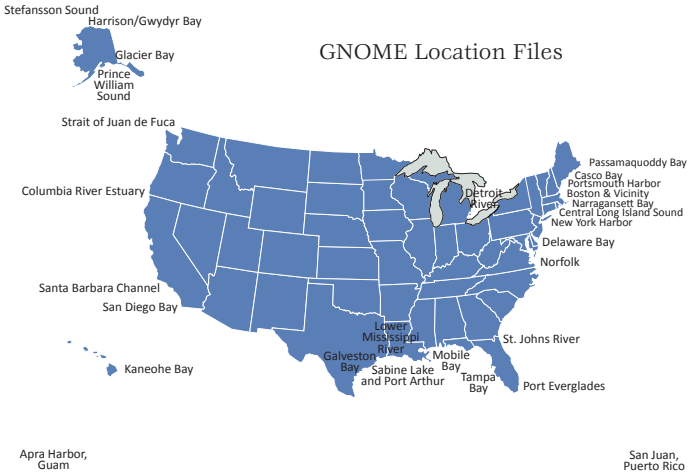
GNOME

NOAA's spill response trajectory model, GNOME (General NOAA Operational Modeling Environment), is freely available for download from the Web site of NOAA's Office of Response and Restoration (OR&R), Emergency Response Division (ERD). You can use GNOME to investigate the effects of different pollutants and environmental conditions on trajectory results. You can examine both the forecast trajectory ("best guess") and the uncertainty estimate ("minimum regret") at the same time.

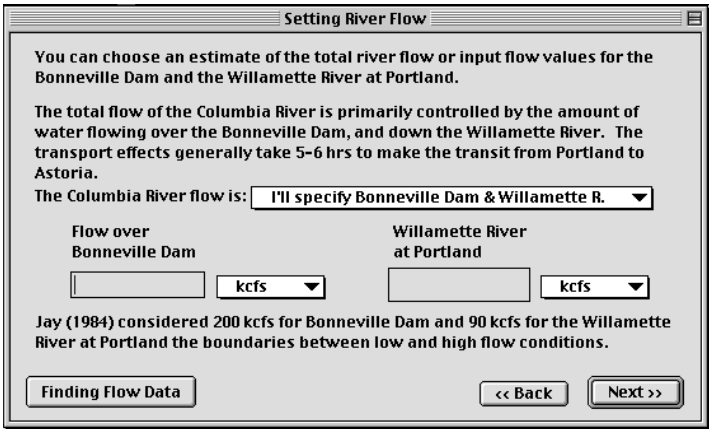
GNOME supports different user experience levels through user modes. In **Standard mode**, regionally-specific location files use questions to guide users in setting up their scenarios. In **Diagnostic mode**, advanced users can set up a custom region (as ERD does during a spill response), and can incorporate a number of outside atmospheric and oceanic circulation models, such as the NOAA or other nowcast/forecast models. GNOME provides output as pictures, movies, or MOSS files. MOSS files can be processed using tools from the GNOME Toolkit (http://response.restoration.noaa.gov/gnometoolkit) to generate GIS-compatible shapefiles.

Design a Realistic Scenario

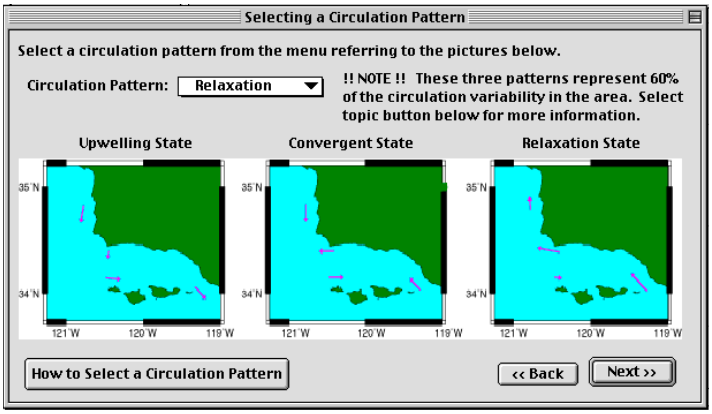
Location files are required to run GNOME in its standard configuration. NOAA develops location files that include a base map, current patterns, and relevant climatological current information. GNOME location files have been developed for these regions:



In GNOME's Standard mode, a Wizard asks questions to help you set up the spill scenario. The complexity of the Wizard's questions depends on the specific region being modeled. Detailed help is always provided for each Wizard question.



The Columbia River Estuary location file requests information on relative flow (high, medium, or low) or the flow over Bonneville Dam and through the Willamette River.

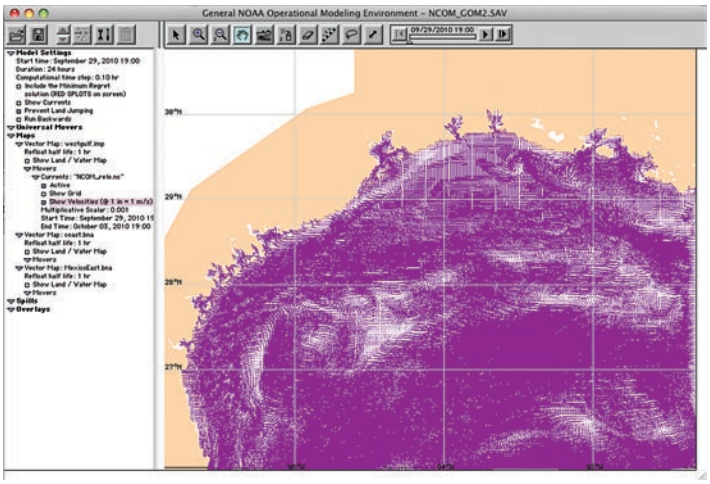


The Santa Barbara Channel location file asks the user to select among statistically significant circulation patterns.

Output may be printed as trajectory forecasts at specific times, or viewed on a monitor as a "movie." In addition to graphical output, GNOME estimates the amount of oil beached, still floating, or evaporated at specific times.

Know Your Limits

Uncertainty estimates are provided as additional trajectory analysis information. By investigating the uncertainty associated with wind, diffusion, and current estimates, you can identify potential threats that might be missed by only looking at the "best guess" trajectory. In Standard mode, default values are used for the uncertainty parameters.



GNOME can use models on a variety of grids, including rectangular, curvilinear, and triangular grids. Here, current data for the Gulf of Mexico from Naval Research Laboratory's NCOM (Navy Coastal Ocean Model) has been loaded into GNOME. Global NCOM (based on the Princeton Ocean Model) is a 1/8-degree resolution operational nowcast-forecast system on a curvilinear grid.

GNOME Can Use Your Atmospheric or Oceanic Circulation Model

GNOME has been developed as a grid-independent trajectory model. This means that the currents can be imported from any model that uses a rectangular, curvilinear, or triangular grid. GNOME can use wind information from a time series at a point, or a wind model on a rectangular or curvilinear grid. Documentation is available on proper formatting for currents and winds at http://response.restoration.noaa.gov/gnomediagnostic/locationfiles.

GNOME accepts both NetCDF- and ASCII-formatted circulation fields. If your particular model is not currently supported, send an email to the GNOME Wizard. Our goal is to enable GNOME to read files that are compliant with the NetCDF Climate and Forecast (CF) Metadata Conventions.

GNOME and the IOOS Regional Associations

Since the inception of Regional Associations under the Integrated Ocean Observing System (IOOS) program, a number of observational and modeled data have become more readily accessible. GNOME is able to leverage these data for response and education purposes if they are in compatible formats.

Getting GNOME

The GNOME model is constantly undergoing development to incorporate emerging needs. Location files are developed for U.S. coastal areas as resources become available. For the most recent GNOME and the latest list of location files, check the Web site.

GNOME runs on Macintosh or Microsoft Windows operating systems. The model, location files, example format files, and associated documentation can be downloaded directly from the OR&R Web site. A User's Guide, including technical documentation, and example problems are available for each location file. For Diagnostic mode users, documentation for all GNOME's input and output formats is available for download.

For additional information:

- http://response.restoration.noaa.gov/gnome
- orr.gnome@noaa.gov

NOAA's Office of Response & Restoration—Protecting our Coastal Environment

For further information about NOAA's Office of Response and Restoration, please visit our Web site at

http://response.restoration.noaa.gov or call (301) 713-2989.