EMS Annual Meeting Abstracts
Vol. 8, EMS2011-446-2, 2011
11th EMS / 10th ECAM

Forecasting the weather
- ensemble techniques
in probabilistic weather prediction

Process oriented urban-scale precipitation modelling on sub-diurnal time scales

H. W. Rust

Institute of Meteorology, Freie Universität, Berlin, Germany (henning.rust@met.fu-berlin.de, +49 30 838 71128)

Facing climate change and changing patterns of precipitation, the sustainable planning and design of urban sewerage systems has become a difficult task. Sewerage design is commonly based on numerical modelling requiring simulation of precipitation as input. Characterised by a high spatial and temporal variability, precipitation is difficult to model on urban spatial and sub-diurnal time scales. Given the clustered nature of rainfall, spatial Poisson-cluster models seem a natural and promising approach which is pursued here. The model parameters are estimated from rainfall characteristics obtained from high-resolution radar data augmented by rain gauge observations. We investigate the model's potential to reproduce rainfall variability on the spatial-temporal scales relevant to extreme convective events causing flash flood or sewerage system overflow. A long-term goal is to link the model parameters to variables of large scale circulation in order to allow for a downscaling of GCM simulations to the urban sub-diurnal scale.