Electron Microburst Size Distribution Derived with AeroCube-6

Response to Reviewer Feedback 2

Mykhaylo Shumko

20 February 2020

Dear reviewers,

Thank you for taking your valuable time to read and evaluate this manuscript again. I have addressed your comments and made the necessary changes to the manuscript. As before, my responses are marked in green and your simple suggestions that do not warrant a detailed response are marked done.

Reviewer 1

The authors have responded well to the my comments. I recommend publication of the manuscript after correcting one typo shown below without another round of review.

- Line 155, n500 --> a500 Done

Xiao-Chen Shen

Reviewer 2

This paper uses AC6 data along with model results to determine the likely size of microburst populations in the radiation belt. It is a useful study to the community, furthering knowledge of microburst populations and driving mechanisms, and could be published with a few additional modifications. Thank you to the author for their responses to the first round of comments. Many of the comments were incorporated into the paper.

Moderate clarifications:

(1) Thank you for your clarification regarding the microburst scale size versus Lshell. In comments to both reviewers, you gave context as to why Lshell was considered in the first place. This would be helpful background for all reviewers, please add it to the article.

Thank you for requesting that we incorporate our response from the first round into the manuscript. We added our L shell dependence reasoning to section 4.2.

(2) In your responses to reviewer 1, you mention that the 60-70 km peak in Fig. 3 is likely due to normalization. This is a huge feature in your plots – this needs to be directly addressed. Please add a few lines regarding the 60-70 km peak.

We added a paragraph explaining the imperfect normalization to section 4.2.

(3) Line 262: I'm still a little unclear on your use of "qualitatively similar." As far as I can tell, the PDFs are similar in that they both start at 100, then decrease to 0. However, isn't that what any PDF would do? What really makes them at all similar?

Thank you for pointing this out and we made another attempt to clarify this sentence. Besides mentioning that they are qualitatively similar, we now point out that after the initial drop both F(s) curves flatten at roughly the same place after considering the magnetic field scaling between LEO and the magnetic equator.

## Minor clarifications and types

- (1) Line 161: "on an activate day" presumably is intended to be "on an active day" Done
- (2) Line 241-242: One of the instances of 70-80 km was switched to 60-70 but the other was not. Done
- (3) Line 262 "CDF" -> "PDF"

When we addressed the 3<sup>rd</sup> moderate clarification we decided to point out the separation at which both CDF curves flatten. Thus we believe that leaving it as CDF is more appropriate in this case.