Title of presentation and abstract:
Usage of a global statistical bias correction to enhance simulations of the current and future hydrological cycle

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Future climate model scenarios depend crucially on their adequate representation of the hydrological cycle. Within the European project "Water and Global Change" (WATCH) special care is taken to couple state-of-the-art climate model output to a suite of hydrological models. This coupling is expected to lead to a better assessment of changes in the hydrological cycle. However, due to the systematic model errors of climate models, their output is often not directly applicable as input for hydrological models. We design, apply and validate a methodology for correcting climate model output to produce internally consistent fields that have the same statistical intensity distribution as the observations. We refer to this as a statistical bias correction. As observations, global re-analysed daily data of precipitation and temperature are used that are obtained in the WATCH project. The time intervals used for calibration and validation are chosen to be as far apart as possible in an effort to expose any dependence on decadal climate fluctuations. This increases our confidence in its applicability to multi-decadal simulations of future climate projections. We will apply the bias correction to global climate model data of precipitation and temperature from the ECHAM5/MPIOM model and compare the bias corrected data to the original GCM data and the observations.

Then, the orginal and the bias corrected GCM data will be used to force the hydrological model of the Max Planck Institute for Meteorology (MPI-HM) consisting of the Simplified Land surface (SL) scheme and the Hydrological Discharge (HD) model, and the impact of the bias correction on the projected simulated hydrological changes will be analysed.

Lectures/Hands on session:
The Hydrological Discharge model - Simulating river runoff with climate model input