Comparing the Responsiveness of Streams and Ponds to Decreases in Acid Deposition in the Northeastern United States

Audrey Reid
Rubenstein School of Environment and Natural Resources
Honors College
University of Vermont

Advisor: Dr. Mary Watzin
Rubenstein School of Environment and Natural Resources
University of Vermont

Millions of dollars have been spent on implementing the Clean Air Act Amendments (CAAA) in the United States. While it has been shown that acid deposition has decreased in the Northeastern United States[1], little is known concerning trends in stream and pond chemistry since the implementation of the CAAA. This study investigated water chemistry trends between 1983 (before the CAAA) and 2009 (after the CAAA) in ponds and corresponding inlet and outlet streams in the White Mountain National Forest, New Hampshire. I hypothesized that significant changes in water chemistry would occur in pond inlet streams, and no change would occur in ponds and pond outlet streams. Data collected during the summer of 2009 on a variety of water chemistry parameters (pH, SO_4^{2-}, NO_3^-, Ca^{2+}, Mg^{2+}, Al^{3+}) were compared to archived data from 1983/1984 and 1995. Results showed significant changes in water chemistry in pond and inlets since1983, and that water body location, type, and year can be used to accurately predict pH and SO_4^{2-}, NO_3^-, $Ca^{2+}$and Mg^{2+}concentrations.

[1] Dricoll C.T., Lawrence G.B., Bulger A.J., Butler T.J., Cronan C.S., Eagar C., Lambert K.F., Likens G.E., Stoddard J.L. and Weathers K.C., Acidic Deposition in the Northeastern United States: Sources and Inputs, Ecosystem Effects, and Management Strategies. *BioScience*, **51**, 16 (2001).