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## Using HydroShare to Enhance Sharing and Reproducibility of Research Results

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**Abstract:** HydroShare is a web-based hydrologic information system operated by the Consortium of Universities for the Advancement of Hydrologic Science, Inc. (CUAHSI). Within HydroShare, users can create and share data and models using a variety of file formats and flexible metadata. HydroShare enables users to formally publish these resources as well as create linkages between published data and model resources and peer reviewed journal publications that describe them. Ability to link published data and models with the papers that describe them is a great step in the direction of scientific reproducibility, but is only a first step. HydroShare supports further transparency in the scientific process by enabling scripting of analytical steps via a RESTful application programming interface (API). Using this API, HydroShare users can develop scripts to read data from HydroShare, perform an analytical step (e.g., data processing or visualization), and then write results back to HydroShare. The script itself can then be shared as part of the published dataset in HydroShare, or it can be shared as a Jupyter Notebook that can be executed within the HydroShare environment. Scripts or Jupyter Notebooks can then be executed by others to reproduce the analysis used by the original authors. In this presentation, we discuss how HydroShare can enable best practices for linking publications with data and models and for promoting reproducibility in environmental analyses through sharing of data, models, and scripts that encode the scientific workflow. The HydroShare system is available at <http://www.hydroshare.org>. Source code for HydroShare is available at <https://github.com/hydroshare>.

**Keywords:** HydroShare, Data Sharing, Data Publication, Reproducibility.