KU LEUVEN

Statistics and Econometrics Seminar

Joint organization by
ORSTAT, Faculty of Business and Economics and the Statistics Research Group,
Faculty of Science
Leuven Statistics Research Center

Prof. Dr. Xuming He

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"Bivariate downscaling for climate projections"

Thursday, May 24, 2012
12.00–13.00h

Location: Room HOG 03.101, Naamsestraat 69, Leuven.
Supporting research project: GOA-project 2007/04

Abstract. Statistical downscaling is a useful technique to localize global or regional climate model projections to assess the potential impact of climate changes. It requires quantifying a relationship between climate model output and local observations from the past, but the two sets of measurements are not necessarily taken simultaneously, so the usual regression techniques are not applicable. In the case of univariate downscaling, a simple quantile-matching approach with asynchronous measurements often works well, but challenges remain for downscaling bivariate data. In this talk, we propose a bivariate downscaling method for asynchronous measurements based on a notion of bivariate ranks and positions. The proposed method is preferable to univariate downscaling, because it is able to preserve general forms of association between two variables, such as temperature and precipitation, in statistical downscaling. This desirable property of the bivariate downscaling method is demonstrated through applications to simulated and real data.
Joint work with: Yunwen Yang and Jingfei Zhang.