

Environmental Statistics

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The aim of the short course is to give an introduction into the statistical modeling of some important environmental processes.

Nowadays, there are strict rules of the EU on the air pollution. For each pollutant daily and annual limits are given. For that reason it is of importance to have suitable statistical tools to model the behavior of air pollutants over time. Using data from several measurement stations in Berlin the performance of various statistical approaches is analyzed. Our main focus will lie on modeling particulate matter which turns out to be the most serious air pollutant in that area. In addition to parametric and semiparametric approaches spatial methods will be presented as well.

In order to cover the huge amount of energy consumed by human beings natural resources are becoming increasingly important. One of the most promising renewable energies is the wind energy. In order to cover the required energy it is important to have reliable forecasts of the wind speed. At the moment it is possible to distinguish between five categories of wind speed forecasting approaches namely physical models, conventional statistical models, spatio-temporal prediction models, artificial intelligence models and combinations of all classes. Our main focus will lie on short-term forecasting. Several new statistical approaches will be presented which have turned out to be quite effective in that context.