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Expected future runoff of the Upper Jordan River simulated with CORDEX climate change data

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The Jordan River, flowing from the Mount Hermon area to the Dead Sea, is an important freshwater source in the region. Its water is almost fully used by withdrawal from Lake Kinneret, fed to a large extent from the upper Jordan River (UJR) basin. Future climate change is expected to increase the pressure on the water availability in a region already now suffering from scarcity of water. Simulation of the future UJR discharge is therefore a societal highly relevant key scientific task.
The contribution presents simulations of the future discharge of the Upper Jordan River based on climate change data from five different RCM models run in two Coordinated Regional Climate Downscaling Experiments (CORDEX) experiments. This data are applied together with the hydrological simulation model WaSiM-ETH. Obtained findings extend the previous simulations performed within the GLOWA Jordan River project (www.glowa-jordan-river.de), an interdisciplinary research project providing scientific support for sustainable water management in the Jordan River region.
The presentation discuses the difficult constraints of hydrological simulations in the UJR region, which include complex terrain, karstic features and missing observational meteorological reference. It describes the setup of the applied hydrological model and concentrates upon the obtained results. The performed simulations for the period from 1976 to 2100 indicate an increasing annual mean temperature for 20071–2100 by 2.6 K above the 1971–2000 mean. The simulated ensemble mean precipitation is predicted to decrease in this period by 20 %. Related to the mean for 1976 – 2000, the discharge of the upper Jordan River is simulated to decrease by 25.3% until 2100