

Interactive comment on “Comparison of the fast Lyman-Alpha and LICOR hygrometers for measuring airborne turbulent fluctuations” by Astrid Lampert et al.

Anonymous Referee #1

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This is a review of manuscript amt-2017-353, “Comparison of the fast Lyman-Alpha and LICOR hygrometers for measuring airborne turbulent fluctuations”. The LICOR sensors in different forms are used at automated field stations for research networks covering large temporal and spatial scales, and are well characterized. The purpose of this manuscript is to evaluate LICOR humidity sensors in a new environment, on aircraft, compared with standard Lyman-alpha hygrometers. The results show that the LICOR sensors are well suited for airborne measurements of humidity fluctuations, provided that a vibrationless environment is given, and this turns out to be more important than close sensor spacing.

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MESSAGE TO THE EDITOR: This is a detailed technical assessment of LICOR sensors that should be posted online for discussion in AMTD, and to be considered for publication only after some major revisions are made. LICOR sensors are widely used on aircraft, so validation of their performance is needed. The manuscript is an important contribution because it analyzes the environments in which the LICOR sensors perform well compared to the “gold standard” of Lyman-alpha hygrometers. It cannot be published, however, until the authors rewrite it in with better organization, better explanations and better English editing.

MAJOR CONCERN TO THE EDITOR: I still have a concern that the authors and other research groups are using LICOR sensors in an environment that the manufacturer does not recommend. Manuscript page 4, lines 9-12: The authors stated that “the manufacturer warns in the manual that the sensor should not be applied with vibrations around 150 Hz and around the harmonics”. I am not an expert in this area, but would like to see more justification and proof that the LICOR is measuring accurately at 20 Hz in the aircraft environment.

The authors do not clearly explain the reason for the drift and noise in their sensors.

GENERAL and SPECIFIC COMMENTS follow in the attached supplement.

Please also note the supplement to this comment:
<https://www.atmos-meas-tech-discuss.net/amt-2017-353/amt-2017-353-RC2-supplement.pdf>

Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2017-353, 2017.

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