ORD’s Environmental Monitoring and Assessment Program (EMAP) Improving Monitoring Science for the Nation and the World

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Making decisions with sound science requires..

- Relevant, high quality, cutting-edge research in human health, ecology, pollution control and prevention, economics and decision sciences
- Proper characterization of scientific findings
- Appropriate use of science in the decision process

Research and development contribute uniquely to..

- Health and ecological research, as well as research in pollution prevention and new technology
- In-house research and an external grants program
- Problem-driven and core research
Alignment of Labs/Centers with Risk Paradigm

**Risk Assessment**
- Dose-Response Assessment
- Hazard Identification
- Exposure Assessment

**Risk Characterization**
- Regulatory Decisions
- Social Factors
- Control Options

**Risk Management**
- Statutory & legal considerations
- Political Considerations

National Exposure Research Laboratory
- Research to measure, characterize & assess exposures and to support compliance with environmental regulations and policies

National Health and Environmental Effects Research Laboratory
- Research to identify hazards & characterize "Dose-Response"

National Center for Environmental Assessment
- Risk characterization & research on risk assessment methods

National Risk Management Research Laboratory
- Research & technology transfer to prevent, mitigate & control pollution

National Center for Environmental Research and Quality Assurance
- Extramural program - grants, fellowships, & national centers of excellence - to complement ORD's intramural program
ORD Locations

3 National Laboratories
2 National Centers
2 Offices
ORD’s Customers

EPA Program Offices and Regions

Other Agencies and Policy Partners

Place-Based Customers (states, tribes, local communities)

Academic Research Community

Environmental Technology Providers
National and International Collaborative Efforts

National Coastal Assessment
National Coastal Condition Report II
Western EMAP
R-EMAP
Great Rivers
Gulf of Mexico hypoxia
Ocean.US
EOS
Other EPA Efforts

Ocean.US

National Oceanographic Partnership Program’s Interagency Ocean Observation Office

Earth Observation System (EOS)

EMAP’s data archives and ease of accessability is contributing towards a global collaborative network for environmental problem-solving
Earth Observation System (EOS)

Recent EOS Summit; 46 member nations and 24 participating international organizations affirmed the need for timely, quality, long-term, global information as a basis for sound decision making.

- Promote the development of a comprehensive, coordinated, and sustained Earth observation system[s]
- Assist developing countries in improving and sustaining their contributions to observing systems
- Exchange data in full and open manner, consistent with international instruments and policies
## EPA EOS “Button” Chart

### Measurement and Monitoring

<table>
<thead>
<tr>
<th>Air</th>
<th>Water</th>
<th>Land/Waste</th>
<th>Community/Ecosystem Health</th>
<th>Compliance/Semenviability</th>
<th>Mapping</th>
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<tbody>
<tr>
<td>UV Index</td>
<td>NOX</td>
<td>Air Quality Standards</td>
<td>Air Index</td>
<td>Aquatic Habitat Protection</td>
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<td>PM 10</td>
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<td>Water Quantity</td>
<td>Fish Population</td>
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- Tools/data identified
- Tools/data in progress
- Models available now
- Models in progress
- Programs

### RESEARCH & DEVELOPMENT

Building a scientific foundation for sound environmental decisions
## EOS - Measurement and Monitoring

### Water
- ERAMS
- EMAP
- EPANET
- DFLOW
- TMDL
- 305B
- Local Drinking Water Info
- Oceans, Coasts, Estuaries
- Drinking Contaminant Source Index
- National Nutrient Guidance
- Ecoregional Nutrient Criteria

### Partner
- SDWIS
- ICR
- CWNS
- WATERS
- NCOD
- River Corridor
- SI-Water Quality
- Beaches
- STORET
- National Hydrography Dataset
2003 EMAP sampled the continental shelf of WA, OR and CA within the 30 to 120 m depth range, with 150 stations from WA to the Mexican border.
EMAP GOALS

Develop the scientific basis for consistent measurement of the health of the Nation’s aquatic ecosystems

Assist in building state capacity for monitoring for 305(b) and 303(d)

Provide design/analysis support so states can implement more cost-effective monitoring
EMAP Approach for a Report Card

Develop a cost-effective, scientifically-defensible, representative, and unbiased estimate of ecological condition

States adopt and implement a consistent approach for assessing ecosystem health

States’ data aggregated for national report card

Change and trend data