

Author Response to Reviewer 2

The accurate sounding of the atmospheric surface layer and boundary layer with good vertical resolution remains a challenge for the lower atmospheric research community. The traditional measurement techniques like radiosondes, microwave radiometers, lidar often inadequate to produce desired boundary layer sounding data. In this paper, the authors present an improved version of the CopterSonde used for the boundary layer soundings. Additionally, a systematic and detailed comparison study of CopterSonde data with the data collected using the traditional sounding systems provides the strength and weaknesses of the current approach that utilizes the in situ and remote sensing measurements. The paper is well written and timely. I recommend the manuscript for publication in the Atmospheric Measurement Techniques.

The authors thank the reviewer for their comments. Each comment is addressed individually below.

Comments

1. Please include a table of CopterSonde sensor details, such as accuracy and range.

The authors refer the reviewer to Segales et al. (2020, in review)

2. Getting in situ profiles of the surface layer over the oceans is very difficult than the land-based observations. I wonder whether the CopterSonde conducted observations over the ocean? If yes, please include an analysis of the data in the current manuscript.

The authors agree that observations over the ocean would be a challenge. No observations have been made over the ocean with the CopterSonde.

3. Figures 9 and 11: These figures need redo to get a better picture of the vertical variabilities.

These figures have been redone to make the colorfill more visible. Note Figures 9 and 11 are now Figures 10 and 12, respectively.

References:

Segales, A. R., Greene, B. R., Bell, T. M., Doyle, W., Pillar-Little, E. A., and Chilson, P. B.: The CopterSonde: An Insight into the Development of a Smart UAS for Atmospheric Boundary Layer Research, *Atmospheric Measurement Techniques*, 2019, in review