

Gulf of Maine *Alexandrium catenella* Bloom Potential

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Summary:

Two weeks ago, low toxicity levels were reported in the western coastal Maine (<2 ug/100g). No update this week. For New Hampshire this week, toxicities by State of New Hampshire are Neogene test negative for Hampton Harbor (only site tested). For the next several days, modeled *A. catenella* cell concentrations over top 10-m remains low nearshore (Fig.1). Winds were shifting between upwelling-favorable and downwelling-favorable during the past week. Winds will be dominated by weak upwelling-favorable condition until tomorrow, then shift to strong downwelling-favorable condition starting from 2 June (Fig.2); downwelling favors onshore cell accumulation. This week, observed cells are not present for Hampton, UNH, ACB30, ACBSW2 (Hampton Beach Oyster Farm), and Little Bay Marine, and not sampled at Gosport Harbor. Both model and observations in MA and NH waters showed absent or low cells during past 1-2 weeks (Fig.3). Model produces little cells for all coastal Maine, NH and Maine, and continue to be decline compared to last week (Fig.4).

Model Predicted Surface and Observed Shellfish Toxicity

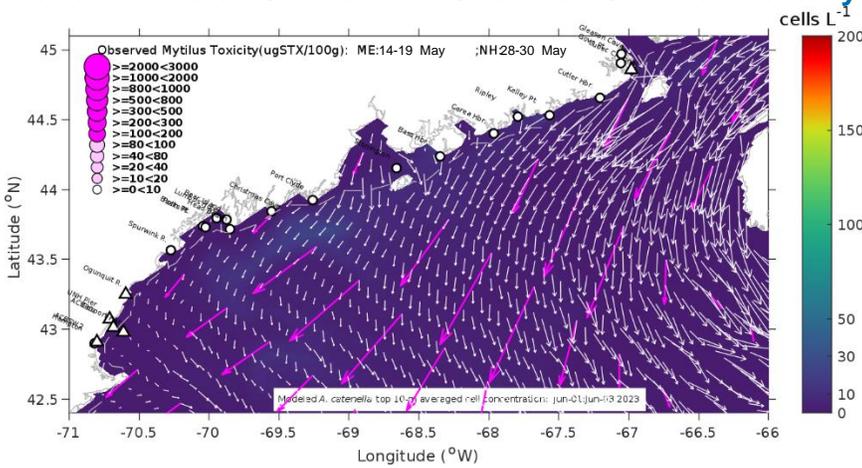


Fig. 1: Model predicted surface (top 10-m average) *A. catenella* cell concentration, surface current (white vectors) and wind stress (red arrows) averaged over upcoming 3.5 days by the nowcast/forecast, and observed shellfish toxicity (dots). Gray line stands for the 25-m isobath. Triangles represent sites where routine samplings for toxicity are collected, but no data is available for the week.

Transient Wind Leading to Onshore Transport

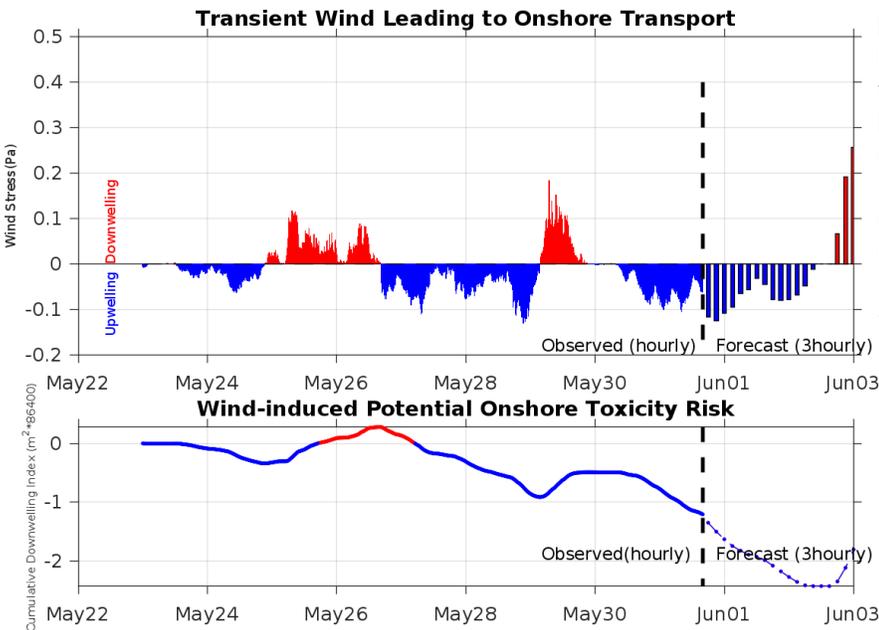


Fig. 2. (Upper) Transient alongshore wind for buoy I in the eastern Gulf of Maine during the past week. Forecast wind is from the NOAA NOMADS. Downwelling (red) means higher potential of cells transporting onshore, while upwelling (blue) means less potential of onshore transport. (Lower) cumulative wind-induced downwelling to predict potential onshore toxicity risk. Positive means more onshore transport, thus higher toxicity risk should offshore cells be readily available.

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Model Validation of *A. catenella* Cell Concentrations

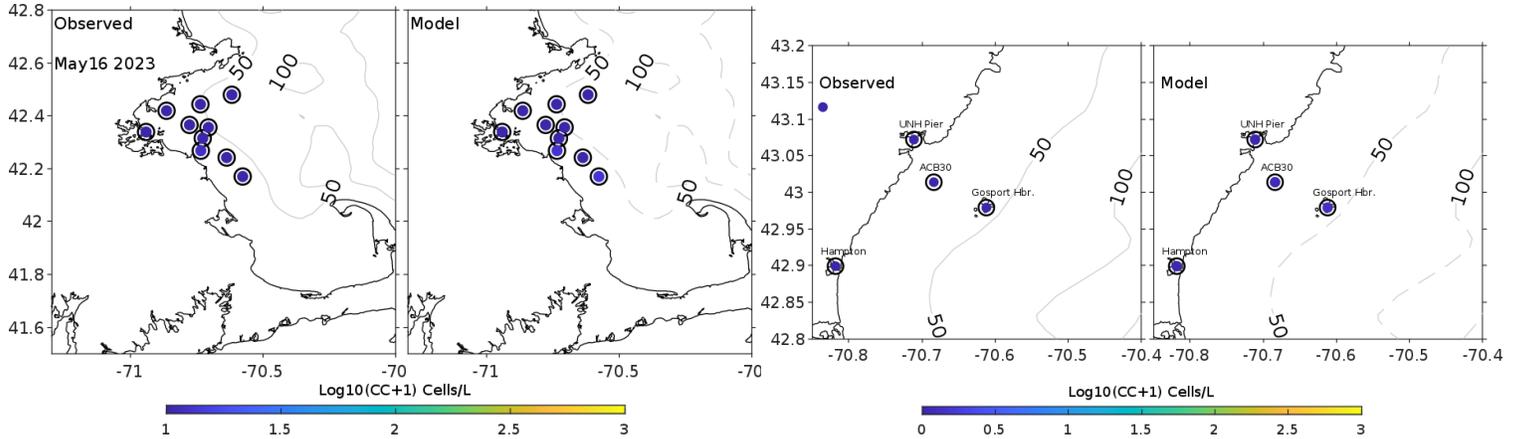


Fig.3. Model-data Comparisons of *A. catenella* surface cell concentrations for (left) MWRA WN234 survey samples on 16 May, 2023, and (right) NH samples during 28-30 May, 2023. Credit: Chris Nash, NH DES, and Scott Libby (MWRA/Battelle).

Time-averaged Surface *A. catenella* Concentration

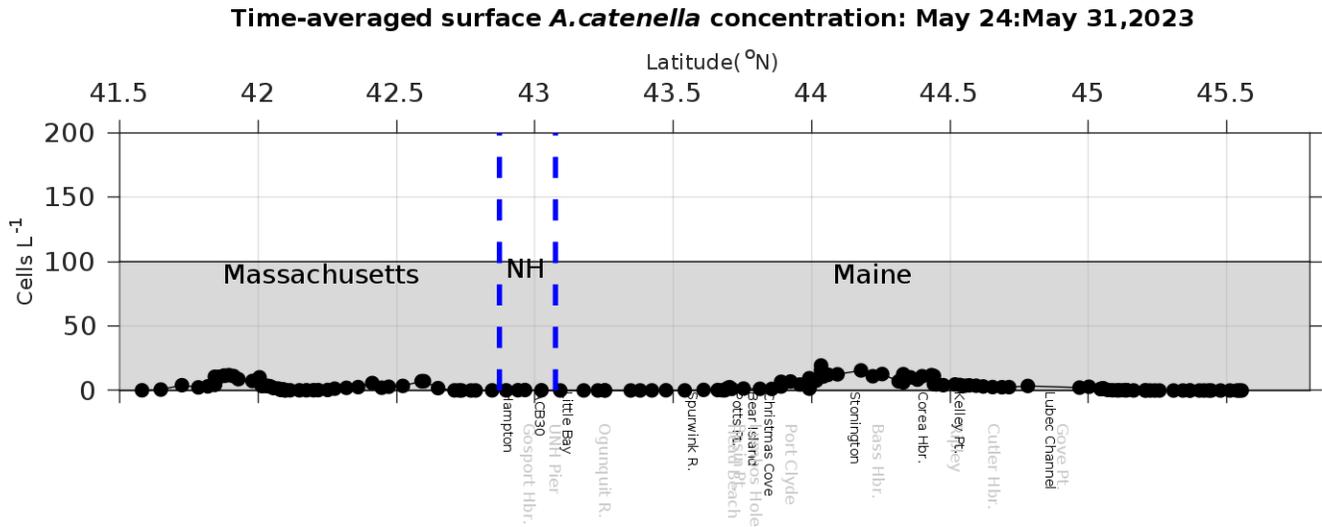


Fig.4. Weekly-averaged modeled surface *A. catenella* cell concentrations along 25-m isobath (see Fig.1 for isobaths locations). Also labeled are the closest onshore locations where toxicity was routinely sampled. It shows the weekly-averaged cell concentration when shellfish was exposed to the potential toxicity associated *A. catenella* blooms. 100 cells/L is the nominal threshold above which *A. catenella* tends to be toxic.

Additional Resources

- [Gulf of Maine HAB Forecast](#)

For questions, contact:

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