Geophysical Research Abstracts
Vol. 14, EGU2012-6339, 2012
EGU General Assembly 2012

Assessment of extreme precipitation over Northern Europe using WRF as a regional climate model within the RiskChange-project

S. Mayer (1,2), S. Sobolowski (1,2), and S. Outten (3)

(1) Uni Bjerknes Centre, Bergen, Norway (stephanie.mayer@uni.no), (2) Bjerknes Centre for Climate Research, Bergen, Norway, (3) Nansen Environmental and Remote Sensing Center, Bergen, Norway

It is likely that one of the most damaging impacts of climate change may be an increase in the frequency and/or intensity of extreme precipitation events. Understanding the patterns of these changes is crucial for the design and adaptation of critical infrastructure. However, the magnitude, location and timing of these changes are largely unknown at the local to regional scales that stakeholders most care about. Further, the physical mechanisms underlying extreme events at regional scales are not well understood and the range of uncertainty is high. The main objective of the RiskChange project is to establish a consistent scientifically based framework for risk-based design using state-of-the-art knowledge of future changes in climate extreme statistics.
Within the project a major part is to dynamical downscale from global and regional climate model projections to local scales of applications which will provide a data basis for the assessment of future changes in climate extreme statistics. Associated with this task is the quantification of uncertainties in the projected future climate extremes and associated variables for extreme environmental load. Concretely, the Weather Research and Forecasting model WRF is used as a regional climate model to downscale global climate model data from the models NORESM (met.no/BCCR) and EC-Earth (DMI) to a horizontal grid of 8 km for the cities Copenhagen, Denmark and Oslo, Norway.
Results from preliminary test runs are presented to evaluate the performance of the chosen WRF model set up; in particular, we focus on the choice of physical parameterizations. First results addressing the representation of extreme rainfall events and extreme winds in a 20-years hindcast of the ERA-interim (1989-2009) period are shown. RiskChange results will contribute to the development of planning and decision support tools for local and central authorities and form the basis for establishing design guidelines and associated tools for the industry.