

Interactive comment on “Retrieval of sodium number density profiles in the mesosphere and lower thermosphere from SCIAMACHY limb emission measurements” by M. Langowski et al.

Anonymous Referee #2

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General comments This paper deals with retrieval of sodium atom number densities between 50 and 150 km altitudes from SCIAMACHY limb emission measurements. The topic is interesting, analysis is sound and the paper is reasonably well written. However, in my mind it relies a little bit too much on the earlier paper by the first author. I hope that the authors could somewhat lessen this binding (see comments below). Anyway, I would like to recommend this paper to be published in AMT. I have the following comments:

Specific comments

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page 7916, line 7: In this section authors rely strongly on the earlier paper Langowski et al., 2014. I would recommend that you wrote few sentences about your 2-D-method. For example, is the method truly tomographic where latitude-altitude cells are probed from different direction by several LOSs?

page 7918, line 18: Same as previous. Open up a little bit more the differences to your earlier paper. Why is the Ring effect not important here? And open what do you mean by “etc”.

page 7918, line 1: Please, explain why do you need an artificial model for the solar spectrum. Could you use some fine resolution measured solar spectrum?

page 7918, line 16: Why do you mention only red shift here?

Sec. 2.2: Retrieval algorithm: Clarify by a few sentences what is your algorithm. You are mainly talking about forward model details.

Sec. 2: The order of things is not optimal in this section. Usually the whole forward model is presented first and only then the retrieval algorithm (as I said above, algorithmic aspects are not really mentioned).

Fig. 2.: Mention your blue line identification in the caption.

Fig. 5.: Why do you extend the y-axis up to 150 km? Above 110 km profiles look like noise.

Fig. 8.: Say more clearly that the line colors used are the same as in Fig. 6.

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