

## PHD OPPORTUNITIES IN CRITICAL ZONE SCIENCE



Penn State University invites applications for undergraduate, graduate, and postdoctoral scholars to pursue research working with an interdisciplinary team within the NSF-funded Susquehanna/Shale Hills Critical Zone Environmental Observatory. The applicants should have interest in the following career areas:

1. **Geomorphology:** The mechanics of hillslope and channel sediment transport and their role in the evolution of regolith. Applicants with interests in both field-based studies and numerical modeling are encouraged.
2. **Geochemistry:** Field/computational aspects of weathering processes.
3. **Stable Isotope Hydrology:** Experimental/computational aspects of environmental tracers and “age of water” simulation at the watershed scale. GIS and programming experience necessary for computational applicants.
4. **Computational Hydrology:** Interest in experimental/computational aspects of fully coupled, physics-based watershed modeling. GIS and C/C++ programming experience necessary. Expertise in high performance computing, multi-scale, multi-process models would be useful.
5. **Ecohydrology/Physiological Ecology:** Experimental and theoretical aspects of ecohydrology, including sapflow and whole-tree water use.
6. **Hydropedology:** Experimental and theoretical aspects of hydropedology and hillslope/catchment hydrology, with an emphasis on the mapping, monitoring, and modeling of subsurface preferential flow network and soil moisture spatial-temporal patterns across scales.
7. **Hydrogeophysics:** Discriminating flow and transport processes in porous and fractured media with electrical and electromagnetic geophysical methods, including coupled modeling. Experience with Matlab would be useful.

The focus of this multidisciplinary NSF-funded research effort is to quantitatively predict the creation, evolution, and structure of regolith as a function of geochemical, hydrologic, pedologic, biologic, and geomorphologic processes. Interested applicants should apply directly to the Department of Geosciences (1, 2, 7), Crop & Soil Science (3, 6), Ecology (5), or Civil & Environmental Engineering (3, 4). All graduate student positions will be filled by Fall 2008. For more information about the Observatory contact: Professor Christopher Duffy at [cxdl1@psu.edu](mailto:cxdl1@psu.edu), Civil & Environmental Engineering Dept. Penn State University, 212 Sackett Building, University Park, PA 16802. For application information, contact the appropriate department.