Reviewer #1:

This is the second round of comments for the manuscript Shumko et al., submitted to GRL. The

authors have addressed some of my concerns from the previous review, but I find that, overall,

the manuscript is still very difficult to read and in need of major improvement before publication.

Many of the fundamental problems with the writing style still persist. I suspect that the first

author doesn't fully appreciate the degree to which this can/will detract from an otherwise fine

result that is worthy of GRL publication. I really can’t emphasize this enough, especially for an

early-career scientist. For this reason, I recommend that this be rejected, but encourage

resubmission after an extensive rewrite. One suggestion is to rewrite each paragraph a number of

times until you’re sure you’re stating exactly what you intend to state in an efficient manner.

As I did in the first review, I’ll point out some (but not all) instances where improvements need

to be made, and some cases give recommendations. It really is difficult to provide a complete

review when the paper’s in this shape without essentially rewriting it myself. Some of my

comments are to be taken merely as suggestions as there’s no need to conform to my particular

writing style.

Thank you for your critique and feedback regarding this manuscript. We have incorporated your suggestions, and we have made other substantial changes to the manuscript. Even while implementing your suggestions, we preserved most of the scientific content of the original manuscript. One exception is that we added a paragraph in section 4 that discusses the implications of the bounce period analysis and how it can be used to validate magnetic field models.

Since most of the manuscript was modified, we decided to not use track changes so as to make it easier for you to read.

The line numbers referenced are from the tracked-changes file.

L17  Does large mean large spatial scale or large amplitude? Done

L34  Coulomb scattering only facilitates loss at very low L, like L<1.5. In this context it seems

like it’s competing with the other listed processes. Done.

L37  consistency: both hiss and chorus are whistler mode I removed the words “whistler-mode” to make it more general because it does not directly apply to the analysis we have done.

L42  These two sentences can be simplified: "Some of these electrons may be impulsively

scattered into the loss cone, where they result in short-duration (~100 ms) enhancements in

precipitating flux [citations]." Done

L51  Is there a newer reference than Millan02? Second, sentence is not well written. Maybe

try "...[Millan et al., 2002]. This may be due to relatively weaker pitch angle scattering of

relativistic electrons by chorus [Lee12]." We added a reference to Woodger et al., 2015 as well and mention how we have been unable to find any reports of relativistic microbursts seen by balloons.

L55  Note that SAMPEX also observes microbursts in their >150 keV Done

L60  ...and have been directly linked observationally [Breneman] Cleaned up the sentence.

L87  and at the magnetic equator Done

L104  also state the low energy range here Done

L116  I don't understand how you can be at the eastern edge of the bounce loss cone since the

bounce loss cone, unlike the DLC, exists everywhere. I really think you mean at the eastern edge

of the DLC, within the BLC. Done. We explained that this microburst observation was possible since the DLC electrons that could have shrouded this microburst were lost to the SAA.

L147  This is an example of the kind of sentence that makes this manuscript difficult to read.

"two issues with the spacecraft timing and position" --> I read this as meaning that there were

two issues with the timing and two issues with the position. Here's a version that's precise and

reads better: "At the beginning of the FB mission, two issues prevented the proper analysis of

blah blah: the spacecraft clocks were not synchronized, and their relative positions were not

accurately known". Done. The timing and separation correction sections have been moved to the supporting material to avoid unnecessary distractions from the science.

L150  The next two sentences can also be much improved. One example might be: "The

relative clock drift was determined with a cross-correlation time lag analysis on uniquely-

identified trains of microbursts that hit both spacecraft simultaneously. Four time periods

with.…" Done

L162  Sentence doesn't make sense. Done

L172  “their velocity”  the satellite velocity Done

L173  what are "Keplarian elements"? This detail is unnecessary for this analysis, and has been replaced with “orbit parameters”.

L174  was,  was Done

L177  who released this? Why is it important that it was released? Removed “released” since it was not relevant.

L183  which implies Done

L191  a map of what? Done

L200  Very weirdly phrased. Is this just a statement that electrons drift azimuthally? You

make it sound as if the electrons only just started drifting as they were turned into microbursts. Clarified the sentence

L238  I understand what you're saying here, but the way it's stated is not at all clear upon first

read. Clarified the sentence

L238  Discuss what exactly this hints to. i.e., there's a particular underlying (falling?) spectrum

that's smeared out by the broad energy channels. Because of dispersion, this causes a skewing.… Done

L241  upper? Don't you mean the horizontal scale? Clarified this sentence to mean that higher energy electrons were abundant within those energy channels.

L266  This is odd how you've broken up the comparisons to past results into the two

sentences. I reorganized the sentence.

L281  Wide Band Data Done

L288  Perhaps true, but what about in the proceeding and following hours? There must be

some indication of whether chorus was present in this sector around this time. I checked the locations of RBSP, THEMIS, GEOTAIL, and CLUSTER and none were in the area in the hours before and after the microburst was observed. RBSP did observe lower band chorus between 22 and 2 MLT. This has been added to the manuscript.

L290  I don't like this statement. It's better to say that past results have indicated that

microbursts in this region are likely created by chorus. Done.

Some of the larger changes to the organization of the manuscript include:

* Added a key point to emphasize the uniqueness of this observation.
* Thought:
  + Reduced the number of significant digits.
* Section 2:
  + Reorganized the spacecraft description and the location/conditions where the microburst was observed.
  + Clarified the bounce loss cone terminology, and explicitly stated that there were very little to no electrons in the drift loss cone.
* Section 3:
  + Reorganized the subsections so the main result of the manuscript, the scale size analysis is last. Figures 3 and 2 were swapped as well.
  + Corrected the uncertainty in the longitudinal scale size, and propagated it to the magnetic equator.
  + Moved the technical details of the timing and separation correction into the supporting information document because it could detract the reader from the scientific results of the manuscript.
  + Added a short section to describe the energy spectra analysis.
* Section 4:
  + We mentioned that RBSP observed enhanced magnetic field wave power in the lower band chorus frequency range. RBSP was near midnight at this time.
  + Discussed the utility of bounce period estimates as a means to validate magnetic field models.
  + Merged the discussion and conclusion sections to reduce redundancy.

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Reviewer #2:  
  
I have just short minor comments.

Thank you for your suggestions. We have implemented your comments, and at the recommendation of the other reviewer, we have improved the writing style of the manuscript. Since a large portion of the language in the manuscript was changed, we did not use track changes to make it easier for you to read. For the most part, we have preserved the scientific content of the original manuscript in this version.

Line 12, The key points could be clearer by modifying like this. "The lower bound lat/lon scale sizes of microbursts at LEO were 28:8 \_ 0:8 km and 50:8 \_ 11:4 km, respectively. Done  
  
Line 102, "From the black vertical black bars" ' "From the vertical black bars" Done

The few major changes that were motivated by the other reviewer include:

* Added a key point to emphasize the uniqueness of this observation.
* Thought:
  + Reduced the number of significant digits.
* Section 2:
  + Reorganized the spacecraft description and the location/conditions where the microburst was observed.
  + Clarified the bounce loss cone terminology, and explicitly stated that there were very little to no electrons in the drift loss cone.
* Section 3:
  + Reorganized the subsections so the main result of the manuscript, the scale size analysis is last. Figures 3 and 2 were swapped as well.
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  + Discussed the utility of bounce period estimates as a means to validate magnetic field models.
  + Merged the discussion and conclusion sections to reduce redundancy.