# Brokering as a framework for hydrological model repeatability

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Data brokering aims to provide those in the the sciences with quick and repeatable access to data that represents physical, biological, and chemical characteristics; specifically to accelerate scientific discovery. Environmental models are useful tools to understand the behavior of hydrological systems. Unfortunately, parameterization of these hydrological models requires many different data, from different sources, and from different disciplines (e.g., atmospheric, geoscience, ecology). In basin scale hydrological modeling, the traditional procedure for model initialization starts with obtaining elevation models, land-use characterizations, soils maps, and weather data. It is often the researcher's past experience with these datasets that determines which datasets will be used in a study, and often newer, or more suitable data products will exist. An added complexity is that various science communities have differing data formats, storage protocols, and manipulation methods, which makes use by a non native user exceedingly difficult and time consuming.

We demonstrate data brokering as a means to address several of these challenges. We present two test case scenarios in which researchers attempt to reproduce hydrological model results using 1) general internet based data gathering techniques, and 2) a scientific data brokering interface. We show that data brokering can increase the efficiency with which data are obtained, models are initialized, and results are analyzed. As an added benefit, it appears brokering can significantly increase the repeatability of a given study.