

From Data Integration to Integrated Solutions

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Water Quality Workshop

MACOORA - NERACOOS -SECOORA

IOOS, USGS, EPA, National Water Quality Network

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**Gulf of Maine
Research Institute**

Science. Education. Community.

Overview

- Northeast Coastal and Ocean Data Partnership
- Northeast Exchange Network projects
- IOOS Data Integration Framework
- Open standards - critical building blocks

Northeast Coastal and Ocean Data Partnership

- OUR GOAL: To make each partner's long term datasets discoverable, accessible, and eventually interoperable through tools available on the internet
- OUR METHOD: Use standards and protocols already in use by the various disciplines represented wherever possible.
- Over 23 Partners representing state and federal agencies, academic institutions and non profit organizations

Partnership Priorities

- Keep up with national / international standards
- Expand regional focus within national/ international context
- Maintain close alignment with NERACOOS
- Facilitate data discovery, access and interoperability
 - Across communities of practice
 - Across the spectrum from ocean-coast-watershed
 - Across the spectrum of data providers
- Leverage funding and technical expertise
- Provide mutual assistance opportunities to partners for data management

Partnership Exchange Network Project

- Exchange Network (EN) grant awarded to NH DES through EPA
- Funding approved through NH process summer 2008
- Purpose is to share ocean/coastal data via Exchange Network protocols
- Final products include
 - ODPX data exchange template and schema
 - Functional node and node clients in the network
 - Web application that allows querying, display and retrieval of partner data
 - Lessons learned and best practices

Challenges

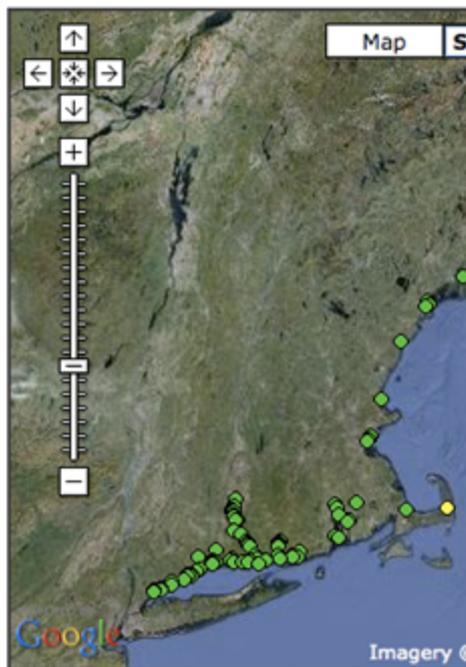
- Long delay (almost 2 years) from initial grant application until money officially accepted by NH
- Maintaining partner motivation for such a long, detailed process
- Partner underestimation of what it would take to develop a workable schema for all
- Insufficient metadata
- Diversity of data sets
- Talking the same talk (what is an activity? monitoring location? project? trading partner agreement? node? node client? etc.)
- Trying to finish development of template via webinars (often 2 hours each)

Successes

- Diversity of partners (includes Canadians)
- Diversity of partner systems (EN, OBIS, SWE, JGOFS)
- Diversity of data sets (physical/chemical, platform, dead sea bird, trawls/cruises)
- Incorporated a lot of standards (EN, GCMD, SWE, GML)
- Provided forum to discuss data details and understand each other's data
- Leading us toward Partnership goal of interoperability
- Learning from others in the Exchange Network community
- Builds on work already done by partners (GCMD metadata registry)

Data Discovery and Access Product

Northeast USGS - NWIS - WQX Estuar



Organizations Click Organization name to view Mo

[USGS-MA](#) [USGS-GA](#) [USGS-ME](#) [USGS-CT](#)

Org ID	Org Name	Monitoring Location
USGS-MA	USGS Massachusetts Water Science Center	USGS-USGS-0110587900

Activity	Project	Type	Media	Start Date
sun4dmamrl.01.00402081	2441A1WLB	Sample-Routine	Water->Surface Water	2004-09-08
Comment A-2540368 At mouth of tidal creek,near ocean				
Results Ammonia and ammonium 0.111 mg/l as N				
sun4dmamrl.01.00402082				
Comment Ammonia and ammonium 0.111 mg/l as N Ammonia and ammonium 0.14 mg/l NH4 Phosphorus 0.02 mg/l Nitrogen, mixed forms (NH3), (NH4), organic, (NO2) and (NO3) 0.39 mg/l Organic nitrogen 0.22 mg/l Nitrite 0.006 mg/l as N Nitrite 0.020 mg/l Nitrate 0.257 mg/l Nitrate 0.06 mg/l as N Nitrate-nitrite 0.064 mg/l as N Specific conductance 34100 uS/cm @25C contd. check				
sun4dmamrl.01.00402083				
Results Nitrate 0.416 mg/l				
sun4dmamrl.01.00402084	2441A1WLB	Sample-Routine	Water->Surface Water	2004-09-08
Comment A-2540369 Creek Station,1000 ft upstream of mouth				
Results Nitrogen, mixed forms (NH3), (NH4), organic, (NO2) and (NO3) 0.54 mg/l				
sun4dmamrl.01.00402085	2441A1WLB	Sample-Routine	Water->Surface Water	2004-09-08
Comment A-2540370 Creek Station,1250 ft upstream of mouth				
Results Nitrogen, mixed forms (NH3), (NH4), organic, (NO2) and (NO3) 0.57 mg/l				

Exchange Network 2 – Enabling Geospatial Exchange

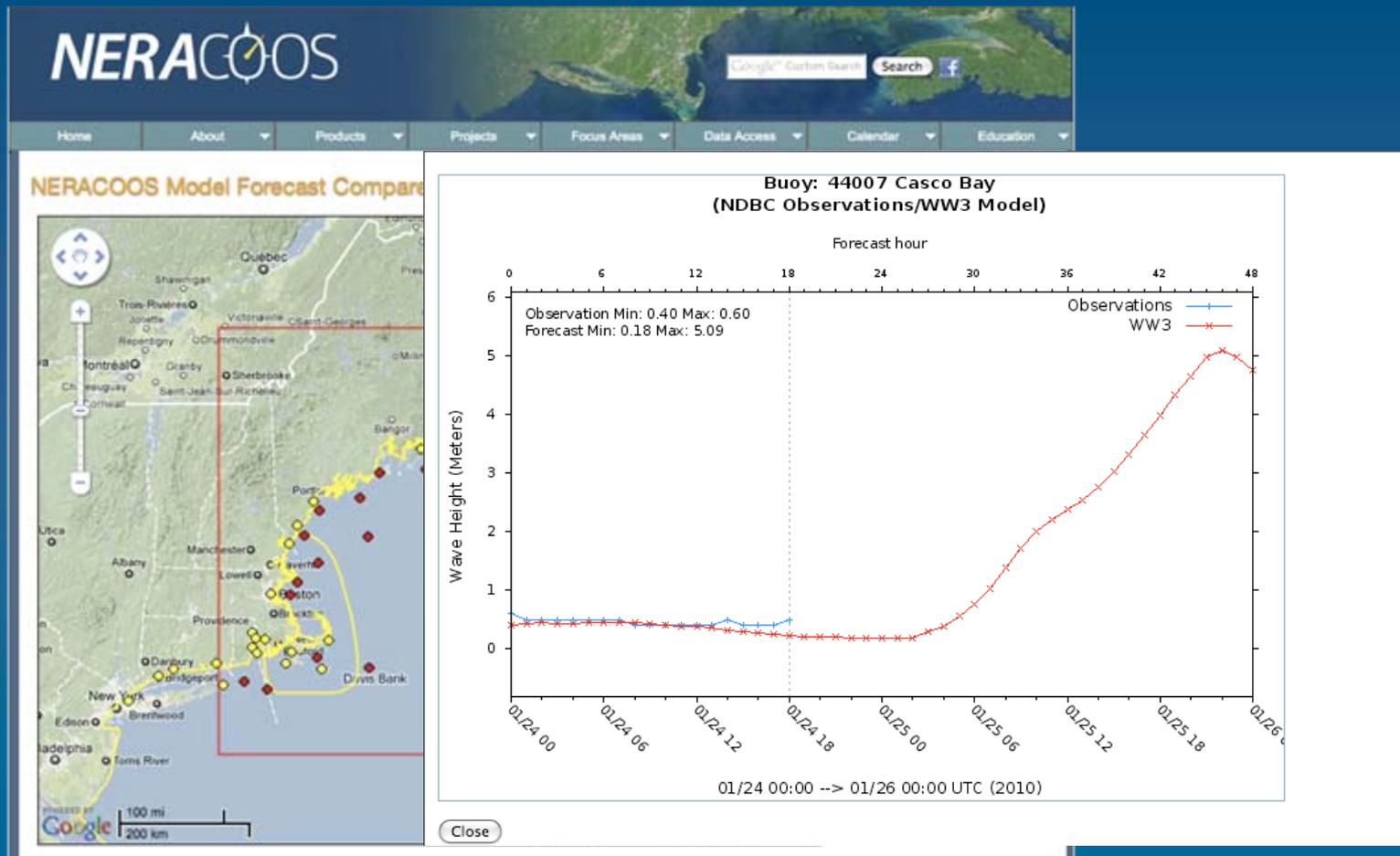
Proposal goal is to enable geospatial data exchange to support environmental decision making

- Develop product or service that supports regional environmental decision makers
- Enable exchange of geospatial data between multi-jurisdictional agencies
- Utilize EN protocols and Open Geospatial Consortium (OGC) standards
- Identify challenges and opportunities for enabling geospatial exchange within the EN
- Develop best practices and other transferable capabilities

IOOS Data Integration Framework

- Open Geospatial Consortium (OGC) Sensor Observation Services (SOS) for real time observations
 - NERACOOS SOS
- OpenDAP, THREDDS for gridded model products
 - Implementation across the regions
 - NERACOOS Model – Observation product

NERACOOS Model-Observation Comparison



Integration and Innovation through Open Standards

- Open standards are critical building blocks
- Cost effective and sustainable solutions
- Transferable tools and products
- Need to be considered throughout development process
- Allow us to harness to software, data and computing power that is available on the web