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Regional multi-model ensemble results for hydrological cycle properties in a high- and a low-emission scenario

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In the scope of the EU FP6-Project ENSEMBLES, a multi-model ensemble of global climate simulations was produced for the high-emission scenario SRES A1B and the mitigation scenario E1 (which is very similar to RCP2.6). For 26 so called Giorgi-regions (Giorgi and Bi, 2005) precipitation, cloud cover and evapotranspiration are analyzed. Besides ensemble statistics, we focus on systematic differences between some of the contributing models. These differences are particularly large for the Amazon region. In this region, some models (most pronounced in HadCM3.3 and HadGEM2-AO) simulate a dieback of the rainforest resulting from a positive feedback between rainfall reduction and changes in plant transpiration, leading to reduced moisture recycling.
The results complement the CMIP5 analyses in that they contrast simulated signals for the E1 scenario (closely resembling RCP2.6) to the widely used CMIP3 scenario SRES A1B.