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# Reproducing observational evidence through hydrologic model simulations in a small agricultural catchment

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Investigating hydrologic process patterns on small catchments provide a way to better understand the overall catchment behaviour, which is useful not only for the wider scientific community but also for practitioners working in water resources management, risk and operational forecasting. The objective of this study is to develop a conceptual spatially distributed hydrologic model to reproduce observational evidence, i.e. the diurnal streamflow fluctuations in dry weather periods and the nonlinear relationship between soil moisture and discharge during rainfall events. The analysis will be performed in the Hydrological Open Air Laboratory (HOAL) in Austria. The HOAL is a 66 ha experimental catchment where a wide range of hydro-meteorological characteristics are measured with a very fine spatial and temporal resolution (Blöschl et al., 2016). The distributed hydrologic model will be evaluated for the main catchment and its eleven tributaries by using discharge and spatially distributed soil moisture and evapotranspiration measurements. The spatial and temporal patterns of rainfall-runoff relationship will be discussed in terms of differences in the main runoff generation mechanisms. We aim to demonstrate that the new conceptual model allows to reproduce the diurnal streamflow fluctuations caused by transpiration in longer dry periods and the spatial and temporal differences between the threshold behaviour of different runoff generation mechanisms during rainfall events.

References:
Blöschl, G., et al. (2016). The Hydrological Open Air Laboratory (HOAL) in Petzenkirchen: A hypothesis-driven observatory. Hydrology and Earth System Sciences, 20(1), 227–255. https://doi.org/10.5194/hess-20- 227-2016.