

Ann. Geophys. Discuss., referee comment RC1
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Comment on angeo-2021-8

Anonymous Referee #1

Referee comment on "Attenuation of plasmaspheric hiss associated with the enhanced magnetospheric electric field" by Haimeng Li et al., Ann. Geophys. Discuss.,
<https://doi.org/10.5194/angeo-2021-8-RC1>, 2021

This manuscript reports an interesting event of hiss wave attenuation possibly related to energetic electron flux (serving as energy source for these waves) decrease during enhanced convection electric field. The authors used test particle simulation to explain the observed electron flux variation related to the electric field enhancement. The results are mostly supported by the figures/data presented, but additional clarifications/improvements are needed before I can recommend it for publication in ANGIO. Please find below my detailed comments/suggestions.

- Figure 2: my main concern is whether a clear separation between hiss prior to ~ 15 UT at RBSP-A (claimed to be externally driven) and those afterwards at RBSP-A (claimed to be locally generated) can be drawn in RBSP observations. Wave properties between these two groups of waves are rather similar (ellipticity, WNA) actually, even the Poynting fluxes are similar for the former group before $\sim 14:30$ UT. So it may be worth to show the E_{\min} during the entire interval presented, to support that these waves cannot be supported by local electron population (E_{\min} above the energy of high fluxes, I suppose).
- Line 172: please specify the time interval used as initial distribution. Supposing it should be > 2 hrs, how will the possible temporal evolution within the interval affect your simulation results?
- Figure 4: it is not immediately clear to me why the electron flux evolution is such highly energy dependent. Can you include short discussions in the manuscript when describing this figure or in the conclusion section, to help the readers better understand the importance of convection electric field in electron dynamics over different energies?