



Inter-sectoral comparison of model uncertainty of climate change impacts in Africa

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We present the model results and their uncertainties of an inter-sectoral impact model inter-comparison initiative (ISI-MIP) for climate change impacts in Africa. The study includes results on hydrological, crop and health aspects. The impact models used ensemble inputs consisting of 20 time series of daily rainfall and temperature data obtained from 5 Global Circulation Models (GCMs) and 4 Representative concentration pathway (RCP). In this study, we analysed model uncertainty for the Regional Hydrological Models, Global Hydrological Models, Malaria models and Crop models.

For the regional hydrological models, we used 2 African test cases: the Blue Nile in Eastern Africa and the Niger in Western Africa. For both basins, the main sources of uncertainty are originating from the GCM and RCPs, while the uncertainty of the regional hydrological models is relatively low. The hydrological model uncertainty becomes more important when predicting changes on low flows compared to mean or high flows. For the other sectors, the impact models have the largest share of uncertainty compared to GCM and RCP, especially for Malaria and crop modelling. The overall conclusion of the ISI-MIP is that it is strongly advised to use ensemble modeling approach for climate change impact studies throughout the whole modelling chain.