

*Achieving Nutrient and Sediment Reduction Goals in
the Chesapeake Bay:
An Evaluation of Program Strategies and
Implementation*

Committee on the Evaluation of Chesapeake Bay Program
Implementation for Nutrient Reduction
to Improve Water Quality

National Research Council

Kenneth H. Reckhow, Committee Chair
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Statement of Task

Tracking and Accounting

1. Does tracking of BMPs appear to be reliable, accurate, and consistent?
2. What tracking and accounting efforts and systems appear to be working, and not working? How can the system be strategically improved?
3. How do these inconsistencies appear to impact reported program results?

Milestones

4. Is the two year milestone strategy, and its level of implementation, likely to result in achieving the CBP nutrient and sediment reduction goals for this milestone period?
5. Have each of the states and the federal agencies developed appropriate adaptive management strategies to ensure that CBP nutrient and sediment reduction goals will be met?
6. What improvements can be made to the development, implementation, and accounting of the strategies to ensure achieving the goals?

Committee Membership

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Stephanie Johnson (Study Director) and Michael Stoeber (Research Associate)

Strategies for Meeting Goals

Establish a Chesapeake Bay Modeling Laboratory

- Chesapeake Bay Models Central to the CBP
 - Estimate N,P, TSS loading reductions required
 - Relate BMPs to loading reductions
 - Response to Precipitation and Climate Changes
 - Lag times
- Stewardship of the Chesapeake Bay Models
 - Only a few professionals understand the details
 - Publically available code (CCMP) is only the beginning (radios and violins)
 - Need an active user community (violin teachers and performers)
- Model Credibility
 - Critically important

Possible Chesapeake Bay Modeling Laboratory Tasks

- Compare monitoring data and model predictions
- Uncertainty in model simulations
- Improve predictive skill
- New scientific understanding of the system
- CBP monitoring programs
- Adaptive management experiments
- Performance of BMP controls
- Science gaps
- Climate change
- 2017 re-evaluation of the TMDL and the WIPs

Chesapeake Bay Modeling Laboratory Organization

- Academic association is vitally important
- Flow of ideas among policy, management, and academic communities
- Joint research with faculty and lab scientists/engineers
- Joint appointments in academic departments.
- More than a virtual association of collaborating individuals
- A modeling laboratory as a physical location
- Evaluate existing laboratories
 - Relationship to management agencies
 - Makeup of the technical staff
 - Academic versus operational focus
 - Scope of the laboratory's charge



National Oceanic and Atmospheric Administration Great Lakes Environmental Research Laboratory

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Mission Statement and History



What is the Great Lakes Environmental Research Laboratory (GLERL)?

The NOAA Great Lakes Environmental Research Laboratory is one of 7 Federal research laboratories within the Oceanic and Atmospheric Research ([OAR web site](#)) line office of NOAA. GLERL was formed in 1974 to provide a focus for NOAA's environmental and ecosystem research in the Great Lakes and coastal marine environments. Presently GLERL's research resides under NOAA's Ecosystem Goal Team ([EGT web site](#)) specifically in the Ecosystem Research Program ([ERP Charter \[pdf\]](#)). During its history, GLERL has made many important scientific contributions to the understanding and management of the Great Lakes and other coastal ecosystems. GLERL scientists thus play a critical role in academic, state, federal, and international partnerships, and GLERL research provides information and services to support decisions that affect the environment, recreation, public health and safety, and the economy of the Great Lakes and coastal marine environments.

National Center for Atmospheric Research



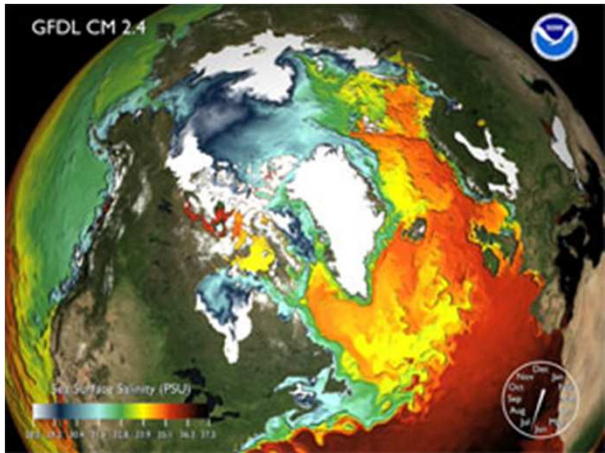
In 1956, the National Academy of Sciences convened a committee of distinguished scientists to investigate the state of meteorology.

The committee planned to establish a national institute (later called a national center) for atmospheric research to be operated by a consortium of universities with support from the National Science Foundation.

The mission of the institute would be to:

- Attack the fundamental problems of the atmosphere on a scale commensurate with their global nature.
- Aggregate the large-scale research facilities necessary for such an attack.
- Provide a coordinated, interdisciplinary approach to these problems on a scale not possible in individual university departments.
- Preserve the natural alliance between research and education, without unbalancing university departments.

Geophysical Fluid Dynamics Lab



**Cooperative Institute for Climate Science
A Princeton University and Geophysical
Fluid Dynamics Laboratory Collaboration**



GFDL research concerns the following:

- Predictability of weather on large and small scales
- Structure, variability, predictability, stability and sensitivity of global and regional climate
- Structure, variability and dynamics of the ocean over its many space and time scales
- Interaction of the atmosphere and oceans, and how the atmosphere and oceans influence and are influenced by various trace constituents
- Earth's atmospheric general circulation within the context of the family of planetary atmospheric circulations