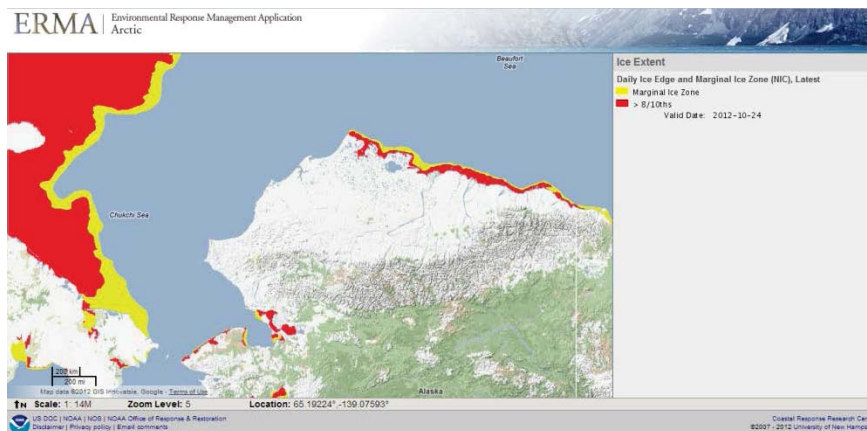




# Environmental Response Management Application

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NOAA's Office of Response and Restoration



Edmonton, CA  
Feb 12-13, 2013



# Environmental Response Management Application (ERMA®)

## Functions

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

## Regions

- Arctic: <https://www.erma.unh.edu/arctic>
- Gulf of Mexico: <http://gomex.erma.noaa.gov/erma.html>
- Caribbean, Pacific Northwest, Atlantic, New England, Pacific Islands, Southwest, Great Lakes



## Use ERMA to...

Visualize the situation status during an oil spill drill



Assess damage and plan for restoration



Analyze threats from climate change, drilling, and hurricanes

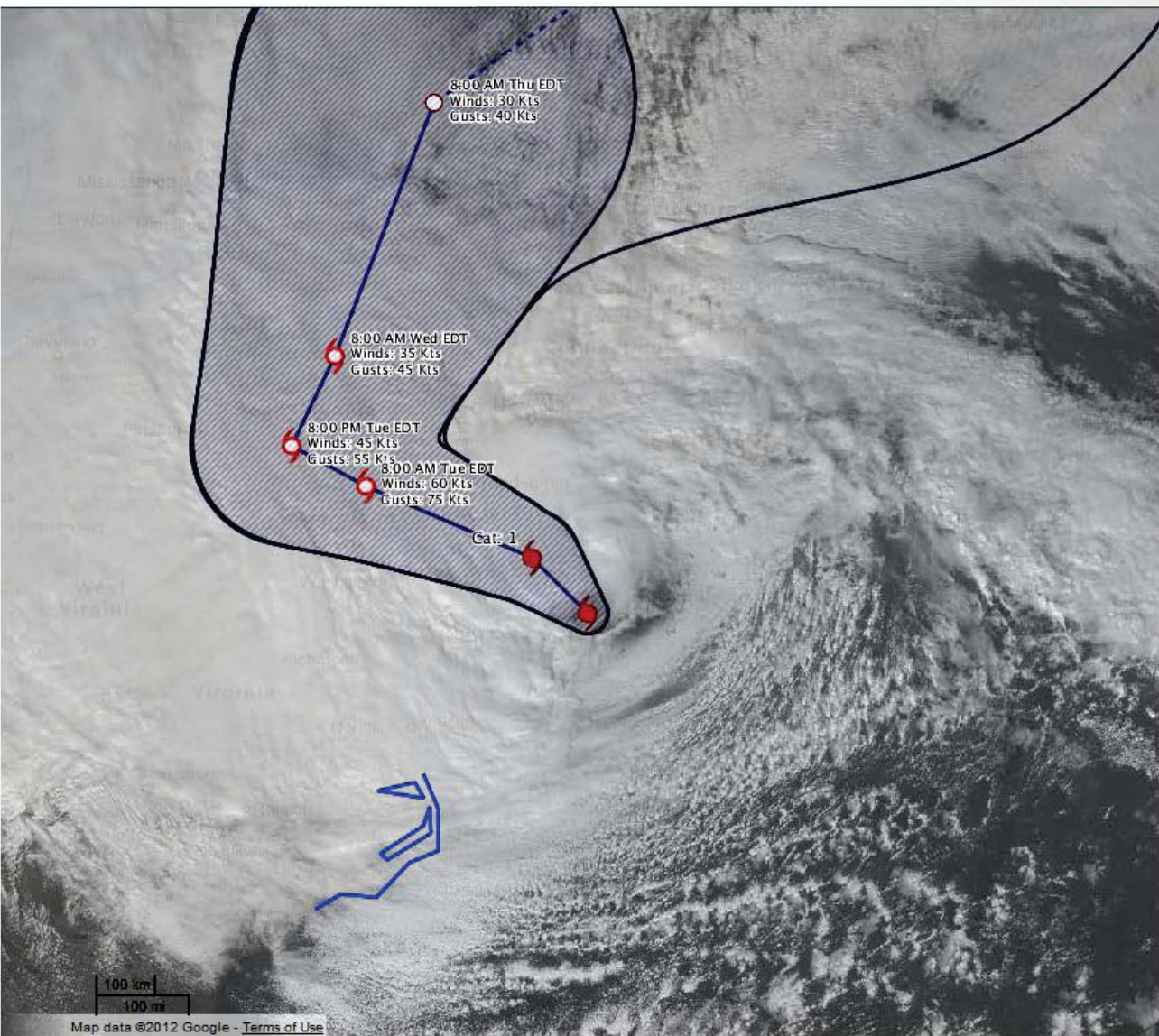


Create a Common Operational Picture in a disaster response









## Hazardous Weather, Earthquakes, & Tsunamis

### Current Active Storms

- / Hurricane Warning
- / Hurricane Watch
- / Tropical Storm Warning
- / Tropical Storm Watch
- / Hurricane Warning
- / Hurricane Watch
- / Tropical Storm Warning
- / Tropical Storm Watch
- Potential Track Area (Day 1-3)
- Potential Track Area (Day 4-5)
- Potential Track Area (Day 1-3)
- Potential Track Area (Day 4-5)
- / Forecasted Track (Day 1-3)
- / Forecasted Track (Day 4-5)
- / Forecasted Track (Day 1-3)
- / Forecasted Track (Day 4-5)
- Low Chance of Tropical Cyclone Development (< 30%)
- Medium Chance of Tropical Cyclone Development (30% - 50%)
- High Chance of Tropical Cyclone Development (> 50%)
- Hurricane
- Tropical Storm
- Tropical Depression

## GOES Imagery

GOES Visible Image

**Geostationary  
Satellite Server**

Valid At: Mon Oct 29 2:15 PM EDT

## How ERMA Can Help?

- **Data Collection, Visualization, and Sharing**
  - Cross Jurisdictional boundaries (Multi Agency, Multi State, Multi Cultural)
- **Resource Information**
  - Subsistence, cultural
  - 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



# ERMA Layout

The screenshot displays the ERMA Arctic web application interface. At the top, the header reads "ERMA | Environmental Response Management Application Arctic". Below this is a navigation bar with tabs for "Information", "Help", and "Recent Data", followed by a search input field and a "Login" button. The main map area shows a geographical view of Alaska and the surrounding Arctic seas (Beaufort Sea, Chukchi Sea, Bering Sea, Gulf of Alaska). The map includes various data layers, such as administrative boundaries, bathymetry, and environmental data, which are listed in a "Layers" panel on the right. The "Layers" panel includes options like "Background", "Admin Boundaries & Reference Features", "Bathymetry & Hydrology", "Imagery & Remote Sensing", "Natural Resources, Habitats, & Managed Areas", "Navigation & Marine Infrastructure", "Public Safety & Infrastructure", and "Response Planning". Under "Response Planning", there are sub-options for "Arctic Research Mapping Application (ARMAP) Field Research Projects", "Arctic Marine Shipping Assessment (AMSA) Incident Locations (1995-2004)", "Alaska (USA)", "Norway", "Restoration", "Weather, Oceanography, & Natural Hazards", and "ERMA Tools". A scale bar at the bottom left indicates 500 km and 500 mi. The bottom status bar shows the scale (1:28M), zoom level (4), and location coordinates (74.62938°, 179.91482°). The footer contains the NOAA logo, copyright information (US DOC | NOAA | NOS | NOAA Office of Response & Restoration), and a disclaimer/privacy policy link. The Coastal Response Research Center logo and copyright information (©2007 - 2012 University of New Hampshire) are also present.

ERMA | Environmental Response Management Application Arctic

Information | Help | Recent Data

Layers | Legend | Query Tools | Zoom | Download | Print

Layers clear all collapse all

- Background
- Admin Boundaries & Reference Features
- Bathymetry & Hydrology
- Imagery & Remote Sensing
- Natural Resources, Habitats, & Managed Areas
- Navigation & Marine Infrastructure
- Public Safety & Infrastructure
- Response Planning
  - Arctic Research Mapping Application (ARMAP) Field Research Projects
  - Arctic Marine Shipping Assessment (AMSA) Incident Locations (1995-2004)
- Alaska (USA)
  - Geographic Response Plan Maps - NW Arctic (2011)
  - Joint Subarea Contingency Planning Regions (ADEC)
- Norway
- Restoration
- Weather, Oceanography, & Natural Hazards
- ERMA Tools

Scale: 1:28M Zoom Level: 4 Location: 74.62938°, 179.91482°

US DOC | NOAA | NOS | NOAA Office of Response & Restoration  
Disclaimer | Privacy policy | Email comments

Coastal Response Research Center  
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# Arctic ERMA Development

## Accomplishments/Partnerships

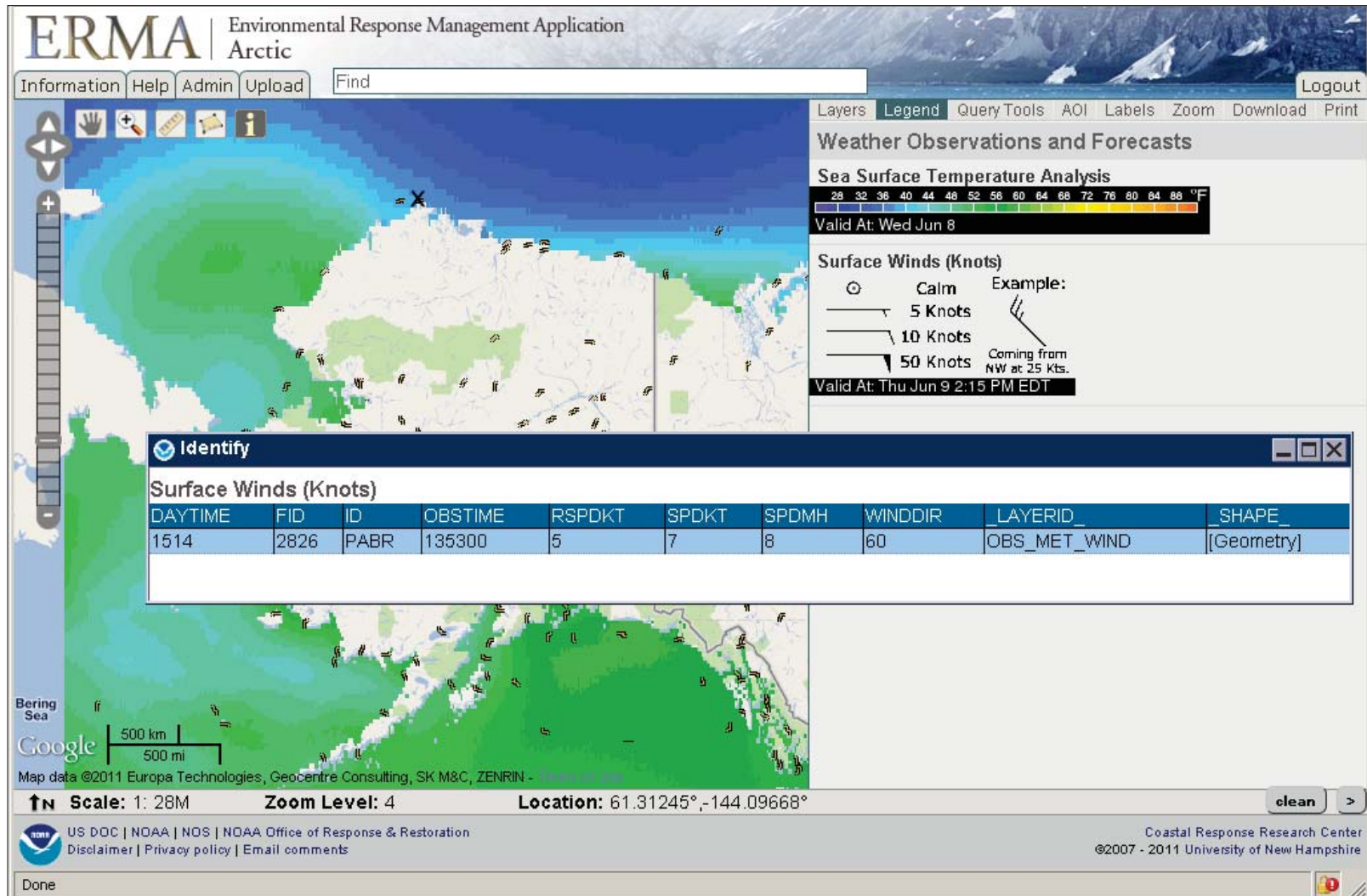
- Funded by NOAA, Oil Spill Recovery Institute, Bureau of Safety and Environmental Enforcement
- Public launch July 31, 2012 <https://www.erma.unh.edu/arctic>
- Populated base layers in collaboration with other mapping entities (AOOS/CIRCAC, Arctic Net, University of Alaska Fairbanks)
- Working with local Alaskan communities to incorporate local knowledge
- Pilot Project for the Arctic Council's Emergency Prevention, Preparedness and Response Working Group as a pan-arctic platform
  - Norm Snow advocate for Canadian involvement in Arctic ERMA
  - NOAA/Environment Canada Project under a "Memorandum of Understanding: For collaboration on Weather, Climate and Other Earth Systems for the Enhancement of Health, Safety, and Economic Prosperity"

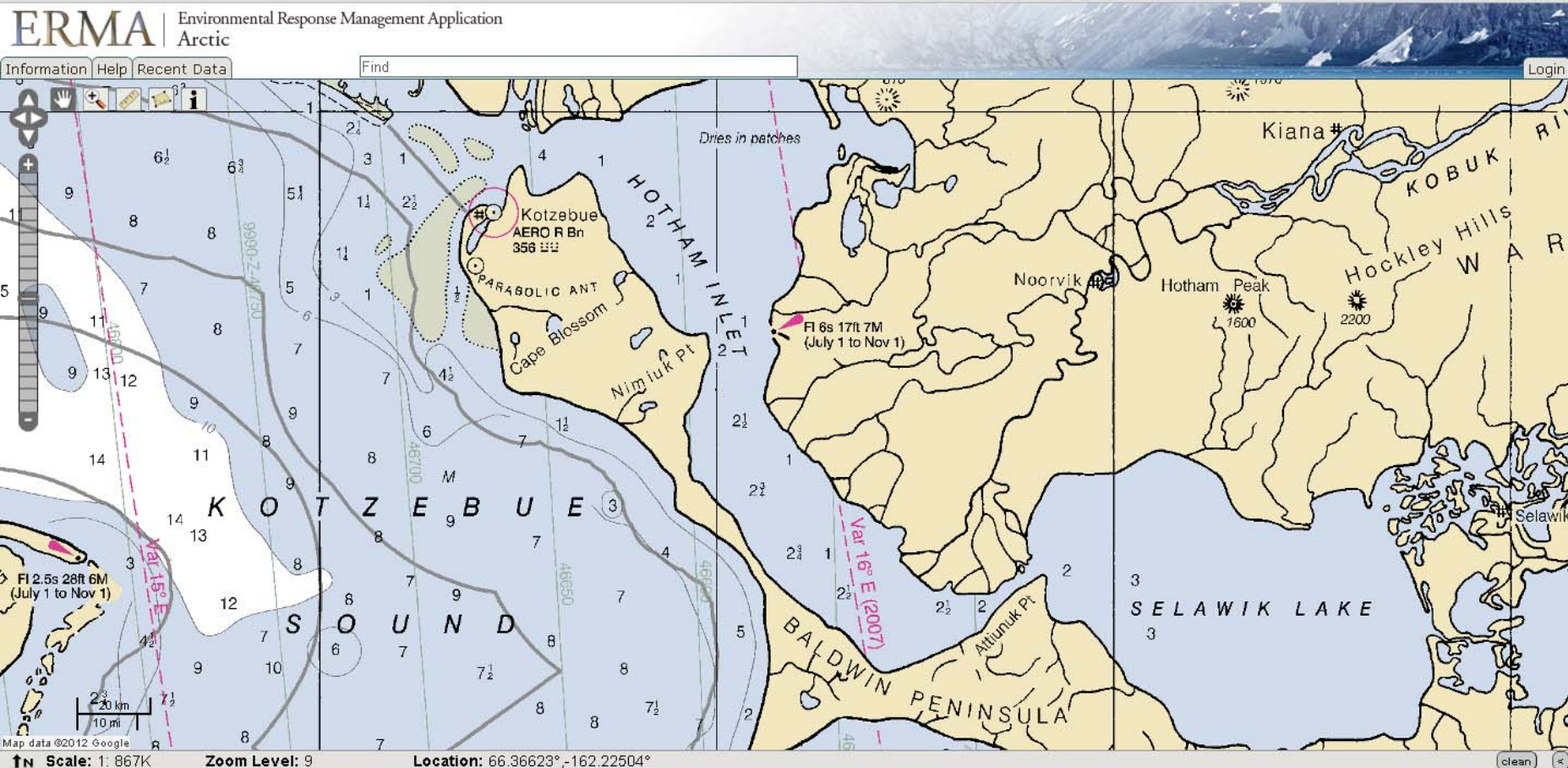
# Types of Information in ERMA

- 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

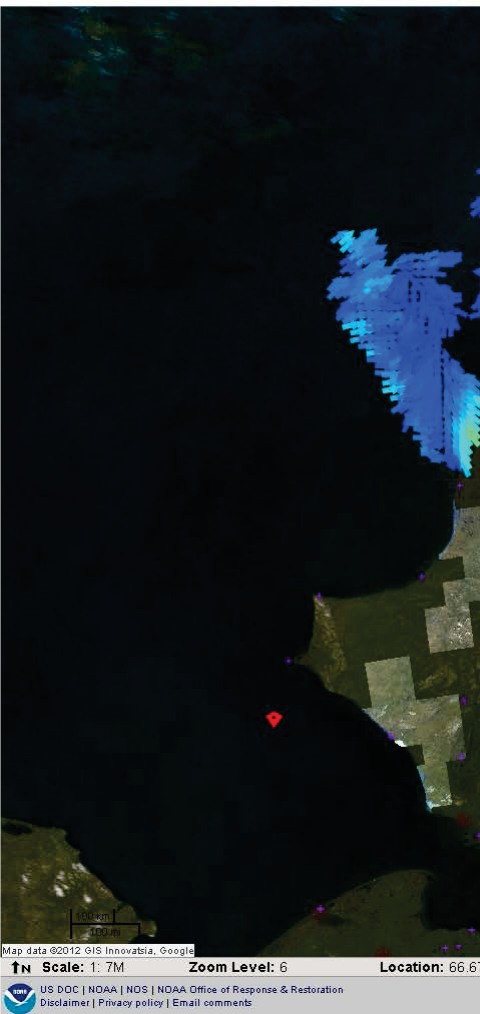


# Real-Time Weather Data Feeds









2012-05-17 10

## Barrow Webcam

2012-05-17 10:40



Cam 2012-05-17 10:40:41

[Click here for fullsize image](#)



[http://feeder.gina.alaska.edu/webcam-uaf-barrow-seaice-images/2012\\_05\\_17\\_10\\_40.html](http://feeder.gina.alaska.edu/webcam-uaf-barrow-seaice-images/2012_05_17_10_40.html)

### Imagery & Remote Sensing

Alaska Imagery - Best Data Available (Alaska Mapped, SDMI)

AK True Color Orthos 2.5-m, (SDMI, GINA)

### Currents

Sea Surface Currents (knots) - HF Radar (Demo from UAF, GINA)



### Ice Observations

Barrow Sea Ice Webcam (UAF, GINA)

Alaska (USA)

Airports (AKDNR, 2006)

Airport

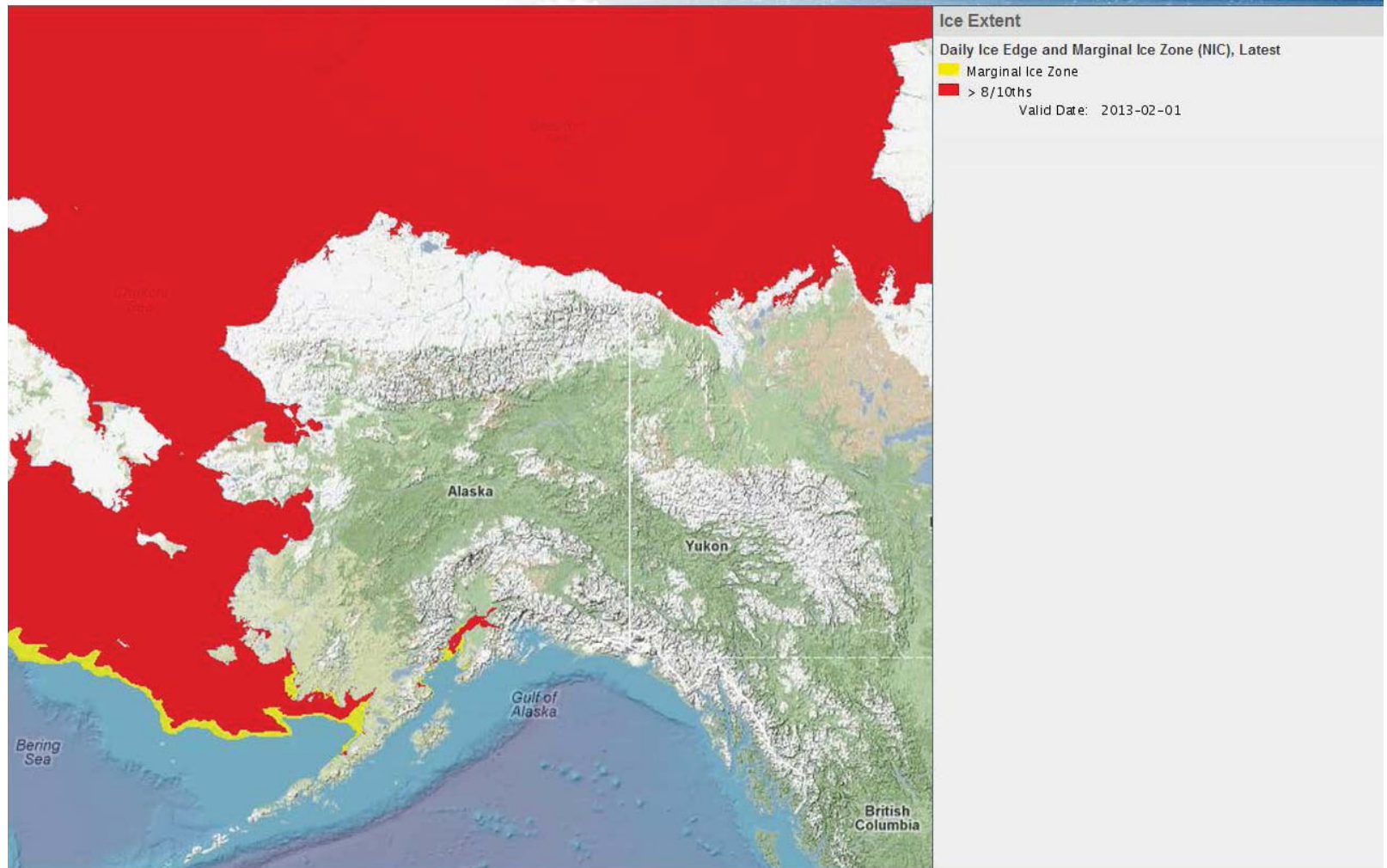
Alaska Airports, Helipads, and Seaplane Ports (GNIS, 2011)

### Hazardous Weather, Earthquakes, & Tsunamis

- USGS Earthquake Shakemaps Feed
- USGS Latest Earthquake Locations 1day Magnitude 2.5+
- USGS Latest Earthquake Locations 7day Magnitude 2.5+

# National Ice Center Ice Extent Feeds

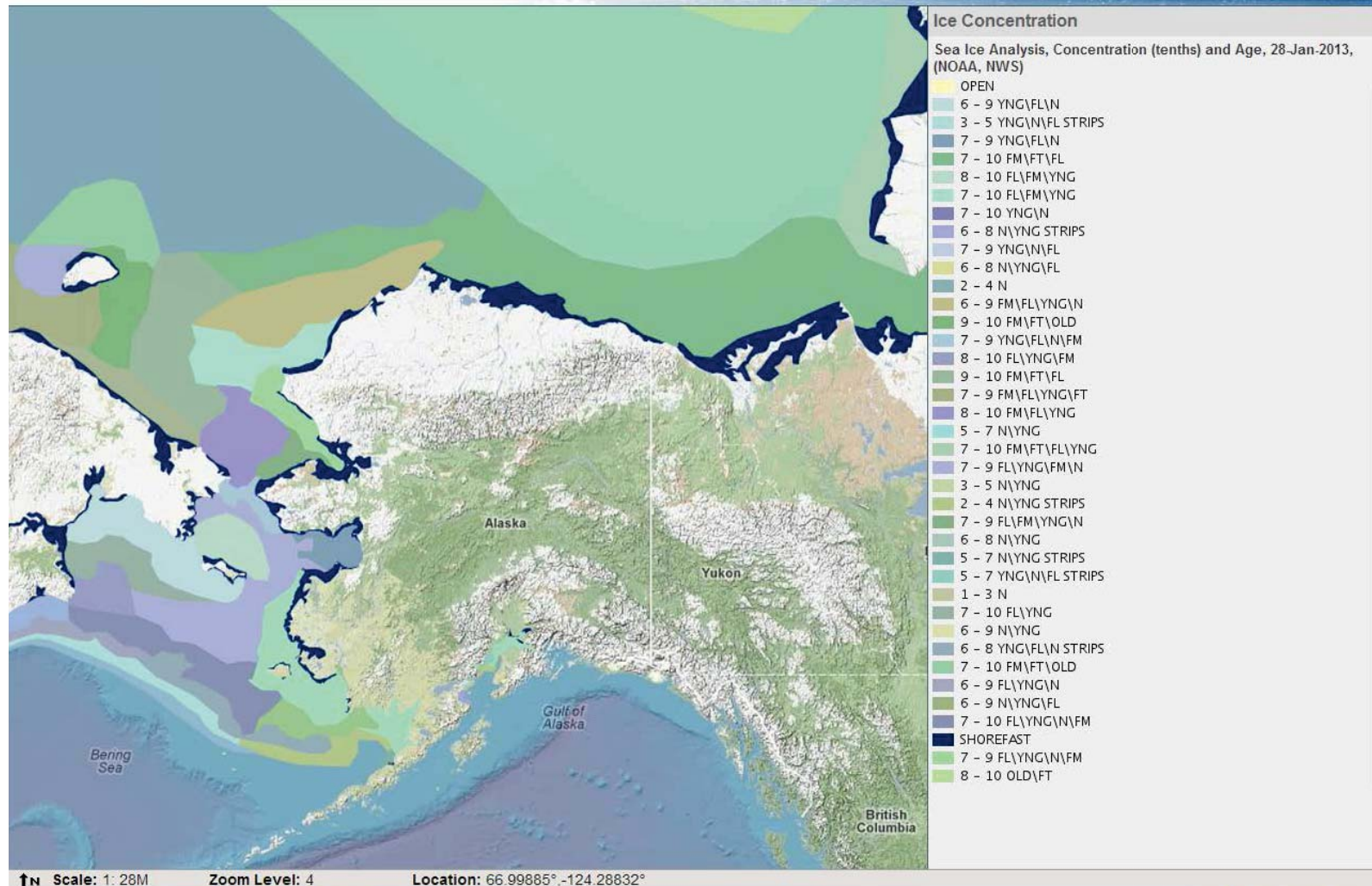
ERMA | Environmental Response Management Application  
Arctic



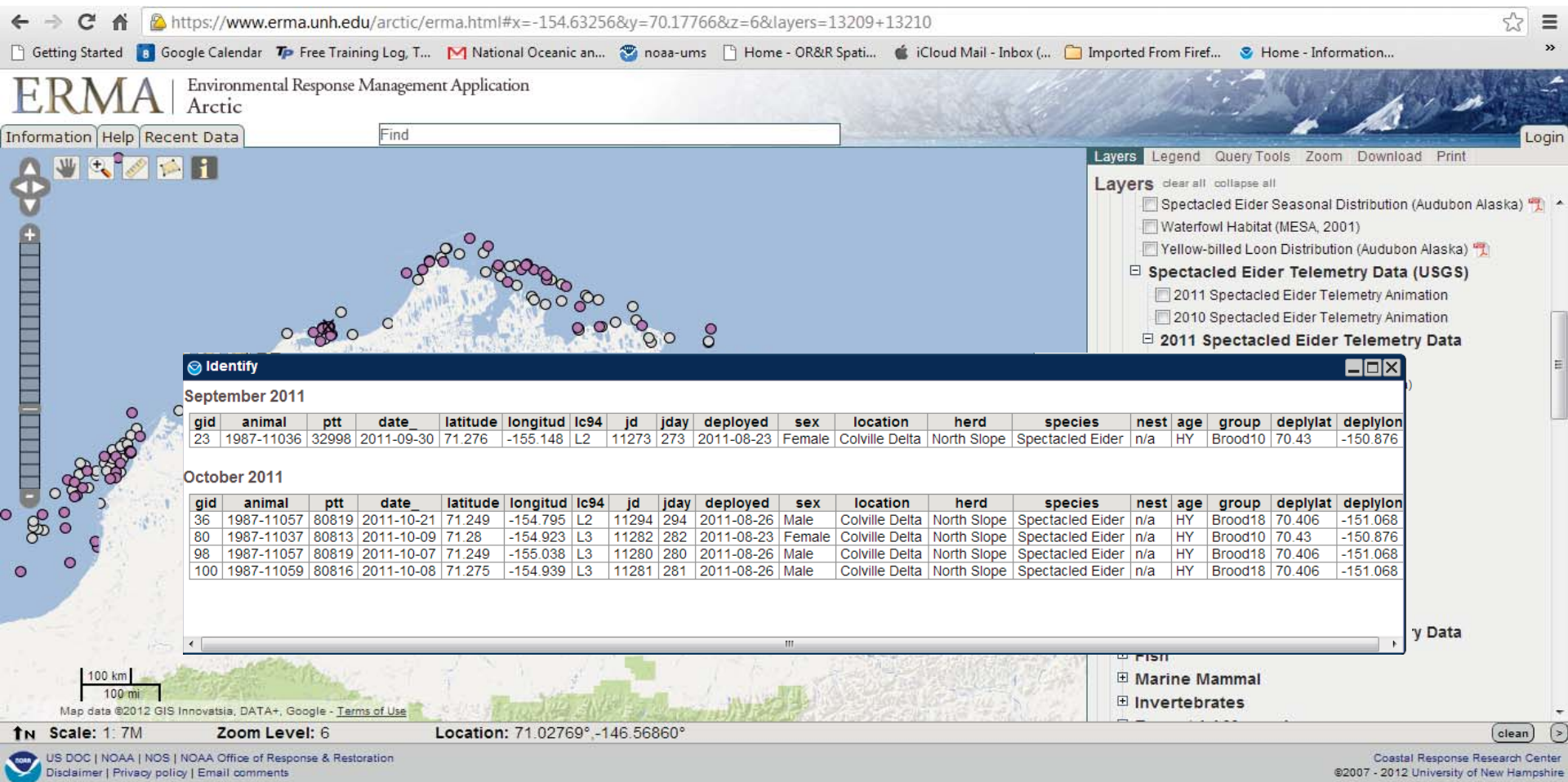


# National Weather Service: Ice Concentration

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# Spectacled Eider Telemetry Data





# Geographic Response Plans

ERMA

Environmental Response Management Application  
Arctic

NW Arctic Subarea Geographic Response Strategies

DRAFT June 2011

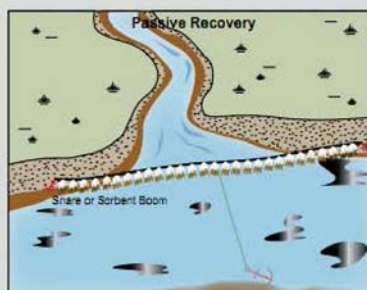
ADEC)

ID	Location and Description	Response Strategy	Implementation	Response Resources	Staging Area	Site Access	Resources Protected (months)	Special Considerations
N-22-01 FO-S	Nugnugluktuk River & Kougachuk Creek Nearshore waters in the general vicinity of the mouth of the river	Free-oil Recovery Maximize free-oil recovery in the offshore & nearshore	Deploy free-oil recovery strike teams upwind and up current of Nugnugluktuk River & Kougachuk Creek	Deploy multiple free-oil recovery strike teams as required to maximize interception of oil before it impacts nearshore waters	Deering	Via marine waters Chart 16005	Same as N-22-02	Vessel master should have local knowledge. Use extreme caution, shoal waters

FO-S

PR

EX



An example of the *Passive Recovery Tactic*. Actual deployment should be adjusted for local conditions.



An example of the *Exclusion Booming Tactic*. Actual deployment should be adjusted for local conditions.

Map  
Legend

Free-oil Recovery



Passive Recovery



Exclusion Booming

Protected-water Boom

Shore or Sorbent Boom



Bears in Area, Guards Recommended

Aerial photography of this area is unavailable at this time, but may be included as it becomes available.

## Nugnugluktuk River & Kougachuk Creek, NWA-N22

Center of map at 66° 13'20" N Lat., 163° 54'23" W Lon.



This is not intended for navigational use.

Site Information for Northwest Arctic, NWA-N22

Identify

Geographic Res

gid	subarea	
22	Northwest Arctic	Ni

Google

200 km  
200 mi

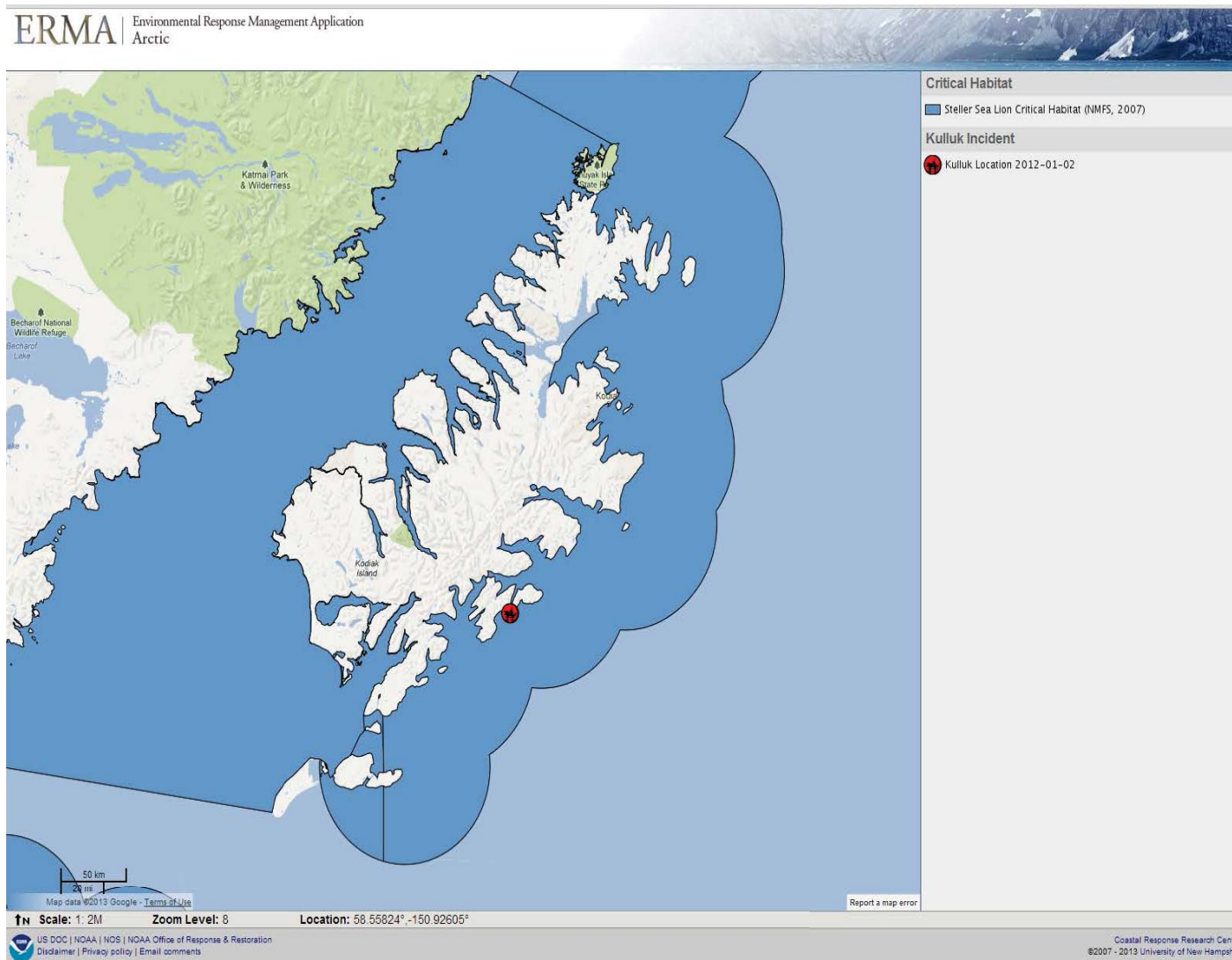
WESTERN

Map data ©2012 Europa Technologies, GIS Innovatsia, G

Scale: 1: 14M

Zoom Level:

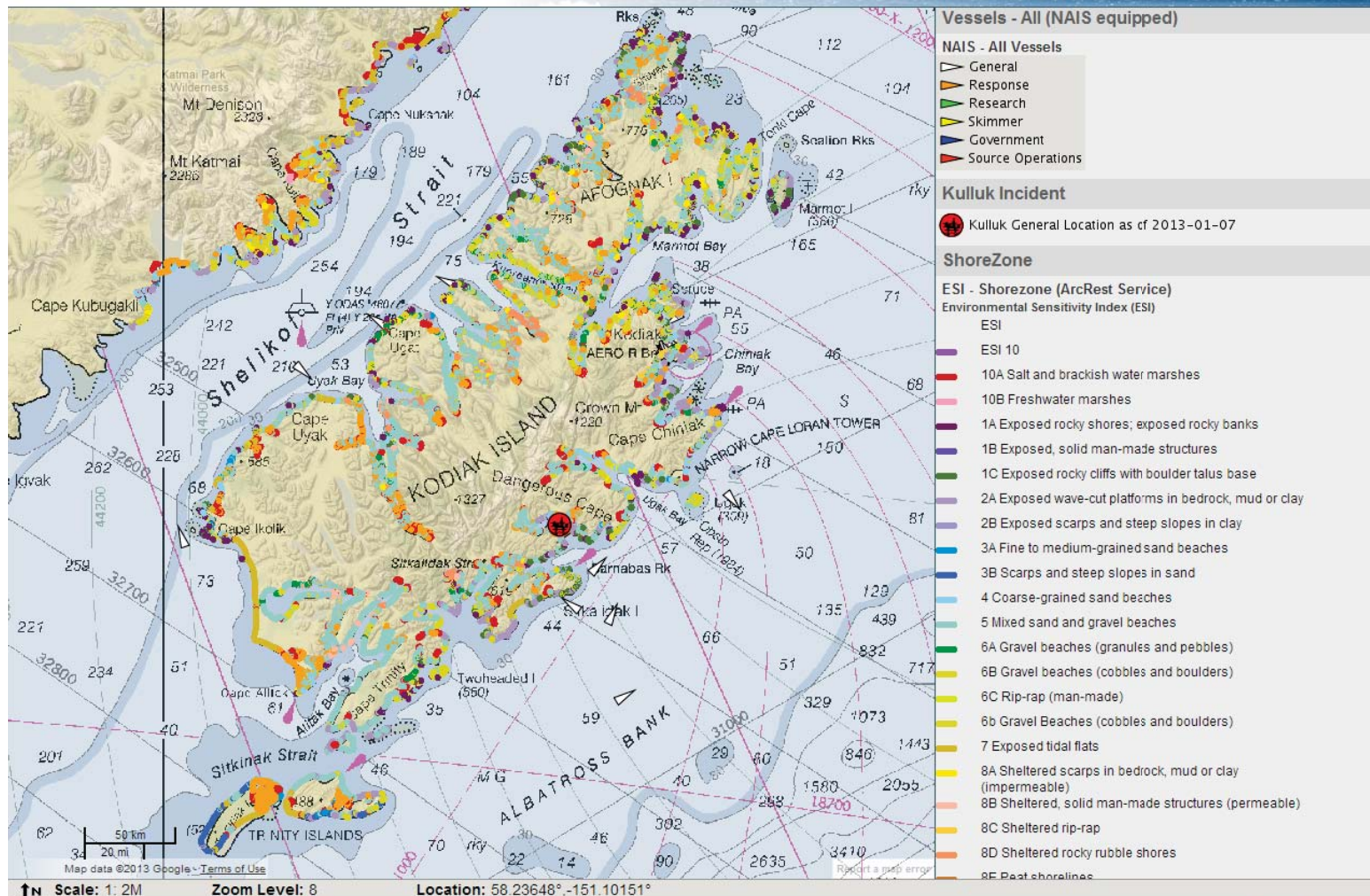
# Rig Kulluk: Grounding





# Rig Kulluk: Place of Refuge

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Arctic



## ERMA Next Steps

- Host workshop with Canada on obtaining high priority Canadian datasets (Feb 12/13, 2013 – Edmonton, CA)
- Develop Stand-Alone Product (Spring 2013)
- Participate in the upcoming SONS 2013 Exercise - TBD
- Continue working with the Arctic Communities



# For More Information

## <https://www.erma.unh.edu/arctic>

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  - Allison Bailey, Sound GIS
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  - Chander Ganesan, OTG

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