NATIONAL WATER QUALITY MONITORING COUNCIL

Working Together for Clean Water

Selected Updates and Accomplishments Through 2010

by
Pixie Hamilton

Advisory Committee on Water Information
July 13th, 2010

- **Collaboration and Outreach:**
  - 7th Biennial National Conference
  - Web seminars for State, regional, and tribal councils and watershed partnerships; online tool-kit
  - First release of the Council's bi-annual online newsletter
  - Web page updates and access (http://acwi.gov/monitoring)
- **Compatible water-quality formats and web services**
- **Methods and Data Comparability Board**
- **National Water Quality Monitoring Network for U.S. Coastal Waters and Their Tributaries ("Network")**
- **Water Information Strategies**

Methods and Data Comparability Board

Promoting the value of data comparability in water-quality monitoring

Dan Sullivan, USGS co-chair
Steve Wendelken, EPA co-chair

Aquatic Sensor Workgroup
methods and data comparability board

Membership

- Industry – YSI, In-Situ, Hach
- Federal Government – EPA, USGS, NPS, NOAA
- States – Texas CEQ (large real-time network)
- Environment Canada
- Research – Alliance for Coastal Technologies, NSF, Battelle
- Software developers

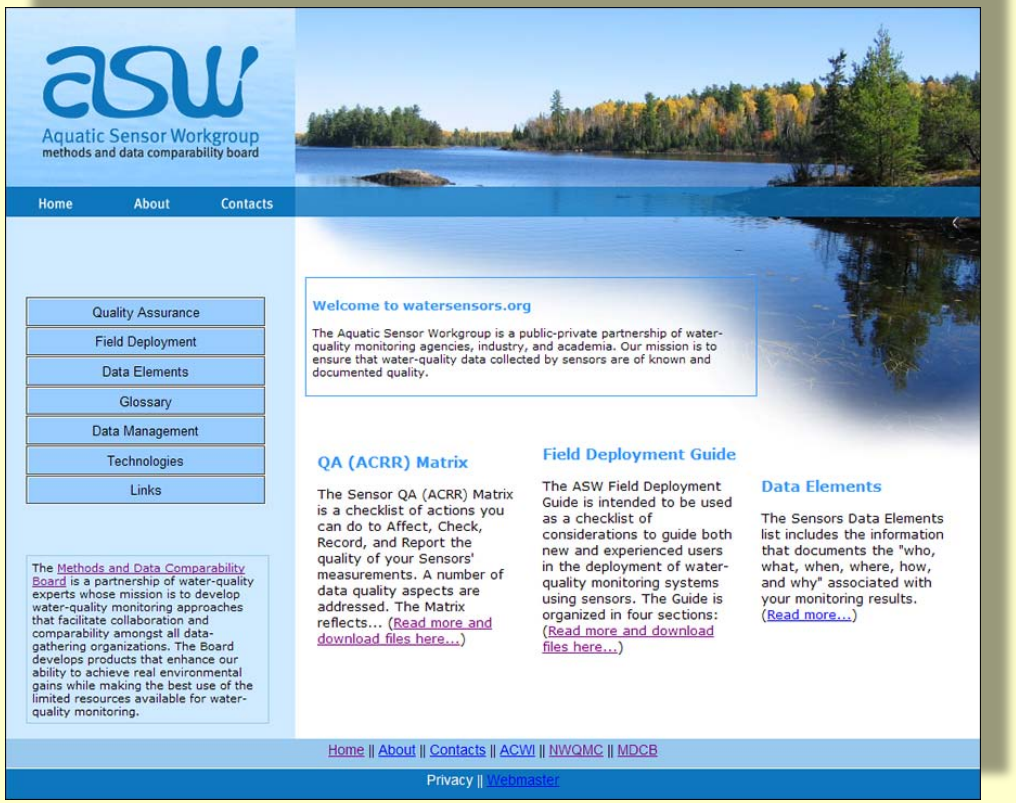
Accomplishments, FY09-10

- Guides
  - Quality Assurance Matrix
  - Deployment guide

Aquatic Sensor Workgroup
methods and data comparability board

Accomplishments, FY09-10

- Website (http://watersensors.org)
- “Sensors Basics” Workshop (Denver)
- Sensor data elements



Aquatic Sensor Workgroup
methods and data comparability board

Future Directions

- **Outreach**
  - Promote guides
  - User adoption
- **Data management**; mapping ACT database and sensor fields to NEMI fields (more traditional)
- **Specifications**; approved performance standards

Contact and More Information

- Dan Sullivan
- djsulliv@usgs.gov
- 608-821-3869

http://acwi.gov/methods/index.html

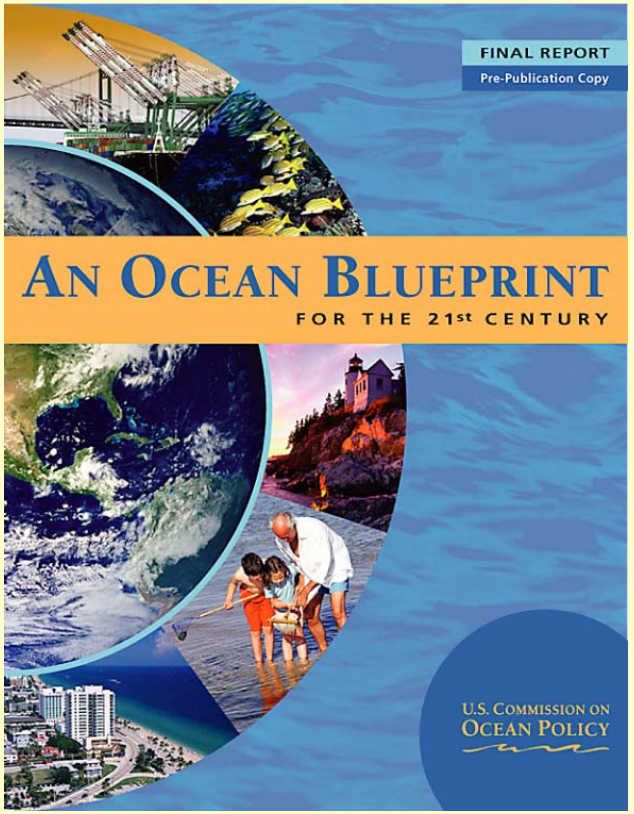
National Water Quality Monitoring Network for U.S. Coastal Waters and Their Tributaries ("Network")

U.S. Commission on Ocean Policy

- Chapter 15, Creating a National Monitoring Network

U.S. Ocean Action Plan

- Advancing our Understanding of the Oceans, Coasts, and Great Lakes
- Create a National Water Quality Monitoring Network



Multi-year Effort

- **Phase I - Network Design (FY 05 & 06)**
- **Phase II - Pilot Studies (FY 07 & 08)**
- **Phase III - Demonstration Projects (FY 08 & 09)**
- **Phase IV – Implementation; fill gaps and provide necessary enhancements to existing monitoring programs (FY 10 and beyond)**

The Network is a continuum of observations in:

- Estuaries
- Near-shore waters
- Off-shore waters
- Great Lakes
- Coastal beaches
- Wetlands
- Flow and flux from
  - Streams
  - Ground water
  - Atmosphere

Selected Design Features

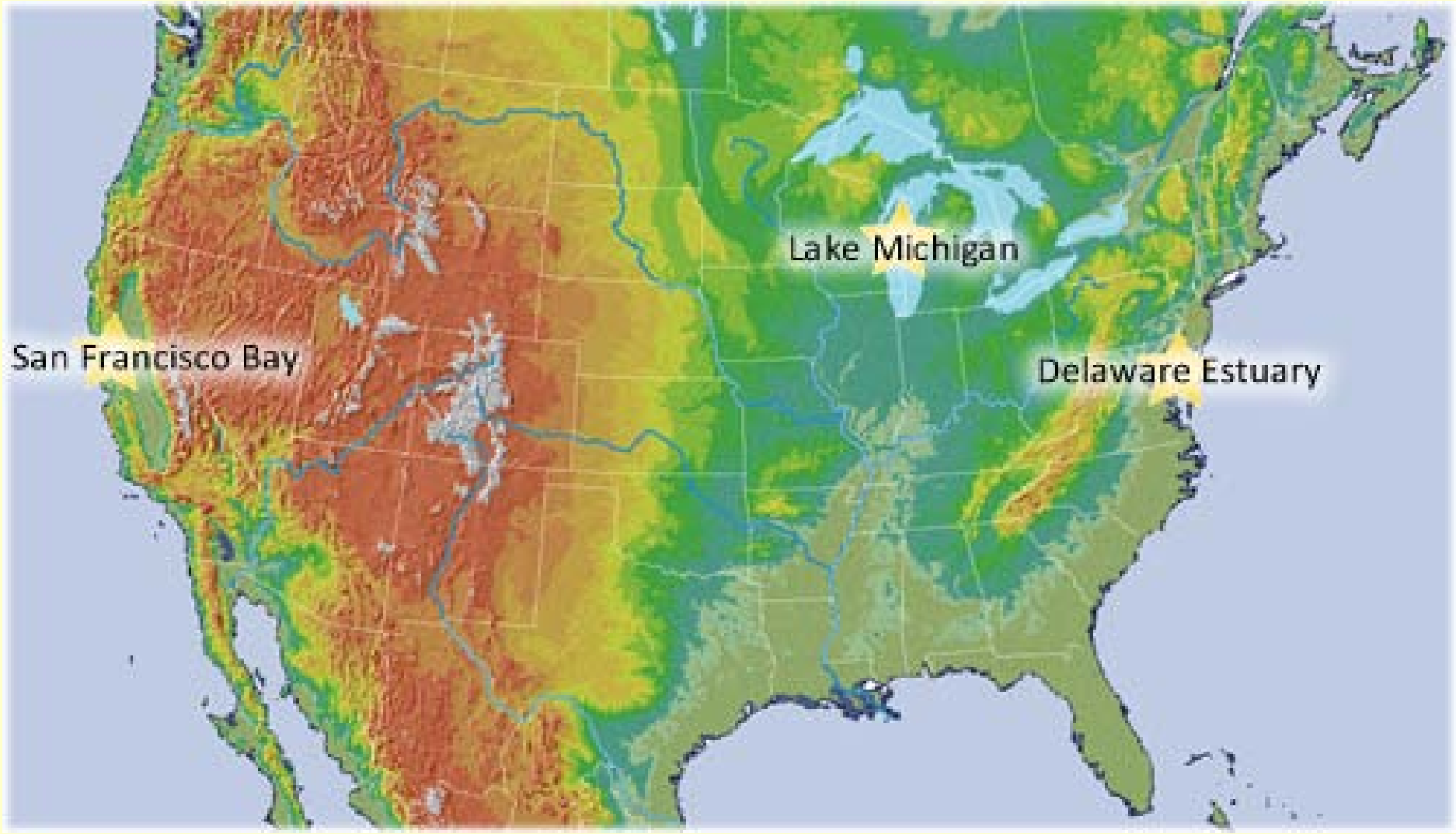
- Clear linkages with management issues—such as related to nutrient enrichment, oxygen depletion, toxic contaminants, and beaches

- Involvement of IOOS and regional associations for monitoring offshore compartments and coastal management.

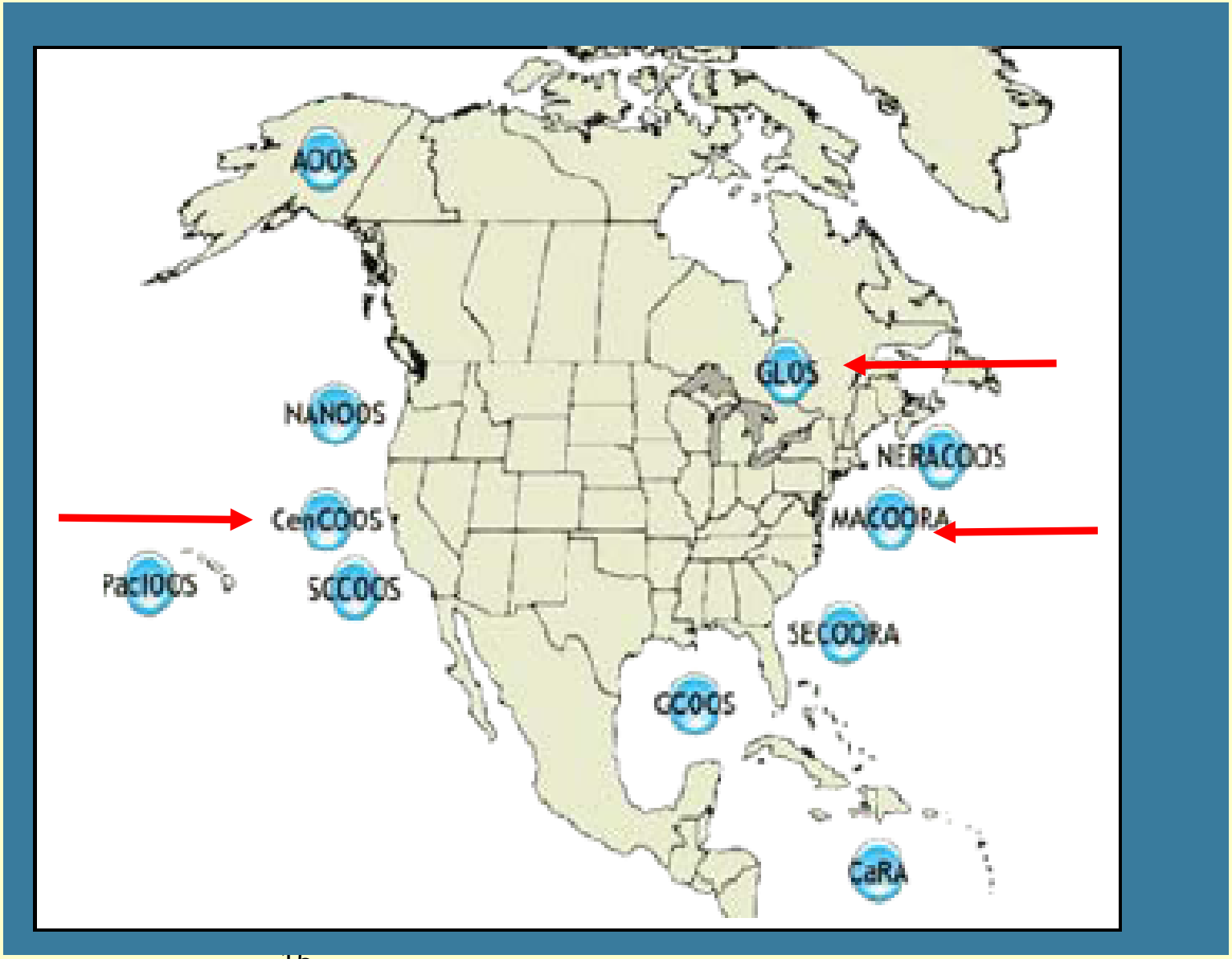
- A linked data network

- Inclusion of monitoring to meet diverse objectives (including fixed and probabilistic designs)

- Provisions for data comparability, management, and access.


Lake Michigan
San Francisco Bay
Delaware Estuary

Regional Associations for Coastal and Ocean Observing



Phase 4 —Continued Implementation

- New technologies, such as real-time monitoring with sensors and autonomous underwater vehicles (AUVs), with more traditional monitoring.

- Improved data infrastructure and reporting through web services.

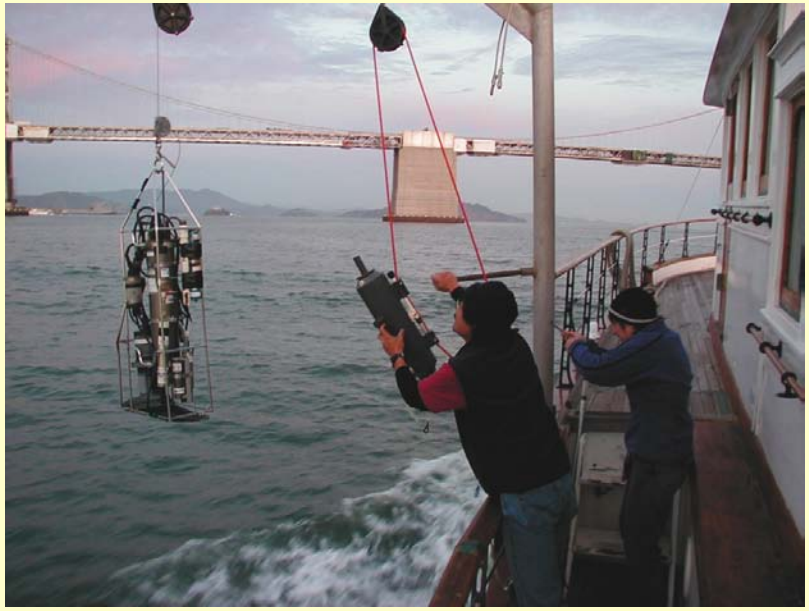
- Continued monitoring and tracking of nutrients, sediment, dissolved oxygen, phytoplankton abundance, beach health, and other parameters.

Phase 4 — Assessment Highlights

- Improved understanding of oceanic and land-based inputs of sediment, nutrients, and contaminants to U.S. coastal waters and estuaries.

- Enhanced assessments on the sources, amounts, timing, and severity of natural and anthropogenic stressors on coastal ecosystems.

- Comparisons among estuarine and coastal waters show different responses to contaminants and other natural and anthropogenic factors, including in magnitude, timing, and source.

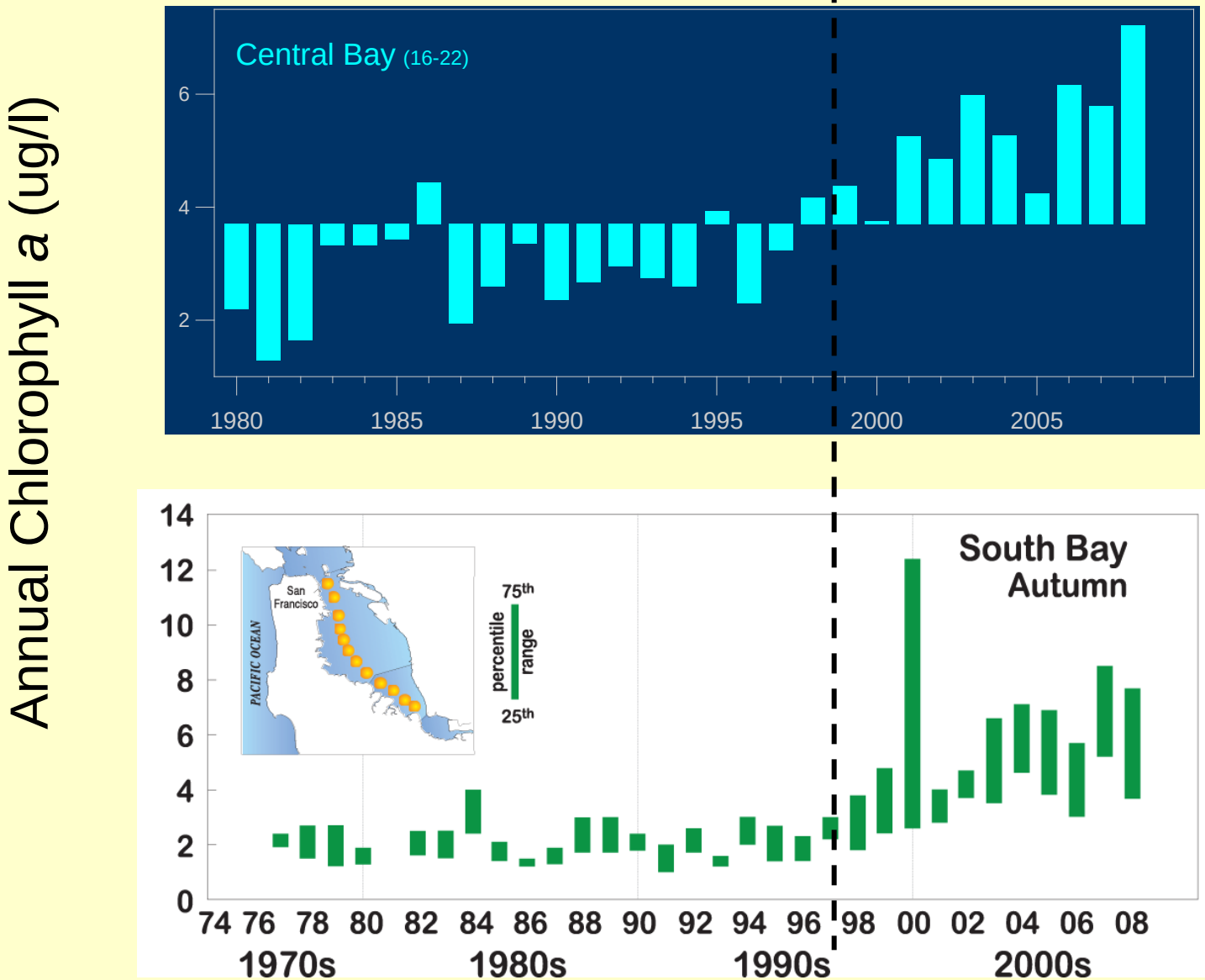


Hydrologists collect water samples for analysis of long-term trends in nutrients, dissolved oxygen, chlorophyll a and other constituents in San Francisco Bay.

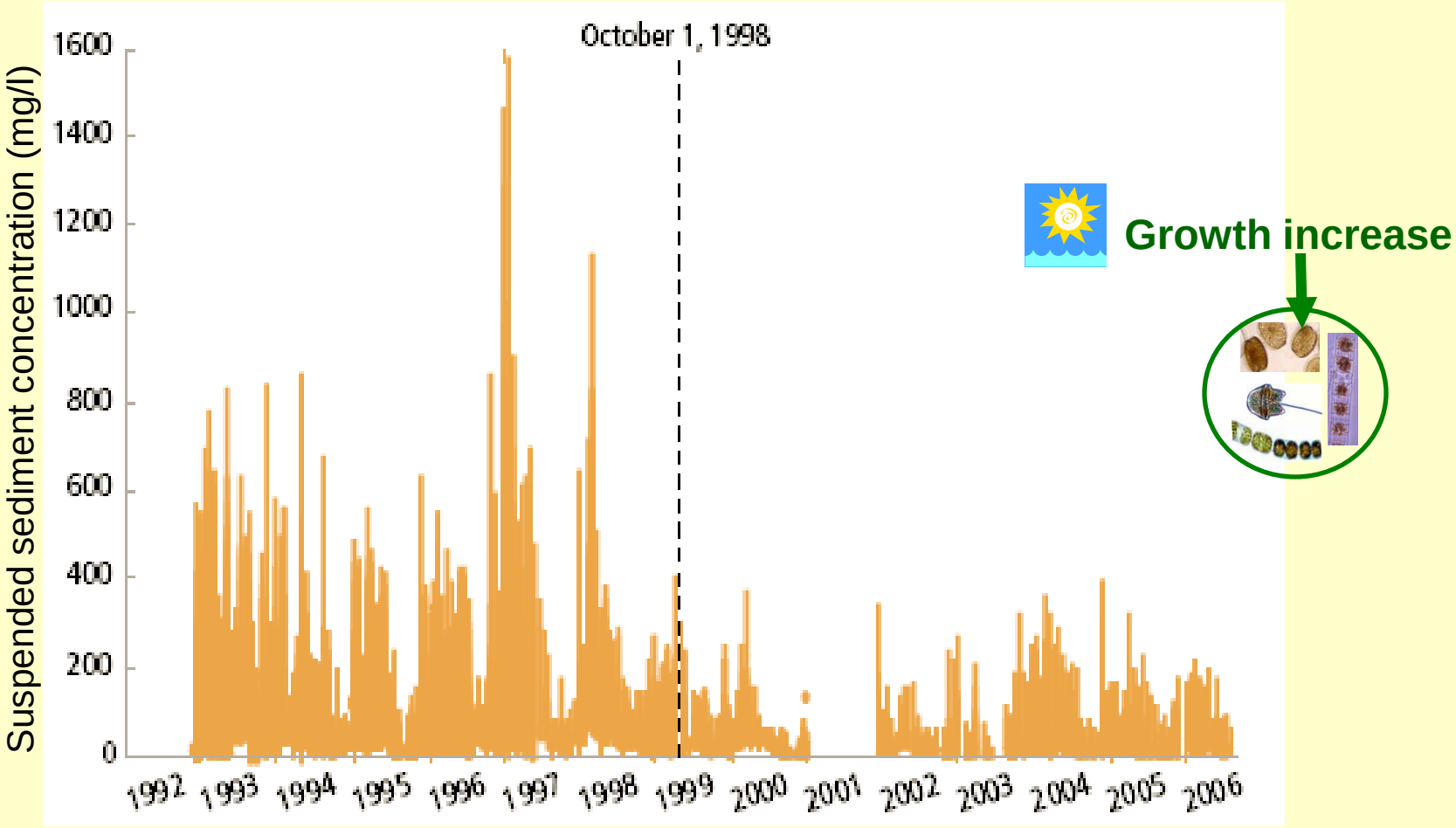
The National WQ Monitoring Network supports these critical monitoring elements:

- Routine analysis of dissolved inorganic nutrients
- Identification of phytoplankton community composition
- Real-time monitoring for suspended sediment and quantification of suspended-sediment flux to the Bay

Chl-*a* increasing since 1998-99!



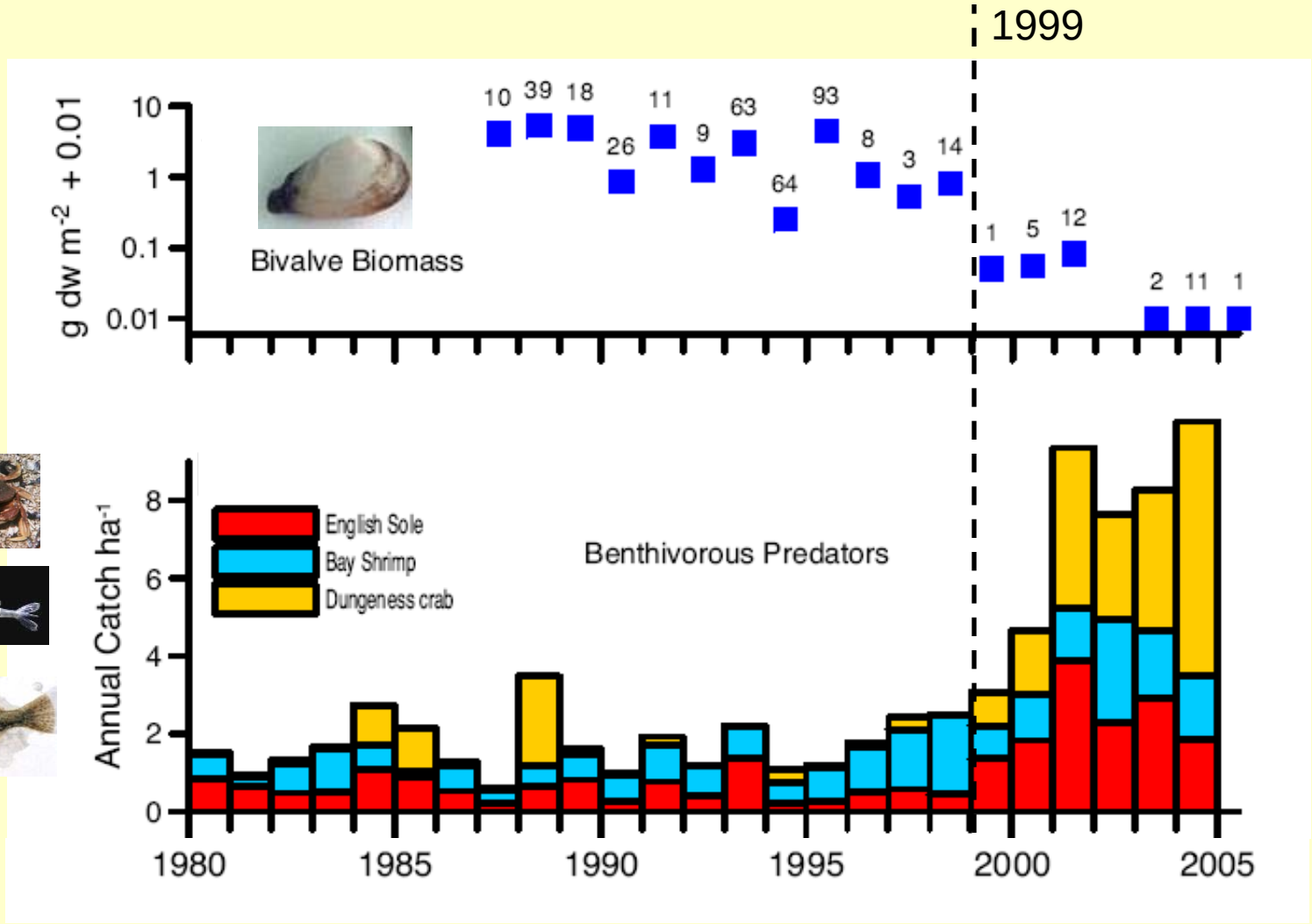
Water clarity increased due to the 40% decrease in suspended sediments

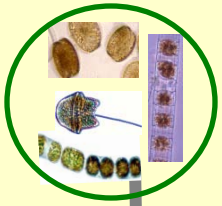


"The increase in Bay water clarity is likely to persist"

From: Schoellhamer, D.H., 2009, Suspended Sediment in the Bay: Past a Tipping Point. 2009 The Pulse of the Estuary. San Francisco Estuary Institute. http://www.sfei.org/rmp/pulse/2006/index.html

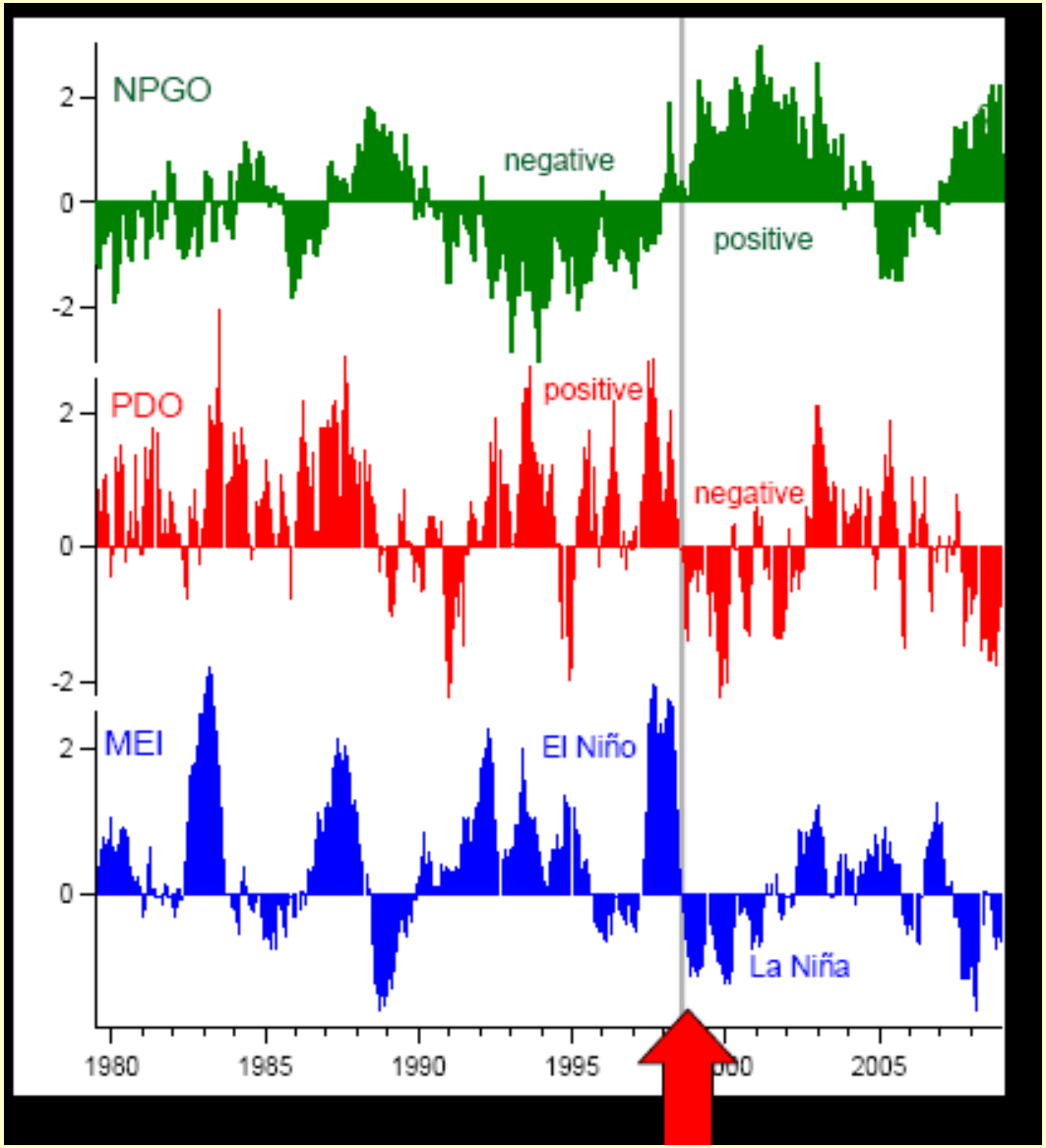
Decreased Clam Grazing (ie, the predator of my consumer is my ally)





Clam grazing

From: Cloern, J.E., A.D. Jassby, J.K. Thompson, K. Hieb. 2007. A cold phase of the East Pacific triggers new phytoplankton blooms in San Francisco Bay. *Proceedings of the National Academy of Sciences of the United States of America* 104(47):18561-18656. http://www.pnas.org/content/104/47/18561.full.pdf+html



1999

North Pacific Gyre Oscillation flipped from negative to positive

Pacific Decadal Oscillation flipped from positive to negative

Multivarite ENSO Index flipped from positive to negative

Dramatic shifts in ocean currents/atmospheric circulation


For additional information:
http://acwi.gov/monitoring/network/