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Atmospheric Measurement Techniques Discussions

Interactive comment on "The performance of Aeolus in heterogeneous atmospheric conditions using high-resolution radiosonde data" *by* X. J. Sun et al.

Anonymous Referee #2

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The manuscript describes a method to assess the performance of the wind lidar mission ADM-Aeolus for vertically heterogeneous atmospheric profiles. The errors introduced by vertical gradients in wind speed combined with vertical gradients in backscatter coefficients lead to errors in the derived wind speed due to the sampling of the atmosphere in range bins of 250-2000 m. The main body of the manuscript describes the construction of profiles of aerosol and cloud backscatter coefficient derived from radiosonde measurements. These backscatter profiles from the radiosonde together with the wind profile are used to assess the wind error due to atmospheric variability within one range-gate.

The manuscript addresses an important topic for ADM-Aeolus and future wind lidar missions and is thus of relevant for publication. Nevertheless I recommend substantial revision and major modifications, before it could be considered for publication due to major weaknesses in structure (major comment 1), content (major comment 3,5), and methodology (comment 2, 4) of the manuscript.

Please also note the supplement to this comment:
http://www.atmos-meas-tech-discuss.net/7/C29/2014/amtd-7-C29-2014-supplement.pdf

Interactive comment on Atmos. Meas. Tech. Discuss., 7, 1393, 2014.