



Analysing environmental change effects on future water availability and the water cycle in Benin (West Africa) using a conceptual hydrological model

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Fresh water has already become a critically scarce in many regions of the world. Especially in West Africa, where the precipitation amount is below the long term average since the 1970th, fresh water supply could become problematic in the future. As fresh water availability is controlled by the hydrologic cycle a detailed analysis of all parts of the water cycle is essential for future water resource management. The IMPETUS-project investigates in an interdisciplinary approach the environmental change effects on the water cycle in West Africa, focusing on two catchments, the Ouémé River in Benin and the Drâa River in Morocco. Earlier investigations of the IMPETUS-project have revealed that apart from climatic change land use/land cover change due to migration and population growth is recently the major impact on the water cycle in Benin. To assess the influence of these environmental changes on future water availability and the hydrologic cycle an interdisciplinary scenario analysis is carried out. Different land use and climate change scenarios are calculated with a conceptual hydrological model, which have been validated for several sub-catchments of the Ouémé River for different time periods. Realistic data for the scenario analysis are provided from different disciplines of the project (e.g. climate scenarios, land use scenarios, demographic scenarios). After a short introduction of the IMPETUS-project and the model concept the presentation will focus on the different future scenarios of water availability for Benin. Finally the influence of future water demand on the water resources in the target region and the applicability of conceptual hydrological models in the decision making process for future water management will be discussed.