Welcome Participants!

Innovative Coastal Modeling for Decision Support: Integrating Physical, Biological and Toxicological Models

Coastal Response Research Center
September 26-28, 2006

Coastal Response Research Center

Nancy Kinner
Amy Merten

September 26-28, 2006

Center Staff

- **Co-Directors:**
  - **UNH – Nancy Kinner**
  - **NOAA – Amy Merten**
- **Research Scientist – Kim Newman**
- **Project Coordinator – Kathy Mandsager**
- **Assistants:**
  - **Kristin Bailey-McCarthy**
  - **Walter Durack**

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Logistics

- Packet Contents
- Bathrooms
- Gregg Hall has WiFi
- Emergency Exits
- Center “Help Desk”
- Parking vs. Group Transport
- Lunch Breaks on your own except Thursday
- Full Breakfasts (Gregg Hall) and Evening Dinners (Other Locations)

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Coastal Response Research Center Mission

Center Creation

- Funding for oil spill research decreasing
  - Government
  - Private sector
- Many research needs exist regarding spill response, recovery and restoration
- ORR/UNH oil spill partnership started in 2002
- Coastal Response Research Center formed in 2004

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NOAA

Overall Center Mission

- Develop new approaches to spill response and restoration through research/synthesis of information
- Serve as a resource for ORR and NOAA
- Serve as a hub for spill research, development, and technical transfer

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Specific Center Missions

- Conduct and oversee basic and applied research and outreach on spill response and restoration
- Transform research results into standards of practice
- Encourage strategic partnerships to achieve mission
- Conduct outreach to improve preparedness and response
- Create a learning center to promote awareness of capabilities and realistic expectations about risks and benefits

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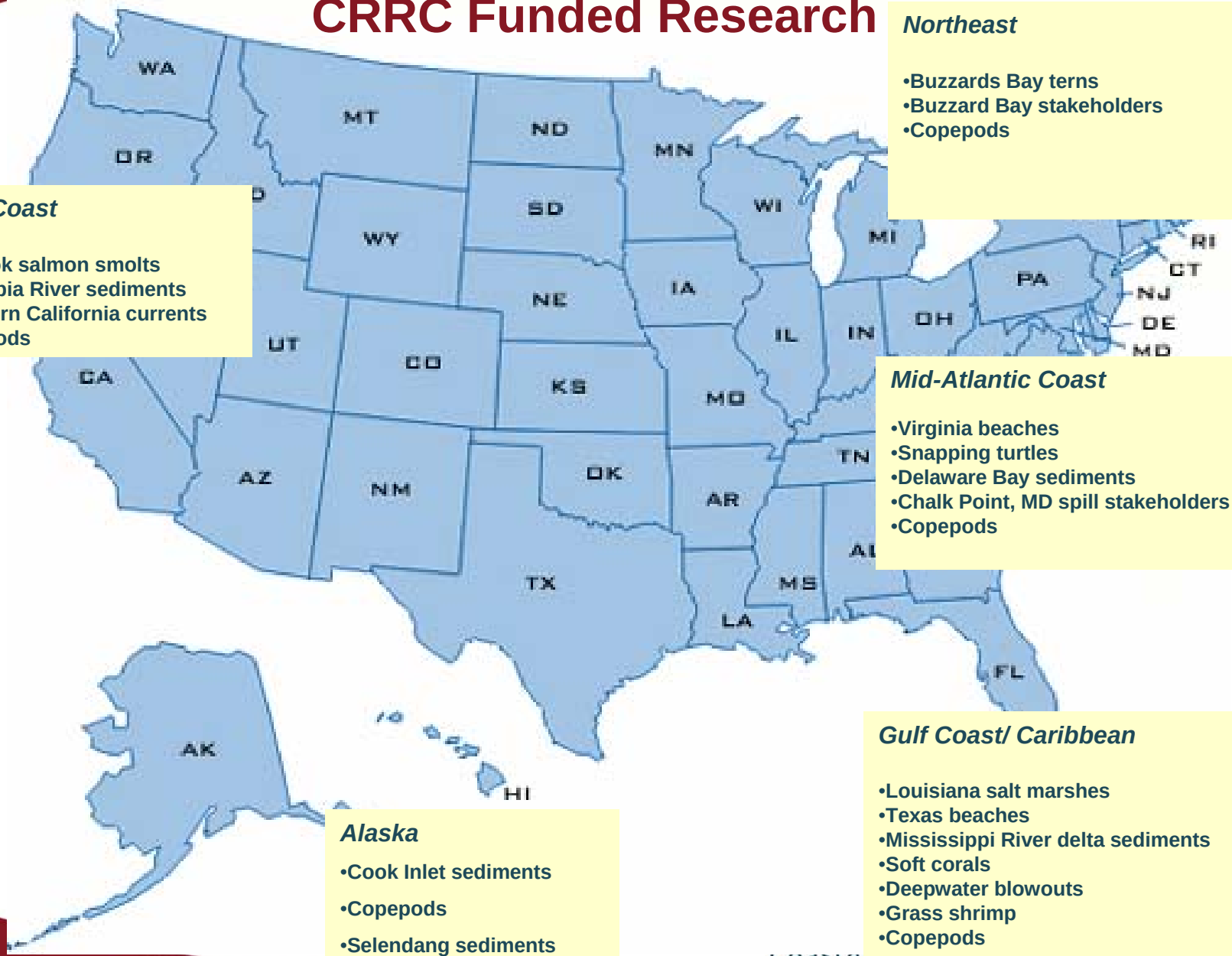
CRRC Funded Research



Northeast

- Buzzards Bay terns
- Buzzard Bay stakeholders
- Copepods

West Coast

- Chinook salmon smolts
- Columbia River sediments
- Southern California currents
- Copepods

Mid-Atlantic Coast

- Virginia beaches
- Snapping turtles
- Delaware Bay sediments
- Chalk Point, MD spill stakeholders
- Copepods

Gulf Coast/ Caribbean

- Louisiana salt marshes
- Texas beaches
- Mississippi River delta sediments
- Soft corals
- Deepwater blowouts
- Grass shrimp
- Copepods

Alaska

- Cook Inlet sediments
- Copepods
- Selendang sediments

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Translating CRRC-Funded Research into Practice

- NOAA Co-Director with Response Experience
- NOAA Project Liaisons
- PAH Toxicity Workshop
- Integrated Modeling Workshop
- Office of Response & Restoration (OR&R) Special Projects

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PAH Toxicity Workshop
Aug 15 – 16, 2006
Objectives:

- Identify areas where data gaps have been filled through collective research
- Identify gaps that remain
- Delineate methods for translating research results to application
- Outline potential products
- Discuss strategies for implementation
  - Workgroups? Contracts? Databases? Manuscripts?

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PAH Toxicity Workshop
Aug 15 – 16, 2006
Main Results:

- **Identification of database characteristics and data needs to incorporate chemical fate and biological effects predictions into model forecasts**

- **Identification of data-rich case studies to inform database needs and seed oil (PAH) library**

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PAH Toxicity Workshop
Aug 15 – 16, 2006
Main Results:

- **Identification of strategies for improving collaborations across NOAA**
  - **Integrating messages and research needs**
  - **Leveraging funding**
  - **Developing non-traditional methods for integrating research results into spill response practices**

- **Identification of new ideas for better preparing to apply broader suite of NOAA scientific capabilities to spills**

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Integrated Modeling Workshop

- Connectivity to CRRC-funded researchers
- Designed for high NOAA participation
- First of an annual series addressing NOAA OR&R “hot-topics”

OR&R Special Projects

- CRRC-funded program for OR&R professional development
- Competitive process; joint decision by UNH and ORR
- 2 awards: CRRC pays 6 weeks salary and modest travel needs for OR&R staff
- Allows recipients to focus on issues that will directly impact ORR and CRRC
- Integrated modeling and PAH toxicity workshops to help foster ideas for proposals
- Applications are due to David Holst, Nov 17th, 2006

Participant Introductions

Name
Affiliation
Interests for Participation

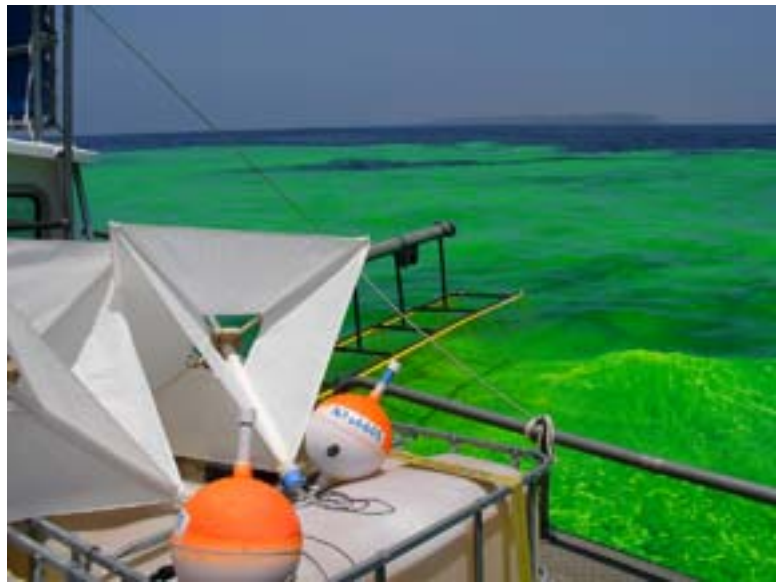
Highlights of CRRC Funded Research in the Integrated Modeling Workshop

Payne, French-McCay, Nordhausen, and Terrill

- **Field Verification of Oil Spill Fate and Transport Modeling and Linking CODAR Observation System Data with SIMAP Predictions**

Objectives:

- **Measure small-scale transport processes**
- **Develop/validate oil-spill model algorithms for application to subsurface dispersion modeling of naturally-entrained and chemically-dispersed oil**
- **Refine dispersed oil monitoring program in CA**



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McGrath and DiToro

- Use the target-lipid model to develop a universal endpoint (toxic unit) to normalize PAHs from disparate studies to compare toxicities
- Use the target-lipid model to predict chronic toxicity endpoints
- Developed a database of studies where individual PAHs and mixtures of PAHs exposed aquatic organisms
  - Constant exposures
  - Measured exposure concentrations
  - Measured body residues associated with effects

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Mitchelmore and Baker

- Objectives – acute and chronic impacts of dispersant, Arabian Light WAF, and CE-WAF on anemones (1st year) and corals (2nd year)
- Exposures – Gradient of exposures for 8 hours, recovery for 1 month. Measured 53 PAH in water for each treatment across time (0, 4, 8, 24, 48, 72, 96 hours, and 28 days)
- Endpoints:
  - Mortality
  - Behavioral (tentacle extrusion, mucous production)
  - Bioaccumulation of PAHs
  - Biomarkers (protein levels, algal cell counts, chl a, DNA damage, mRNA levels)

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Newman and Unger
Virginia Institute of Marine Sciences

- Developing time-dependent model for predicting mortality from individual PAHs and mixtures of 6 representative PAHs
- Receptor: grass shrimp
- Examining latent mortality
- Quantifying exposures

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