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Atmospheric Measurement Techniques Discussions

Interactive comment on "Retrieval of tropospheric column-averaged CH_4 mole fraction by solar absorption FTIR-spectrometry using N_2O as a proxy" *by* Z. Wang et al.

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Response to Referee 1

We thank the reviewer for carefully reading the manuscript and for providing constructive comments. We address the comments below.

1)Technical comment: The wording of the paper seems often clumsy to me. Because the lead author is not a native speaker, I do not intend to blame him for that. However, I herewith urge the native speakers among the coauthors to carefully proofread the paper and apply corrections.

Done

2) Contents: In the comparison of the CH4 and N2O approaches, essentially only time series are presented. For an adequate quantification of the systematic differences between the two approaches, it would be highly desirable to include a discussion of the annual cycle of e.g. the discrepancies, the dependence on H2O column, the dependence on solar elvation and the dependence on station latitude.

We have added an annual cycle plot for results using HF and N2O at all sites. We also plotted the dependence of results with respect to H2O column, but there is not obvious trend. This might because the influence of H2O on HF method results in an increase in uncertainty and scatter, but no definite dependence, while the influence on N2O is weak. The dependence on station latitude is not additionally plotted because there are only four sites being used in this work, and the latitude dependence of the results can be seen from the seasonal cycle plot.

Interactive comment on Atmos. Meas. Tech. Discuss., 7, 1457, 2014.