Harshbarger Building Room 122
1133 E. James E. Rogers Way
P.O. Box 210011
Tucson, AZ 85721-0011
Office 520-621-7120
Fax 520-621-1422

**THE UNIVERSITY OF ARIZONA
COLLEGE OF SCIENCE
Hydrology &
Atmospheric Sciences**

PhD Position in Hydrology at the University of Arizona, Tucson

We invite applications for a PhD position in Hydrology at the Department of Hydrology and Atmospheric Sciences at the University of Arizona. The graduate student will participate in an NSF-funded project on "Hydrologic closure relationships at different levels of hillslope model complexity".

The project:

- Addresses the challenge of predictions of subsurface water flow and solute transport at scales of hillslopes and catchments. Issues at these scales arise from unknown heterogeneity of subsurface properties and simplified representation of the flow and transport dynamics. Within hydrologic models these simplifications require closure relationships (representing the aggregated small-scale physics) that vary in time and space.
- Aims to find and explain temporally changing closure relationships at the hillslope scale for two different levels of model complexity: (i) system-scale closure relationships, e.g., transit time distributions and the storage-discharge relationship, and (ii) simplified process-based representation of coupled unsaturated and saturated zone.
- Will gain novel insights into the closure relationships, e.g., their temporal variability and their connection to other hydrologic variables, by combining recent methodological advances, namely (i) new data-based approaches to determine transit time distributions and the storage-discharge relationship, (ii) data assimilation, and (iii) machine learning methods.
- Will utilize data collected from recent experiments at the Landscape Evolution Observatory (LEO) hillslopes at Biosphere 2 and real-world data from a well-equipped zero-order basin.

The graduate student will closely interact with an international team of researchers working on this project and will have the opportunity to participate in outreach communication with the public through Biosphere 2, a major tourist attraction in the region.

The ideal candidate will have a strong background in hydrologic modeling or subsurface hydrology, as well as excellent programing and communication skills. Experience with machine learning methods is desirable.

The position will remain open until filled and begin either Fall 2021 or Spring 2022.

If you are interested in this position or if you have any questions about this position, please contact Peter A. Troch (patroch@arizona.edu). We strongly encourage applications from veterans, individuals with disabilities, women, minorities, and members of other underrepresented groups.