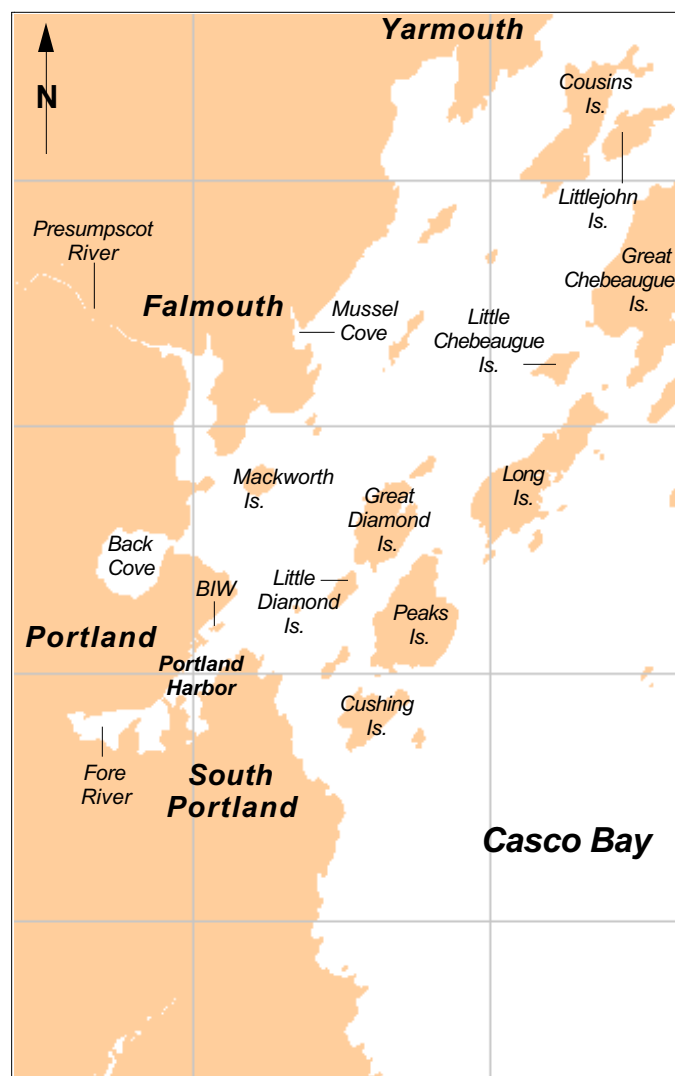


User's Guide

Welcome to the Location File for Casco Bay! Casco Bay is a popular tourist and recreation area. It is also home port to more than 150 fishing vessels and is New England's third largest fishing port in terms of dollar value. Portland Harbor, in the western section of Casco Bay, is the most important port on the coast of Maine and is a popular cruise ship port of call. This ice-free harbor offers safe anchorage for vessel traffic carrying petroleum, electronics, paper products, and other goods, and is the Atlantic terminus for petroleum product pipeline shipments to Canada (The Port of Portland, Maine, <http://www.portofportlandmaine.org>).



NOAA has created Location Files for different U.S. coastal regions to help you use the General NOAA Oil Modeling Environment, GNOME. In addition, on a

case-by-case basis, NOAA develops international Location Files when working with specific partners. Each Location File contains information about local oceanographic conditions that GNOME uses to model oil spills in the area covered by that Location File. Each Location File also contains references (both print publications and Internet sites) to help you learn more about the location you are simulating.

As you work with the Location File for Casco Bay, GNOME will prompt you to:

1. Choose the model settings (start date and time, and run duration).
2. Input the wind conditions.

GNOME will guide you through choosing the model settings and entering the wind conditions. Click the Help button anytime you need help setting up the model. Check the “Finding Wind Data” Help topic to see a list of web sites that publish wind data for this region.

More information about GNOME and Location Files is available at <http://response.restoration.noaa.gov/software/gnome/gnome.html> .

Technical Documentation

Background

Circulation in the Casco Bay region is driven primarily by tides. Winds are generally southerly in the summer and northerly in the winter. Occasional “northeaster’s” can lead to gale force winds. These winds, however, typically are much less severe by the time they reach the coastal area near Portland.

The main channel entrance to Portland Harbor lies between Cushing Island and the mainland. Northwest of Hussey Sound, between Great Diamond Island and Cousins Island, is a naval anchorage and oil transfer area. Near the harbor approaches are numerous shoals.

The Casco Bay region has extensive mudflats, particularly in the areas of the Fore River, the Presumpscot River, Back Cove, Mackworth Island, Little and Great Diamond Islands, Little and Great Chebeague Islands, Cousins and Littlejohn Islands, and Mussel Cove. Mudflats are typically exposed at lowtide and submerged at hightide. GNOME does not model currents in these regions; only diffusion and wind move oil across mudflats to shoreline.

The Bath Iron Works (BIW) Dry-Dock is in northeast Portland Harbor and is indicated as a rectangular island on the Location File map. This dry-dock--9 barges lashed together--is due to be removed in 2001. It will be replaced by a cruise ship terminal at a later date. The Casco Bay Location File models currents going around the dry-dock.

Current Patterns

The Casco Bay Location File uses one current pattern to simulate tidal circulation. The tidal current pattern is scaled to tides in the Portland Harbor entrance southwest of Cushing Island (43.63°N, 70.21°W).

All current patterns were created with the NOAA Current Analysis for Trajectory Simulation (CATS) hydrodynamic application.

References

You can get more information about Casco Bay from these publications and web sites.

Oceanographic

Hulburt, E. M. and N. Corwin, 1970. Relation of the Phytoplankton to Turbulence and Nutrient Renewal in Casco Bay, Maine. *Journal Fisheries Research Board of Canada*, vol. 27 (11), pp. 2081-2090.

Ridderinkhof, H., 1995. Lagrangian Flows in Complex Eulerian Current Fields. In: *Quantitative Skill Assessment for Coastal Ocean Models* [Coastal and Estuarine Studies, Vol. 47]. D. R. Lynch and A. M. Davies (eds). Washington, D.C.: American Geophysical Union. pp. 31-48.

Vermersch, J. A., R. C. Beardsley, and W. S. Brown, 1979. Winter Circulation in the Western Gulf of Maine: Part 2: Current and Pressure Observations. *Journal of Physical Oceanography*, vol. 9, pp. 768-784.

Xue, H., F. Chai, and N. R. Pettigrew, 2000. A Model Study of the Seasonal Circulation in the Gulf of Maine. *Journal of Physical Oceanography*, vol. 30, pp. 1111-1135.

Weather and Online Information

Marine Prediction Center Coastal Marine Forecast
<ftp://www.mpc.ncep.noaa.gov/pub/docs/mpc/coastal/PWMCWFPWM>
Coastal Marine Forecast for the region from Stonington, ME to the Merrimack River, MA.

National Data Buoy Center, Portland Buoy
[http://www.ndbc.noaa.gov/station_page.phtml?\\$station=44007](http://www.ndbc.noaa.gov/station_page.phtml?$station=44007)
Current offshore meteorological conditions at a buoy 12 nautical miles southeast of Portland, ME.

The Weather Underground, Inc.

<http://www.wunderground.com/US/ME/Portland.html>

Current and forecast weather for Portland, ME.

<http://www.wunderground.com/MAR/AN/150.html>

Marine forecast for the coast of Maine (Eastport, ME to Stonington, ME and Stonington, ME to the Merrimack River, MA).

General Information

Casco Bay Online

<http://www.cascobay.com/>

A community web site with links to tides, weather, marine and offshore forecasts, and general environmental information for the Casco Bay region.

U.S. Environmental Protection Agency (EPA) Watershed Profile for the Presumpscot River

<http://www.epa.gov/surf3/hucs/01060001/>

Environmental profile and watershed information focused on rivers, streams, lakes, and land characteristics.

Oil Spill Response

NOAA Hazardous Materials Response Division (HAZMAT)

<http://response.restoration.noaa.gov>

Tools and information for emergency responders and planners, and others concerned about the effects of oil and hazardous chemicals in our waters and along our coasts.