

Interactive comment on “Validation of revised methane and nitrous oxide profiles from MIPAS-ENVISAT” by J. Plieninger et al.

Anonymous Referee #2

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This paper provides a thorough characterization of the new MIPAS CH₄ and N₂O data sets describing in detail their biases and error distribution when compared with multiple satellite instruments. It also attempts to characterize differences between these MIPAS data products when either the reduced spectral resolution or the full spectral resolution measurements were used. The paper provides sufficient detail for data product users to accurately interpret biases and random errors and should be published after the issues highlighted below are addressed.

Major issue:

I found that the comparisons with the surface data added no value to the paper. I believe they should either be justified fully with a detailed explanation of the methodology and the expected errors associated with the comparison of upper tropospheric values

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with surface values or they should be removed completely. I feel the authors would not have presented the results had they not felt them valuable so I would prefer they demonstrated their value rather than removing them. However, I leave it to them.

Minor points:

Page 12109 line 13: The description of the visibility flag needs another sentence or two to understand fully its usefulness.

Page 12113 line 20: “cites” goes to “sites”

Page 12118 line 27: This comment goes towards the major issue. Is this technique valid? Does it have any heritage? What do these comparisons add to the characterization of the data sets? How do I interpret differences in the comparisons? Etc..

Page 12120 line 3: Both profiles are clearly “not constant” between 10 and 13 km

Page 12120 line 5: The term “belly” shaped should be changed. The entire description of the profile shape needs to be cleaned up.

Page 12120 lines 8-9: I do not understand what the authors mean by “no longer be distinguished”.

Page 12120 line 20: Why include an altitude with only one data point? There should be a minimum data point threshold for statistical comparisons. The inclusion of this point generates an outlier that needs to be mentioned and then discarded by the reader. It should just be discarded by the authors.

Page 12125: The text should refer to Figure 11 somewhere

This paper is well written, easy to read and presents valuable detail. It should be published once the issues outlined above are addressed.

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