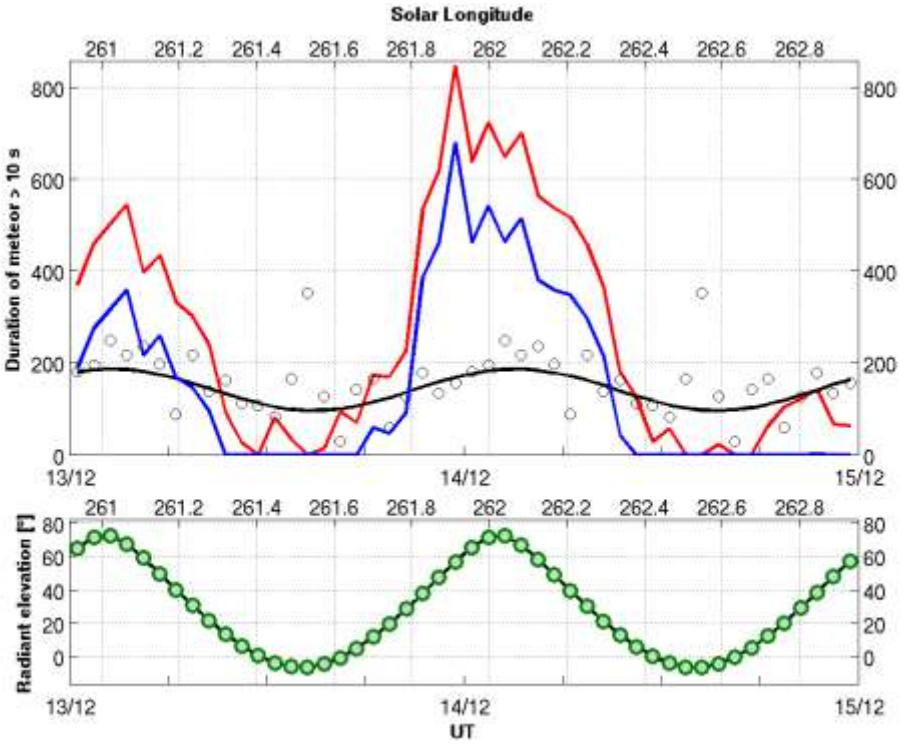


Geminids 2017, Humain

Number of meteor reflections > 10 s

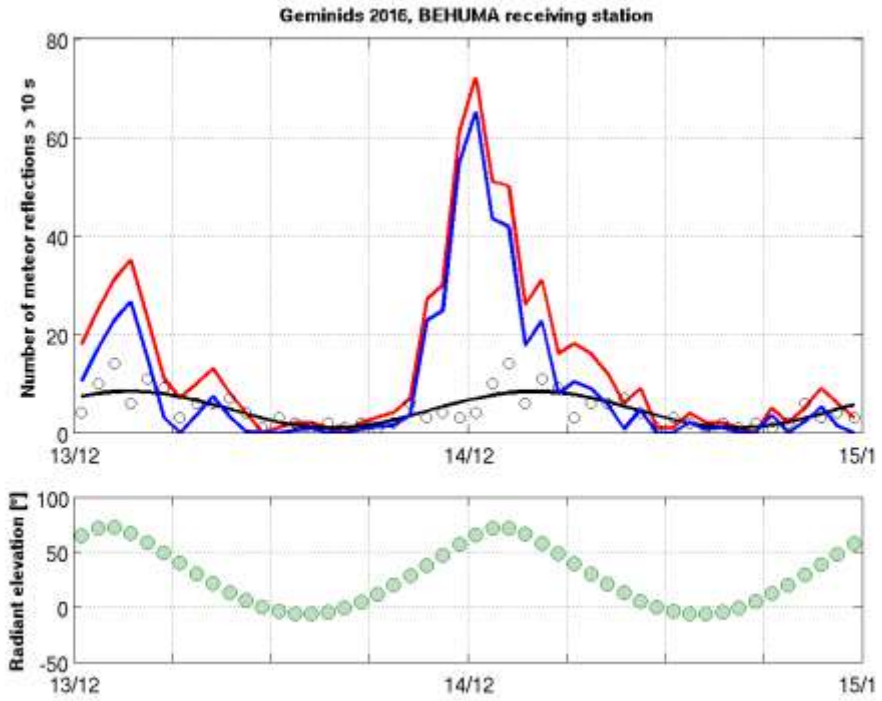


Total duration of meteor reflections > 10 s

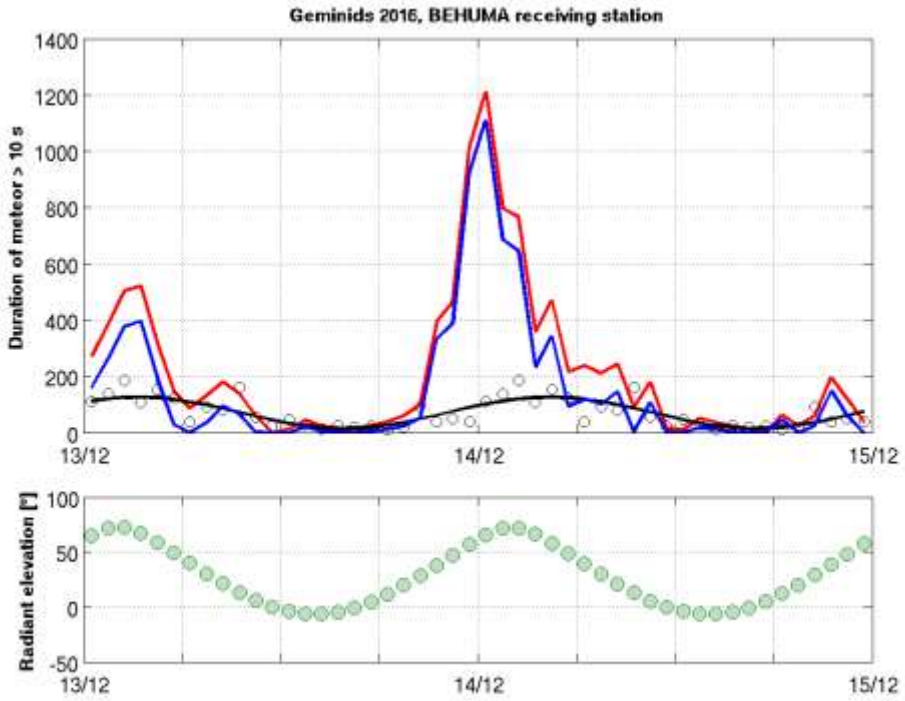


Geminids 2016, Humain

Number of meteor reflections > 10 s

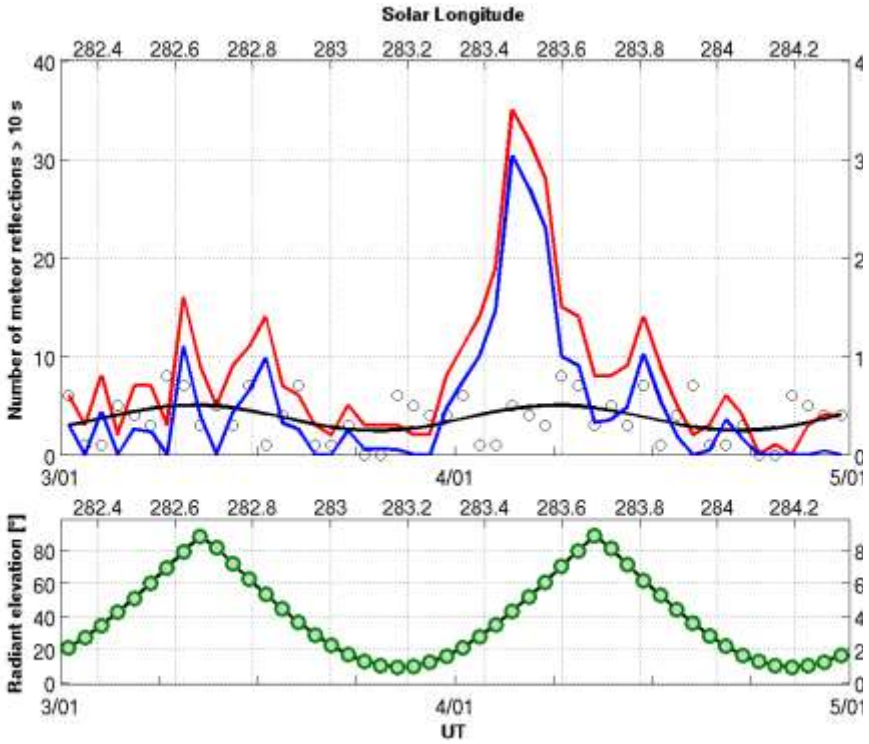


Total duration of meteor reflections > 10 s

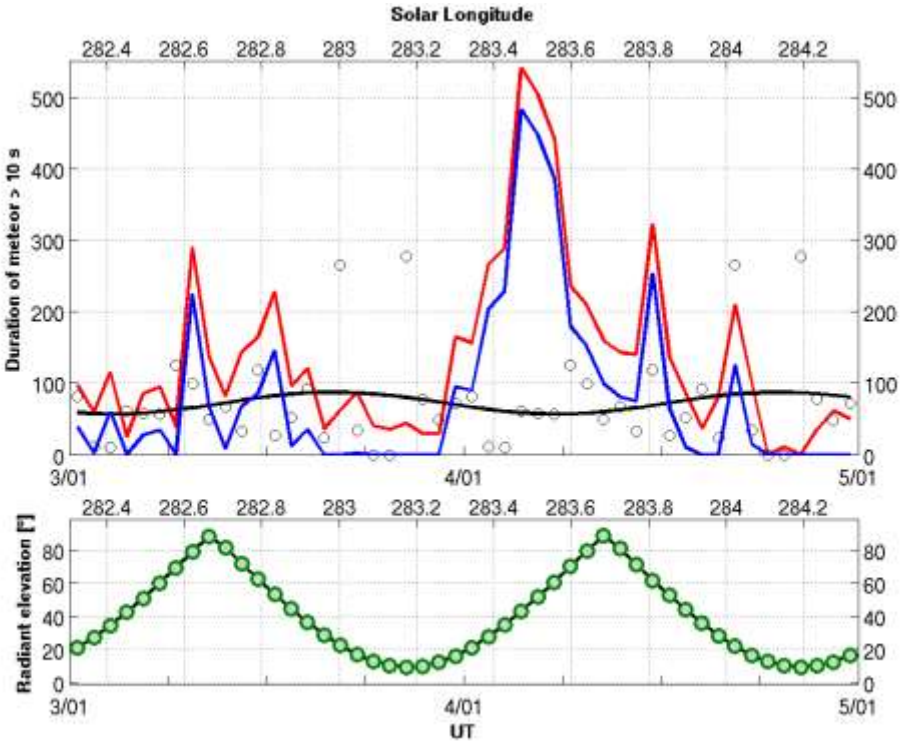


Quadrantids 2018, Humain

Number of meteor reflections > 10 s

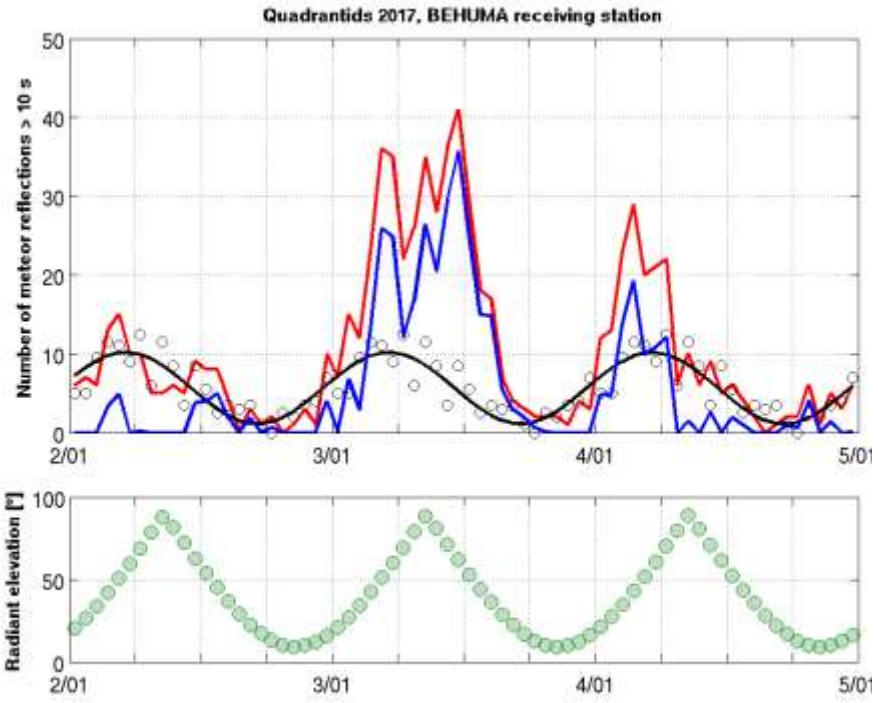


Total duration of meteor reflections > 10s

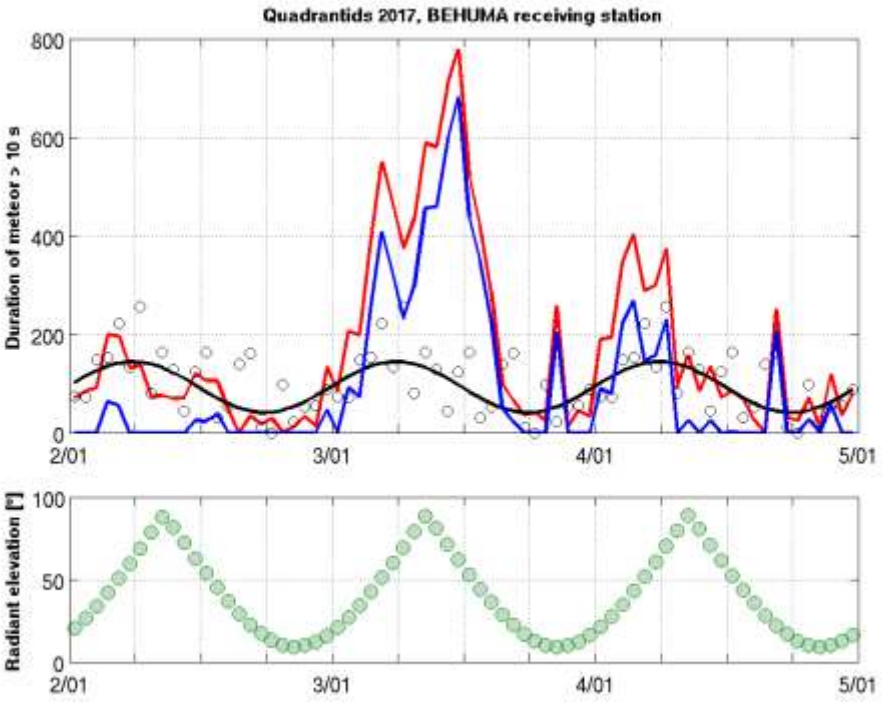


Quadrantids 2017, Humain

Number of meteor reflections > 10 s



Total duration of meteor reflections > 10s



Conclusions

- We have estimated the sporadic background and subtracted it from the total BRAMS radio meteor activity to obtain shower activity for the Perseids 2016-2018, Geminids 2017-2018, and Quadrantids 2017-2018.
- The resulting shower rates have to be corrected for the sensitivity of the setup (Observability Function), which is highly dependent on radiant-setup geometry and antenna gains.
- The main feature in the estimated shower activity is the shape of the Observability Function (repeating every 24 hours), which means that the diurnal variation of the sensitivity of the system swamps the real variation of the meteor rate.
- Calculation of the Observability Function is under development and expected to be ready by end 2018. To be continued…