



Evaluating ÖKS15 Austrian Climate Scenarios for Hydrological Applications: A Climate Change Impact Study in two Styrian Catchments

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The ÖKS15 Austrian Climate Scenarios recently made available are investigated for hydrologic impact research. The ÖKS15 dataset, based on results from 13 RCMs, was obtained by downscaling and bias-correcting the latest projections from the EURO-CORDEX ensemble to a 1 km-grid. The simulations show a mean temperature increase of up to +4°C for the period 2071-2100 compared to 1971-2000 for the region under investigation. Although subject to major uncertainties, precipitation simulations point to an increase of mean precipitation, particularly in winter months.

In the present study we couple the ÖKS15 1 km-gridded data with the process based hydrological model WaSiM (www.wasim.ch) to evaluate their suitability for investigating impacts of climate change on hydrological regimes in Styria. We examine two catchments - the alpine Wölzerbach (~230km²) as well as the pre-alpine Raab (~990km²). The smaller alpine catchment has been subject to devastating torrents in recent years, whereas the Raab catchment is primarily vulnerable to drought. While data for the alpine catchment are limited, the dense (1 km-scale, 5 min) hydro-meteorological network WegenerNet Feldebach region (www.wegcenter.at/wegenernet) offers wide potential for validation in the Raab catchment.

In particular we evaluate the degree of applicability of the ÖKS15 data for hydrological impact studies. Analyzing various performance criteria for the past (1971-2000) we aim at assessing the credibility of projections of future (2021-2050 and 2071-2100) water balance components. Special consideration is given to the evaluation of climatic and hydrologic uncertainty in order to get insights to the strengths and limitations of the dataset for hydrological impact assessment.