

Three PhD Assistantships in Hydrology

The *Environmental Flow & Transport Lab* within the Department of Civil & Environmental Engineering at Vanderbilt University (<https://my.vanderbilt.edu/eftl>) is seeking applications for three PhD assistantships in hydrology:

1. **Water-Energy Nexus:** our goal is to develop a novel framework to explore deep groundwater flow systems in extensional terrains by integrating geophysical (electromagnetic), geochemical, and field observations with fluid flow and transport models. The outcomes and understanding gained with this effort could help quantify the volumes, salinity, residence times, and genesis of brackish water within deep aquifers in the western USA -- an unconventional resource with the potential to offset the ever-increasing deficit of water and energy in arid environments. We will give preference to applicants with a quantitative background and experience in programming and flow and transport modeling.
2. **Groundwater remediation and decision making under uncertainty:** our objective is to develop a novel and transferable methodology for the assessment of groundwater treatment processes and groundwater monitoring and management in contaminated sites undergoing remediation. In addition to a robust physical template, this methodology will be informed by the legal and regulatory analyses of remedial decision-making and practice at comparable sites. We will give preference to applicants with a quantitative background and experience in programming, flow and transport modeling, and geostatistics.
3. **Hydroinformatics:** we aim to improve our understanding and modeling conceptualizations for hydrologic exchange processes along river corridors. The project integrates data mining and synthesis of large physical and biogeochemical datasets with new physics-based models for transport in large river networks to assess cumulative effects and forecast outcomes for changing water quality at the scale of the nation. We will give preference to applicants with a quantitative background and experience in programming and GIS.

The positions have an anticipated start date of January 2019 (Spring Semester), or in some circumstances, summer or fall 2019. The successful candidates will join the Civil & Environmental Engineering Program (<https://engineering.vanderbilt.edu/cee/>) and are expected to work collaboratively with colleagues at the Consortium for Risk Evaluation with Stakeholder Participation (CRESP; <http://www.cresp.org>), the Vanderbilt Institute for Energy and the Environment (VIEE; <https://www.vanderbilt.edu/viee/>), New Mexico Tech (NMT), the Pacific Northwest National Laboratory (PNNL) and the U.S. Geological Survey.

Interested applicants should email a CV, transcripts, and a one-page statement of past and present research goals to Dr. Jesus D. Gomez-Velez (jesus.gomezvelez@vanderbilt.edu).