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Comment

Interactive comment on “High-resolution atmospheric water vapor measurements with a scanning differential absorption lidar” by F. Späth et al.

F. Späth et al.

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We thank the reviewer for her/his comments which will definitely help to improve the manuscript. We will consider all comments, implement these in the revised version and will give a more detailed response with it. To the major comments, we would like to respond briefly already now:

Of course, we do not intend to present a "proof of concept" for water vapor DIAL with this manuscript. Our goal is in fact to demonstrate - among others - the volume-scanning capability of the modified UHOH DIAL for the first time. It should be noted

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that this capability is new - not only for our instrument but in general.

It is correct that our DIAL system made its first high-resolution water-vapor measurements within the COPS field campaign in 2007 but at that time only in vertical-pointing mode. First scanning measurements in one direction could then be obtained during a field campaign in 2009 (Behrendt et al., 2009). During HOPE in 2013, we performed the first water vapor volume scans not only with slow scan speed but also with fast scan speed ($6^\circ/\text{s}$, ~ 1 minute for a scan) and with significantly improved transmitter and receiver performances (other laser, other seeders, other wavelengths, refined data analysis). These significant changes are much more than a "mere tuning/optimizing exercise". We understand that the relevance of these improvements of the system to the measurement results are not yet clear enough in the first version. Thus, we will point them out more clearly in the revised version which will then become hopefully more convincing.

Following the suggestion of the reviewer, we are happy to extend the meteorological discussion of the examples in the revised manuscript.

Finally, we thank the reviewer for the encouraging statement that "the value of our instrument cannot be overstated".

Interactive comment on Atmos. Chem. Phys. Discuss., 14, 29057, 2014.

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