Field Guide to NOAA's Oil Trajectory Maps

NOAA oceanographers use specialized computer models to predict the movement of spilled oil on the water surface. They predict where the oil is most likely to go and how soon it may arrive there. During a major spill response, they generate trajectory maps that show their predictions. Below, we show an example map and explain how to interpret a NOAA trajectory map.

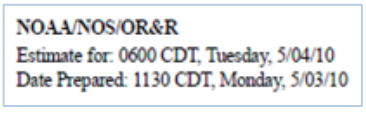
How a trajectory is predicted

Oil on the water is moved by currents and winds. Using currents and winds predictions from a variety of sources, as well as available observations, the NOAA oceanographers run several leading computer models to forecast the movement and spreading of the oil. They also use satellite imagery analysis and observations reported by trained observers who have made helicopter overflights back and forth across the potentially affected area, recording locations where oil is seen.

Key parts of the map

To interpret a NOAA trajectory map, look for these parts of the map (examples are shown on the next page):

Dates and times – In the upper right corner are (1) the date and time when oil locations are predicted to be as shown on the map ("Estimate for"), and (2) the date and time when the map was made ("Date Prepared").

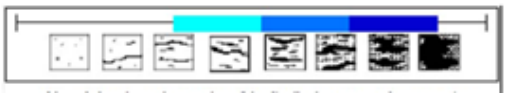


Oiled areas - Shown as overlapping color-coded patches representing the predicted amount of oil. Relative amount of oil is determined by the thickness of the layer of oil on the water and percent coverage (a measure of how completely the oil covers the water; coverage is 100% if you would see no water between patches of oil when looking from above). Dark blue areas show where the greatest amounts of oil are predicted to be, medium blue areas show where medium amounts of oil are predicted to be, and light blue areas show where the least amounts of oil are predicted to be.

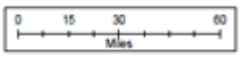
Locations of potential beached oil – Shown as red "x"s on the map marking locations where NOAA predicts that oil may beach during the forecast period (the time interval between when the models were run and the date and time for which the predictions were made. The map does *not* show areas where real oil has actually beached.

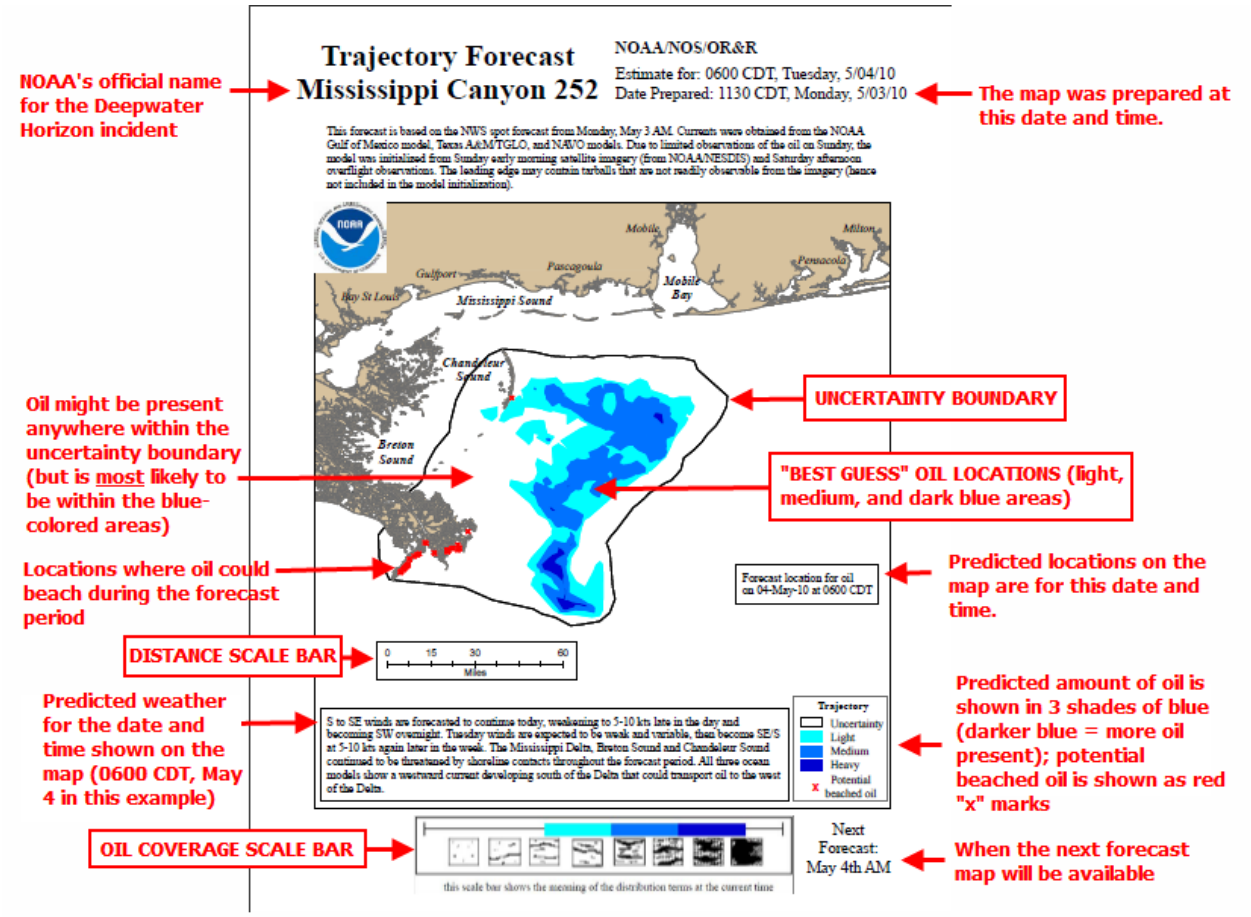
Uncertainty boundary - The colored areas and "x"s on the map represent the oceanographers' best estimate of the places where the oil is likely to be located, at the date and time for which the predictions were made. The oceanographers also draw a black line—the uncertainty boundary—around the colored areas on the map to indicate that there's a chance that oil could be located anywhere inside this boundary. The uncertainty boundary is based on the extent of the differences among the models as well as inevitable inexactness in our knowledge of currents and winds, and other model inputs.

Oil coverage scale bar – Shows how color coding (light/medium/dark blue) corresponds to how the oil could look to an observer viewing from above. The greater the coverage, the greater the amount of oil (and the less water is visible between patches and streamers of oil).



Distance scale bar (in miles) – Use this scale to judge the approximate dimensions of the predicted oil slick and the predicted distance of the oil from locations on shore.





For more information

Visit NOAA's Office of Response & Restoration website (**response.restoration.noaa.gov**) to obtain the **Trajectory Analysis Handbook** and other publications and tools useful to oil spill responders.