Abstract: The last 2 sentences (lines 25-30) are a bit repetitive and awkward. Perhaps combine them "... less than a few tens of km, which maps to less than 200 km at the equator..." or something. The up to 80 km could be dropped from the abstract or worked in somehow, but it's probably not an important enough number to need in the abstract.

Intro:

-Missing 'of' in line 36 "dynamics [of] particle acceleration

-line 61: After a careful reading of Parks 1967 I found this 40 +/- 14 km number needs some qualification. When deriving the scale size he only considered microbursts that were detected on all 4 telescopes placing a minimum size on the microburst before it would be considered. From Parks: "For some microbursts, it was evident that the precipitation regions were smaller than 40 ñ 14 km in radius at the X-ray production plane. Although, in general, microbursts occurred in time coincidence in more than two telescopes, examples are shown in Figure 5 for the cases in which microbursts were detected only in the zenith-pointing telescope. The spatial extent for these events was therefore less than 20 km in radius."

-lines 75-78: This sentence doesn't read very well. The information there is good, but it should be reworded and maybe split (it's fairly long). Here's an attempt as I was thinking about it: "By mapping the microburst size distribution in LEO to the equator it can be compared to the wave scales derived in prior literature..." (see next comment)

-line 77 "dominant wave properties": What properties of the wave can we identify by mapping the scale size of microbursts to the equator? The size distribution you've determined can be compared to the size distributions of various waves, giving us a clue about which wave(s) may have been responsible, but I don't see how any further properties of the waves could be determined. Maybe you've addressed that later in the paper, but in that case mention something here too.

-lines 79-91: More a style comment (i.e. feel free to ignore) but your sentence transitions in this paragraph get repetitive. "This paper first describes... Then... Next, ... Then... Lastly, ..." I quickly surveyed a couple papers to see how others have handled this and it's all over the place. Some skip a summary entirely, some give a more general overview rather than saying what's in each section individually. Those who describe each section individually seem to often use the section number ("Section 3 describes...", "... are discussed in section 4.", etc.).

Instrumentation

-Need extra comma in line 95: "AC6-B, separated"

-lines 96-97: To someone who doesn't know about AC-6 this sentence may be confusing, be more explicit. How is the attitude control changing drag? How precise is the separation control?

-paragraph lines 99-105: This paragraph feels unfocused. You open by talking about the dosimiters then abruptly switch to talking about the orbit and data quality flags. I think you're bringing up the orbit here to explain why Fig. 1b has so much more data at certain MLTs. I think a little rearanging would help the clarifications a lot: Keep the start the same, at line 102 drop "The AC6 orbit is in the dawn-dusk MLT sectors" and start with "Fig. 1b shows....". The MLT information could appear in paragraph 1 of this section, after you describe Fig. 1b to explain the MLT dependence, or in the figure caption. Drop the sentence "Quality samples have...", the value of the quality flag is unimportant to this paper, it's good enough to say you've used data that was flagged as quality data. The last sentence might need a different transition so the paragraph flows well after you've made those changes.

Methodology: Microburst Detection

-paragraph lines 108-111: I'm not sure you need a overview of the steps taken in this section, especially if it's only two steps. As it is now sentence 1 and 3 of this section are almost identical and very near each other in the text ("The overall procedure to find microbursts observed simultaneously by AC6 is to first identify them on each spacecraft separately."; "The first step to find microbursts observed simultaneously by AC6 is to identify them on each spacecraft separately."). You could probably drop lines 108-111 entirely, if not you need to reword one or both sentences to give some variance in information.

-line 120, your question about wavelets: I think it's good as is, the wavelets show your methods produce similar results so they should be mentioned, but if the wavelets were only used as a check on the burst parameter you don't need to describe more.

-line 121 "data wrangling": I'm not sure how I feel about using this term (too informal?), but it stuck out to me so I thought I'd mention it.

-lines 123-124 "These false detections were removed to remove their bias.": Drop this sentence, it probably doesn't need to be explained why you would remove false detections. I also wouldn't think of this as bias. To me bias implies true events but somehow selected or presented in a way that obscures some other truth behind those events. False detections are error/noise.

-line 132: Need another comma "threshold, dos2, was used"

-line 136: Why 0.2 or 0.4s? I assume that's the period of the noise, but that should be stated. Might fit better in your previous sentence where you first say it's periodic.

-line 136: Remove comma "0.2 or 0.4 s lag and the"

-lines 141-142: Commas should be around your "i.e." phrase "correlated microbursts, i.e. microbursts that were observed simultaneously by both AC6 units, with the following procedure."

-line 156: Need comma "location, i.e. latitude"

-line 157: "stationary and narrow in latitude structures observed by AC6" This is an awkward way of describing curtains (mostly the narrow in latitude part). Maybe try "stationary structures observed by AC6 that are narrow in latitude".

-line 158: Should be 'that', not 'and' "structures observed by AC6 that can be confused with microbursts"

-line 158: Figure 2; throughout this paper you flip between using Figure and Fig., pick one and stick to it.

-line 161: "Considering" isn't really the word to use here. Try something like "After filtering out transmitter noise and applying the CC criteria 662 simultaneous microburst detections were found and used for the analysis in the following section."

Methodology: Microburst Size Distribution in LEO and Magnetic Equator

-line 168: "arguments presented in Section 4 in Joy et al. (2002)" A sentence or two summarizing these arguments, or the conclusions they lead to, would be helpful.

-line 172: I agree your proof doesn't seem necessary and should be dropped. I expect the majority of your expected readers will quickly understand that a simultaneous observation on both AC-6 units means the microburst was that size or greater. I also expect a fair portion of your expected readers to not fully understand the formal proof. Take those points together and the proof will likely cause confusion without adding anything of importance.

-sentence 180-184: This would probably read better split into two sentences, one describing F(s) and the other describing N(s). You should also be careful with how you describe N(s) in the text since it includes a normalization term and is not just "the number of microbursts observed above s".

-line 181: Need comma "above s, to N(0), the total"

-sentence 205-207: This sentence doesn't really fit with the paragraph it's attached to, which mostly talks about uncertainty. The "Lastly," it starts with makes it seem like it should relate adding to the confusion. At least drop the lastly and let the sentence stand on its own, or maybe expand this into its own paragraph (what does the PD tell us? What does that peak at 70-80 km mean? What does it mean that it's near 0 from 20-70 km?)

-paragraph 221-227: Good motivation moving into the modeling section. Perhaps you can use my suggestion to expand the sentence discussing Figure 3b (lines 205-207) to discuss the shortcomings of the probability density then reference that here to strengthen the motivation further.

Modeling: Monte Carlo and Analytic Modeles to Estimate F(s)

-line 243 "each spacecraft B": I think you by this you mean spacecraft B's at different distances, but it doesn't read well and someone less familiar with your process might be confused.

-line 246, your question: I think you should wait to reference Figure 5d, so far you've talked about the general model only and have not yet assumed P(r) so it's too early to introduce the result for P(r) being a single radius.

-line 256, your question: This might be a general enough equation to not need a citation, especially if you pulled it off Wolfram.

-sentence line 258-259: the intersection area alone is not a probability, rather the ratio of that area to another is. To be the "probability that a microburst will be observed by both spacecraft, given that it was observed by one" you would need the ratio of the intersection divided by the area of one full circle of radius r. You get to that ration in equation 7, but be careful with your wording.

-line 261: "which is integrated out (marginalized) since AC6 is observing the cumulative effect of microbursts at all r" I don't follow this very well

-paragraph lines 258-265: This paragraph doesn't flow well and doesn't have clear direction. A couple suggestions: make it clear in your first sentence that you're going to find F(s) in the analytic case. Reference equation 5 as a starting point, much of your paragraph is finding n\_i although you never say that (you should say that). **Move to SI**

-equation 7: Your equation ends with a period (end of sentence) but line 265 continues the sentence. I prefer leaving the period and turning line 265 into its own sentence.

-line 265: what is the "area normalization factor"? This is the only place that phrase appears in this paper.

-sentence lines 265-268: This would read a bit better if it were rearranged a bit: "To illustrate the effects of random microburst locations around AC6, an example analytic and MC model of F(s) is shown in Fig. 5d for a fixed-size d = 40 km microburst population." I don't think noting the curve color is necessary in the text. Also, you should present the microburst size in radius as you have all along, not diameter (leaving it as diameter in the plot is fine since that's your upper limit on s before it's not visible). Referring to your question on line 246 I think this is the perfect place to first reference Fig. 5d.

Modeling: Estimating optimal parameters for microburst size models

lines 273-275 + equation 8: I doubt you want to go into a full description of Bayesian statistics and MCMC, but without being very familiar with Bayes theorem this sentence and equation make very little sense.

lines 276-286: same comment, doesn't make much sense to me. It might be a difficult balance between detail and brevity here, we can talk more about it.

paragraph 287-291: This paragraph does make sense and gives me a sense of how to interpret your results, you should strive for this sort of explanation in the previous paragraph.

paragraph 292-301: Largely understandable summary, well done. A couple readability comments follow.

lines 295 "'theta' is chosen from the prior": You haven't defined prior very well yet so it's not clear what possible thetas might be chosen. In the first paragraph you say "P('theta') is the prior probability distribution for each model parameter that describes the prior level of knowledge, however weak, about the model parameters." which explains a lot, but doesn't make clear some cases such as how you choose your first 'theta' (i.e. when you don't have prior knowledge yet).

line 297 "likelihood": likelihood of what? is there a likelihood in the current 'theta' consideration as well, or is this unique to the prior?

line 314: mssing comma "98%, of microbursts ..."

line 316: "the 0.5% of microbursts" would read better as "the remaining 0.5% of microbursts".

Discussion

sentence lines 327-330: It seems you might have added this sentence just for me (no revision comment).

sentence lines 334-335: Awkwardly worded, perhaps "... shown in Fig. 3b suggests there are two microburst populations."

line 351 "similar results": similar in what way, and to which shown example (single or double)? Do they also find the majority of microbursts are of moderate size (few tens of km) with some rare large ones?

Paragraph 366-377: Most of this paragraph could be generalized to all waves, not just chorus waves. It feels like the chorus waves are being forced in, in fact. I see two ideas in this paragraph that you're trying to merge together: 1) the waves scattering microbursts should have correlated properties on the same scale as microburst equatorial sizes and 2) chorus waves have already been linked to microbursts in prior literature, and previous studies of chorus correlation scale sizes agree with the findings in this work (i.e. chorus is a strong candidate to be the scattering wave). This could be broken into two smaller paragraphs or just rearranged a bit to flow better in a single paragraph, but right now it reads like you're flipping back and forth between arguments for any given wave and chorus waves in particular.

Conclusions

line 385: I feel like there's a comma issue here, but can't decide if you should add a comma "The AC6 microburst data, together with modeling, has hinted" or remove one "The AC6 microburst data together with modeling has hinted"

line 387: remove comma