

Spill Modeling Summit



Wrap-up Notes



Discussion and Consensus/Synthesis of Perspective

- State-of-the Art for Spill Modeling
- Future Oil Spill Modeling
- Research Questions for Spill Modeling



Research Needs- SOTAR

- SOTAR - vertical and horizontal dispersion coefficients and how to build into model
- SOTAR - on Langmuir model (wind drift, stokes drift, surface mix layer) and how to build into model
- SOTAR - oil sediment interactions and how to build into model



Research Needs - Emulsification

- Emulsification - when does emulsification begin - mechanistic algorithm based on oil composition and environmental conditions



Research Needs - Biology

- **TOP PRIORITY:** More short-term toxicity data (less than 12 hours true acute)
 - Variety of representative cold/warm water species
 - Characterization of exposure for all studies
 - Exposure to chemically dispersed oil
- **More long-term effects of acute exposures**
 - Variety of representative cold/warm water species
 - Characterization of exposure for all studies
 - Exposure to chemically dispersed oil
 - Growth, behavior and reproductive factors (Species dependent)
- **Avoidance/Attraction of birds to oil**



Research Needs - Validation

- Effect of the uncertainty in the input on the model output (i.e., sensitivity)
 - Oil type & characteristics
 - etc
- Monitoring during spills -
 - Water column - 4-D (drifters to track plume)
 - Density profiles
 - Concentration, and size distribution of oil droplets and dissolved components
 - Exposed Creatures
 - Bird & turtle exposure & impacts (beyond dead bodies)
- Experimental Spill??



Research Needs - Visualization

- 4-D visualization of 3-D concentrations with uncertainty communicated to non-modelers
 - Software tool (?) or representation standards
 - Not model specific
- Interactive visualization tool for modelers
- Interactive visualization tool for decision-makers & information management



Research Needs - Integration of Observed Data into Models

- nowCast/ forecast
- QA QC
- Data mining
- HF radar, etc
- Remote sensing (wave fields, currents, oil distribution, sea surface heights, oil ashore)
- Technology and standards to translate data to model
- How to address differences in time & space scales
- Tech transfer from meteorology and oceanography and atmospheric dispersion



Unresolved Issues

- Capture on the shorelines
- Shoreline distribution
- Droplet distribution as a function of energy dissipation rate
 - Surface
 - Bottom
- Air concentration (hydrocarbons)
- Oil-in-Ice
- Tech transfer of current research into operations
- More transparency in models
- Calculating concentrations from Lagrangian method

