



The impact of the climate change on river flooding under different climate scenarios

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Global climate changes caused by increasing atmospheric greenhouse gas concentrations is not a new issue. One of the most important impacts of future climate change on society will be regional water resources and flooding. In this paper, the Rossby Centre Regional Atmospheric Model (RCA) is driven by different global climate data sets. For the past climate (1961-2000), the model is driven by ERA40 and ECHAM4 data, while for the future simulation (2021-2060), it is driven by ECHAM4 data consistent with the SRES-B2 scenario. To investigate the influence of changed future climate on regional water resources and flooding, the precipitation of the model output is used for the Suir River Catchment area (Ireland) as input for the HBV model. The calibration and validation results of our ERA40 driven present day simulation show that the HBV model can reproduce the discharge fairly well. The same parameters are also used for the validation of our ECHAM4 driven present day simulation. It gives a little stronger flooding due to overprediction of precipitation in the ECHAM4 driven simulation. The projection of the future climate shows an increase in flood frequency and intensity. This is also depicted by the return values of the extreme discharge. Results suggest that the application of a high resolution regional climate model in connection with a conceptual hydrological model is capable of capturing the local variability of river flooding.