

An assessment of long-term monitoring programs in New York State

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Air pollutants such as nitrogen oxides, sulfur dioxide, and mercury have had significant impacts on the quality of lakes, rivers, soils, biota, and tree health throughout the Northeastern US. Some areas of New York State are particularly susceptible to environmental degradation, such as the Adirondack and Catskill regions, which receive some of the highest rates of acid and mercury deposition in the country. Long-term monitoring efforts have produced data sets that have been extremely valuable for evaluating changes over time in air pollution loads and effects on the environment.

It is important to reevaluate long-term monitoring programs to ensure that these programs remain efficient and effective. To our knowledge, a comprehensive evaluation of state-wide long-term monitoring of acid and mercury deposition has never been undertaken in New York State. We are working with stakeholders to create a comprehensive database of long-term monitoring efforts in New York State, including monitoring of lakes, streams, soils, vegetation, and biota. These monitoring efforts include projects funded by a variety of federal and state agencies, private non-profit organizations, and academic institutions. Additionally, we are working to identify key science and policy questions to which the findings from long-term monitoring efforts can be applied.

We will undertake statistical analysis of select data sets to address the efficiency of monitoring efforts by identifying redundancies and gaps in monitoring efforts. After documenting data availability and identifying the policy needs for environmental monitoring, we can begin to analyze whether current monitoring practices are excessive (involving more effort than is justified by the results produced) and/or inadequate (producing results that are not sufficiently accurate or precise to meet policy needs). These analyses will include estimates of uncertainty in measurement and model parameters in order to most successfully answer key science and policy questions.

By summer 2012, we plan to have identified optimal, cost-effective monitoring options based on our inventory of long-term monitoring data sets and statistical analysis of select data sets. Ultimately this stakeholder driven, collaborative project will provide guidance for optimizing the efficiency and cost-effectiveness of long-term monitoring activities for sulfur, nitrogen and mercury in New York State.

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