



Evaluation EPA's Temporally Integrated Monitoring of Ecosystems (TIME) and Long-Term Monitoring (LTM) Programs

May 2009

Fact Sheet

Introduction

The Temporally Integrated Monitoring of Ecosystems (TIME) and Long-Term Monitoring (LTM) programs currently support data collection on surface water chemistry of lakes and streams in the Northeast and Mid-Atlantic states to provide scientists and policy-makers data on patterns and trends in response to changing air emissions and acid deposition. The principal investigators and other staff involved in the TIME/LTM program use funding from the Office of Research and Development (ORD) within the Environmental Protection Agency (EPA) to collect water samples and analyze data on key chemical variables including sulfate, nitrate, calcium, magnesium, acid neutralizing capacity, and dissolved organic carbon. ORD responsibilities for management of the TIME/LTM program are being transferred to EPA's Office of Air and Radiation (OAR). OAR will use the results of the evaluation to assess needs for program changes. The evaluation entails an assessment of program objectives, design, implementation, costs, and other factors to determine effectiveness, long-term sustainability, and contributions to knowledge of ecological conditions affected by acid deposition.

Evaluation Questions

1. What is the purpose of the TIME/LTM program?
2. What are the key characteristics of the TIME/LTM program?
3. Who uses TIME/LTM data and for what purposes (e.g., basic research, policy development)?
4. What is the relationship of TIME/LTM to other ecological monitoring programs?
5. What are the costs associated with TIME/LTM?
6. How is TIME/LTM administered and managed?
7. What opportunities exist to improve TIME/LTM?

Evaluation Methods

- Developed Logic Model of the TIME/LTM programs
- Refined Evaluation Questions and Measures
- Identified Data Sources and Collection methods to:
 - Review research articles and other TIME/LTM-based publications from peer-reviewed scientific journals from 1985-2007
 - Collect information through telephone interviews with program cooperators, EPA staff and managers, other federal agencies, and not-for-profit organizations
- Conducted content analysis of data from documentation and interviews
- Prepared written report and posted at www.epa.gov
- Presented evaluation at TIME/LTM Cooperator Workshop June 3-4, 2009

<http://www.epa.gov/evaluate>

For more information on completed evaluations at EPA or the Evaluation Support Division, visit the above link.

Key Findings

1. Objectives of the TIME/LTM program have changed over time. Current objectives are to measure patterns and trends in acidity of freshwater ecosystems and establish a long-term record of ecological conditions.
2. The TIME/LTM program design has changed over the years to focus on sites with long-term data in the Eastern United States. Similar chemical data are collected from current TIME/LTM sites but at different frequencies for different purposes.
3. TIME/LTM data are used for a broad range of purposes, but by a relatively small number of people. The data are generally used to better understand patterns of and trends in acidification in freshwater ecosystems; reporting on the effectiveness of national and international programs to reduce acid deposition; developing and implementing policies; and contributing to knowledge and understanding of interrelationships between acidification and other ecological conditions.
4. TIME/LTM evolved from a variety of environmental monitoring programs and continues to evolve as sites are added and eliminated. It is not integrated with other monitoring efforts.
5. Program costs have generally remained the same but EPA funding has declined. Overall costs and costs per site sampled and analyzed vary significantly and are generally difficult to determine.
6. Details on the establishment and administration of cooperative agreements are unclear and need better documentation. Interactions among cooperators may improve the program, but opportunities to interact have been limited.
7. Cooperators believe that TIME/LTM data are collected and analyzed efficiently and offered suggestions for future consideration including collection of additional variables and potential expansion of sites into other geographic regions.

Recommendations

The evaluation resulted in seven recommendations:

1. Clearly articulate and document the scientific question of current interest relative to acidification of freshwater lakes and streams.
2. Establish a forum for interaction and discussion among the appropriate individuals with expertise to identify the right question(s) and knowledge of data needed to answer the question.
3. Based on the critical question and data gathered over the history of TIME/LTM, examine the methodologies and protocols to affirm approaches to ensure relevance of data collected to the question being addressed.
4. Explore other long-term monitoring options and how TIME/LTM can leverage or benefit them.
5. While engaging in the above activities, identify short-term funding to continue data collection at some level to ensure the integrity of the long-term TIME/LTM data record.
6. Continue to develop the OAR Web site to include not only TIME/LTM data sets in usable formats, but also literature and documentation.
7. Based on the outcome of the above recommendations, determine optimal institutional arrangements for program oversight and data management.

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Report Link: <http://www.epa.gov/evaluate/reports.htm>

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