



Jun 27th, 9:00 AM - 10:20 AM

## HydroShare: A Platform for Collaborative Data and Model Sharing in Hydrology

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Tarboton, David; Idaszak, Ray; Horsburgh, Jeffery S.; Ames, Daniel; Goodall, Jonathan L.; Couch, Alva; Hooper, Richard P.; Wang, Shaowen; Clark, Martyn; Dash, Pabitra; Yi, Hong; Bandaragoda, Christina; Castronova, Anthony M.; Gan, Tian; Li, Zhiyu; Morsy, Mohamed M.; Ramírez, Maurier; Sadler, Jeffrey M.; Yin, Dandong; and Liu, Yan, "HydroShare: A Platform for Collaborative Data and Model Sharing in Hydrology" (2018). *International Congress on Environmental Modelling and Software*. 37.  
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## HydroShare: A Platform for Collaborative Data and Model Sharing in Hydrology

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**Abstract:** This paper addresses the open collaborative data and model sharing opportunities offered by the HydroShare web based hydrologic information system operated by the Consortium of Universities for the Advancement of Hydrologic Science Inc. (CUAHSI). HydroShare users share and publish data and models in a variety of flexible formats, in order to make this information available in a citable, shareable and discoverable format for the advancement of hydrologic science. HydroShare includes a repository for data and models, and tools (web apps) that can act on content in HydroShare and save results back into the repository that represents a flexible web based architecture for collaborative environmental modeling research. This presentation will focus on the key functionalities of HydroShare that support web based collaborative research that is open and enhances reproducibility and trust in research finding through sharing of the data, models and scripts used to generate results. The HydroShare Jupyter Notebook app provides flexible and documentable execution of Python or R code snippets for analysis and modeling. An analysis or modelling procedure documented in a Jupyter Notebook may be saved as part of a HydroShare resource along with the associated data, and shared with other users or groups. These users may then open the notebook to modify or add to the analysis or modelling procedure, and save results back to the same, or a new resource. Passing information back and forth this way serves to support collaboration on common data in a shared modelling platform. The Jupyter platform is embedded in high performance and data intensive cyberinfrastructure so that code blocks may include preparation and execution of advanced and data intensive models on the host infrastructure. We will discuss how these developments can be used to support collaborative research, where being web based is of value as collaborators can all have access to the same functionality regardless of their computer or location.

**Keywords:** Collaboration, Model Sharing, Repository, Reproducibility.