

The doctoral thesis presents various methods of wind data analysis. Its first part summarizes the undesirable factors that influence the measured wind data. In particular, the effects of anemometer placement with regard to the near-by obstacles are investigated. In addition to the theoretical review, the practical examples of analysis of these effects at the wind mast measurements are demonstrated. The second part is focused on the measure-correlate-predict methods. Two original matrix-type methods are presented. Furthermore, a comparison of accuracy of measure-correlate-predict methods for various types of reference data series, various methods and various configurations of applied methods has been performed. The reanalyzed wind proved to be a suitable source of reference data in most cases. The applicability of surface wind data from meteorological stations depends on the combination of reference and target series, as well as on the homogeneity of involved data. The newly introduced methods proved to be suitable and universal tool for measure-correlate-predict application. The final part of the thesis analyses the wind conditions over the Czech Republic. Besides to the overview of the knowledge of the Czech wind climate, the calculation of the wind map of the Czech Republic is described. The final map was produced using combination of models PIAP and VAS/WAsP; the latter consists of interpolation method VAS and model WAsP. The result shows the distribution of average wind speed at the heights of 10 m and 100 m above ground.