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## Web-based hydrological modelling tool - Hidro-Odtu

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Bucket-type conceptual hydrological models are widely popular, because of their relatively low data and computational demands. With the improved computational techniques and advances in computer sciences, web based hydrological modelling tools are becoming available too. Conceptual rainfall-runoff (CRR) models are designed to approximate the general physical mechanisms which govern the hydrologic cycle and found practical by many hydrologists and engineers. In this context, a web based, open-source, platform independent, easily accessible hydrological modelling tool **Hidro-Odtu** has been designed. Aiming at providing fast and accurate results, **Hidro-Odtu** utilize lumped and semi-distributed hydrological modelling capabilities. The design of the **Hidro-Odtu** contains pre-processing using the tools to automatically delineate the river network and basin boundaries, input the forcing data, lumped hydrological modelling with parameter calibration capability, hydrological overland flow routing and dynamic result visualization. Moreover, web-based technologies allow remotely prepare model input files, run model calculation and display model results for rainfall-runoff calculations. Bucket storage lumped, conceptual rainfall-runoff model is selected as core feature for hydrological model and it is enhanced to a semi-distributed model by including the Muskingum-Cunge flow routing method to simulate overland flow. Model results are evaluated by several performance indices such that Nash-Sutcliffe Efficiency Index (NSE), Sum of Square of Error (SSE) or Kling-Gupta Efficiency (KGE).

Hydrological modelling, calibration and routing algorithms have been implemented by using Python programming language for the back-end calculations and Node.js framework, html, JavaScript have been utilized for front-end side to handle data preparation and results visualization.

Hidro-Odtu have been evaluated with numerous data sets with different study areas and found successful to delineate sub basins and river network, to define rainfall-runoff relationship on the basis of the sub-basins. With this tool, it is aimed to obtain practical hydrological modelling results using web technologies.