Environmental Response Management Application

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ERMA®

Barrow, AK
Nov 8-9, 2012
What is ERMA?

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

• 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
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
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
Environmental Response Management Application (ERMA)
External GIS Data
- Nautical Chart
- Real Time Weather Obs
- Buoy data feeds
- Vessel Tracking
- NOAA Baseline Datasets

Base Public datasets
- Environmental Sensitivity Indices
- Landuse
- Bathymetry
- Regional Monitoring
- Habitat Classifications
- Restoration Projects
- Local Bioresource data

Secure Response datasets
- Trajectories
- Satellite Interpretations for oil
- Shoreline Assessment Results
- Overflight Plans & Observation
- Booms Strategies & Deployment
- Protected Resource Impacts
- Field sampling (subsurface, analytical chemistry, etc.)
- Platform observations
- Additional data feeds as required
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
Where to Find Data: Layers Tab
Where to Find Data: Legend Tab
Where to Find Data: Bookmarks/Zoom Tab
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)
- Kotzebue Workshop (May 12)
- Barrow Workshop (Nov 12)
NOAA/BSEE Funding

• Enhance/finish Arctic ERMA before exploratory drilling commences

• Tasks:
  – Finished acquiring key data sets
    Launched July 31, 2012
  – Develop “stand-alone” ERMA (currently)
  – Training/drills
  – Operations/Maintenance
Arctic Communities Workshops

- NWAB/Kotzebue – May 21-22, 2012
- NSB/Barrow – Nov 8-9, 2012
- Establish understanding of oil spill response, NRDA and ERMA
- Identify local knowledge data and information
- Initiate agreements to protect local knowledge/information
AK and Arctic Partners

- Arctic Communities – Kotzebue and Barrow
  – This workshop, in particular!
- Alaska Ocean Observing System (AOOS)
- University of Alaska – Fairbanks
- Oil Spill Recovery Institute, Cordova, AK
- Arctic Council’s Emergency, Prevention, Preparedness and Response Working Group
How will ERMA use your maps/data?

• Preparedness:
  – What if the unthinkable happens here? What are the spill risks?
  – What are the local response priorities? Do they align with the Geographic Response Plans?
  – Can we make general predictions of areas of concern based on habitat/species relationships for different seasons….
  – Prioritize data sets that you want to be public
    • For example, Iñupiaq place names?
    • Are there others?
Incident
Incident
Demo
Real-Time Weather Data Feeds
Real-time Data
Resources at Risk
Resources at Risk
# Geographic Response Plans

**NW Arctic Subarea Geographic Response Strategies**

<table>
<thead>
<tr>
<th>ID</th>
<th>Location and Description</th>
<th>Response Strategy</th>
<th>Implementation</th>
<th>Response Resources</th>
<th>Staging Area</th>
<th>Site Access</th>
<th>Resources Protected</th>
<th>Special Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-22-01</td>
<td>Nugnugluktuk River &amp; Kougachuk Creek, Northwest Arctic</td>
<td>Freewall Recovery</td>
<td>Deploy residual recovery at the effluent &amp; estuary</td>
<td>Oil &amp; gas</td>
<td>Denali</td>
<td>Via marine waters</td>
<td>Exterior mooring, shore access</td>
<td></td>
</tr>
<tr>
<td>N-22-02</td>
<td>Nugnugluktuk River &amp; Kougachuk Creek, Northwest Arctic</td>
<td>Passive Recovery</td>
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<tr>
<td>N-22-03</td>
<td>Nugnugluktuk River &amp; Kougachuk Creek, Northwest Arctic</td>
<td>Exclusion Boom</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**Legend**
- **Dark Green**: Protected water area
- **Blue**: Freewall recovery
- **Purple**: Passive recovery
- **Red**: Inclusion Boom

**Nugnugluktuk River & Kougachuk Creek, NWA-N22**

Center of map at 66° 13'20" N Lat., 163° 54'28" W Lon.

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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
What if a spill happens near this region?

• Critical to have local people in the response infrastructure

• “Real-time” traditional, local knowledge
  – Need your experts to work with our experts to make maps that affect protection and cleanup

• Use subsistence mapping effort here to guide the response effort
  – Borough and Villages approve data access!!!
  – Pull in your community data providers
Thoughts on Integrating More “hands on”

- Detailed training for Subsistence Mapping Team?
- New ERMA code with more sophisticated privilege settings – protect data until needed
- Identify data management people should a spill occur? The Borough uploads subsistence data?
- Use ERMA as scenario development/thought tool in schools?
Thoughts on Integrating, cont’d

• Build in a way to report traditional observations
  – Hajo Eiken’s (UAF) work with subsistence hunters reporting ice conditions
  – Expand LEO – Local Environmental Observer network for a spill or other event?

• Village Peer Reviewers

• Finish Stand-Alone ERMA
For More Information
https://www.erma.unh.edu/arctic

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