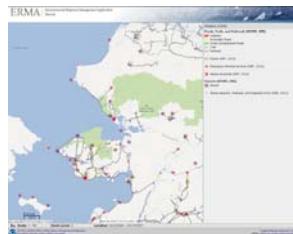




Environmental Response Management Application

Amy Merten, Ph.D., Michele Jacobi
NOAA's Office of Response and Restoration
Allison Bailey (Sound GIS)
Hayley Pickus, JB Huyett (Genwest Systems)



Kotzebue, AK
May 22-23, 2012

Arctic Communities Workshops

- NWAB/Kotzebue – May 22-23, 2012
- North Slope Borough (Tentative)
- Establish understanding of oil spill response, NRDA and ERMA
- Identify local knowledge data and information
- Initiate agreements to protect local knowledge/information

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What is ERMA?

ERMA is an online mapping tool for visualizing environmental information relevant to oil spills and natural disasters.

The screenshot displays a satellite map of the Arctic region. A large, dense blue area in the upper left represents sea surface current density, with a color scale from light blue to dark red. Overlaid on the map are several data layers: a grey shaded area representing bathymetry; red and yellow polygons indicating hazard zones; and small red dots representing ice observations. On the right side of the screen, there is a vertical sidebar with various sections: 'Imagery & Remote Sensing' (listing 'Bathymetry, Sea Surface Currents, Wind Speed, Tides'), 'Comments' (with a color scale for current density), 'Ice Observations' (listing 'Kwethluk Sea Ice Webcam (EWC, GMA)', 'Alaska (USGS)', 'Ice Sat (NASA, 2002)', and 'Sea Ice (NSIDC, 2002)'), 'Hazards' (listing 'Alaska Hazards, Hazards, and Impairments Ports (GMA, 2010)', 'Hazardous Weather: Earthquakes & Tsunamis', 'USGS Earthquake Webmap', 'USGS Latest Earthquake Locations 1 Day Magnitude 2.5+', and 'USGS Latest Earthquake Locations 1 Day Magnitude 3+'), and 'Credits' (listing 'Coastal Response Research Center' and 'NOAA 2012. University of New Hampshire'). At the bottom of the sidebar, it says 'Content Reproduced Under License'.

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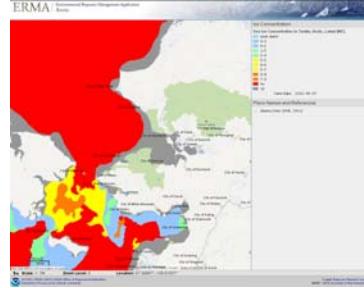
Arctic ERMA Project

- Funded by NOAA, OSRI and BSEE
- Integrated with the Arctic Council EPPR Working Group
- Key Workshop (Anchorage, AK – Apr 5/6, 2011):
 - Diverse participation
 - Identify and prioritize data for inclusion
 - Arctic Communities Work Shops emerged
- Alaska Ocean Observing System (AOOS) – Data services/method development
- UAF/GINA (Geographic Information Network of Alaska) – Data services/method development
- NWAB – GIS Subsistence Mapping Project

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What is ERMA?

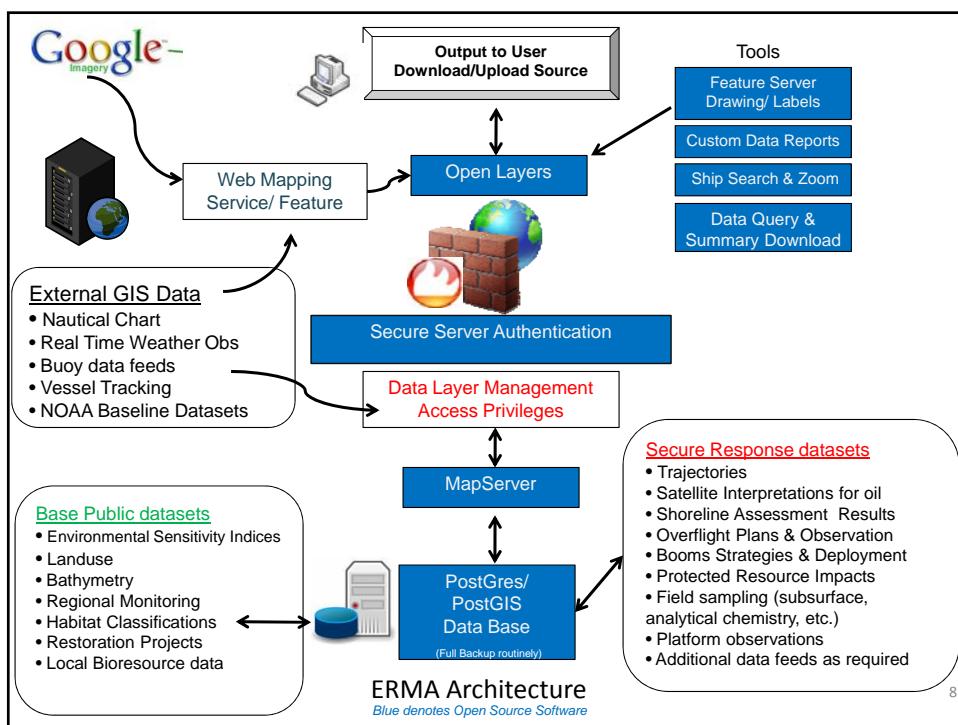
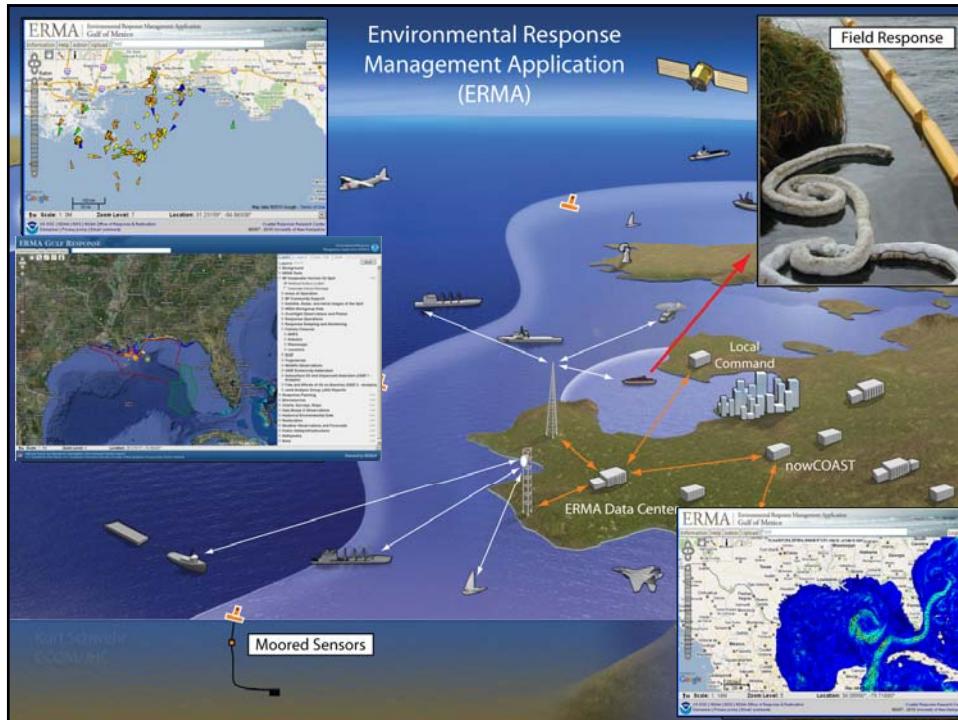
- Web-based mapping tool
- Provides centralized access to information
- Increases communication, coordination, and efficiency
- Prepare for, respond to, assess impacts from hazardous incidents or conditions
- Analyze and visualize environmental information relevant to all hazards



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Use ERMA to...

<p>Visualize the situation status during an oil spill drill</p> 	<p>Assess damage and plan for restoration</p> 
<p>Analyze threats from climate change, drilling, and hurricanes</p> 	<p>Create a Common Operational Picture in a disaster response</p> 



How ERMA Can Help

- **Data Collection, Visualization, and Sharing**
 - Cross Jurisdictional boundaries (Multi Agency, Multi State, Multi Cultural)
- **Resource Information**
 - Subsistence, cultural, sacred sites and access
 - Sensitive habitats
 - Species distribution and life history
- **Critical Infrastructure**
 - Airport and landing areas
 - Water intake locations
 - Communication centers
- **Aid in the development of Response Plans**
 - Environmental Sensitivity Index (ESI) maps
 - Area Contingency Planning (ACP)
 - Geographic Response Plans (GRP)

Account Access

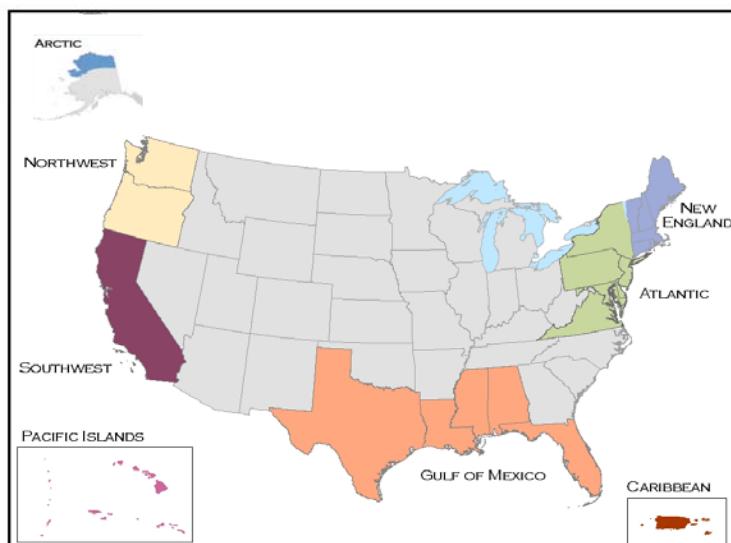
- **Public Side**
 - All publicly available data
- **Restricted Account Side**
 - Username/password required
 - Verified by NOAA
 - Various levels of access
 - Active incidents
 - Sensitive datasets
 - Natural Resource Damage Assessment (NRDA)
 - Drills

Benefits

- Accessed via any Web browser, do not need special software
- Secure access to sensitive data sets
- Communicate with the public*
- Improved collaboration across agencies and organizations through common view



Where is ERMA?



Types of Information in ERMA

- Base Mapping
 - Aerial imagery, terrain, roads
 - Nautical charts
- Response Planning
 - Equipment locations
 - Infrastructure
- Incident Information
 - Trajectories
 - Real time resource tracking
 - Shoreline oiling
 - Sampling data
- Weather & Buoys
 - Hurricane/Storms
 - Remote-sensing imagery
- Resources at Risk
 - NOAA ESI data layers
 - Shorezone
 - Local habitat and species
 - Seafood safety
- Documents & Photo Links
 - ESI and GRP .pdfs
 - Attached to layers
 - Field photos

Goals of Arctic ERMA

- Represent area of significant activities
(US-Canadian Beaufort and Chukchi Sea to south of the Bering Straits)
- Include international partners
- Leverage existing data/programs; not creating new data
- Common platform specifically focused on spill response
 - Demonstrated success during Deepwater Horizon → transferred platform to Arctic

Arctic ERMA Timeline

- Oil in ice research (05 to present)
- Arctic Disasters Workshop (Mar 08)
- US Arctic Research Commission (09/10)
- US Arctic Council (AMSA and EPPR – 08-Present)
- Partial funding NOAA Coastal Zone Planning in FY 10
- Arctic NRDA Workshop (Apr 10)
- Arctic ERMA Stakeholders Workshop (Apr 11)

NOAA/BSEE (~500K)

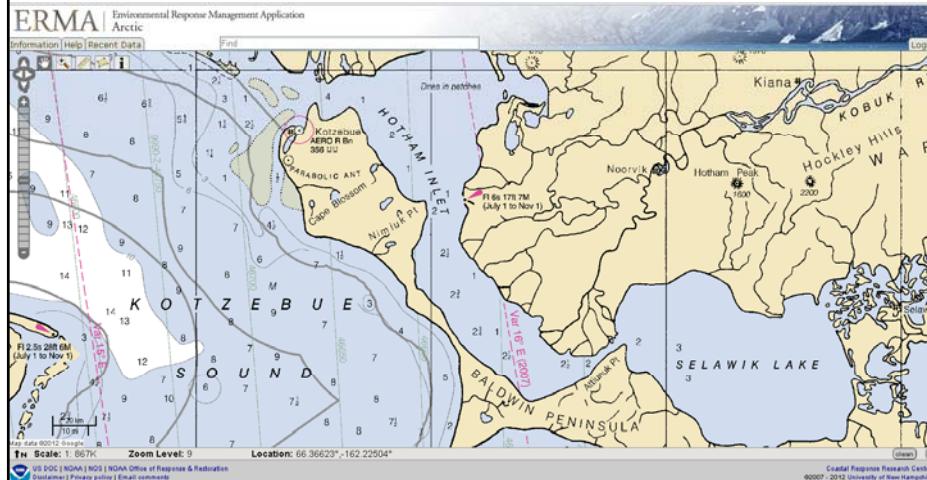
- Enhance/finish Arctic ERMA before exploratory drilling commences
- Tasks:
 - Finish acquiring key data sets (Jun 2012 for “launch”)
 - Develop “stand-alone” ERMA
 - Training/drills
 - Operations/Maintenance
 - Infrastructure solution?

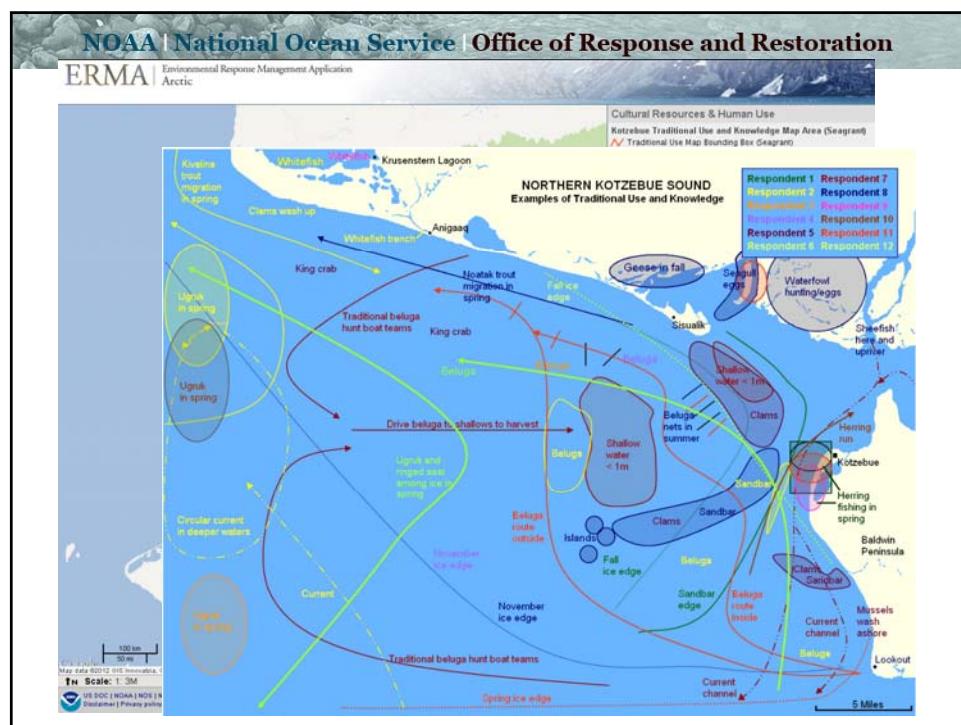
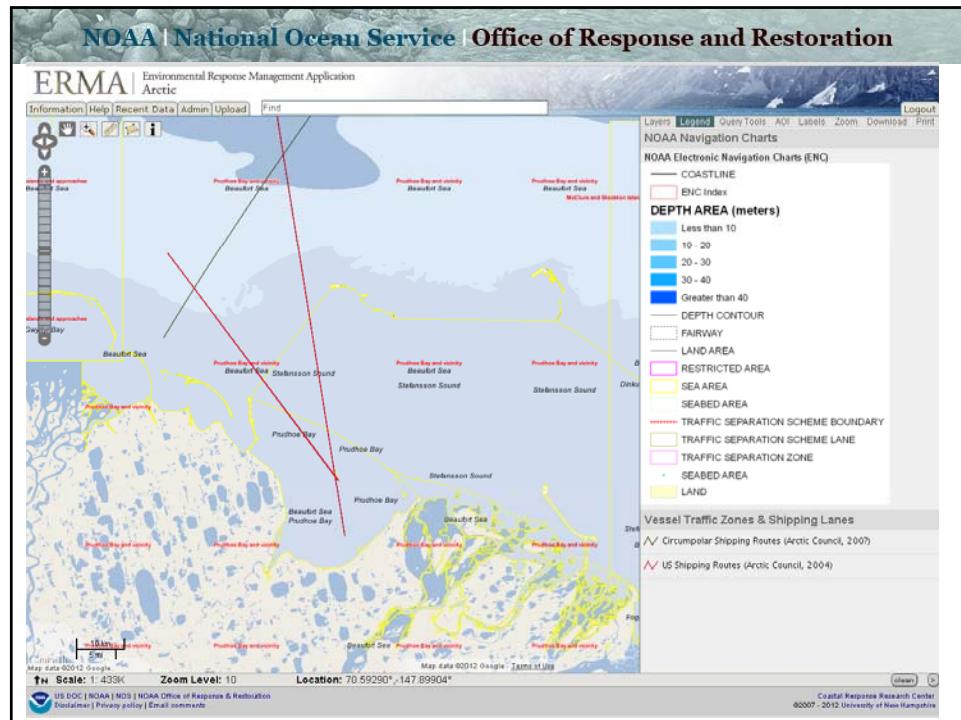
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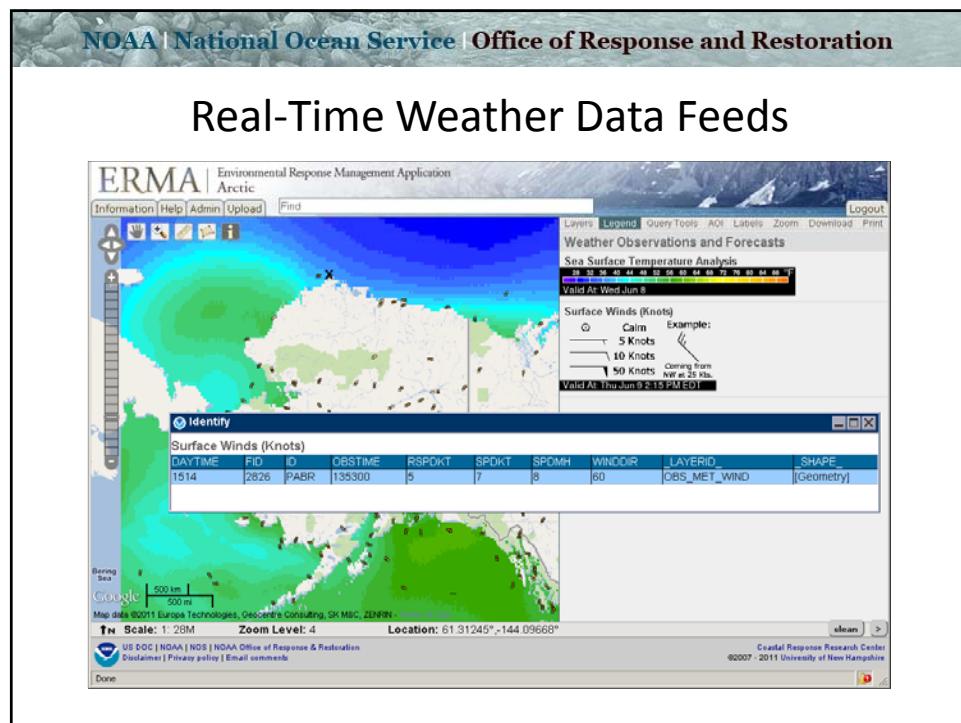
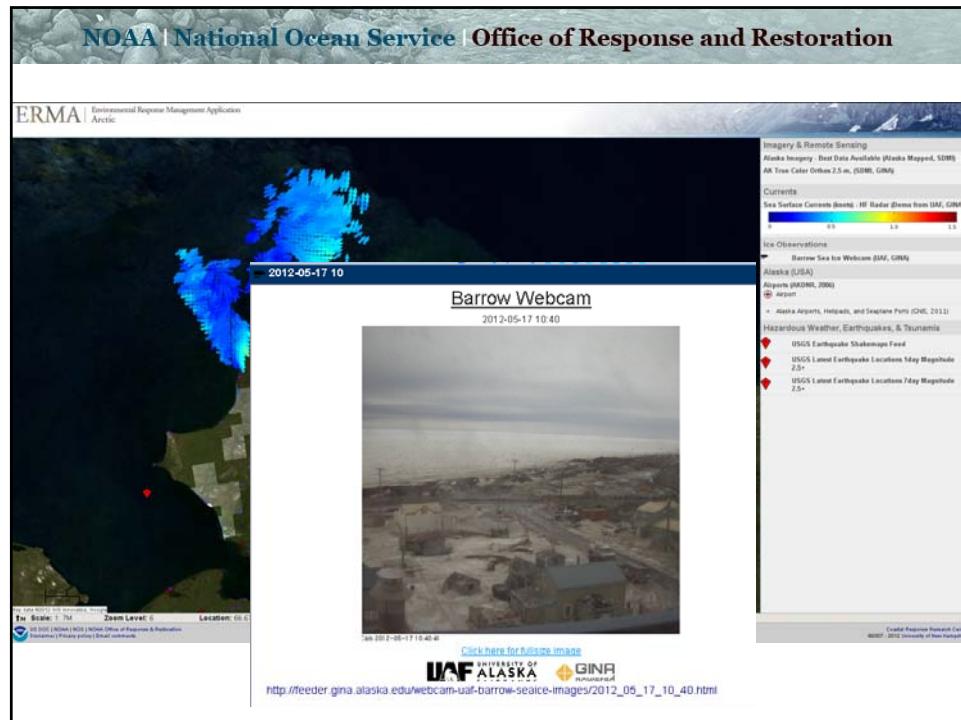
Continued Partnerships

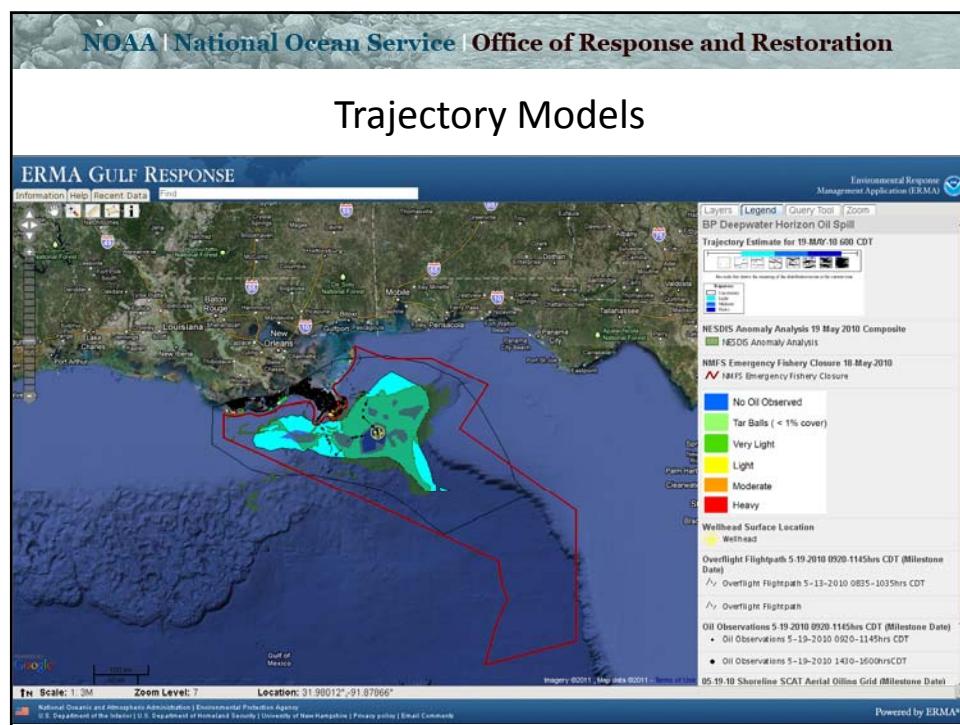
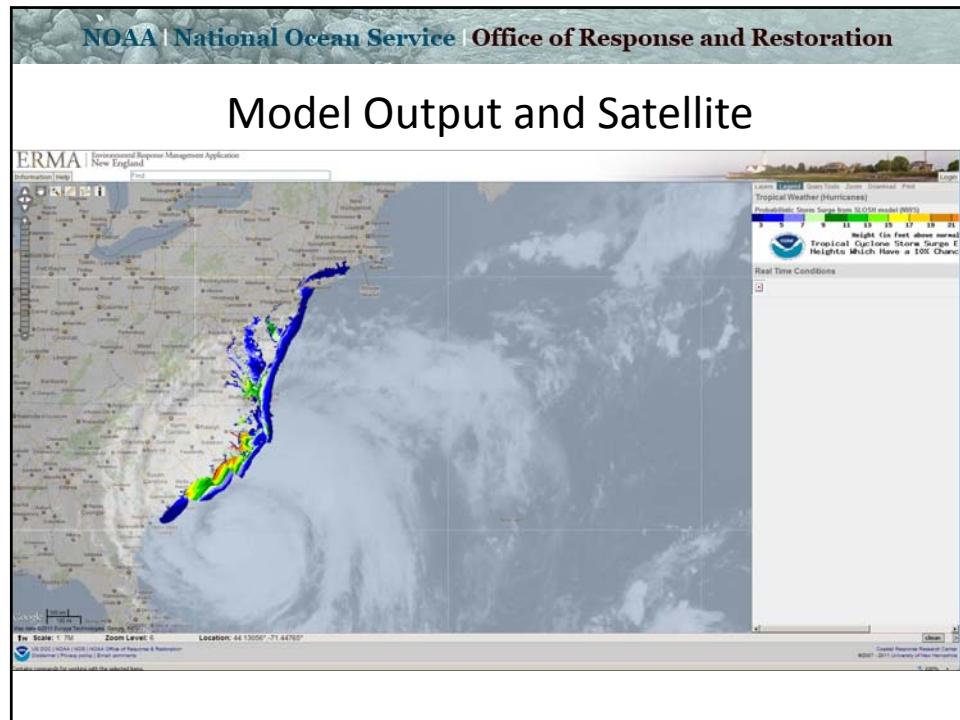
- Arctic Communities
- AOOS/CIRCAC
- UAF
- Canada (US/Canadian MOU)
 - David Kennedy/David Grimes
 - Arctic ERMA Canadian Workshop
 - July 2012, Edmonton (Tentative)
 - EPPR
- Arctic Council/EPPR

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Response Imagery

**ERMA | Environmental Response Management Application
New England**

Information | Help | Admin | Upload | Find | Logout

Layers: clear all | collapse all | manage | Layers Legend Query Tools AOI Labels Zoom Download Print

Background | Hurricane Irene | Bioresources | Charts, Surveys, Ships | Data Buoys & Observations | Environmental Quality | ERMA Tools | Imagery and Remote Sensing | NASA MODIS | FEMA Aerial - Hosted by Telascience | NOAA Aerial 2011-08-31 (Telascience) | NOAA Aerial 2011-08-29 (Telascience) | NOAA Aerial 2011-08-29 (Telascience) | NOAA Aerial 2011-08-28 (Telascience) | NOAA Aerial 2011-08-28 (Telascience) | FEMA Aerial - Hosted by Telascience | FEMA Aerial 2011-08-20 (Telascience) | NASA MODIS | Response Planning | Restoration Projects | Marine Debris | Public Safety/Infrastructure | Weather/Environmental Observations | September 2011 Drill

Scale: 1:16000 | Zoom Level: 18 | Location: 35.59433°N, 75.46277°W

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Shipping Routes & Incident Locations

**ERMA | Environmental Response Management Application
Arctic**

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Layers: clear all | collapse all | manage | Layers Legend Query Tools AOI Labels Zoom Download Print

Transportation | US Shipping Routes | Hazards

Arctic Marine Shipping Assessment (AMSA) Incident Locations

- Collision
- Damage to Vessel
- Fire / Explosion
- Grounded
- Machinery Damage / Failure
- Sunk / Submerged
- Miscellaneous

Identify

Arctic Marine Shipping Assessment (AMSA) Incident Locations

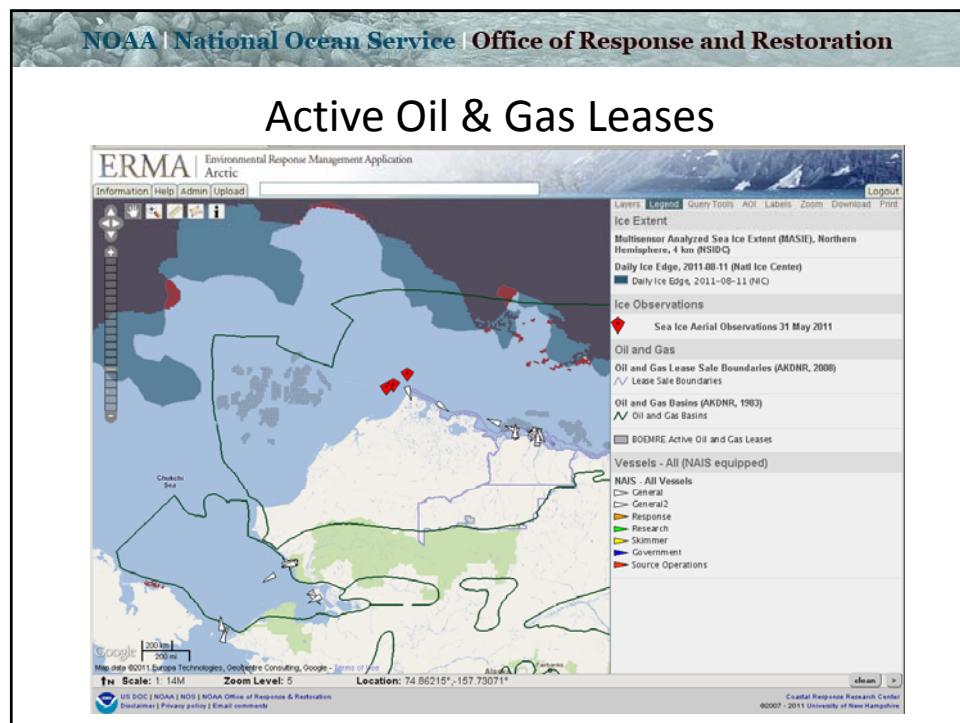
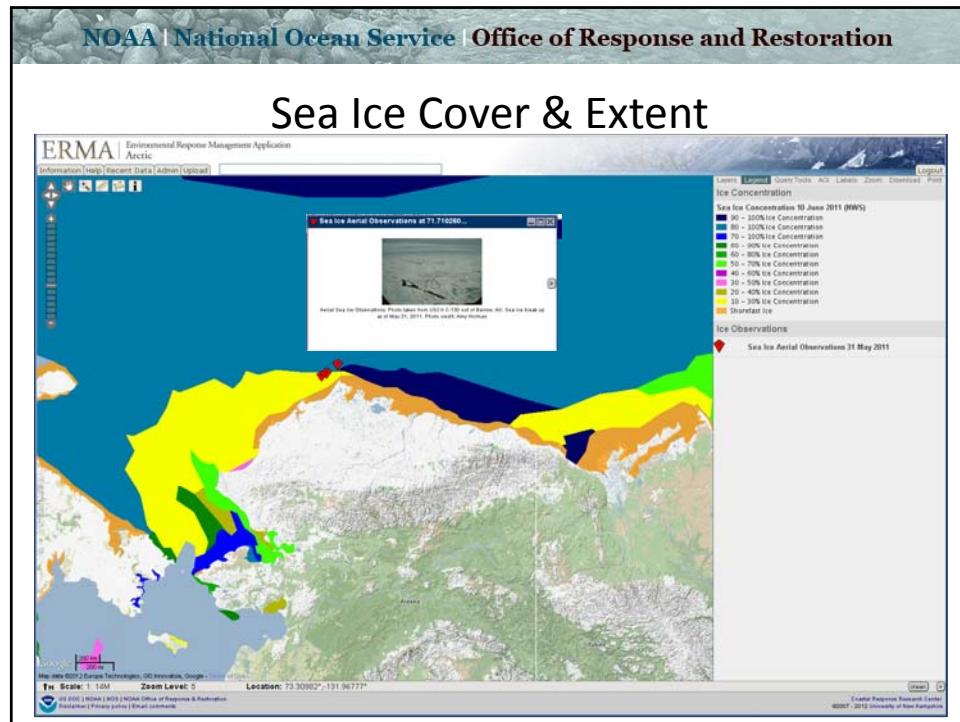
gid	source	type	date	latitude	longitude	lives_lost	fuel_spill	total_loss	ice_damage	primary_re	descrip
123	TSB	PASSENGER SHIP	1998-08-22	64.675	-168.258333	NO	NO	NO	DAMAGE TO VESSEL	CRACK IN BILGE SH PLATING 8 WATER BALLAST TANK PO TANK BEI MONITOR VISUALLY EVERY HOUR	

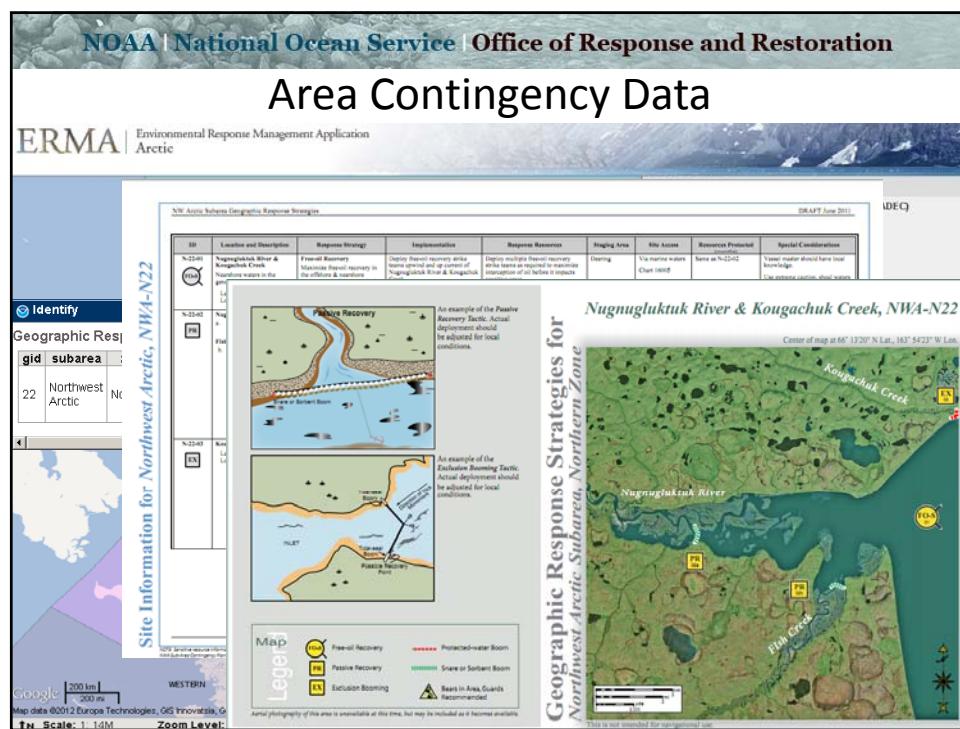
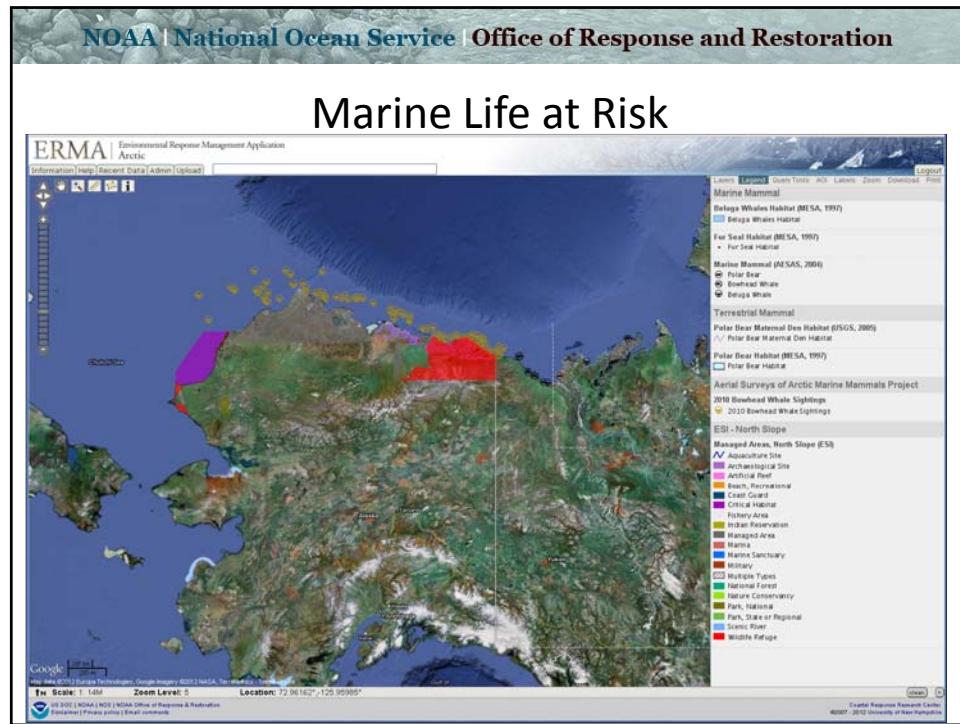
Map data ©2011 Google

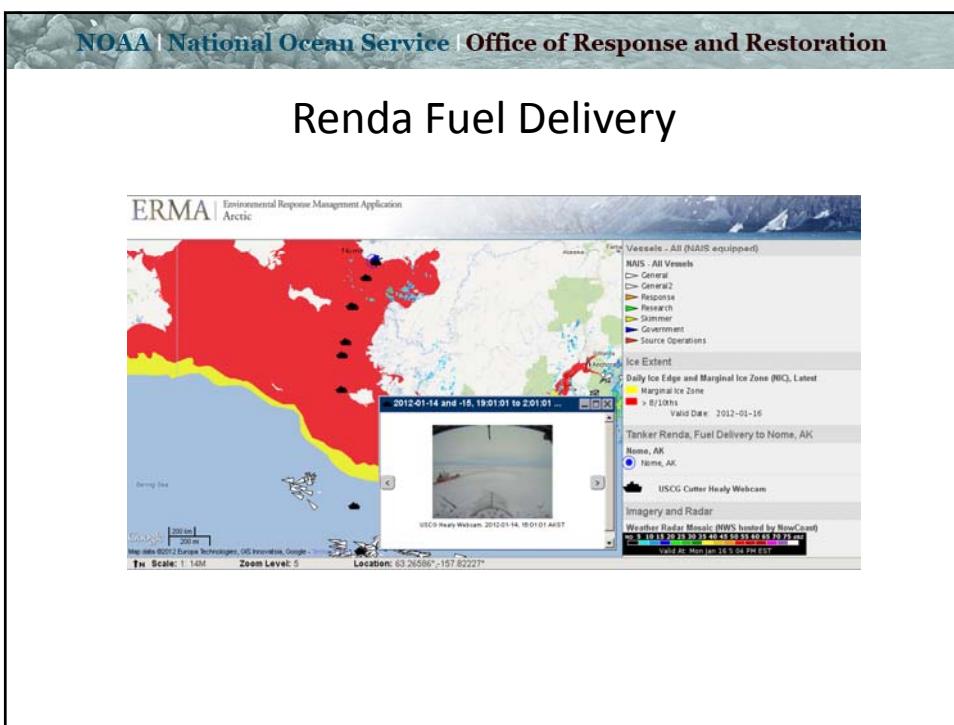
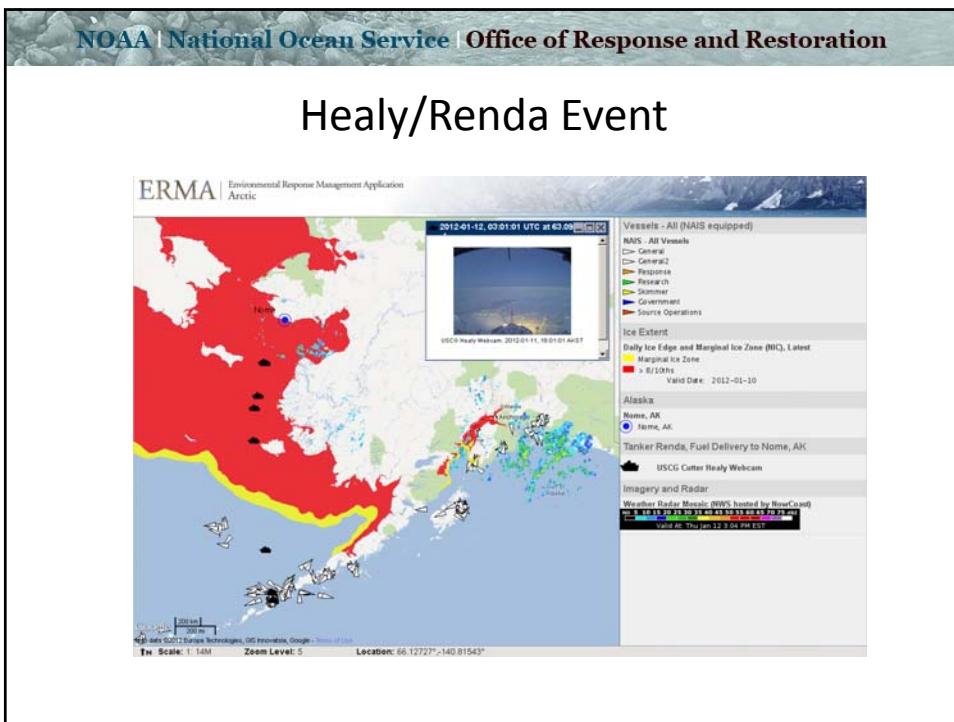
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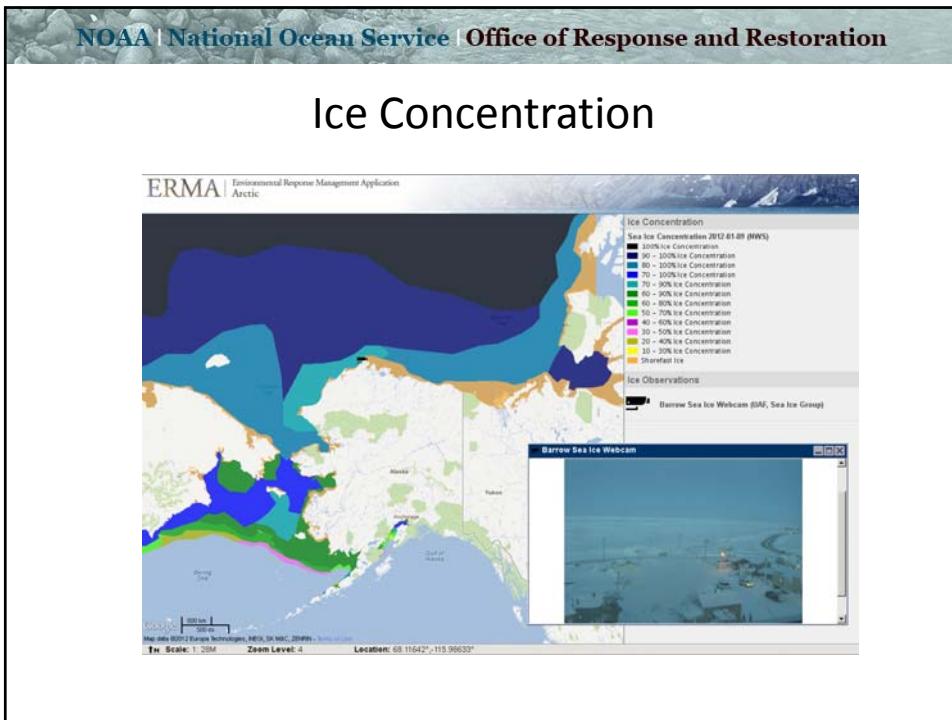
Done

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Data & Mapping Technology Best Practices

- Documented Data Development
 - Must have metadata!
- Data Accessibility
 - Make data available so others can use it
- Planning and Preparedness
 - Not just in crisis mode
- Data Sharing Agreements
 - Focus on what you know, share with others for what you don't, avoid duplication

Interactive Tools

- Zoom To
- Bookmark Map Views
- Areas of Interest
- Measurement Tools
- Animations
- Full Metadata Access
- Find tool
- Map Labels
- Print Tools
- Interactive Query Tools
- Identify tool

Arctic ERMA Next Steps

- Work with Arctic Communities to incorporate local knowledge
- Continue data acquisition in U.S./Canadian Arctic
- Work with other countries to access the key data sets
- Collaborate with other mapping entities (ACE, AOOS/CIRCAC, Arctic Net, UAF)
- Launch Date: Summer 2012
- Participate in Training/Drills of opportunity



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Office of Response and Restoration

NOAA U.S. NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
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 - Matt Dorsey
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 - Robert St. Lawrence
 - Kurt Schwehr
 - Allison Bailey, Sound GIS
 - Aaron Racicot, Z-Pulley
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Funding Sources: Coastal Response Research Center, US EPA Region II, U.S. Coast Guard, NOAA's Office of Response and Restoration and Coastal Storms Program, Oil Spill Recovery Institute, Bureau of Safety and Environmental Enforcement



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