STIFTUNG
EUROPA-UNIVERSITÄT
VIADRINA
FRANKFURT (ODER)

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LEHRSTUHL FÜR QUANTITATIVE METHODEN
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Frankfurt (Oder), 10.06.2014

Ankündigung

Am Lehrstuhl für Quantitative Methoden, insbesondere Statistik findet vom 12.06. – 13.06.2014 ein Workshop zum Thema ***"New Approaches in Environmental Statistics"*** statt.

Vorträge:
12.06.2014, HG 217

13.15 Uhr Prof. Dr. Raid Amin, University of West Florida, Pensacola, USA
Thema: Pediatric Cancer Clusters in Florida: 2000-2010 (with material on air quality and stream integrity)
Abstract
This study uses disease surveillance cluster analysis methods to identify clusters for the three most widely spread pediatric cancer incidence rates in Florida (brain tumors, leukemia, lymphoma). In addition to a univariate purely spatial analysis, a space-time analysis is done, followed by a non-parametric permutation test for space-time interaction. This is followed by a multivariate spatial analysis for three pediatric cancer types together. The main findings include a significant spatial cluster for each of the three cancer types covered in this study, in addition to identifying two significant clusters for all pediatric cancer types combined.

14.30 Uhr Daniel Ambach, Lehrstuhl für Statistik, Frankfurt (Oder)
Thema: Evaluating Different Periodic Seasonal Time Series Model for Efficient Short-Term Wind Speed Prediction
Abstract: Developing short-term wind forecasts helps to increase the productivity of wind energy. Moreover, the energy supply can be optimized, by increasing the accuracy of wind speed predictions, particularly the feed-in of windpower. The wind speed forecasting approaches presented here use 10-minute data collected at several stations in Germany. An overview of different periodic and seasonal time series models are given.

15.45 Uhr Patrick Vetter, Doktorand RECAP 15, Frankfurt (Oder)

Thema: Spatio-temporal statistical analysis of the global carbon cycle

Abstract: Linear mixed effects models have been widely used in the spatial analysis of environmental processes. However, parameter estimation and spatial predictions involve the inversion and determinant of the n x n dimensional spatial covariance matrix of the data process, with n being the number of observations. Nowadays environmental variables are typically obtained through remote sensing and contain observations of the order of tens or hundreds of thousands on a single day, which quickly leads to bottlenecks in terms of computation speed and requirements in working memory. Therefore techniques for reducing the dimension of the problem are required. The present work analyzes approaches to approximate the spatial covariance function in a real dataset of remotely sensed carbon dioxide concentrations, obtained from the Atmospheric Infrared Sounder of NASA's "Aqua" satellite on the 1st of May 2009. In a cross-validation case study it is shown how fixed rank kriging, stationary covariance tapering and the full-scale approximation are able to notably speed up calculations. However, the loss in predictive performance caused by the approximation strongly differs. The best results were obtained for the full-scale approximation, which was able to overcome the individual weaknesses of the fixed rank kriging and the covariance tapering.

13.06.2014, HG 217

11.15 Uhr Prof. Dr. Raid Amin, University of West Florida, Pensacola, USA

Thema: Carcinogenic Air Pollution in the USA

Abstract

The Environmental Protection Agency (EPA) provides air quality data through its National Air Toxics Assessment (NATA) program. We focused on the carcinogenic component in a cluster analysis that is done in stages. As a first step, we used data at the county level for the USA's 48 contiguous states in a cluster analysis with the software SaTScan. If a very large cluster was identified, it was re-analyzed by itself to separate any hot spots. Then, in the third stage, we analyzed the county based hot spots with data at the census tract level. This research is still ongoing, and it is planned to have another stage of analysis done at the km squared level.