

Response to the editor of “Comparison of in-situ FISH measurements of water vapor in the UTLS with ECMWF (re)analysis” by A. Kunz et al.

We thank Patrick Jöckel for being the editor of our paper. We have prepared a revised version of the manuscript and all relevant reviewer comments are included. A point-by-point response to the reviews and a list of all relevant changes made in the manuscript can be found in the online responses to the reviewer comments.

The main points of the revision addressed in the text are summarized here:

- Following largely the suggestions and comments by reviewer 1 many parts of the text are revised. In particular, the abstract, introduction and the summary and discussion sections. All important information on the model data, i.e., reanalysis and operational analyses, can be found in their respective sections (2.2 and 2.3) in the revised manuscript. The information is not distributed at several places in the manuscript anymore. A new chapter 2.4 is included with a discussion on the changes to the IFS over time from 2001 to 2011. Influenced by a special comment of reviewer 1 a further figure is included as a case study to show an area in the LS where an improvement of the operational analysis data is identified.
- According to a comment of reviewer 2 the ratio between simulated and observed water vapor mixing ratio is revised. The former ratio $\Delta(\text{H}_2\text{O})$ is an asymmetric quantity, that is, underestimations are related to $\Delta(\text{H}_2\text{O}) \in (0, 1]$ and overestimations to $\Delta(\text{H}_2\text{O}) \in [1, \infty)$. The reviewer is right, that this asymmetry has implications on statistical quantities like means and standard deviations. Following the reviewers' suggestion we replaced the ratio through its logarithm (with base 2), i.e., $\Delta(\text{H}_2\text{O}^{\log_2})$. This is a symmetric quantity around 0 and there are no issues with statistical quantities anymore. Section 2.4 of the revised version gives a detailed introduction of this new quantity including an additional figure. All other figures and their discussion in the text are revised concerning this new ratio.