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Interactive comment on “Comparing turbulent parameters obtained from LITOS and radiosonde measurements” by A. Schneider et al.

A. Schneider et al.

schneider@iap-kborn.de

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We thank the referee for the positive and stimulating feedback. As already mentioned in the manuscript, we agree that a 100 % correspondence in the detection of turbulent layers by both methods cannot be expected. The Thorpe analysis is only sensitive to layers with convective overturning (even if initially driven by wind shear), and LITOS is mainly sensitive to fully developed turbulence. Therefore we limited our analysis to layers visible by both methods and the lower vertical resolution of the Thorpe method.

Indeed, some quantitative relations between turbulent scales are still under debate. From this point of view the referee is right and our results are not surprising. Nevertheless, in the recent literature these relations are partly used to derive, e. g., energy

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dissipation rates, and uncertainties are partly neglected. Our method provides (for the first time) an independent test for these relations at spatial scales that cannot be resolved by, e.g., radars. We do not want to question the Thorpe method in general. Though, for individual layers further research on the temporal evolution of turbulence seems to be necessary. Therefore we fully agree with the reviewer that future research is essential. Accordingly we have added a note on this topic in the revised version of our manuscript.

Interactive comment on Atmos. Chem. Phys. Discuss., 14, 19033, 2014.

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