Atmospheric
Chemistry
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Discussions

Interactive comment on "Modeling of the Very Low Frequency (VLF) radio wave signal profile due to solar flares using the GEANT4 Monte Carlo simulation coupled with ionospheric chemistry" *by* S. Palit et al.

Anonymous Referee #2

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In their manuscript "Modeling of the Very Low Frequency (VLF) radio wave signal profile due to solar flares using the GEANT4 Monte Carlo simulation coupled with ionospheric chemistry", Palit and co-workers show a modelling for the effect of the M- and X-class solar flares on the VLF propagation. The model results are compared to the VLF propagation measurements and the agreement is found to be very good, at least for the peak times of the flares (Fig. 9).

The strongest novel aspect of the paper is the calculation of the ionisation rate by us-

ing the most throughout model for the purpose, the GEANT4. This approach is very interesting and clearly worth publishing. Related to that, however, I miss some further discussion on the significance of this approach, i.e., authors should discuss somehow what is the significance of GEANT4 modelling compared to more simplified models and how this is likely to be seen in the results. There are several other "moving parts" in both the modelling and the data-analysis (selecting a simplified ion chemistry model, "quiet-day-curving" in the VLF data etc.) — so, how sensitive the analysis is for these compared to the GEANT vs. simplified ionisation calculation. I'm not expecting a throughout investigation of this, but a few lines of discussion educated by the experience gained during the work.

Otherwise, this is a solid piece of work and, as said, worth publishing.

Interactive comment on Atmos. Chem. Phys. Discuss., 13, 6007, 2013.