

EGU2020-13384

<https://doi.org/10.5194/egusphere-egu2020-13384>

EGU General Assembly 2020

© Author(s) 2021. This work is distributed under the Creative Commons Attribution 4.0 License.



Integrated modelling: a tool for combining findings from multiple studies in a hydrologic observatory

Lovrenc Pavlin¹, Borbála Széles^{1,2}, Alfred Paul Blaschke^{1,2,3}, and Günter Blöschl^{1,2}

¹Vienna University of Technology, Centre for Water Resources Systems, Vienna, Austria (pavlin@hydro.tuwien.ac.at)

²Vienna University of Technology, Institute of Hydraulic Engineering and Water Resources Management, Vienna, Austria

³Interuniversity Cooperation Centre for Water and Health (ICC Water & Health),

Research catchments allow a unique opportunity of acquiring long and varied datasets. This process takes years and is often performed by multiple generations of researchers with different research focuses. In this way, complex processes might be identified and explained on a variety of spatial and temporal scales. But how could these puzzle pieces be put together to form the complete picture of the catchment and would they even fit? Physically-based integrated surface-subsurface models, such as HydroGeoSphere, give us the possibility to jointly model a wide array of processes informed by measurable parameters. Here we present the ongoing work on conceptual models testing by an integrated model in the Hydrological open air laboratory (HOAL). This is a small headwater agricultural catchment in Lower Austria, where a variety of hydrometeorological and hydrogeochemical parameters are monitored with high spatial and temporal resolution. The model in this study builds on the conceptual models of previous studies in the catchment and incorporates features such as tile drainage system, macropores, variable land use and regional groundwater flow. Groundwater levels and discharge data at the tributaries and the catchment outlet from 2013-2017 were used for calibration. We discuss the preliminary findings and the advantages and disadvantages of this modelling approach.