

## **Hydrogeology of the Calverton Ponds in the Pine Barrens - An Educational Field Laboratory**

BEBIE, Joakim and RICHARD, Glenn, Dept. of Earth and Space Sciences, State University of New York at Stony Brook, Stony Brook, NY-11794-2100, USA.

A group of interconnected ponds in the pine barrens was chosen to instruct ten 9th graders in hydrogeochemistry in a four-week 'hands-on' summer-project. The aim was to introduce the students to some concepts and techniques used in aqueous geochemistry. The project included collecting water samples from the ponds (that is; Sandy, Fox and Block Ponds) and from ten wells (~10 feet deep) in the surroundings of the ponds. One well was installed at the beginning of the study. The other wells were put in a few months earlier and were therefore given enough time for chemical equilibration. The samples were filtered and field measurements of pH, dissolved oxygen and specific conductivity which can be related to total dissolved solids were performed. Back in the laboratory the samples were analyzed by spectrophotometry for iron and by ion chromatography for chloride, nitrate and sulfate.

The average measured pH was 4.9 and did not change significantly over time. The dissolved oxygen ranged from 5 to 10 mg/L. Total dissolved solids (TDS) ranged from 20 to 70 mg/L which can be considered very low for natural freshwater. We observed chloride concentrations up to 1.2 mg/L which is probably brought in with aerosols. Nitrate levels were very low (~6 mg/L) which can be expected since uptake by plants is most efficient during the summer months. Low sulfate concentrations were measured (~2mg/L). Typical concentrations of iron for Long Island were found.

In order to visualize groundwater flow a sandbox model was used. Computer model calculations were performed to simulate mass balance problems in a system like the Calverton ponds.

The results were presented in poster format at the end of project and also published by the students on the World Wide Web. This educational program was a collaboration between the Center for High Pressure Research, Long Island Groundwater Research Institute, and the Department of Technology and Society. Funding was provided by the National Science Foundation.