

The reviewer commends the authors for the hard work applied to this manuscript that has resulted in a much-improved work.

General Comments:

The authors were asked to compare with previous studies of individual methodologies. Although more references were added, the fact that previous studies of individual methodologies show better results than those shown in the manuscript was not addressed. The methodology presented here does not address the impact of clouds/precipitation and individual methodologies do not use post-processing application which is likely the reason why individual methodologies perform worse than those in literature. By consider the previous literature, the authors should note that ISABLE uses existing methodologies and then applies a cluster technique to addresses layer attribution in post processing. As all other individual methodologies are not applied with any improvements for layer attribution, consider stating that ISABLE *improved* PBLH retrievals due to the layer attribution techniques. Stating the ISABLE was superior to individual methodologies is misleading as individual methodologies were not aided by post processing techniques as ISABLE was.

Specific Comments:

L26: consider the term mixed layer. As a dynamic layer, the ML is not under a finite state.

L53: Correct to "In a ML"

L66: Studies have shown that the EKF technique is sensitive to low SNR and to indeed require further long-time averaging and range smoothing. Please revise this statement.

L180-185: It is stated that defining the RL using radiosonde profiles is difficult due to large variations in temperature and wind profiles. L184-185 later states that the top of the RL is determined as the SBLH due to large variations in temperature and turbulence. At first glance it seems contradicting, please expand on this. Were these occurrences during certain conditions, or errors from the retrieval method?

L367: Provide uncertainties here

L368-371: Please revise, repetition and grammatical errors make these statements unclear. What are rural surfaces? What does 'that' refer to? What is defined as a compact urban surface?

L371: As previously stated "However, that over urban areas is not always developed" in L368-369, L371 should state that 'SBL were not always active'.

L372: "which were determined using the residual layer or clouds" should this state "which were identified as the residual layer or clouds"?

L380: R symbol needs to be corrected

L382: Is this still referring to ISABLE results or all ABLH results? I suspect this is referring to GM, CLST, and WAV results. Please clarify. If this refers to ISABLE please note that the residual layer contains the remains of the previous day's mixing layer at similar heights. With peak daytime mixing layers in Figure 9 at ~1600 (RS), residual layers signals would be expected in similar heights. Figure 9 shows ISABLE overestimations not exceeding ~500m therefore, how can the overestimation of ISABLE during nighttime be attributed to

residual layer signals? Instead, it is likely due to additional stratification of the PBL and therefore additional lofted aerosol layer during nighttime.

L391: MB was not defined in text

L393: Please clarify what “The scatter distribution of GM, WAV2, and CLST at sunrise, sunset, and nighttime could be fitted to two different linear functions” means

L394: “In cases where symbols were plotted below the trend line (dashed line), RLs during nighttime or cloud layers in daytime existed at the layer”. Please clarify the effect of “cloud layers [existing] at the layer”

L399: As stated in L367-371, the urban effect will impact the SBL detection from RS. Consider clarifying this statement by adding this overestimation effect on RS heights that lead to an underestimation when compared to ABLHs.

L401: Use WAV3

L405-408: Similar as above, please clarify the statement “could be fitted to two different linear lines”

L419-420: “The ABLHs for clear skies were significantly higher than those for cloudy skies during the daytime, however, the difference was not as significant during the daytime” Is this repetitive or a typo?

L479-481: What was further verified?

L483-484: See general comments above. The ‘superior’ performance of ISABLE is largely due to the addition of post-processing techniques. As individual methodologies are not applied with any post-processing techniques, it is not correct to state a superior performance. Instead, the large improvement that was seen with the ISABLE post-processing technique should be highlighted.