

Supplementary Material

Statistically Resolved Planetary Boundary Layer Height Diurnal Variability Using Spaceborne Lidar Data

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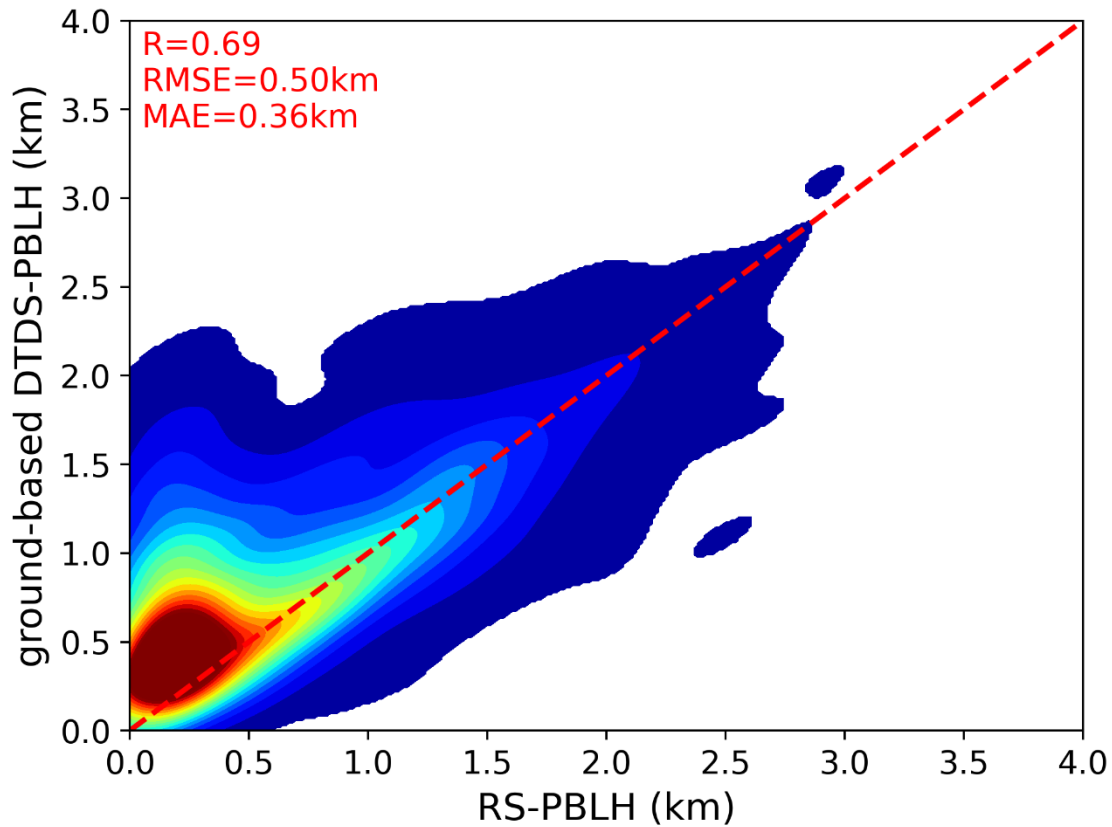


Figure S1. Kernel distribution estimates for the ground-based DTDS-PBLH and the RS-PBLH based on the Liu–Liang method using potential temperatures at the ARM SGP site between March 2015 and October 2017. The correlation coefficient (R), root-mean-square error (RMSE), and mean absolute error (MAE) are given in the panel. Dashed red lines correspond to 1:1 lines.

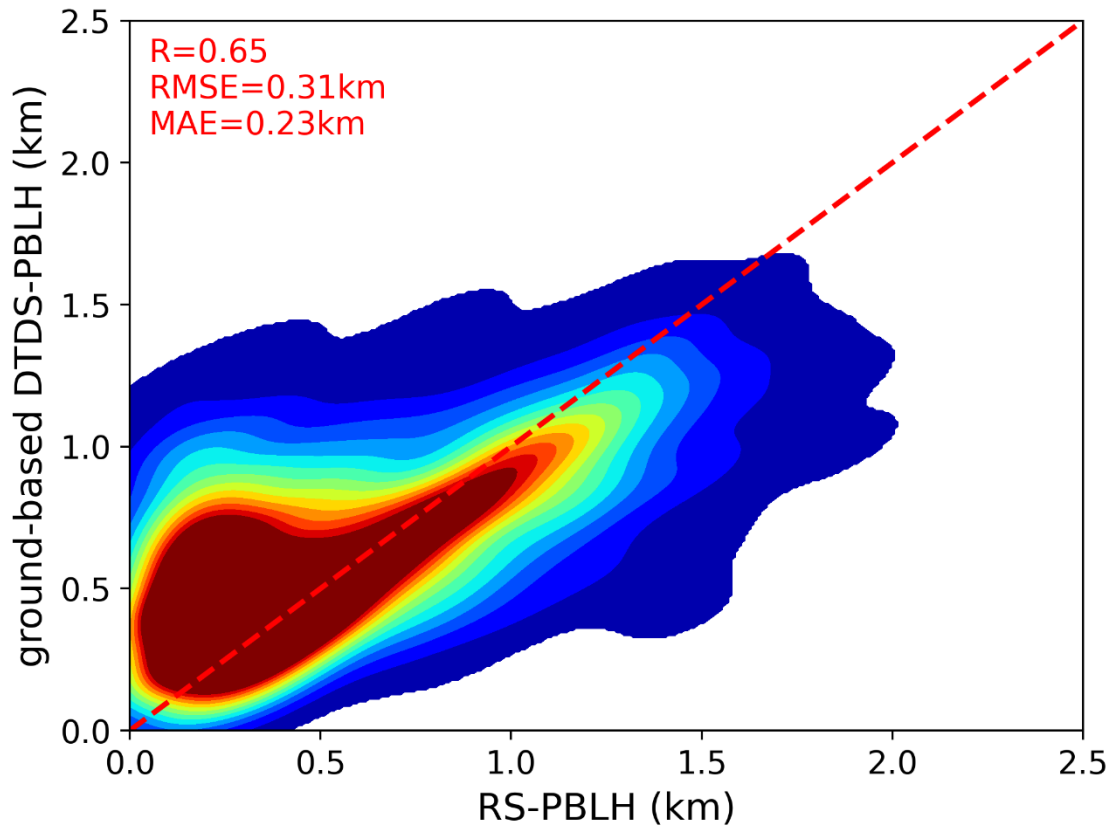


Figure S2. Kernel distribution estimates for the ground-based DTDS-PBLH and the RS-PBLH based on the Liu–Liang method using potential temperatures at the ARM ENA site between March 2015 and October 2017. The correlation coefficient (R), root-mean-square error (RMSE), and mean absolute error (MAE) are given in the panel. Dashed red lines correspond to 1:1 lines.

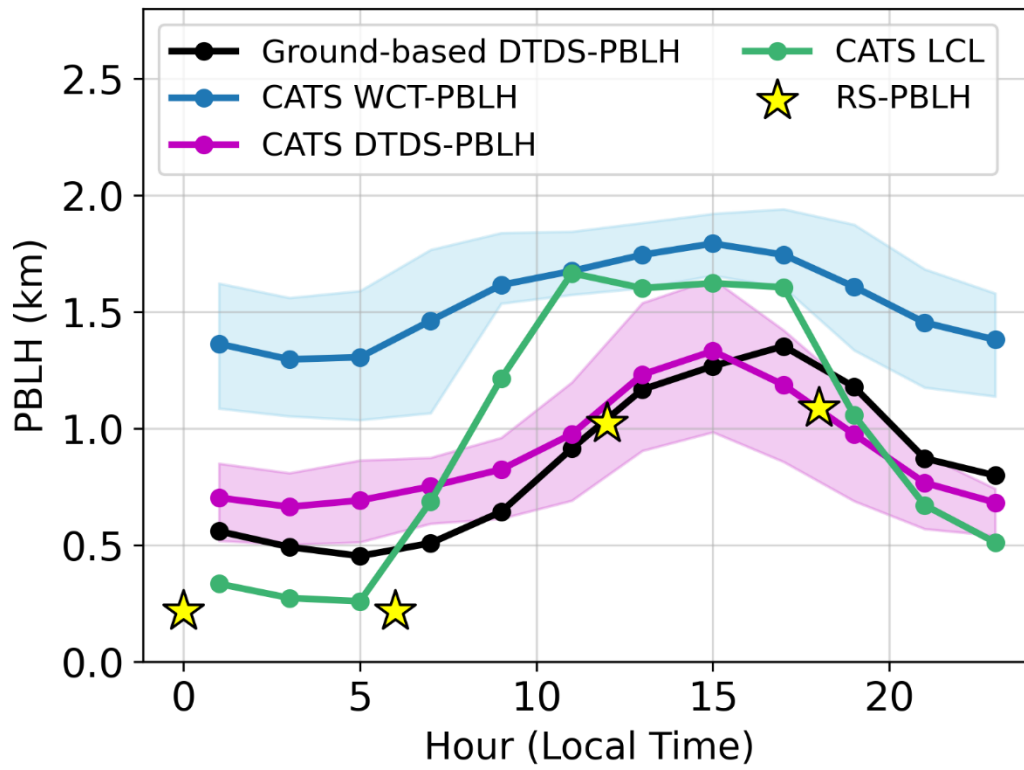


Figure S3. Temporal variations of the PBLH with 2 hours intervals for different instruments and methodologies. The black line corresponds to the ground-based MPL PBLH based on DTDS (ground-based DTDS-PBLH). The magenta line is the CATS PBLH estimated using the DTDS algorithm (CATS DTDS-PBLH) considering mediate and good-quality retrievals. The blue line is the CATS PBLH estimated using the traditional WCT method (CATS WCT-PBLH). Yellow stars are the radiosonde PBLH retrieved using the Liu and Liang method (RS-PBLH). The green line is the computed lifting condensation level (LCL) using the provided meteorological data in CATS files (CATS LCL).

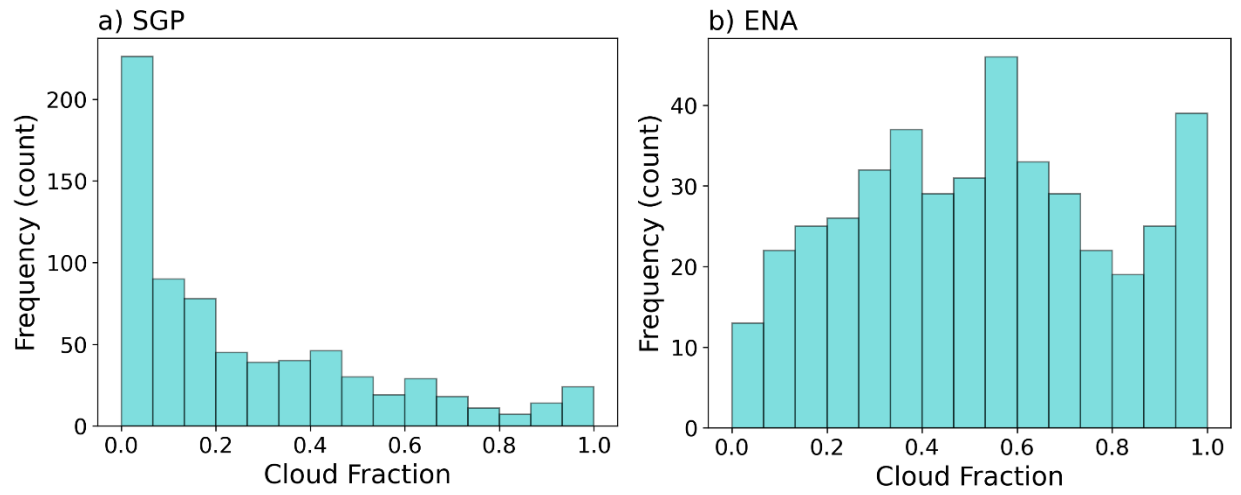


Figure S4. Estimated cloud fractions at the (a) Southern Great Plains (SGP) and (b) the Eastern North Atlantic (ENA).