PROJECT TITLE: Hydrogeochemical dynamics during river and groundwater exchange

Reza, Soltanian, 508 Geology Physics Building, soltanma@uc.edu, 6143733229
Lewis, Owen, 500 Geology Physics Building, owenls@ucmail.uc.edu

Project Description

The flow of water and solutes between aquifers and rivers (so-called interfacial flows) influence our water resources and controls their quality. These interfacial flows are challenging to map and monitor because these systems are highly dynamic. Moreover, many important chemical and biological processes occur during these interfacial flows. Therefore, monitoring, understanding, and prediction of these processes is needed for both scientific and operational purposes related to water quality, nutrient dynamics, and ecosystem health. In this project, a student will collect and analyze water samples from an interfacial flow collected from the recently created CV Theis Groundwater Observatory located in the Great Miami buried valley aquifer system adjacent to the Great Miami river in Miamitown Ohio. The collected data in this project will be used in larger efforts in developing complex models for hydrobiogeochemical interactions between groundwater and surface water (Great Miami river). This project provides multiple skill sets for the student, including how to collect and preserve groundwater and surface water samples, how to work with laboratory equipment to analyze dissolved species concentrations in water specifically training in the use of a new acquired ICP-OES, and the analysis of large data sets. The student will gain a working knowledge of the general chemistry of natural waters, which will be particularly applicable to geoscience and environmental science majors. The project will help our larger efforts in developing near real-time understanding of the complex processes which govern the effects of groundwater–surface water exchange on water quality, nutrient dynamics, and ecosystem health in our region.

http://ucfieldstudies.wpengine.com/observatory/
http://homepages.uc.edu/~nashdb/GMGWO/index.htm