



Boundary layer evolution under sunny conditions - synthetic data for a validation of the COSMO numerical weather prediction model

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The validation with quality-controlled measurements is necessary to improve the results of numerical weather prediction. It is well known that measurements contain random and systematic errors and might be of limited representativeness. The influence of random errors and specific weather conditions on the model-versus-measurement comparison can be notably decreased by considering statistical properties of data records based on multi-year series of measurements.

The present contribution deals with the boundary layer evolution on days with relatively high insolation. Suitable cases are selected through a conditional request to the data base containing the data of the Falkenberg and Lindenberg sites. Synoptic cloud information and radiation data between sunrise and noon are examined for this. The cases identified are then classified according to season, 10m-wind-speed, solar radiation sum and bulk stability across the lower atmosphere. Mean diurnal cycles of several meteorological parameters are calculated for the different classes.

The results are compared to COSMO model data. The usability of the automatic data processing for model validation purposes is discussed.