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Data and Models as Social Objects in the HydroShare System for Collaboration in the Hydrology Community

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Researchers around the world expend tremendous resources to gather and analyze vast stores of hydrologic data and use them in a myriad of hydrologic models. The goal of HydroShare is to advance hydrologic science by enabling the scientific community to more easily and freely share products resulting from their research, not just the scientific publication summarizing a study, but also the data and models used to create the scientific publication. HydroShare is a web-based hydrologic information system developed for sharing, accessing and discovering hydrologic data and models with specific functionality aimed at making collaboration easier and supporting reproducibility, and thus trust in research results. HydroShare has been developed with U.S. National Science Foundation support under the auspices of the Consortium of Universities for the Advancement of Hydrologic Science, Inc. (CUAHSI) to support the collaboration and community cyberinfrastructure needs of the hydrology research community. Within HydroShare, we have developed new functionality for creating datasets, describing them with metadata, and sharing them with collaborators. We cast hydrologic datasets and models as “social objects” that can be shared, collaborated around, annotated, published and discovered. In addition to data and model sharing, HydroShare supports web application programs (apps) that can act on data stored in HydroShare, just as software programs on your PC act on your data locally. This can free researchers from some of the limitations of local computing capacity and challenges in installing and maintaining software on one’s own PC. HydroShare’s web-based cyberinfrastructure can take work off a researcher’s desk or laptop computer and onto infrastructure or "cloud" based data and processing servers. This presentation will describe HydroShare’s collaboration functionality that enables both public and private sharing with individual users and collaborative user groups, and makes it easier for collaborators to iterate on shared datasets and models, creating multiple versions along the way, and publishing them with a permanent landing page, metadata description, and citable Digital Object Identifier (DOI) when the work is complete. This presentation will also describe the web app architecture that supports interoperability with third party servers functioning as application engines for analysis and processing of big hydrologic datasets.