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Sensitivity of hydrological extremes in climate and land use changes in Belgium

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In the present work we analyze, through hydrological modeling, the impacts of climate change on the hydrological extremes in Belgium. The study is carried out for the river Meuse and Scheldt basins in Belgium using the SCHEME hydrological model. The climate change scenarios considered in the analysis have been derived for Belgium from the results of Regional Climate Model simulations that have been performed in the context of the European PRUDENCE project. These simulations are based on the A2 and B2 SRES scenarios. Our approach involves in particular calculation of potential evapotranspiration from all simulations in the PRUDENCE database, based on the Penman equation, as part of the input for the SCHEME model. Furthermore, we consider the hydrological impact of non-meteorological changes and especially of land use changes. Several possibilities of land use in the future are considered in the context of a sensitivity analysis. In both cases of climate and land use change scenarios, the variation in the total streamflow and in the frequency of exceedance of certain thresholds is analyzed.