



High Resolution Joint Water and Energy Balance Observation and Modeling in a Prealpine Environment

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Water and energy fluxes at and between the land surface/subsurface and the atmosphere are inextricably intertwined over a large range of space- and time-scales. Changes in either the energy balance or the water balance propagate through the connected cycles and change the respective other component. Improved understanding and prediction of the hydrological cycle and its potential changes therefore requires the joint consideration of both the water and the energy fluxes.

We present setup, calibration and results of a high resolution distributed modeling study of both the water and energy fluxes in the prealpine terrain of the Rott catchment (55 km², Bavaria/Southern Germany) based on the GEOTOP-Model. Our simulations have a spatial resolution of 90m and an hourly temporal resolution. We intercompare the simulations results with observed streamflow measurements, soil moisture and soil temperature measurements in different depths, and energy flux observations obtained by a Eddy-Covariance tower at the TERENO test site "Fendt" for the year 2010.