



NATIONAL WATER QUALITY MONITORING COUNCIL

Working Together for Clean Water

Selected Updates and Accomplishments Through 2010

by

Pixie Hamilton

Advisory Committee on Water Information

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➤ **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



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

Methods and Data Comparability Board Aquatic Sensor Workgroup



Quality Assurance (ACRR) Matrix
QA Checklist for Calibration, Quality Checks, and Record Keeping
to Ensure that Data Are of Known and Documented Quality



April 19, 2010 acwi.gov/methods

Methods and Data Comparability Board Aquatic Sensor Workgroup



Field Deployment Guide
Checklist for Sensor Selection, Deployment, and
Maintenance: Rivers & Streams



March 24, 2010 acwi.gov/methods

Accomplishments, FY09-10

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

asw
Aquatic Sensor Workgroup
methods and data comparability board

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The [Methods and Data Comparability Board](#) is a partnership of water-quality experts whose mission is to develop water-quality monitoring approaches that facilitate collaboration and comparability amongst all data-gathering organizations. The Board develops products that enhance our ability to achieve real environmental gains while making the best use of the limited resources available for water-quality monitoring.

Welcome to watersensors.org

The Aquatic Sensor Workgroup is a public-private partnership of water-quality monitoring agencies, industry, and academia. Our mission is to ensure that water-quality data collected by sensors are of known and documented quality.

QA (ACRR) Matrix

The Sensor QA (ACRR) Matrix is a checklist of actions you can do to Affect, Check, Record, and Report the quality of your Sensors' measurements. A number of data quality aspects are addressed. The Matrix reflects... ([Read more and download files here...](#))

Field Deployment Guide

The ASW Field Deployment Guide is intended to be used as a checklist of considerations to guide both new and experienced users in the deployment of water-quality monitoring systems using sensors. The Guide is organized in four sections: ([Read more and download files here...](#))

Data Elements

The Sensors Data Elements list includes the information that documents the "who, what, when, where, how, and why" associated with your monitoring results. ([Read more...](#))

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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>

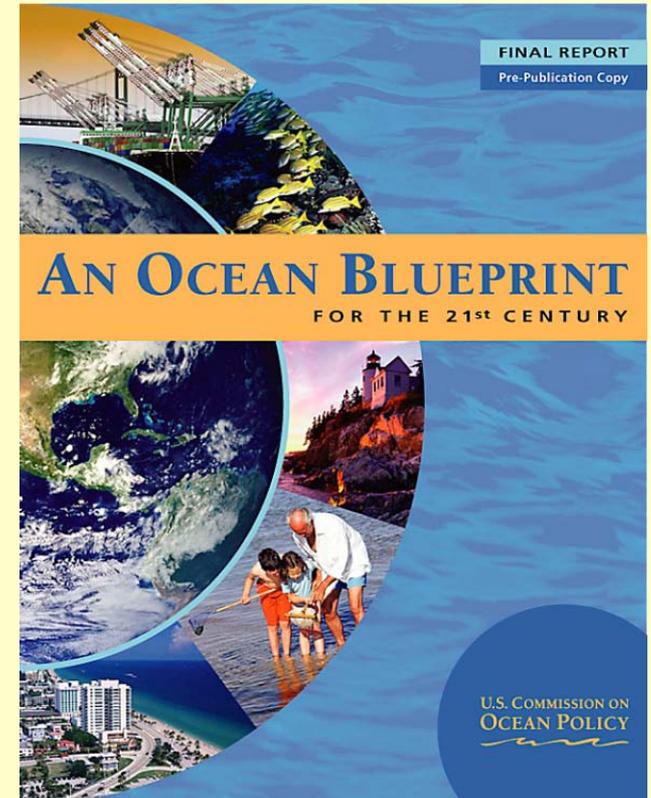
National Water Quality Monitoring Network for U.S. Coastal Waters and Their Tributaries (“Network”)

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:

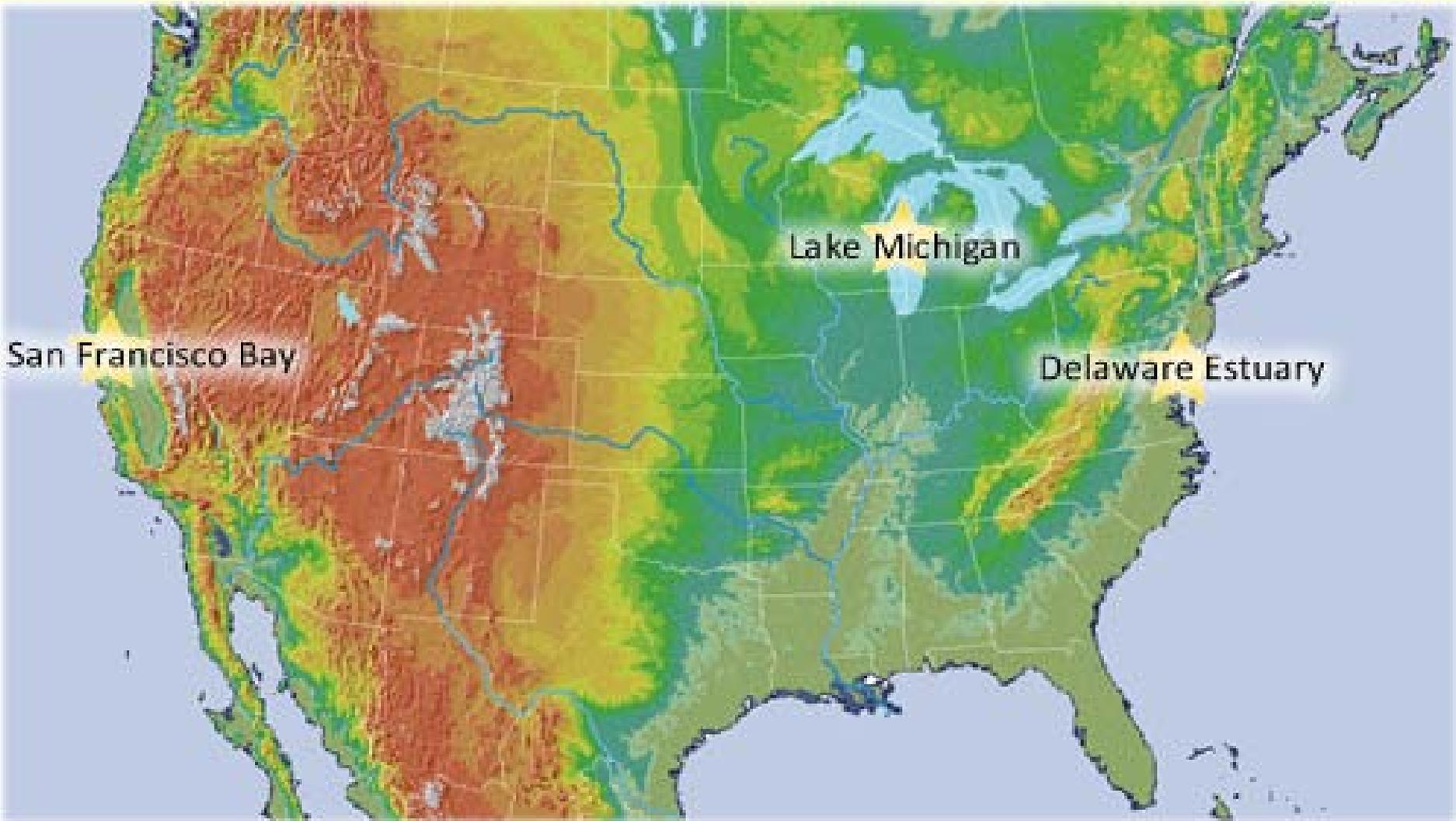
- Estuaries
- Near-shore waters
- Off-shore waters
- Great Lakes
- Coastal beaches
- Wetlands
- Flow and flux from
 - Streams
 - Ground water
 - Atmosphere



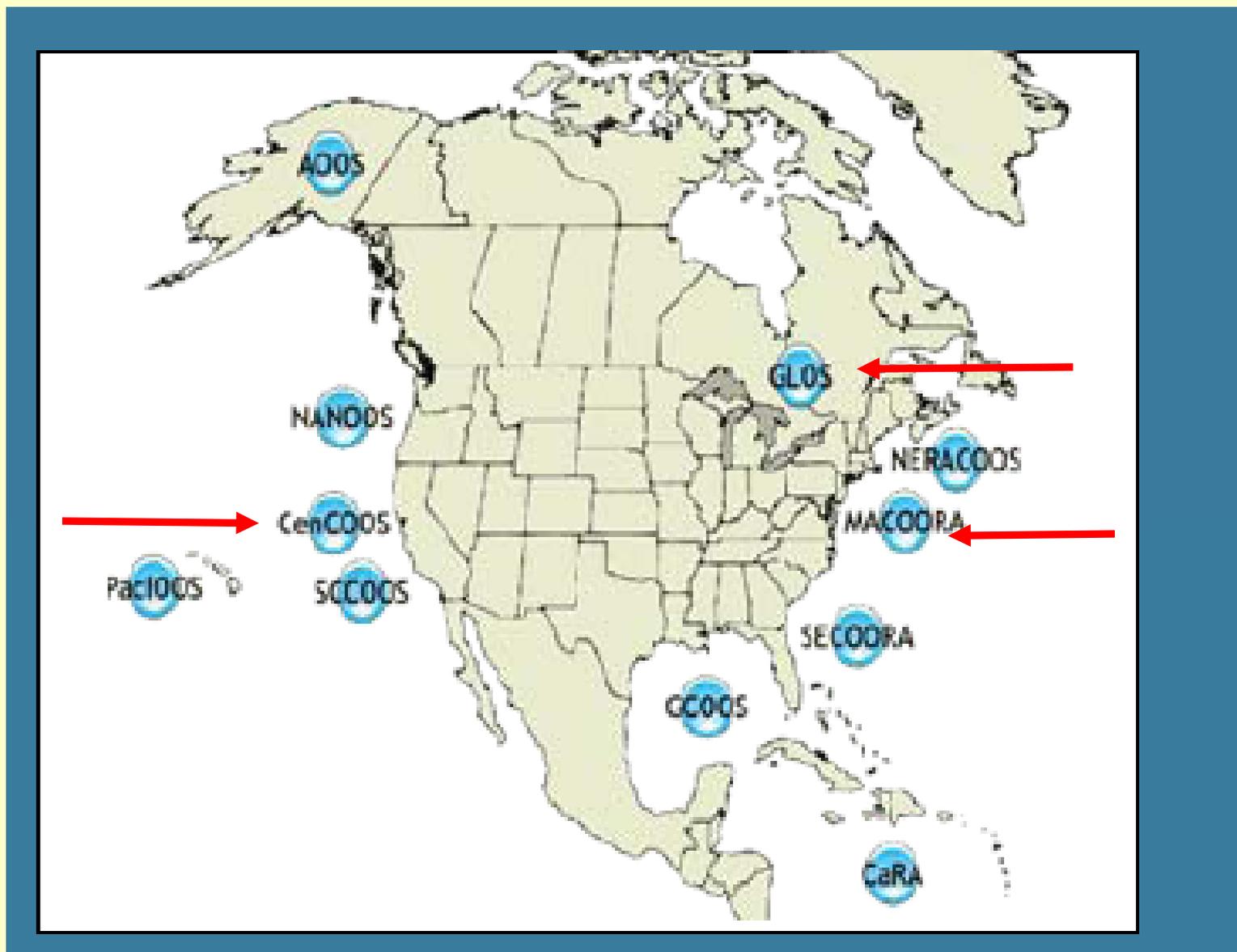
Selected Design Features

- 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.





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.

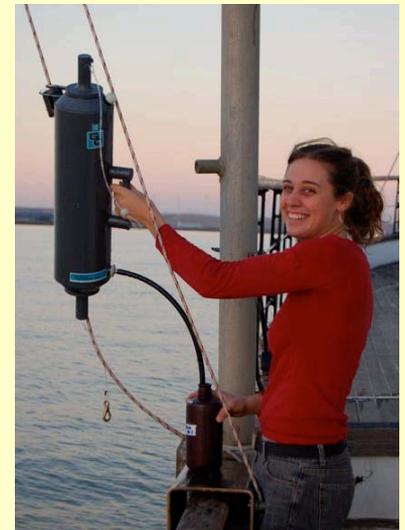




Hydrologists collect water samples for analysis of long-term trends in nutrients, dissolved oxygen, chlorophyll a and other constituents in San Francisco Bay.

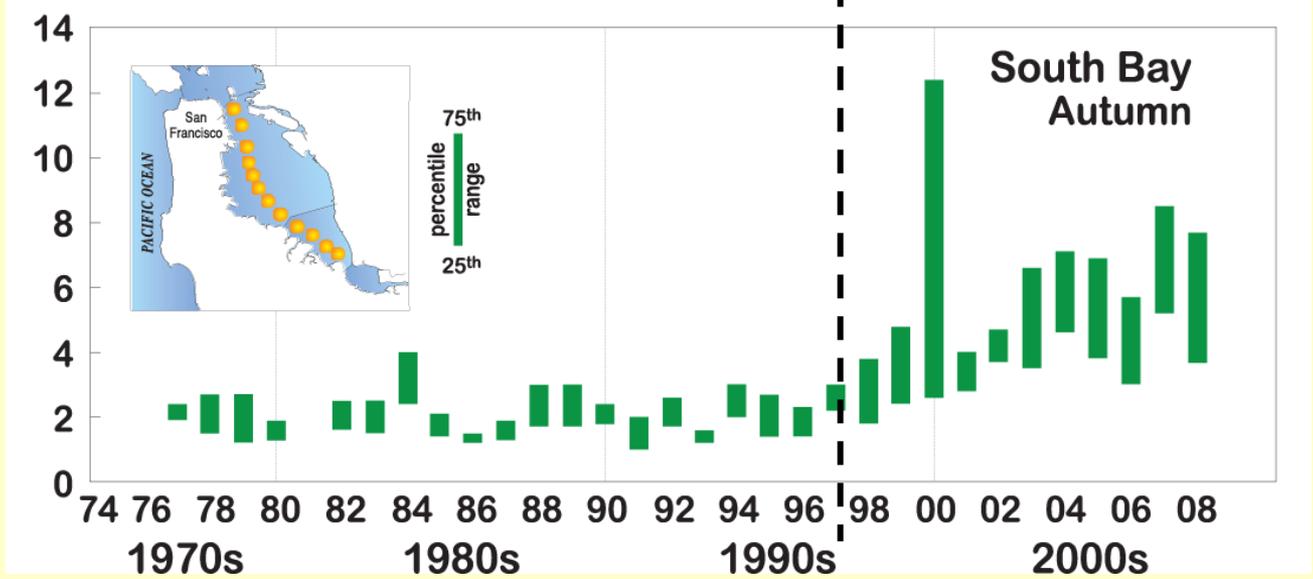
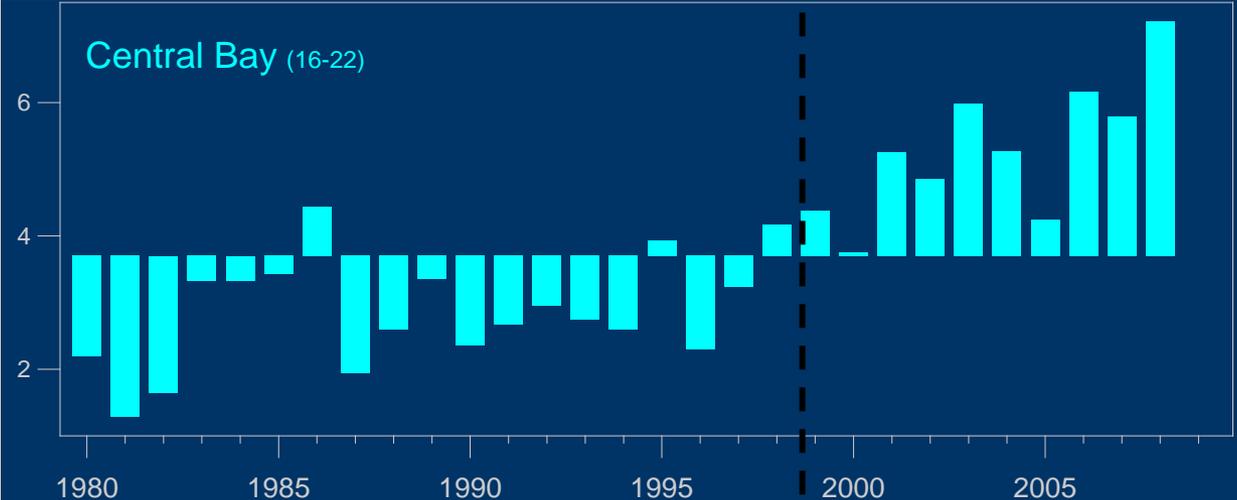
The National WQ Monitoring Network supports these critical monitoring elements:

- 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

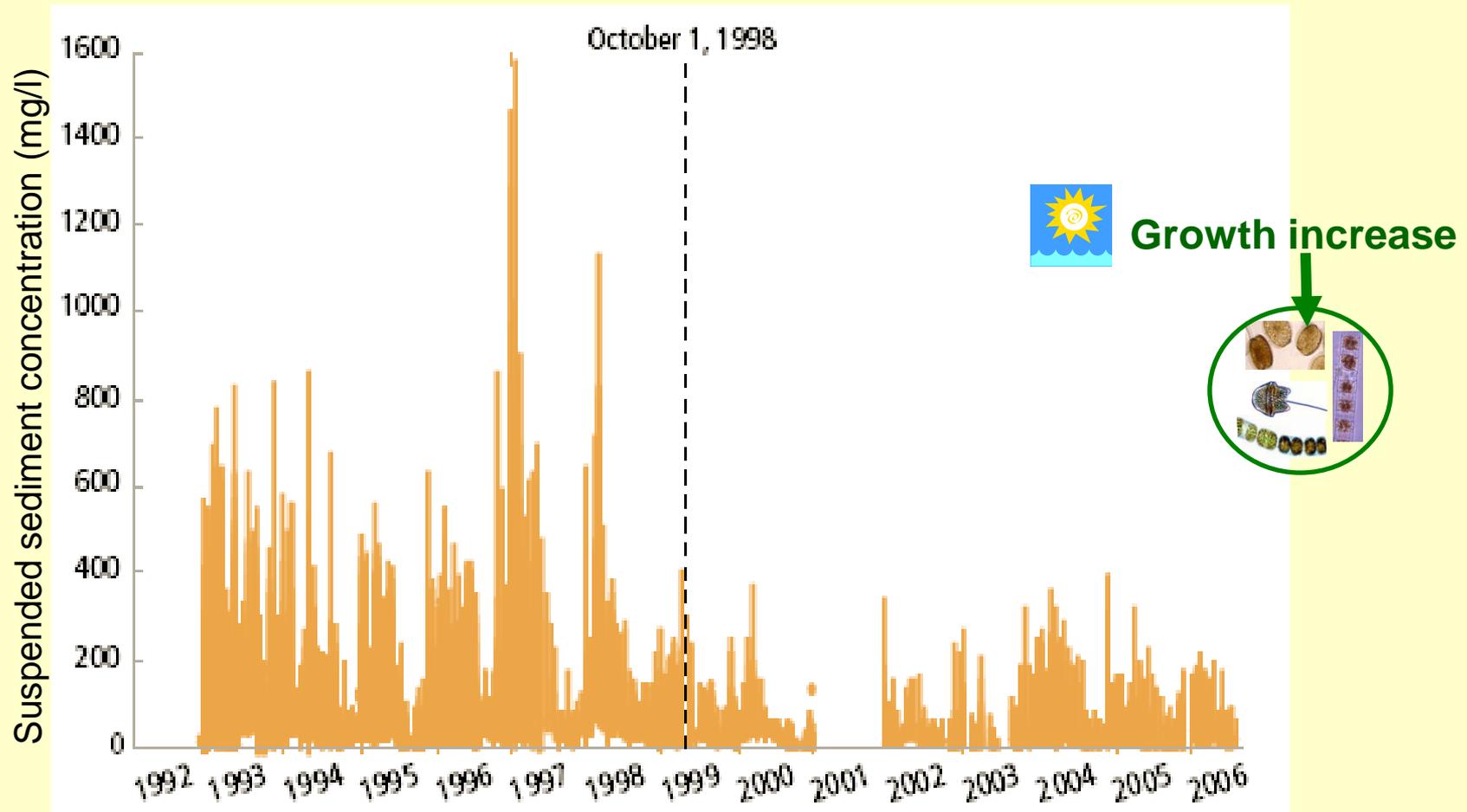


Chl-a increasing since 1998-99!

Annual Chlorophyll a (ug/l)

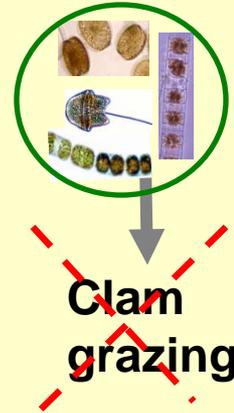
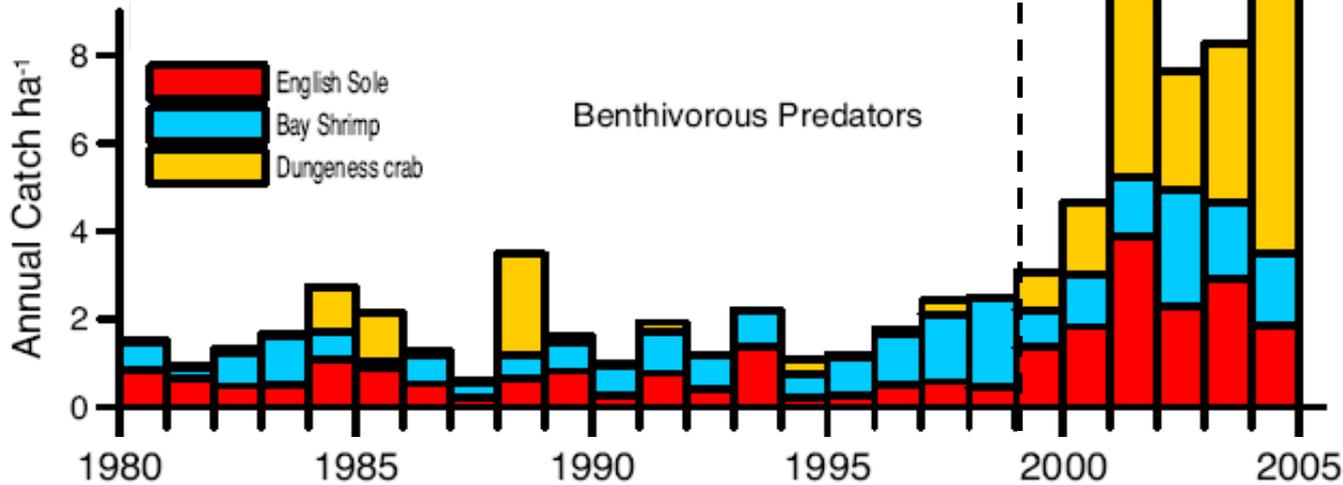
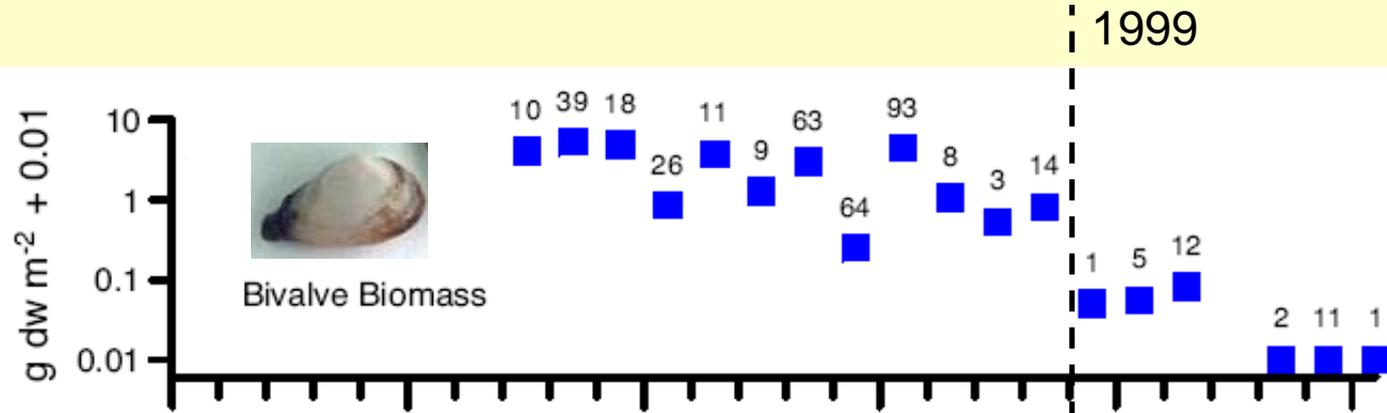


Water clarity increased due to the 40% decrease in suspended sediments

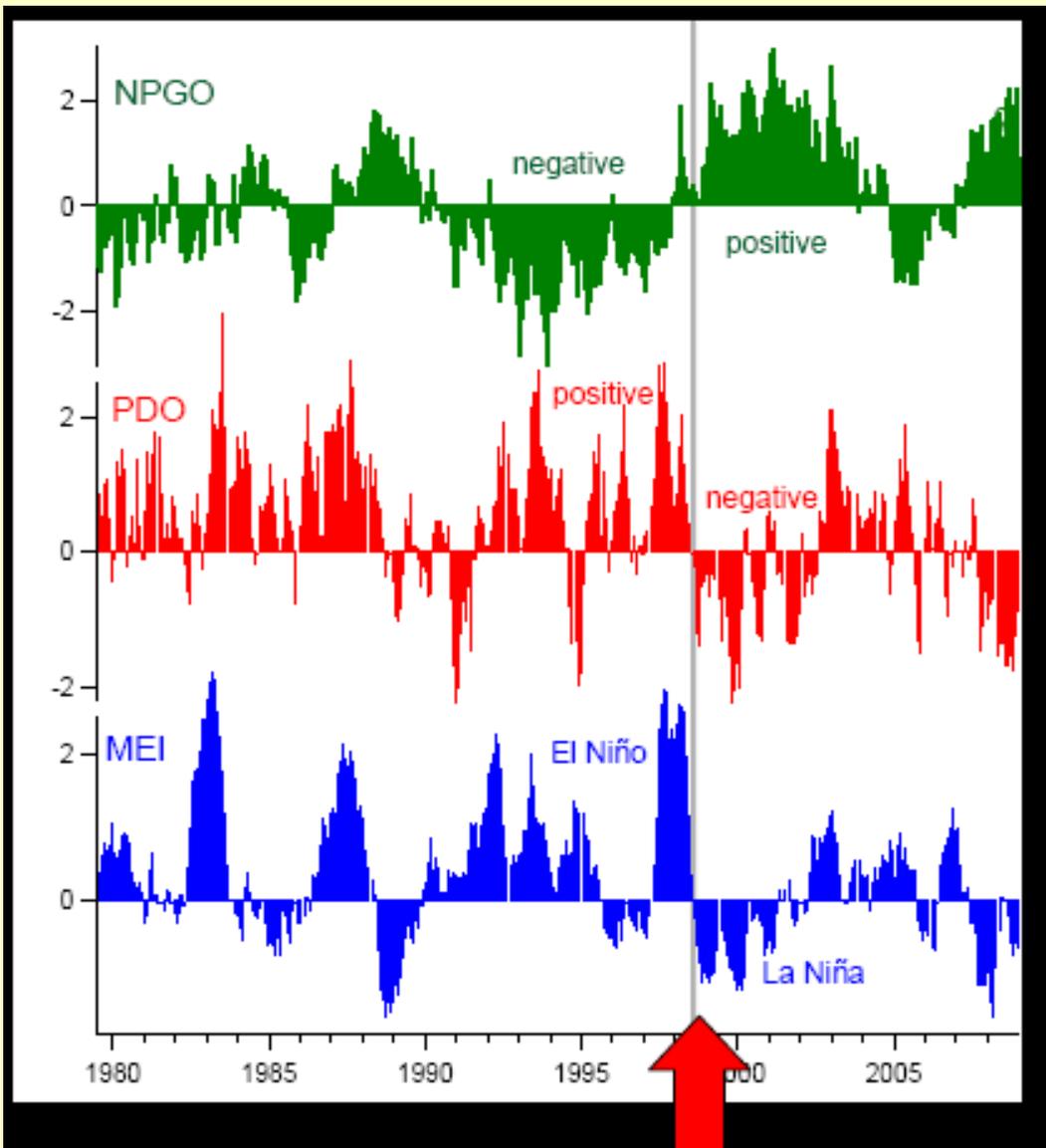


“The increase in Bay water clarity is likely to persist”

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



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

Multivariate ENSO Index
flipped from positive to
negative

Dramatic shifts in ocean currents/atmospheric circulation

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

