noaa

National Oceanic and Atmospheric Administration • National Ocean Service • Office of Response and Restoration

User Perspective:

What Models are NOAA's Assessment and Restoration Division Using?

CRRC Oil Spill Modeler's Workshop

Kate Clark and Troy Baker

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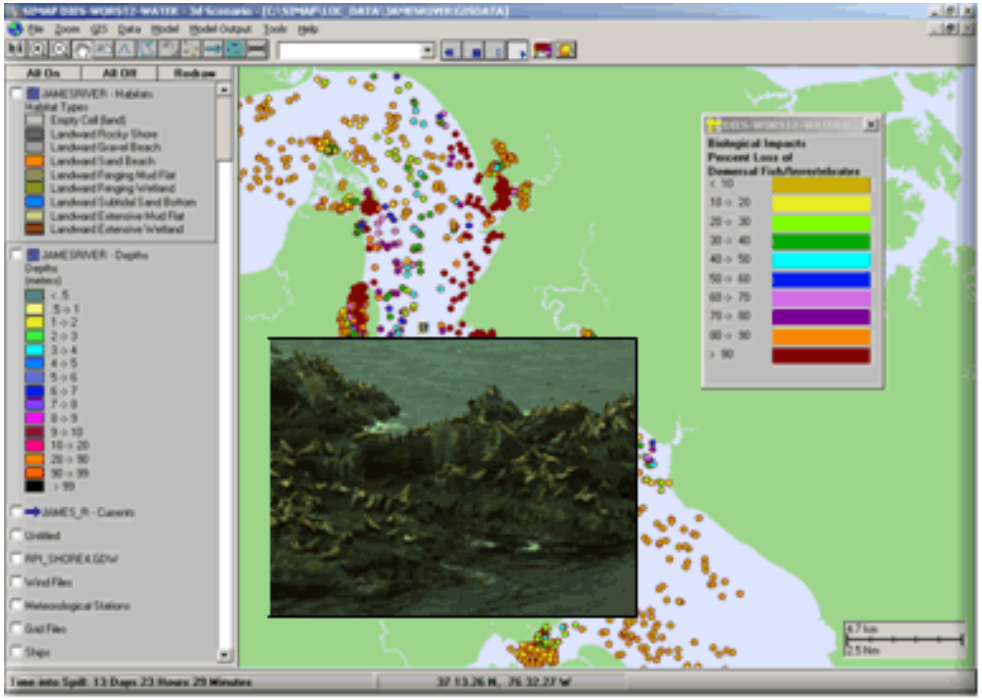
Water Column Modeling

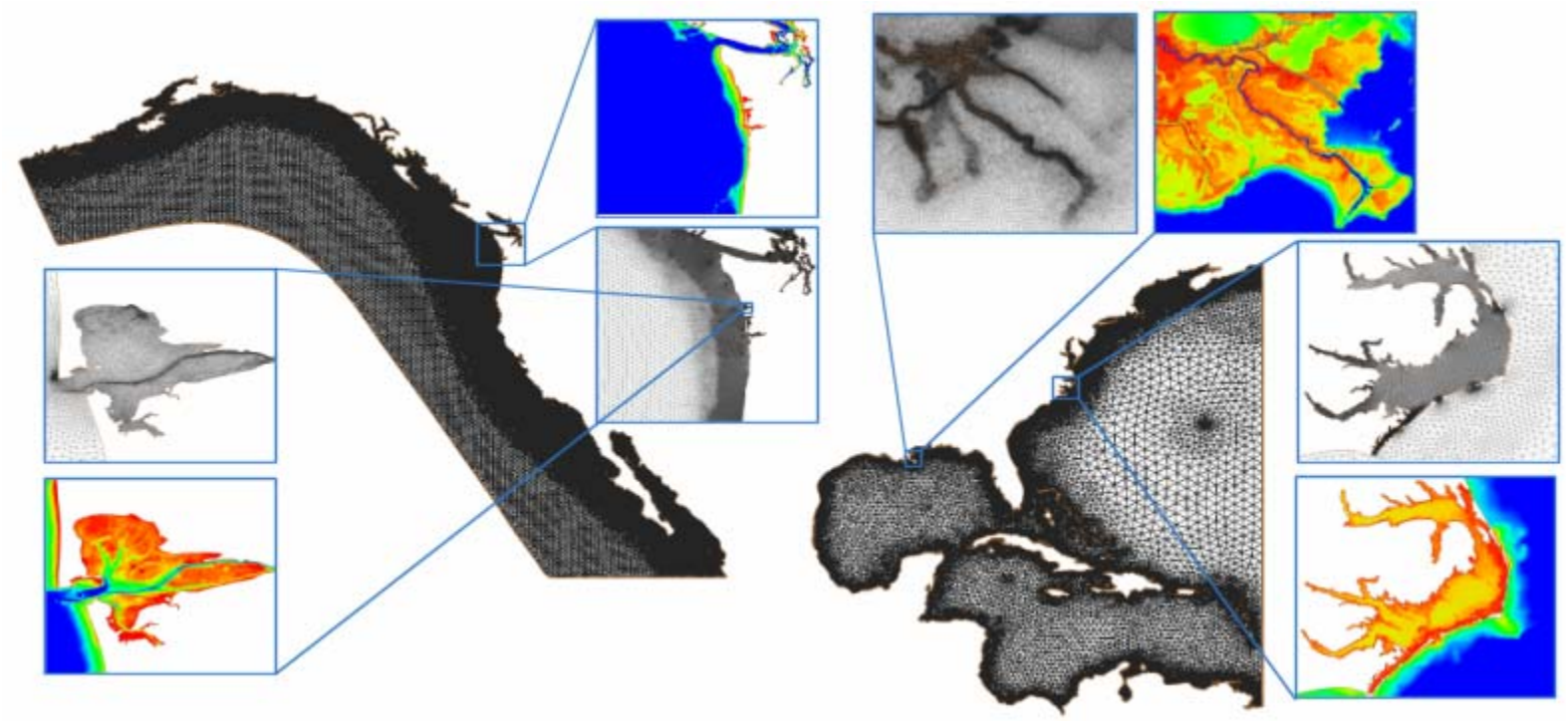
SIMAP; Spill Impact Model



Source: http://www.appsci.com/simap/index.htm

Storm Surge Modeling

ADCIRC; Advanced Circulation Model



Source: www.adcirc.org

Fate and Transport Modeling

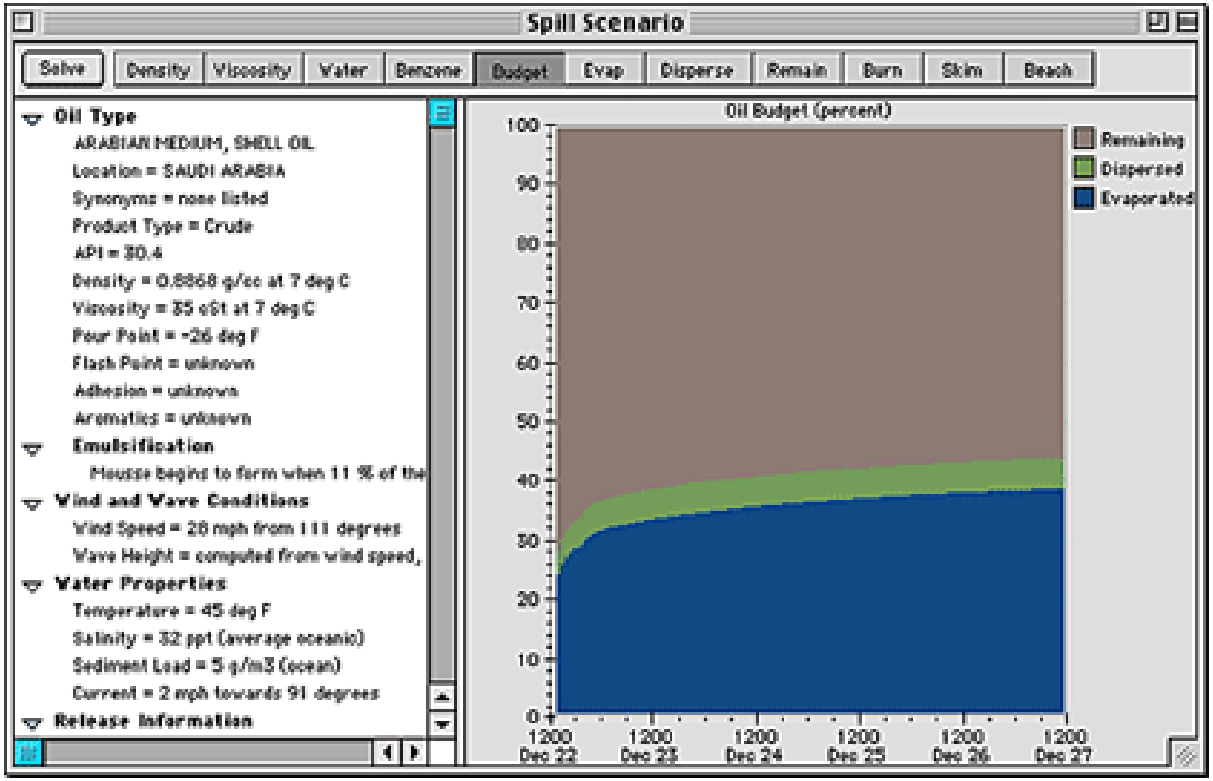
GNOME;

General NOAA Operational Modeling Environment

Source: http://response.restoration.noaa.gov/book_shelf/820_GNOME.pdf

Oil Weathering Model

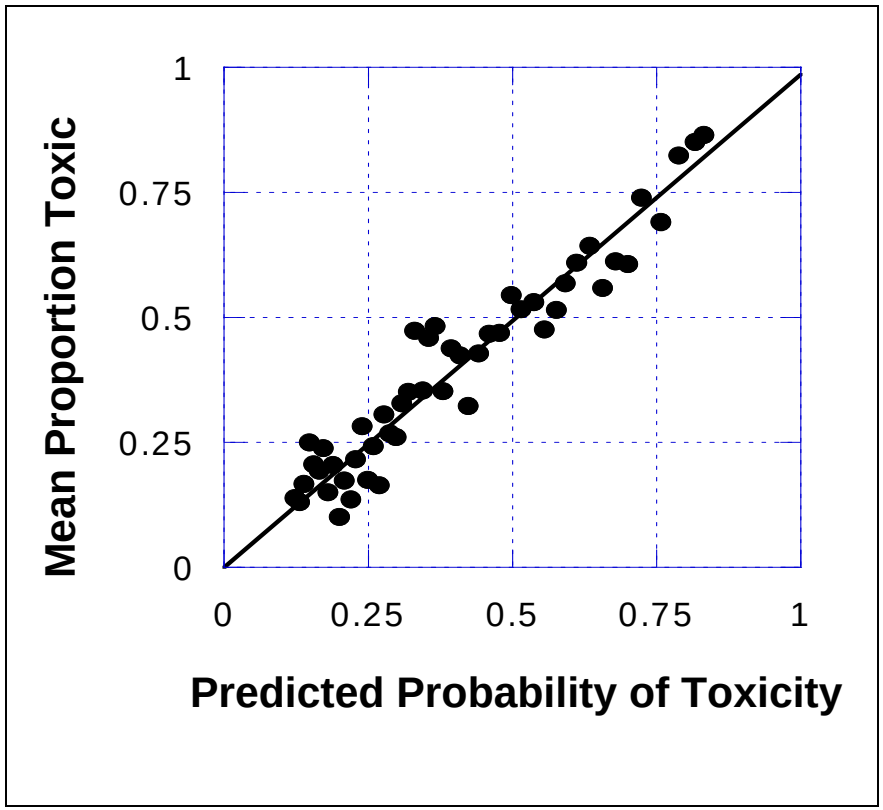
Adios2; Automated Data Inquiry for Oil Spills



Source: http://response.restoration.noaa.gov/book_shelf/538_adios.pdf

Logistic Regression Models

- Using LRM to match site-specific chemistry-toxicity data to evaluate model performance always recommended
- If limited available data, model output predicting incidence and/or magnitude of toxicity can be used to establish framework for scaling benthic injury



The probability of toxicity is predicted using the P_Max model. Each point represents the median predicted probability of a minimum of 50 individual samples within the interval (n=3223)

Source: Jay Field, ARD

State of the Art?

- Defensible
- GIS compatibility
- Real-time data incorporation
- Cost-effective
- Friendly interface; user friendly

The Holy Grail

- Biological: expand toxicology database
  - taxanomically and temporally – research limited
- 3-D
- Rapid assimilation of real data
- Translating exposure to effects over time
  - relies heavily on toxicology database
- Net Environmental Benefits Analysis (NEBA) component
- Economic valuation
- Integration of Habitat Equivalency Analysis (HEA)
  - exposure effects = % service loss for a particular trophic level
- Open-source code

Research

- Sensitivity analysis: Stochastic vs. deterministic models.
- How best to incorporate stochasticity into our models?
- Communicating function and results to the public
- How can we incorporate species density or other environmental information in a standardized way?
- Developing computational links between models that may not be in place already (i.e., storm surge + transport and fate)
- How does exposure relate to habitat/resource service loss?

Thank You

Kate Clark
NOAA Office of Response and Restoration
Kate.clark@noaa.gov
V: 401-782-3235

Photo: K.Clark