

Interactive comment on “A new time-resolved model of the mesospheric Na layer: constraints on the meteor input function” by J. M. C. Plane

Anonymous Referee #1

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A new time-resolved model of the mesospheric Na layer: constraints on the meteor input function by John Plane

Atmos. Chem. Phys. Discuss.

This is one of those rare papers I can review and honestly say Publish as is! well, almost :) I have a few minor points/suggestions:

I don't think referring to the model presented as new does it justice there are countless new models coming out seemingly daily for everything in the atmosphere; I don't trust too many of these yet! I do trust the modeling work that Plane and his group have done over the years, so I trust the current incarnation of their efforts, which represent a step in the evolution of their work! I would recommend that the author consider stating this in some manner, both in the title and the body of the text.

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┆ The eddy diffusivity can be concentrated or layered in altitude (as attested to by Luebken's rocket experiments) and is thus not always homogenous with height. That said, I suspect that over the vertical and temporal resolution of the model in question, these hot-spots of diffusivity smooth out. Please discuss.

┆ In addition, I suspect that many of the meteoroids puff (i.e., ablate suddenly or explosively at a fixed altitude), as seen in some of the Leonid data of Drummond's. This effect may, as above, be smoothed out by the modeling configuration.

┆ Last line of section 3.1. I don't quite agree with the logic.

┆ You have a few superscript typos in the paper.

┆ A point of clarification for me: as you modify meteoric input in section 3.2 and see how it impacts Na abundance, do you modify the meteoric smoke concentrations (required as a sink) accordingly?

┆ I would toss some units on the image in Figure 7.

This is a good paper!

Interactive comment on Atmos. Chem. Phys. Discuss., 4, 39, 2004.

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