

Interactive comment on “Differentiating Diffuse Aurora Based on Phenomenology” by Eric Grono and Eric Donovan

Anonymous Referee #2

Received and published: 11 April 2018

General Comments

The manuscript begins to classify pulsating aurora into three types: a very difficult and much-needed systematic approach. The writing flows well and the results are clear, although I'm not sure they bring very much to the state of our understanding. I hoped for more quantitative conclusions, such as thresholds for how many subsequent 3-s images a patch must maintain its shape to be considered patchy pulsating aurora. I would also like to see more statistical analysis, at least of the events you have already analyzed for this paper. How often was patchy aurora seen compared to patchy pulsating and amorphous pulsating? These details would vastly improve the usefulness of the results.

Otherwise, the figures and data quality looks very good, and the presentation is clear

C1

and concise. At this point, I would say the manuscript may have potential after additional work and resubmission.

Specific Comments

All page number (P) and line numbers (L) refer to the edited paper with tracked changes as shown in the reply to Reviewer Comment 1 (AC1 Supplement).

P1, L24-26: “Higher energy electrons on the order of 1–100 keV are thought to also be affected by electromagnetic ion cyclotron (EMIC) waves (e.g. Ni et al., 2016).” This is not true. Relativistic electrons (typically multi-MeV) may be resonant with EMIC waves, but certainly nothing in the pulsating auroral energy regime.

P4, L5-6: Does the identification requirement include those patches nearest to zenith? If so, please state that as a factor in being “most dominant”.

P4, L33-34: Please specify if these examples are subsequent individual frames (indicating a 3 second resolution) or if frames are skipped. From the total time duration, it seems that these are subsequent frames, but just want to have that be clear.

P5, L4: So patchy aurora is not fluctuating periodically in brightness. Is my understanding correct?

Technical Corrections

Minor typos/grammar:

P1, L19: ‘aurora’ twice

P2, L18, ‘dependent’ should be ‘dependant’

P6, L29: Change ‘who’ to ‘that’ or ‘which’

P9, L14: ‘patch’ should be ‘patches’

2018.

C3