

Temperature inversions in the boundary layer over Prague

Abstract

The main objective of this study is to analyze temperature inversions in the atmospheric boundary layer (ABL) over Prague. In the first part, the concept of the ABL is defined and main theoretical aspects of air stratification are explored. The main part of the background research summarizes current knowledge of temperature inversions, especially how the landscape pattern influences their development and parameters under different synoptic situations, and methods used for their detection, measurement and evaluation. Considering the theme of the thesis, main geographic factors influencing temperature inversions in the area of Prague are also defined. The focus of actions is placed on inversions analysis based upon time series of Praha-Libuš rawinsonde station. Homogeneity of used data is tested and all inversions within the 2000-meters-thick-layer close to the ground are derived. Diurnal, annual and interannual frequency variations are described. Significance of long-term trends is tested and trends are compared to data from Prostějov and Kümmersbruck stations.

Keywords: temperature inversions, boundary layer, climate, Prague