Geophysical Research Abstracts,
Vol. 11, EGU2009-11994, 2009
EGU General Assembly 2009

Models and data for hydrological analyses – lessons learned from uncertainty

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Modelling has become an unavoidable step in the hydrological analyses.
Intensive monitoring of experimental or representative catchments in different environments allowed identifying of dominant processes that further enabled the choice of an appropriate model structure to be used for simulation, forecast or scenario analyses.
Progresses have been done in building different modelling structures (conceptual and physically based, lumped and distributed) that are now being extensively used at different scales, with different amounts of input data and together with different calibration procedures.
The present study will analyse the role of uncertainty, in a Bayesian context, as a tool to learn how input data (discharge, soil moisture, chemistry, rainfall) could be used to evaluate two semi and fully distributed modelling structures (TOPMODEL and WASIM-ETH) in two different catchments: a small (2km2) one in the Swiss Plateau region (the Haute-Mentue catchment) and a medium (100km2) one in low range mountain in central Germany (Weisse Elster catchment).