

## ***Interactive comment on “Surveying pulsating auroras” by Eric Grono and Eric Donovan***

### **Anonymous Referee #1**

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The authors describe a large survey of occurrence rates of recently published sub-categories of pulsating aurora. They classified 10 years of image data from THEMIS network and present the distributions of the different types in magnetic local time and magnetic latitude. They further use the Tsyganenko magnetic field model to map their observations to the equatorial plane to comment on one of the pulsating aurora types having a source region farther toward the tail. The results are new and convincing, the text is clear, rich and understandable. With a few minor changes and a couple of additional discussion items I suggest a prompt publication for this study.

#### General comments:

– The introduction mentions a recent case study by Yang et al., where it was concluded that APA was related to higher precipitation energies than PPA. Based on the different source regions of APA and PPA found in this study, could you comment on the

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agreement of your results with the earlier case study?

- The introduction includes a comment on the previous pulsating aurora surveys probably focussing on a combination on APA and PPA. The discussion could bring this up again to evaluate whether the earlier reported MLT and MLAT distributions agree on the potential type bias of the previous studies.
- Consider adding a map of the locations of the selected THEMIS stations used here.

#### Specific comments:

Line 80: Were the 1-hour keograms generated for this study, or did they already exist for all THEMIS data? The rest of the sentence seems to say that apart from that one hour, the rest of the day makes a shorter keogram. This is hard to understand.

Line 81: It sounds like the spatial and temporal boundaries of pulsating aurora were detected visually. Could that be explicitly mentioned?

Line 101: The reference on this line seems redundant, as the same thought appears more thoroughly referenced in the previous paragraph.

Line 105: Maybe "pulsating aurora type" instead of "pulsating aurora" ?

Line 116: s the probability here defined as occurrence normalized by the imaging time or nighttime or aurora observation time?

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Interactive comment on Ann. Geophys. Discuss., <https://doi.org/10.5194/angeo-2019-129>, 2019.