

***Interactive comment on “The Zugspitze radiative closure experiment for quantifying water vapor absorption over the terrestrial and solar infrared. Part I: Setup, uncertainty analysis, and assessment of far-infrared water vapor continuum” by Ralf Sussmann et al.***

**Anonymous Referee #2**

Received and published: 13 June 2016

This paper details an experimental setup of a long-term radiative closure experiment on the Zugspitze mountain site. The special environmental conditions (frequent low IWV & AOD) coupled with the setup of the Zugspitze instruments provide an advantageous way of characterizing the sensitivity of the radiative closure over the whole infrared range. This study and the following companion papers are major contributions for the improvement of water vapor spectroscopy used in atmospheric remote sensing techniques and climate simulations. The paper is well written and the authors provide

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a comprehensive analysis of the past and current developments in this field.

Important points and questions have already been raised by Referee #1. I agree and recommend the publication of this work on ACP after minor revisions.

Technical corrections:

Page 5, line 19: add comma after “these are crucial prerequisites for closure studies and on dry winter days”

page 5, line 19: change “ the Zugspitze offers regularly” to “the Zugspitze regularly offers”

page 5, line 23: change “Network of the Detection. . .” to “Network for the Detection. . .”

page 5, line 24: add comma after “(NDACC; www.ndacc.org)”

page 9, lines 5-7: consider restructuring the sentences to: “We use the retrieval scheme developed by Esposito et al. (2007) for this kind of boundary layer temperature inversion, which has been successfully utilized by a series of studies (Serio et al., 2008; Masiello et al., 2012; Liuzzi et al., 2014). A similar approach has been used by Rowe et al. (2006) and Rowe and Walden (2009).

Figures 4&5, As referee #1 already mentioned, too many lines are plotted on top of each other such that the contributions are difficult to distinguish. May I also suggest to not use red and green colors together.

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