



The CEDIM-project Flood risk in a changing climate

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The aim of the project is to assess the risk of changes in flood hazard for the near future (2021–2050). The aspect of uncertainty in the future projections is central to the assessment, and will be evaluated through a hydro-meteorological ensemble approach. Three catchment areas (Ruhr, Ammer, Mulde) have been chosen to represent small to medium sized catchments in Germany. The base of the climate simulations lies on GCM simulations forced with the SRES A1b scenario. An RCM dynamical downscaling method is used to transfer the GCM results to a higher spatial resolution which is more suitable for the hydrological model simulations, in particular for small to medium sized catchments. Statistical analysis of hydrological change is mainly based on discharge time series. To address the uncertainty issue, a set of at least two GCMs will provide simulations for the A1b scenario. For one of the GCMs (ECHAM5), three realizations with different initial conditions are used in order to assess the uncertainty due to natural variability. Each GCM simulation is dynamically downscaled to a 7 km horizontal resolution using two different RCMs (COSMO-CLM and WRF). Using output from the RCMs, at least two hydrological models (WASIM, PRMS, SWIM) are used to simulate the discharge in each catchment. A methodology for constructing a weighted ensemble from the simulations will be developed. The ensemble will then be used to assess the risk and uncertainties in future flood events.