

## **Use of high resolution climate change data to simulate hydrological change at the small catchment scale**

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**Abstract** The spatial resolution of common output of global change models is too coarse to be used for impact studies in small catchments. To overcome this limitation, the German Environmental Agency (Umweltbundesamt) has published a data set with a grid size of 10 km (REMO data set), which is suitable for small scale simulations. We used this data set to analyse the effects of global change on the small Kielstau catchment (50 km<sup>2</sup>), situated in northern Germany. In a first step we analysed the differences between measured values and the REMO base scenario (C20) of temperature, precipitation and discharge. Compared to measured values, the simulated winter temperatures, annual precipitation and the discharge values were much higher. In a second step, simulations were carried out with the eco-hydrological model SWAT, which was calibrated with measured runoff data. A comparison between the C20 and three different IPCC scenarios (B1, A2, A1B) showed a decrease of the summer discharge. However, the interpretation of these results is difficult because of the high precipitation in all REMO climate data sets, all simulated values with scenario data are still higher than the measured discharge.

**Key words** climate change; modelling; SWAT; REMO; IPCC scenarios