

A comparison between Image Methods and WRF Model in determination the top of Atmospheric Boundary Layer

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Abstract: The Atmospheric Boundary Layer (ABL) is the region of troposphere situated in its lower part [6]. Due to its direct contact with the surface it's responsible for the main energy exchanges with the Atmosphere [5], influencing directly the climate. The LIDAR system has been appointed by many authors [1, 2] as one of the best tools to obtain information that will allow to provide a good description and characterization of ABL, because the LIDAR's good spatial and time resolutions, besides this kind of system enables the realization of data capture without the influence in the study object [1, 2].

We did one comparison between two methods for obtain the ABL profile. The first is the Image Method, which was developed with internal image processing Mathematica routines allows the PBL height by introducing the "curtain-plot" image into the software. The "curtain-plot" is generated by an automated Labview routine from LIDAR data. The second is a meteorological model Weather Research and Forecasting (WRF), which integrates Eulerian equations fully compressible, non-hydrostatics and conservatives to scalar variables [3,4]. Both methods were validated by Bulk Richardson's Number and showed results according with expectations.

References

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