

SIMAP provides detailed predictions of the three-dimensional trajectory, fate, impacts and biological effects of spilled oil.

APPLICATIONS FOR SIMAP INCLUDE:

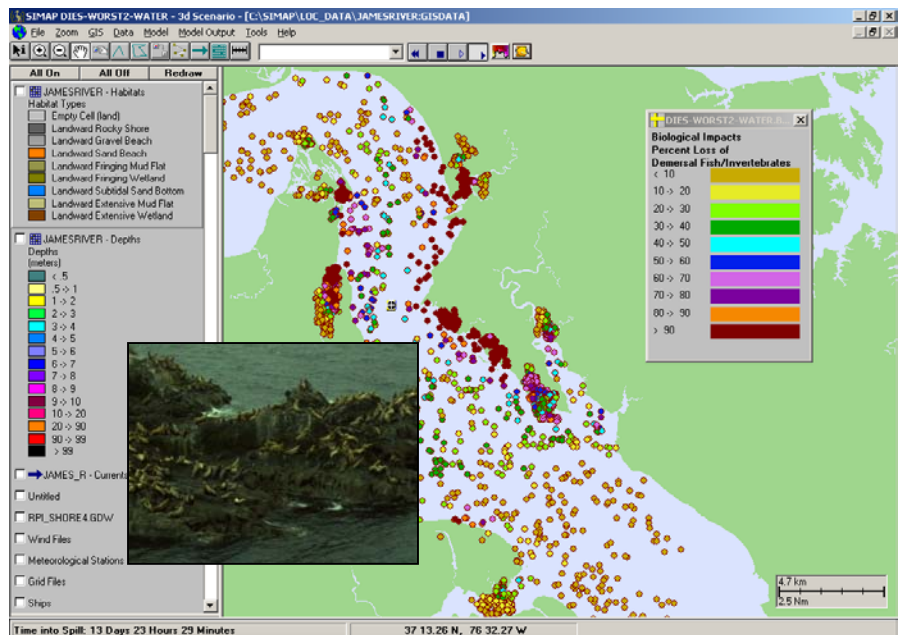
- Hindcast/forecast of spill response.
- Natural resource damage assessment.
- Contingency planning - including worst-case scenario.
- Evaluation of point source discharges.
- Cost-benefit analysis.
- Drills and education.

SIMAP HIGHLIGHTS

- ▶ Physical Fates Model
- ▶ Biological Exposure and Effects Model
- ▶ Stochastic Model
- ▶ Interactive GIS
- ▶ Environmental, Oil & Biological Databases

FEATURES

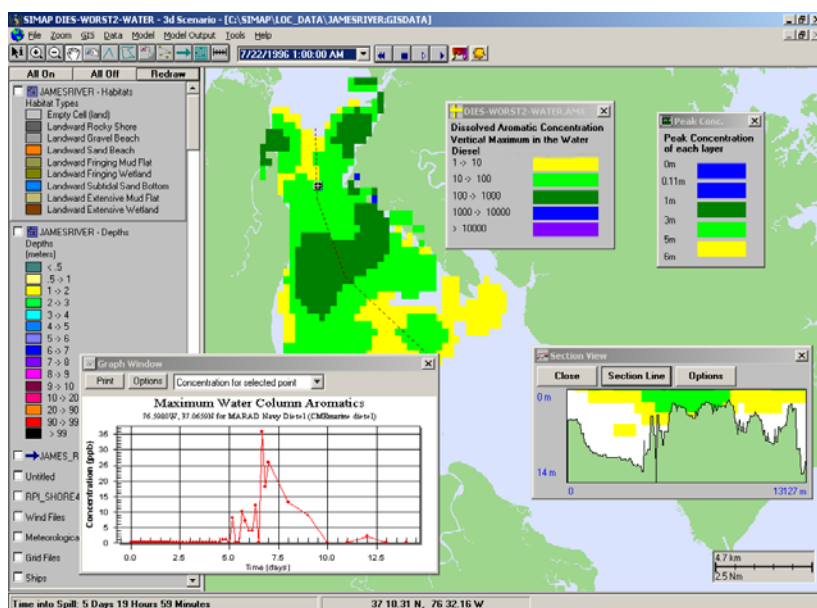
- Contains ASA's own GIS or can be used in other GIS software such as ArcView®.
- Easily interpreted visual displays of surface distribution and subsurface concentrations of spilled oil and its components over time.
- Impacts on fish, shellfish, wildlife, and for series of habitats (environments) affected by the spill.
- Location specific environmental/ biological data applied to any fresh or salt aquatic environment in the world.
- 3D Viewer capabilities.
- Can utilize a variety of hydrodynamic file formats.



PHYSICAL FATES MODEL

SIMAP simulates the following processes:

- Initial plume dynamics.
- Slick spreading, transport, and entrainment of floating oil.
- Evaporation and volatilization (to atmosphere).
- Transport and dispersion of entrained oil and dissolved aromatics in the water column.
- Dissolution and adsorption of entrained oil and dissolved aromatics to suspended sediments.
- Sedimentation and resuspension.
- Natural degradation.
- Shoreline entrainment.
- Boom and dispersant effectiveness.



BIOLOGICAL EXPOSURE AND EFFECTS MODEL

The biological exposure model evaluates:

- Area or water volume exposed above a selected threshold (i.e. a toxicological endpoint in US EPA ecological risk assessment terminology).
- Dose (sum of concentration times time of exposure) the biota are exposed to and the expected percent mortality from acute toxic effects.

STOCHASTIC MODEL

The stochastic model predicts:

- Range of expected concentrations and the probability of exceeding thresholds of concern from a chemical discharge.
- Frequency distribution of model results, for which statistics are calculated and plotted.

ENVIRONMENTAL, CHEMICAL AND BIOLOGICAL DATABASES

- *Environmental database* - includes coastline, bathymetry, shoreline type, ecological habitat type, and temporally varying ice coverage and temperature.
- *Oil database* - includes physical parameters that allow the user to add new oils, duplicate oils already in the database and make changes to oil data while preserving the original values.
- *Biological databases* - can be set up for any area of the world. For the US, ASA has developed a biological database containing seasonal or monthly mean abundance by species and habitat type for each biogeographic region of the US.



Headquarters:
Narragansett, RI
Phone: 401-789-6224
Fax: 401-789-1932
asa@appsci.com
www.appsci.com

Worldwide Offices:
Castetbon, France
St. Andrews, Scotland
São Paulo, Brazil
Gold Coast, Australia
Perth, Australia