

***Interactive comment on “Technical note:  
Lowermost-stratospheric moist bias in ECMWF  
IFS model diagnosed from airborne GLORIA  
observations during winter/spring 2016” by  
Wolfgang Woiwode et al.***

**Anonymous Referee #2**

Received and published: 11 August 2020

The paper by Woiwode et al. evaluates the lowermost stratospheric moist bias in ECMWF analyses and 12h forecasts using high spatial resolved water vapor mixing ratios from the airborne GLORIA observations. A systematic moist peaking at +50% at potential vorticity levels of 6-10 PVU is diagnosed. By model sensitivity experiments, the authors further show that the diagnosed moist bias is insensitive to model grid resolution for short-term forecasts and is present already in the initial conditions. The study is interesting and provides import information for model simulations with respect to lowermost stratospheric water vapor. The paper is well written and organized. I

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recommend the publication of it subject to the technical corrections suggested below.

L51-52: 'too moist analysis' is unclear to me.

L56-57: How can 'small-scale stratospheric intrusions' affect LMS water vapor? Maybe you mean troposphere-to-stratosphere transport?

L84: Please check the value and unit for '0.0625 cm<sup>-1</sup>'.

L106-107: There seems to be a grammatical problem for the phrase 'from a 12 h deterministic forecasts in between the analysis cycles'.

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Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2020-367>, 2020.

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