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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Simulating satellite observations of 100 kHz radio waves from relativistic electron beams above thunderclouds" *by* M. Füllekrug et al.

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We wish to thank the reviewer for the careful reading of the manuscript and the thoughtful suggestions on how to improve the quality of the manuscript.

In particular, we now explain our previous work in more detail in the introduction, establish a closer link to the TARANIS satellite mission in section two and the summary, give an estimate of the expected signal intensity from relativistic electron beams above thunderclouds and point out areas of future research.

We have also taken action on all the other points raised by the referee as explained in detail below.

(1) * We explain now more clearly in the introduction how this contribution advances our previous publication by studying the apparent southward displacement of the transmitters. It is explained in more detail in section three that nocturnal measurements are used to avoid interference from the solar panels, that the originally published image was smoothed here with a 3 deg x 3 deg spatial window to enhance the imaging of the luminosity patches, and we explain in the introduction how the observed attenuation can be added to the previously determined attenuation. In the summary, we now point out the relevance of combining future satellite observations with ground based measurements to assess the frequency dependence of the transionospheric radio wave propgation constant.

(2) * We now adopt the wording 'experimental simulation' in the title and throughout the entire manuscript. The summary now gives a rough estimate of the intensity of relativistic electron beams observed in space and we point out areas of future research to reduce the uncertainty of this estimate. We add at the end of section two a description of the anticipated instruments on the TARANIS satellite. The variability of the transionospheric propagation is now quantified in section 6 and the inclusion of ground based instruments is proposed in the summary to detetrmine the frequency dependence of the transionospheric attenuation.

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 23149, 2010.