

Understanding, Science in Practice and Predictions: Three Components of an Adaptive Framework for Water Science

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ABSTRACT

Looking forward, it is clear that people will be one of the biggest agents of change impacting hydrological systems. While the disciplines of water resources engineering and economics have embraced design and study of engineered and impacted systems, there is considerable scope for hydrologic sciences to focus on the role of people as agents of hydrologic change. In doing so, opportunities to cross-fertilize discovery-driven science (understanding), engineering applications (predictions) and the implementation of management (science in practice) will arise. These three areas of effort provide a holistic platform for research efforts. Management interventions offer opportunities for discovery-based research; predictions used to support management interventions can be tested following implementation, while improvements in both understanding and prediction, if brought to bear on water management problems, can ultimately improve decision making and outcomes. To implement this vision requires a deep engagement between researchers and practitioners, and a willingness to treat changes in policy, law, land management and water management as natural experiments that reveal the different ways that people act as agents of hydrologic change.