

Postdoctoral Position in System Dynamics Modeling of Coupled Human – Natural Systems

Utah State University (USU) invites applications for a postdoctoral position to apply system dynamics modeling to the evaluation of coupled human – natural systems in the Utah Water Research Lab and the Department of Civil and Environmental Engineering.

This project will involve modeling and evaluating critical riverine ecosystem functions in the context of complex, heavily allocated river basins. The extent and timing of river ecosystem functions is controlled by a dynamic interplay of the flow regime and river morphology. Prediction of how hydrology modulates ecosystem response in distinct geomorphic settings, and expected changes under hydrologic alteration, is an important scientific problem with social ramifications. The selected candidate will develop a flexible system dynamics modeling framework to represent spatially and temporally explicit environmental objective performance under alternative water management scenarios. A combination of optimization modeling, programming, and statistical analysis will be used to assess the performance of proposed environmental flow regimes, generate optimal flow regimes for individual ecosystem functions within human management constraints, and evaluate human – natural water management tradeoffs. The selected candidate will also develop a user-friendly interface for demonstrating the results of management alternatives to basin stakeholders.

This project is part of a larger project team working to design environmental flows for highly altered, spatially heterogeneous river basins in California. The successful candidate will interact with diverse researchers and stakeholders in academia and state agencies. Candidates must have a PhD in Engineering, Quantitative Ecology, Hydrology, Geomorphology, Water Resources Management, or a related field. Extensive knowledge and experience with optimization modeling, system dynamics, computer programming (such as Python, R, MATLAB), and statistical analysis is required. Excellent data management skills and journal publication track record are required. Experience with hydrodynamic modeling and geospatial analysis is preferred. Salary will be commensurate with experience, plus excellent benefits.

USU is a highly collaborative community and a true research hub for water and river science <water.usu.edu>. Great facilities, equipment, and a wealth of expertise are available. Set in Northern Utah, outstanding outdoor recreational opportunities abound in the nearby mountains and proximate region. The application deadline is March 2018. There is some flexibility with the start date, ranging from April to June, 2018. To apply, please **send cover letter, CV, and contact information for three references to Professor Belize Lane** by e-mail at belize.lane@usu.edu. The appointment will have an initial term of one year, extendable to two years pending performance.