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Comment

Interactive comment on “Long-term validation of total and tropospheric column-averaged CH₄ mole fractions obtained by mid-infrared ground-based FTIR spectrometry” by E. Sepúlveda et al.

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Dear Editor, dear Reviewers,

We are pleased to see a vital discussion and interest in the paper and many helpful comments and corrections for improving the paper. However, at the same time we need to take care that the subject of our manuscript is not redirected by the suggested modifications.

Please be aware that our manuscript does exclusively deal with NDACC mid-infrared measurements. The special interest in NDACC data is due to the fact that NDACC spectra are available since the mid 1990s and therefore, can provide unique long-term

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time series of column-averaged CH₄ amounts. The near infrared TCCON measurements are not the subject of our manuscript and we do not make conclusions on the near infrared. On the contrary, we clearly state that in the near infrared the situation is different. We can even more point this out and write a dedicated Section: “Remark on non-comparability to near-infrared TCCON retrievals”. With such Section we would fully address your concerns that our mid-infrared paper “may unfairly impact confidence in the near infrared HF correction method” (citation from the editor’s comment). This additional section would directly address your concerns. In this context it is a better solution than your suggestion of converting our paper in a combined NDACC/TCCON paper. Please have a look on the draft for such Section, which we will insert before the Conclusion Section. It is attached to this reply.

In our reply of March 28th we discuss in great detail our HF correction procedure and the problems of the HF correction method when applied in the mid-infrared (please also have a look on the revised appendix, which is attached to that reply, maybe you have overlooked it). With that revised appendix and the proposed modifications we address all the respective concerns of Geoff Toon and of reviewer 2. For the revised manuscript we will also address the minor issues mentioned by reviewer 2.

Concerning comment 1 of reviewer 2 and the editor’s suggestion of expanding the paper by a TCCON study, we don’t think that this is a good idea. We would kindly like to ask you to reconsider your opinion. Our argumentation is as follows:

(1) NDACC CH₄ retrievals are currently discussed in the NDACC community. Our paper contributes to this discussion and therefore the paper should be limited to NDACC retrievals. This focus is important and it will get lost if we write a combined NDACC/TCCON paper. Please understand that the subject of our paper should not be redirected.

(2) Our paper shows a new NDACC CH₄ retrieval method and documents its quality in a very comprehensive way. It has clear conclusions and easily fulfills AMT requirements

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for publication. We think that overloading the paper with additional TCCON results would be counterproductive (the clarity of our results will get lost).

(3) We think that the topic of TCCON CH₄ retrievals is too important to be addressed by your suggested “preliminary” study. A “preliminary” study might cause more confusion and uncertainty instead of bringing clarity and we foresee a non-productive debate. What is really needed in our opinion is a very detailed and careful study of the TCCON CH₄ retrievals, similar to what we did for the NDACC CH₄ retrievals. However, this is a lot of work and it can only be adequately addressed in an extra paper. There it can be examined in detail to what extent near infrared CH₄ profile retrievals are possible or if the HF correction method is the better choice. We are willing to collaborate with you on this in the future.

Best regards, Eliezer and Matthias

PS. please also have a look on the attached draft for an additional Section 5 about non-comparability of NDACC and TCCON.

Please also note the supplement to this comment:

<http://www.atmos-meas-tech-discuss.net/5/C559/2012/amtd-5-C559-2012-supplement.pdf>

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