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## Modeling the effects and feedbacks of irrigation on the regional climate in Northern Italy

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Large parts of the earth's land surface are modified by humans. Since the land surface and the atmosphere are constantly in energy exchange and in interactions with each other, anthropogenic modifications of the land's surface can lead to effects on the climate. The objective of this study is to quantify and investigate the effects and feedbacks of irrigation on the local to regional climate. Irrigation is a land use practice, which does not change the land cover type but changes the biophysical properties of the land's surface and the soil and thus alters energy and moisture fluxes. These local to regional process responses, detectable in different meteorological variables, are investigated using the regional climate model REMO. High resolution simulations at convection permitting scales will be performed in order to particularly investigate irrigation effects on the spatiotemporal behavior of moist convection. Newly developed parameterizations of different types of irrigation are tested on the example of a northern Italian model domain, where cropland and rice paddies are the dominating land cover. The focus of the sensitivity study is on the impact of the parameterizations on the surface moisture and energy balance as well as on heavy rainfall events.