Building Networks for Solutions:

Information Technology and Science

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Barriers to Data Integration

- Federal, state, and local partners at different places on the technology curve
- Volume of data is too great
- Security issues
- New directions (i.e., regional focus) bring more complex issues



Coastal Manager's Perspective



Percent of Offices using GIS and Remote Sensing			
Year	1996	1999	2002
GIS	74	91	92
Remote Sensing	35	42	79

Information Technology Standards

- Allows communication between peers
- Minimizes data integration time and costs
- Permits data operations under known conditions
- Consensus standards organizations:
 - International Standards Organization
 - American National Standards Institute
 - Federal Geographic Data Committee (FGDC)

Geospatial One-Stop

- Web-based portal for access to maps and data
- Making it easier, faster, less expensive for government and the public to access geospatial information
- Increases federal agency accountability
- Establishes a collaborative model to support decision making

National Oceanographic Partnership Program (NOPP)

Collaboration of 15 federal agencies that provide leadership and coordination of national oceanographic research and education:

- brings public and private sectors together to share resources
- focus is to develop an integrated, sustained ocean observing system for the U.S.



Integrated Ocean Observation Systems

A Sampling of Federal Contributions to the National Backbone



Integrated Ocean Observing System (IOOS):

Data Management and Communications plan



NOAA Contribution to **Regional Capacity: COTS**

Pilot (Competitive) GoMOOS **Oregon Health & Sciences Univ.** Univ. of South Florida

Coordination (Competitive) GCOOS **SECOORA** MARA GLC NANOOS Cen-COOS SCCOOS AOOS

Pilot (Congressionally Directed) ACT Wallops/CIT CORMP Caro-COOPS COMPS WAVCIS SCCOOS CIMT **CI-CORE** GEM GoMOOS SCOOP LISICOS COOA



Regional Associations (RAs)

Formed to . . .

- Oversee and manage the design and sustained operation of integrated regional observing systems addressing societal needs
- Agree and establish regional geographic boundaries
- Obtain and disperse funds to operate and improve regional observing systems
- Ensure the timely provision of quality-controlled data and information to users



IOOS Data Portal Prototype

www.openioos.org



IOOS Data Portal Prototype



2004 Hurricanes

www.openioos.org



NOS Data Explorer

- Integrated National Ocean Service (NOS) datacoverage visualization over the Web; always available
- Single point of GIS data discovery and delivery while maintaining distributed data
- Standards-based approach: FGDC metadata, open standards and protocols (OGC, W3C)



http://oceanservice.noaa.gov/dataexplorer/



Ocean Planning Information System

- Geo-regulations
- Ocean Uses
- Marine Protected Areas
- Physical Resources
- Living Resources
- Economic Resources
- Hazards
- Political Boundaries
- Federal Jurisdiction

www.csc.noaa.gov/opis/



Gulf of Maine Ocean Data Partnership



- Purpose: to develop "coordinated access" to physical, chemical, biological, and geologic data in the Gulf of Maine.
- **Goal:** Integrate and provide users with access to continuously updated and archived scientific data for research and management
- International effort
- Will advance a truly integrated ocean observing system in the Gulf of Maine, and contribute to integrated oceans management.

CDIP: Coastal Data Information Program



www.cdip.ucsd.edu

- Wave monitoring, with emphasis on Pacific coasts
- Database of environmental data for range of users
- Distributed to professional and recreational users in cooperation with National Weather Service, National Data Buoy Center

USGS National Map

http://nationalmap.usgs.gov/

- On-line, interactive map service
- Public access to high-quality geospatial data
- Product of a consortium of federal, state, and local partners
- Supports integrating, sharing, and using spatial data easily and consistently

The National Map, FGDC, and Geospatial One-Stop cooperate to achieve the National Spatial Data Infrastructure

- The National Map ensures integrated data through partnerships
- FGDC coordinates national geospatial data standards, policies, education, and outreach
- Geospatial One-Stop facilitates Web-based access to geospatial data



Interagency Coastal and Ocean Mapping

- Interagency Working Group on Coastal and Ocean Geospatial Data and Systems (IWG-COGDS)
 - Enhance standards and delivery of products, data, and services
 - Coordinated with Federal Geographic Data Committee (FGDC)
- Geospatial Data and Systems Office Ocean.US
- Priority areas:
 - Needs assessments, planning, and operations
 - Standards for data acquisition, data, metadata, and products
 - New mapping technologies and adaptation of existing technologies
 - Processing, archiving, distributing data sets and products

Science Capacity and Coastal Solutions

National Research Council: Science, Policy, and the Coast, 1995

- Scientists and policymakers not interacting sufficiently . . . Improve interactions at all levels of government
- Policies lack flexibility and manage single issues . . . Employ integrated and adaptive management approaches
- Lack of resources to apply science to management . . . Improve coordination and allocation of resources



Science Capacity and Coastal Solutions

US Commission on Ocean Policy, 2004

- Increase ocean and coastal research, including socioeconomic factors
- Support ocean exploration
- Implement the national Integrated Ocean Observing System (IOOS)
- Expand and integrate the national monitoring network



www.oceancommission.gov



Pew Oceans Commission, 2003

- Encourage changes in national ocean governance, policy, and structure
- Encourage ecosystem-based and watershed approaches to management
- Manage coastal development to protect habitat and water quality

www.pewoceans.org

Centers for Ocean Sciences Education Excellence



Network of seven regional centers, with the goals of ...

- developing effective partnerships between researchers and educators
- disseminating effective ocean sciences programs and best practices
- promoting a vision of ocean education as vehicle to create scientifically literate citizenry



COASTAL ECOSYSTEM LEARNING CENTERS (CELCS)

STNL AM





NOAA Coastal Services Center LINKING PEOPLE, INFORMATION, AND TECHNOLOGY