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Comment on angeo-2020-95

Michael Kosch (Referee)

Referee comment on "Fine Scale Dynamics of Fragmented Aurora-Like Emission" by Daniel K. Whiter et al., Ann. Geophys. Discuss., <https://doi.org/10.5194/angeo-2020-95-RC1>, 2021

This is a very well written and clear manuscript describing a new type of optical observation associated with the polar auroras. Although the authors have not been able to unambiguously identify the mechanism, they have explored plausible possibilities. This manuscript can be accepted for publication subject to a few minor revisions, described below:

Abstract: Define the acronym EIC.

L23: Spelling error "assumed".

Figures 1 and 3: Please show the ASK field of view on the all-sky images. Also, please indicate the magnetic field direction on the ASK images.

L169 and L175: Please justify the apparently randomly assumed emission altitude of 112.5 km. The only other thing that appears related is the Es layer at ~113 km.

L202-204: There are other auroral phenomena that do not display field-aligned structures, e.g. pulsating and black auroras, which are associated with particle precipitation. Hence, the lack of field-aligned structures does not completely exclude the possibility of particle precipitation. This possible contradiction should be acknowledged.

L230 and L240: Here the height is assumed to be 100 km when previously the optical emission was assumed to be 112.5 km and the Es layer appears at ~113 km. Please justify the chosen altitude.

L289: The authors may wish to emphasize here their belief that the FAEs are not produced by collisional impact due to particle precipitation.