FUNDED RESEARCH OPPORTUNITIES AT UTAH STATE UNIVERSITY

The Utah Water Research Laboratory (UWRL) at Utah State University (USU) (http://uwrl.usu.edu), a multidisciplinary laboratory in the Department of Civil and Environmental Engineering, attracts applicants from a variety of STEM backgrounds and is engaged in a wide range of challenging national and international research efforts. Funded opportunities in the following research groups are described below:

WATER INFRASTRUCTURE AND THE ENVIRONMENT. PhD assistantship is available for highly motivated students to join our dynamic research team focused on water issues related to infrastructure and the environment. Potential research areas include but are not limited to f*luvial hydraulics, computational fluid dynamics, hydraulic structures, scour and erosion, fluid mechanics and experimental techniques, and energy dissipation.* *Inquiries are encouraged and may be directed to brian.crookston@usu.edu.

HUMAN-NATURAL WATER MANAGEMENT. PhD and MS assistantships are available within the USU WET Lab (www.usuwetlab.org) at the intersection of hydrologic science, fluvial hydraulics, and water resources management, with a focus on data-driven solutions for the West's growing water management challenges. Potential research areas include *integrating ecological and climate uncertainty in water management, investigating multi-scale topographic and streamflow controls on river functioning to inform restoration, and quantifying the utility of synthetic terrain generation for ecohydraulic applications*. Students with various backgrounds are encouraged to apply (e.g., hydrology, civil engineering, earth sciences, biology, statistics). Experience with programming, geospatial and statistical analysis strongly desired. *Inquiries may be directed to belize.lane@usu.edu.

COLORADO RIVER WATER MANAGEMENT FOR A NONSTATIONARY FUTURE. Post-doctoral fellowship available at the USU Center for Colorado River Studies and the Utah Water Research Laboratory to develop and test innovative alternatives to manage the Colorado River to achieve the dual goals of providing reliable water supplies and sustaining and enhancing the river's ecosystem under hydrologic and ecologic uncertainties. This position is part of a collaborative initiative to explore a wide range of future Colorado River Basin reservoir and water-supply management strategies while considering ecosystem impacts. This position offers a unique opportunity for a post-doctoral researcher to conduct new, high-impact science that informs management of a major river system. Responsibilities include (1) *develop new modeling approaches to identify reservoir management strategies that provide water supply and ecosystem benefits in a nonstationary future where inflows are on the decline, variable, and uncertain;* (2) *apply new modeling approaches for Lake Powell, Lake Mead, and Flaming Gorge reservoir;* and (3) *work with the project PIs, an advisory committee, and collaborators to make work open, transparent, and available to stakeholders*. This

position offers full salary support commensurate with experience plus excellent benefits. See Requisition #E1800742 at https://usu.hiretouch.com/job-details?jobid=3848 for more information about the position and directions to apply. Please direct further questions about the position to Dr. David E. Rosenberg (david.rosenberg@usu.edu) and Dr. John (Jack) C. Schmidt (jack.schmidt@usu.edu).

AGRICULTURAL WATER AND BIG DATA. PhD and MS assistantships available to develop solutions involving multi-resolution, high/low frequency data sources for agricultural characterization, monitoring, and forecasting. Potential research areas include but are not limited to r*emote sensing vertical integration, beyond line-of-sight UAV technology, data mining and Big Data applications in agriculture*. Experience in HPC systems, data mining, remote sensing, water and energy balance, spatial statistics, and field data collection desired. Google Earth Engine experience is a plus. *Inquiries may be directed to alfonso.torres@usu.edu.

MACHINE LEARNING AND HYDROLOGY. PhD research assistantship is available in machine learning applications in hydrologic (emphasis on groundwater) modeling. Potential research areas include but are not limited to *data-driven modeling of hydrologic systems, uncertainty analysis, and integrated hydrologic modeling*. Students with interests in computer programming, numerical modeling, and data science are encouraged to apply. Proven experience with programming and statistics strongly desired.* Inquiries may be directed to tianfang.xu@usu.edu.

HUMAN IMPACT ON HYDROLOGY MODELING AND PREDICTION. PhD and MS assistantships are available in understanding watersheds as coupled nature-human systems and providing scientific support for water resources management. Specific focus areas are (1) *human activities impact assessments (e.g., irrigation, resource consumption, renewable energy generation) using in-situ measurements and remote sensing products with machine-learning or statistical techniques* and (2) *hydrologic model refinements by improving the human dimension*. Students with various backgrounds are encouraged to apply (e.g., civil engineering, hydrology, earth sciences, remote sensing, mathematics and statistics). Experience with numerical simulation, statistics and spatial data analysis strongly desired. *Inquiries may be directed to ruijie.zeng@usu.edu.

*Communication with respective contacts is encouraged before applying for graduate admissions. Deadline for full funding consideration for graduate studies starting fall 2019 is March 15, 2019 (See https://cee.usu.edu/students/graduate/apply for application information.