

York-Cumberland Winter Storm Grayson

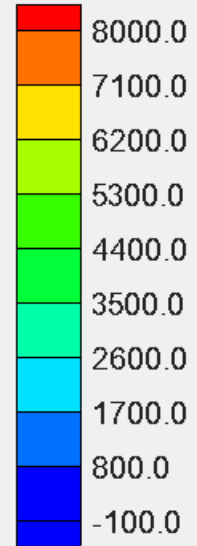
Wells Town Office
May 22, 2018

By Scott Hayward

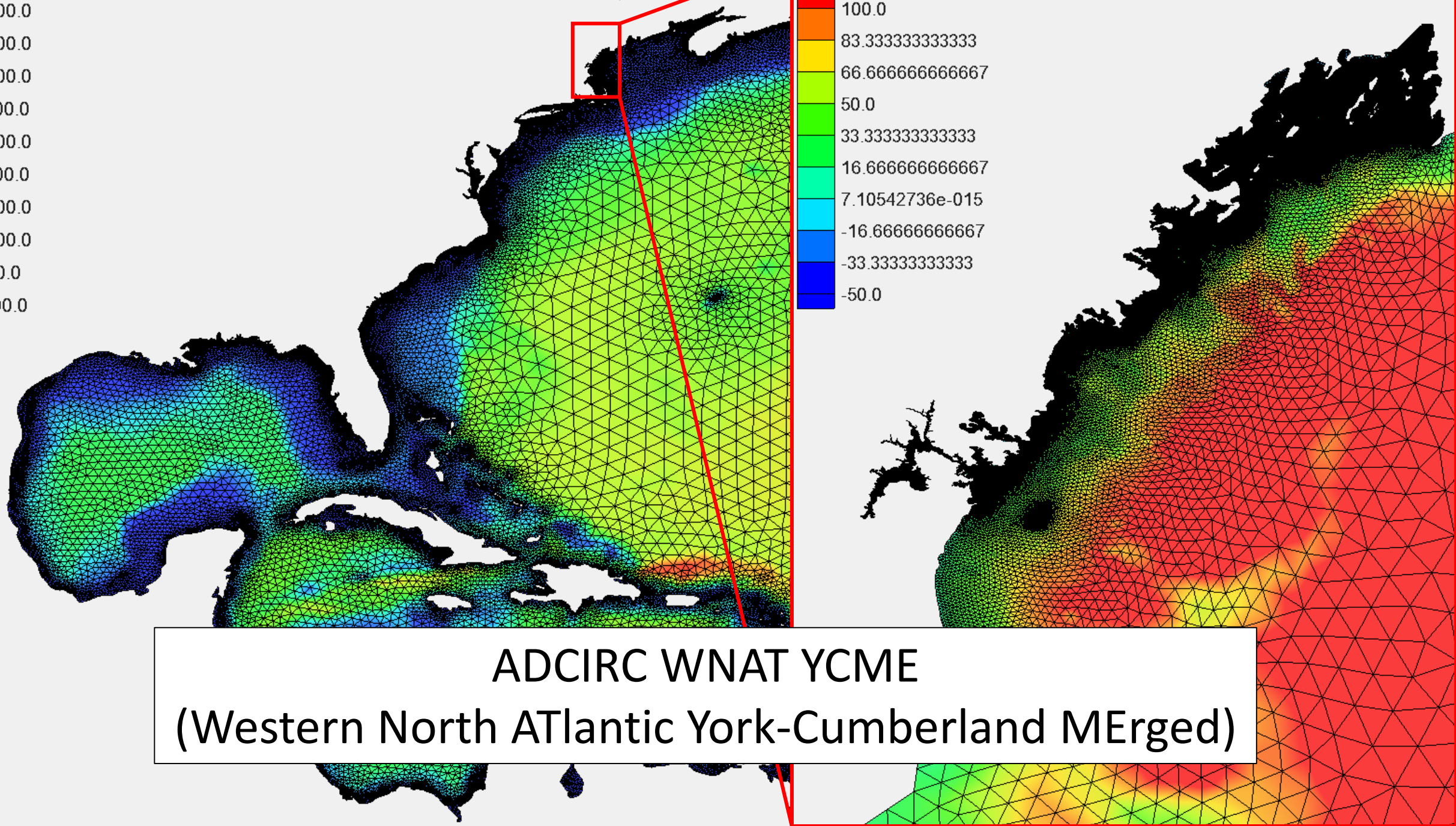
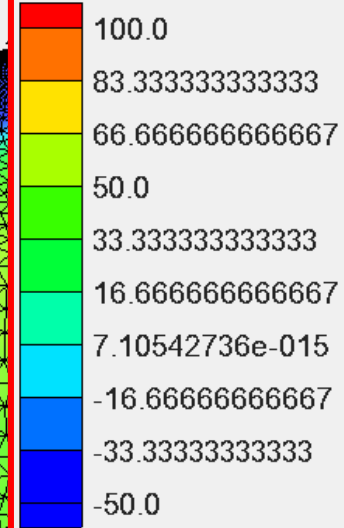
Prepared For:

Town of Kittery
Town of Wells
Town of Kennebunkport
City of Biddeford
Town of Old Orchard Beach
City of Portland
Town of Harpswell

Water Elevation (m)



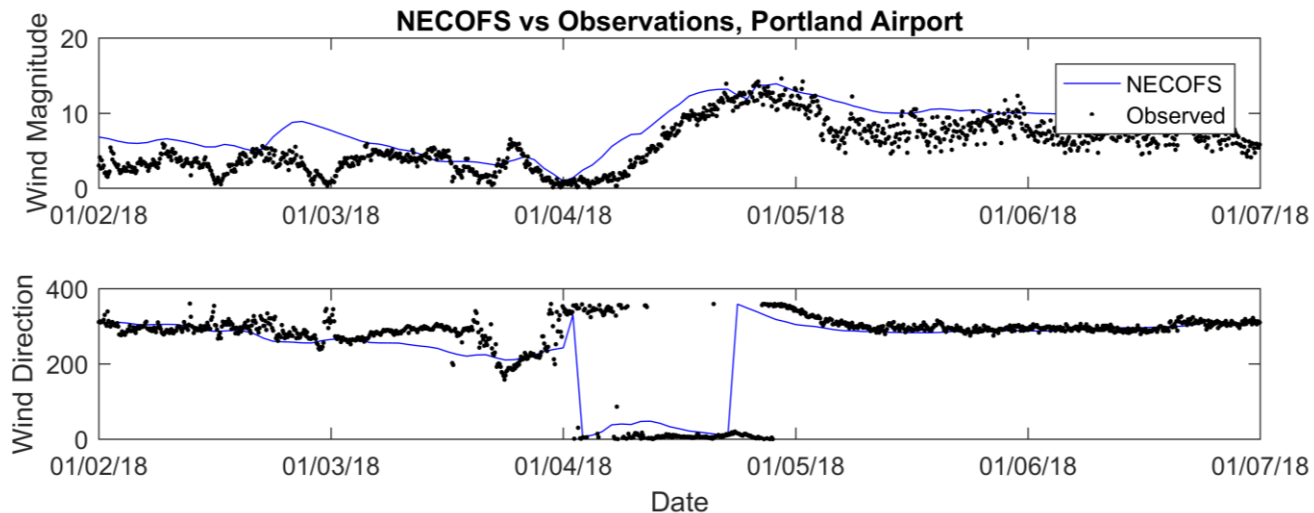
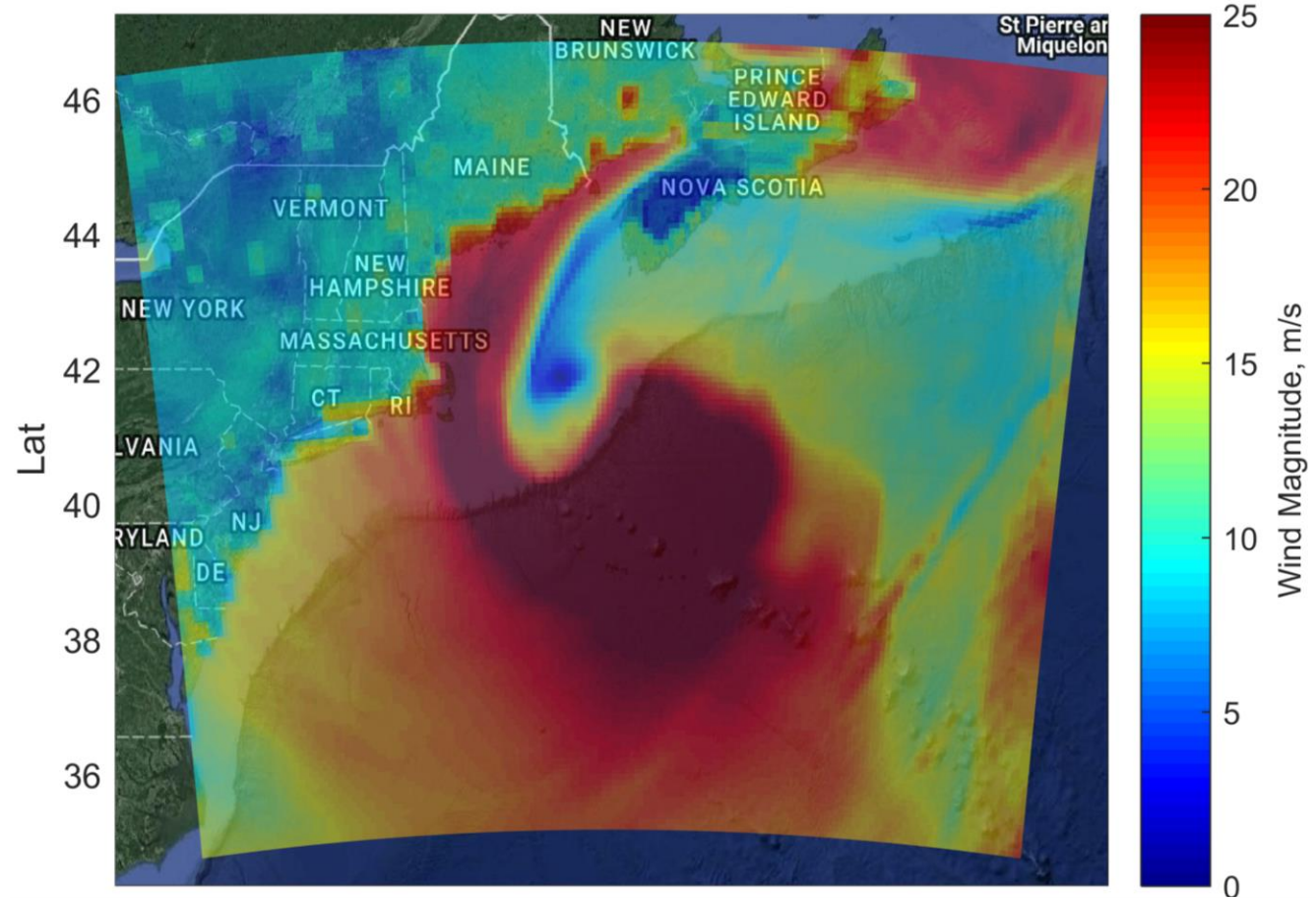
Water Elevation (m)



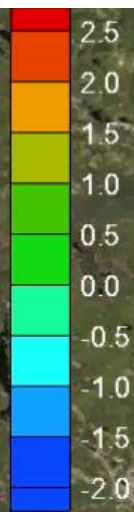
ADCIRC WNAT YCME
(Western North Atlantic York-Cumberland Merged)

Meteorological forcing

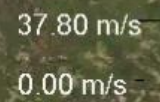
- NECOFS Forecast model (Chen, 2018)
- Open-Source- Umass Dartmouth
- Available as a forecast product
- Highest resolution, both spatially and temporally



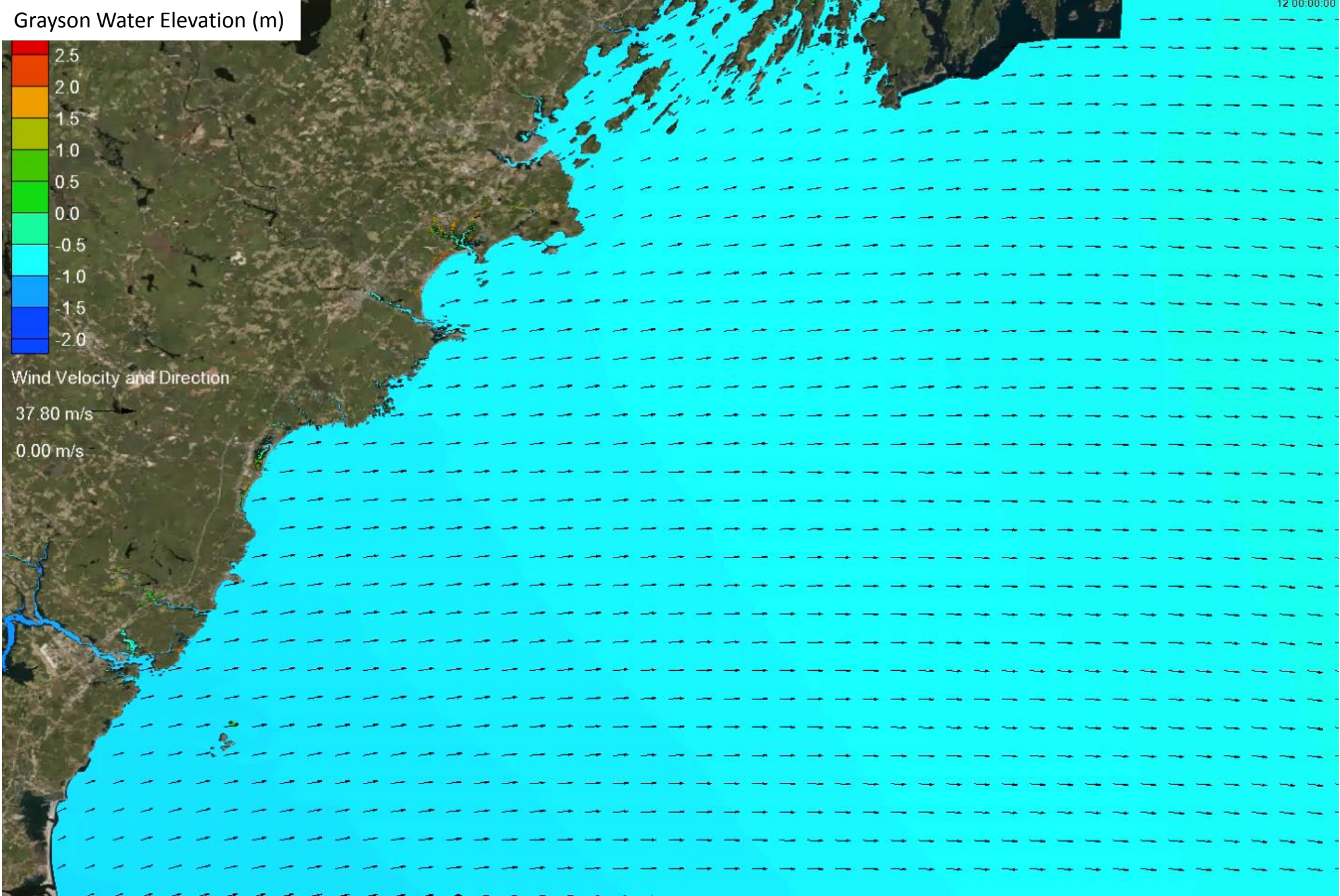
Grayson Water Elevation (m)



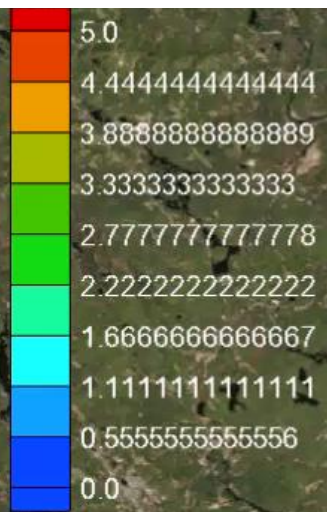
Wind Velocity and Direction



12 00:00:00

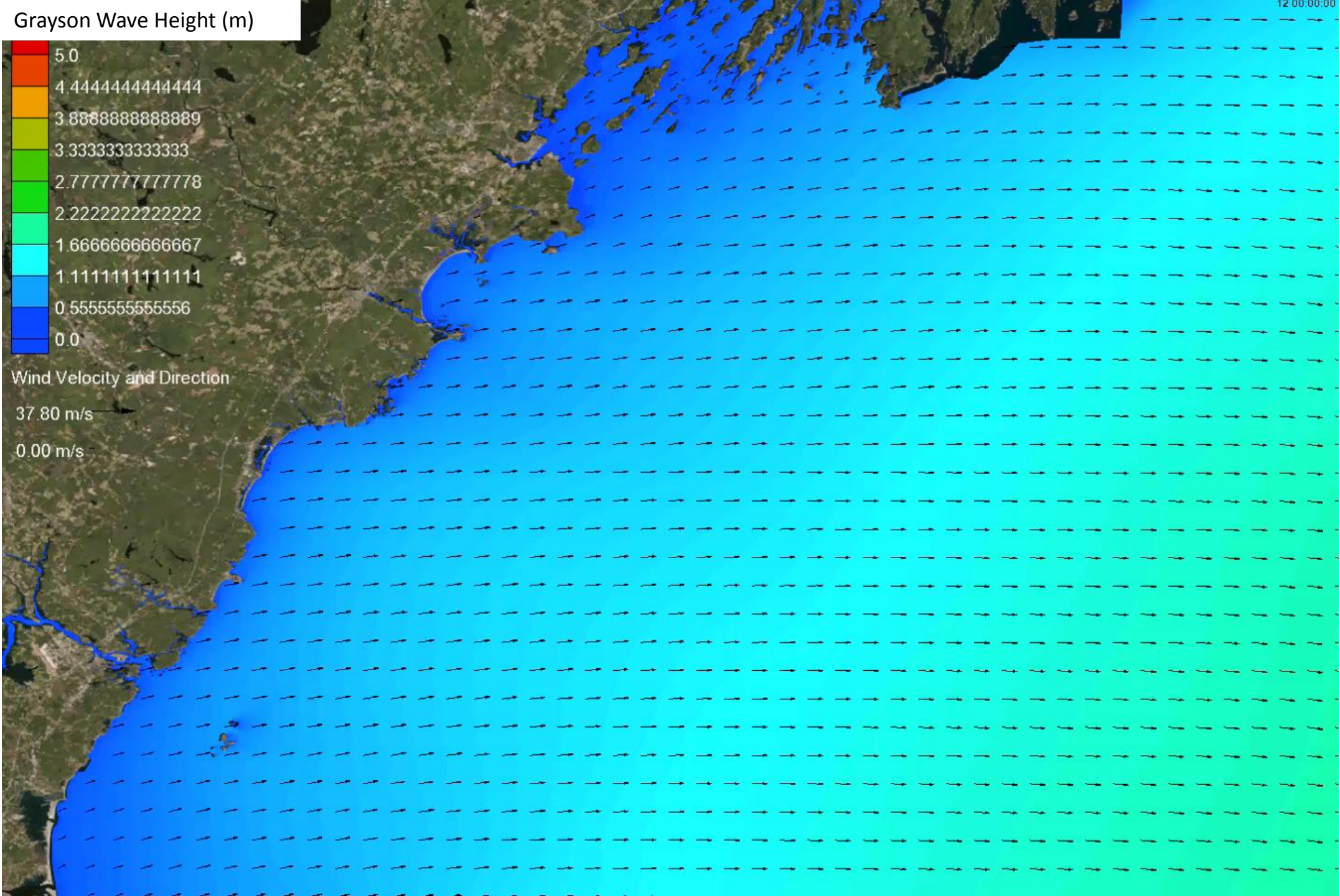


Grayson Wave Height (m)



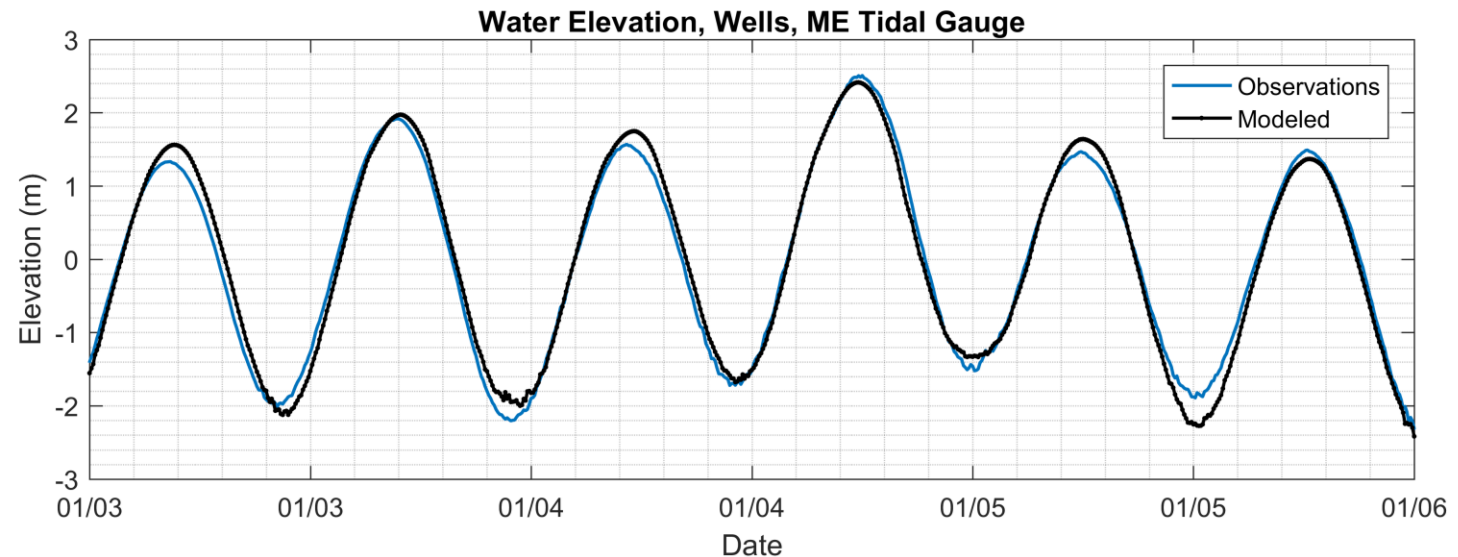
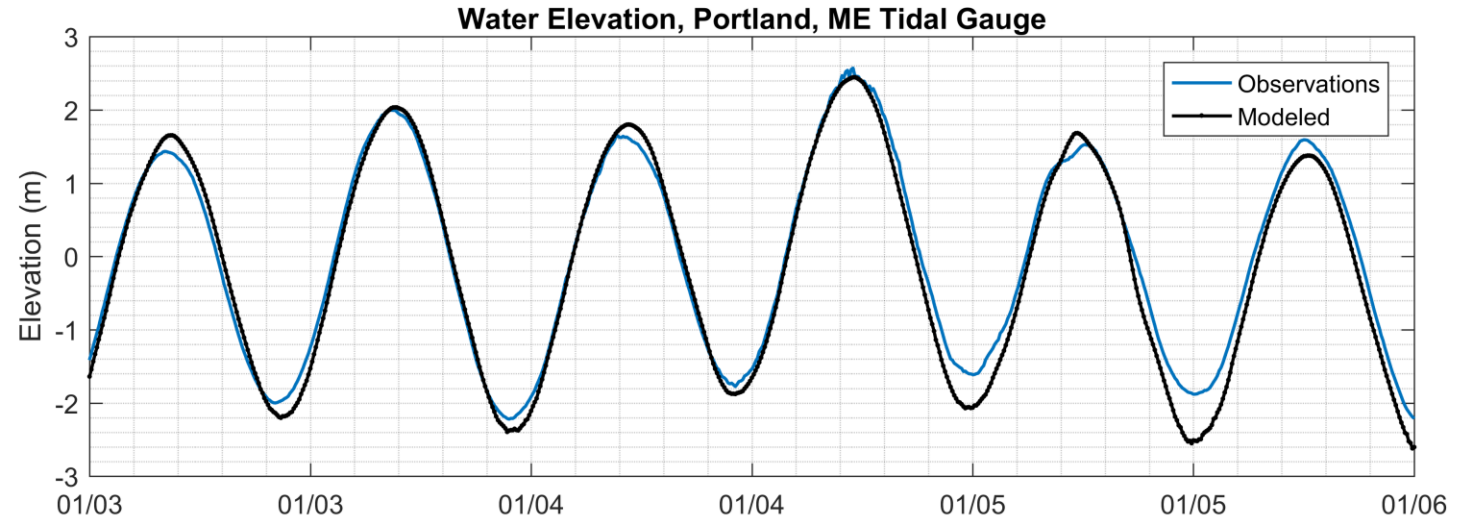
Wind Velocity and Direction

37.80 m/s
0.00 m/s



Water Level Validation

* All Elevations refer to the NAVD88 Vertical Datum



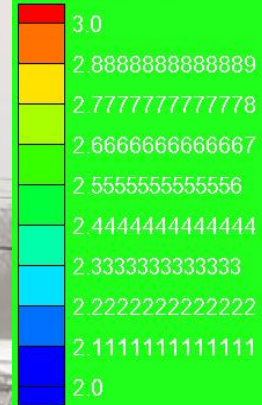


Cooks Lobster House, Baileys Island

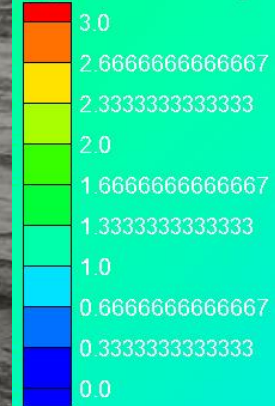
Photo: between 8 and 9 feet, 1 foot waves

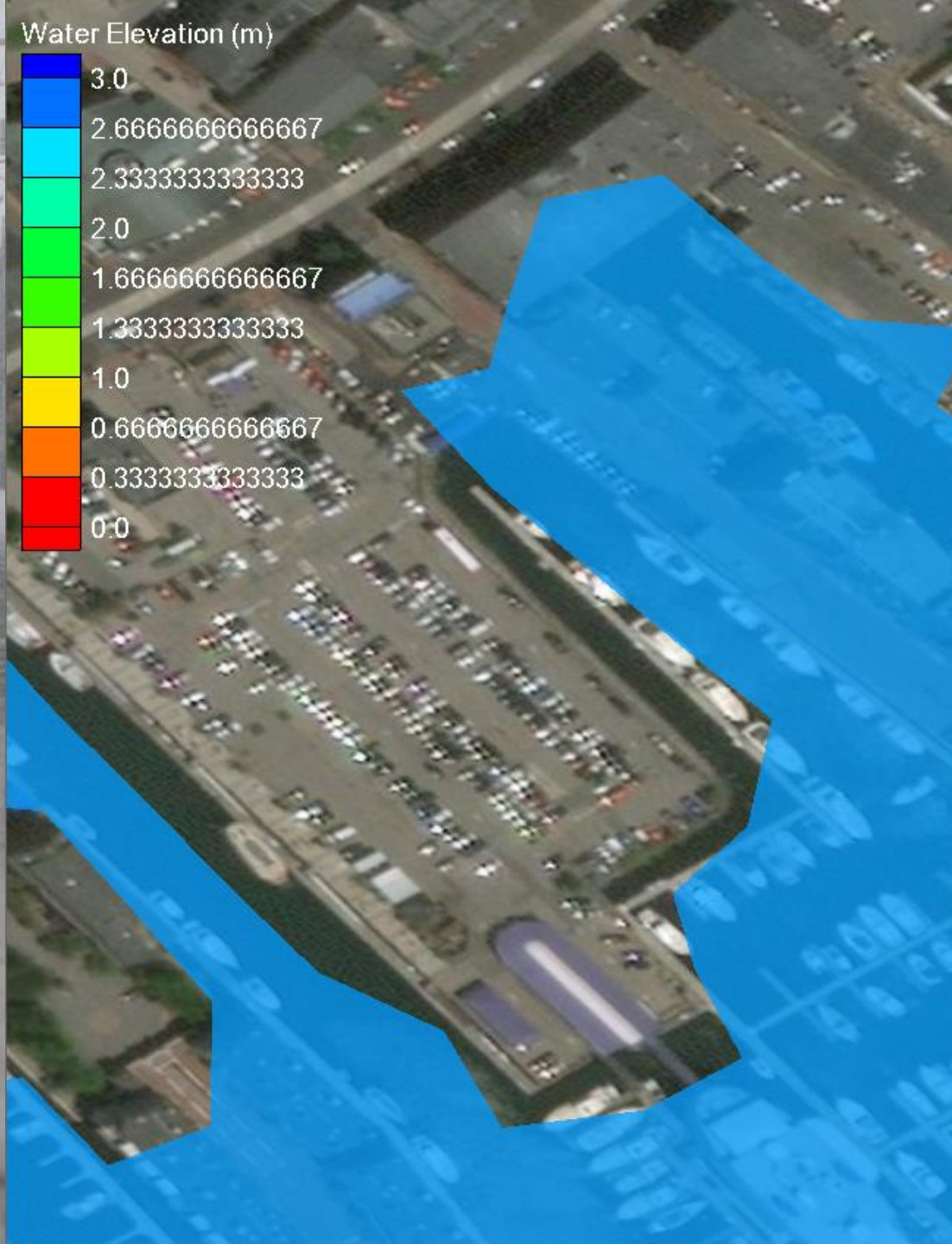
Modeled: 8.28ft elevation, ~2 foot waves.

Water Elevation (m)



Significant Wave Height (m)





Portland Waterfront

Photo: ~7 foot sidewalk elevation

Modeled: 8.86ft elevation



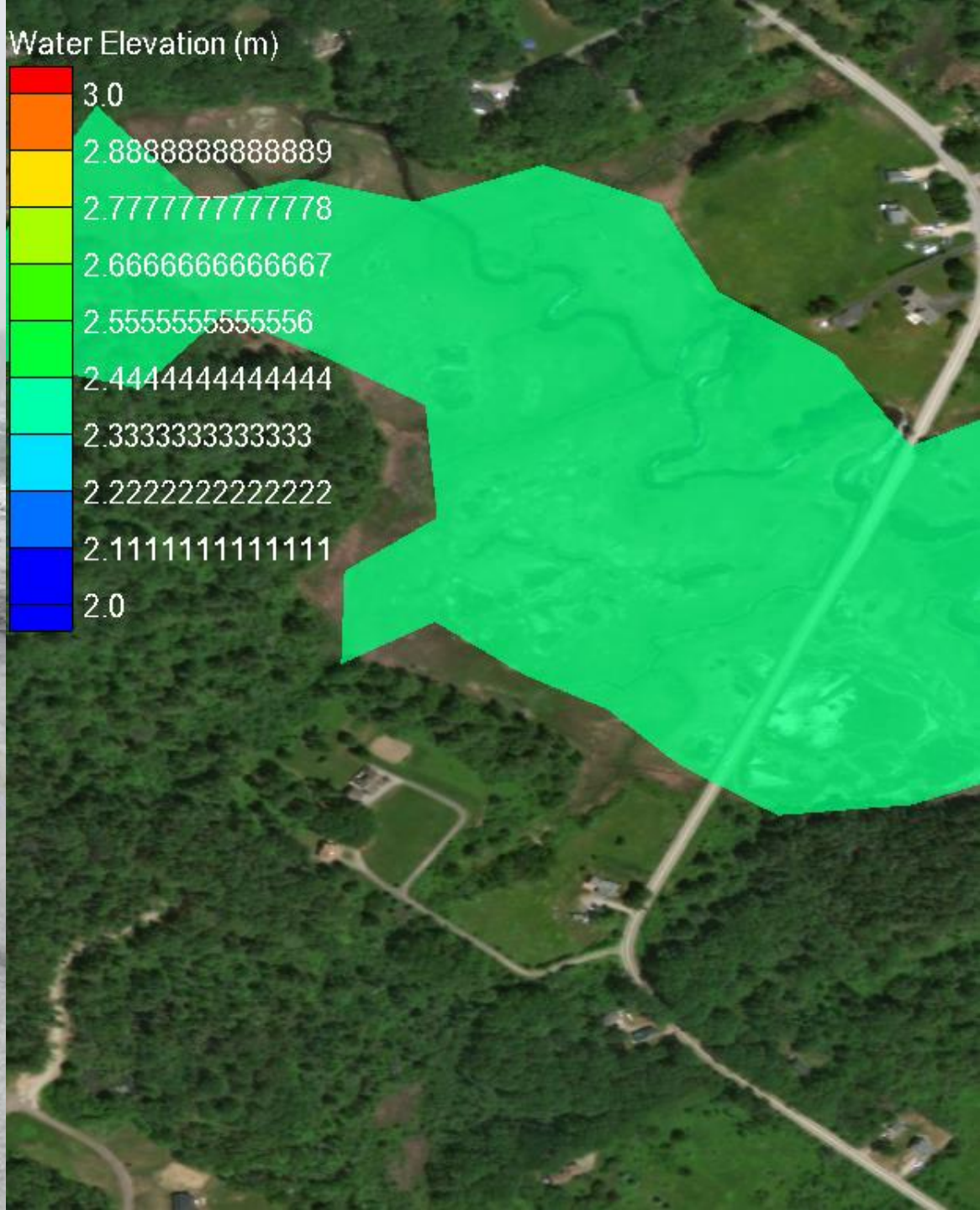
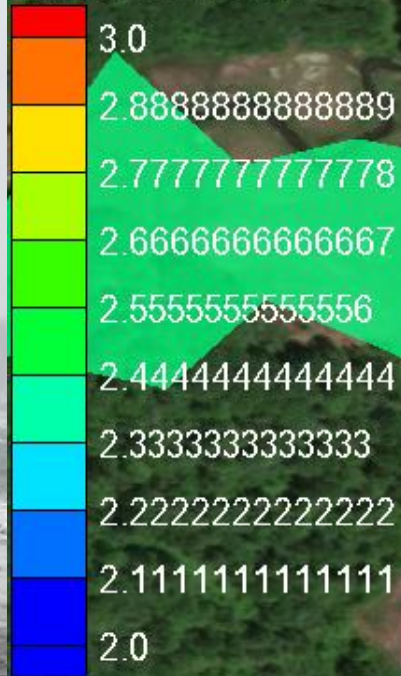
Spurwink Road, Scarborough

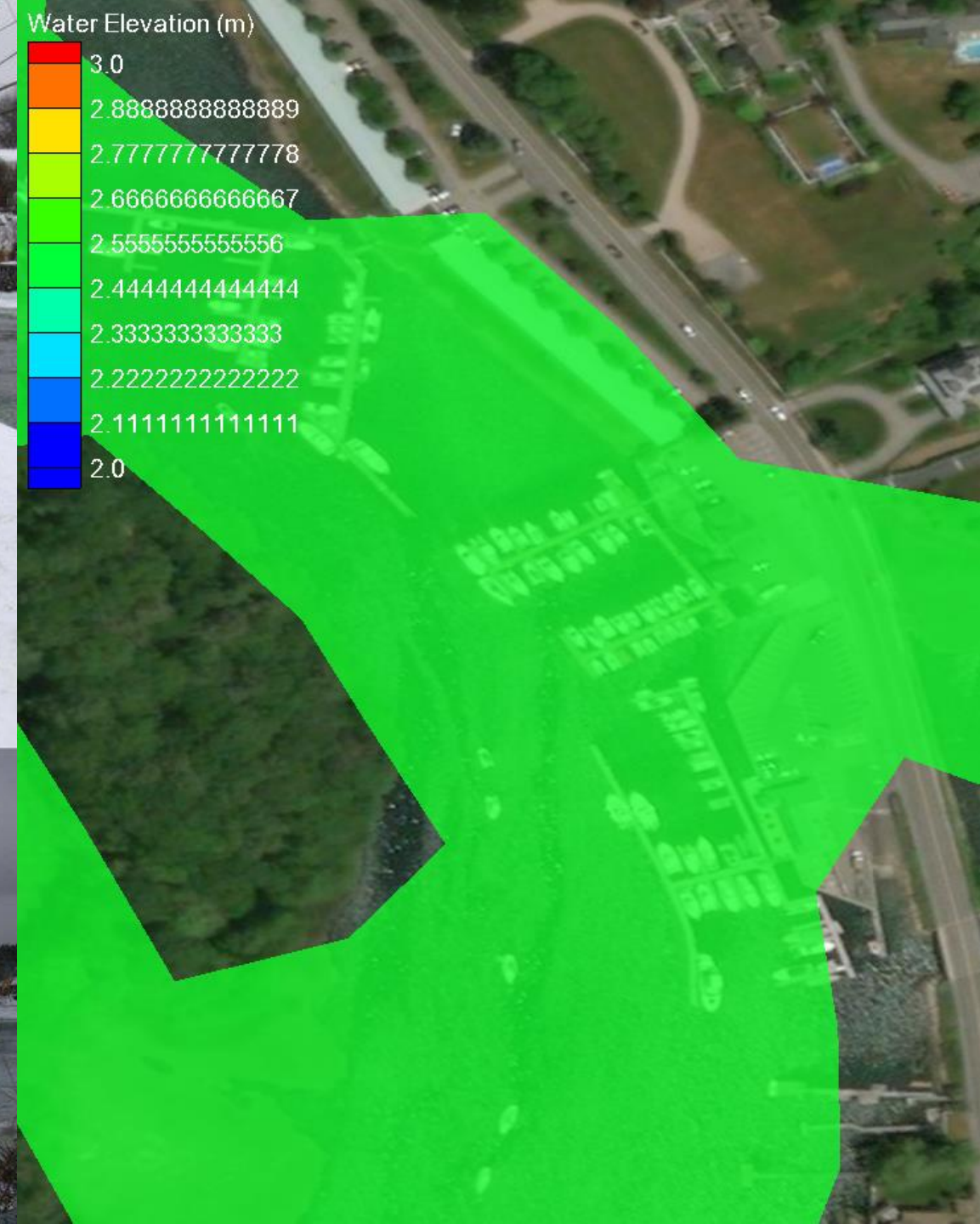
Photo: Road elevation between 7 and 9 feet

Modeled: 8.07 ft (2.46 m)



Water Elevation (m)





Ocean Avenue, Kennebunkport

Photo: 8-9ft (road elevation as low as 6ft)

Modeled: 8.12ft elevation

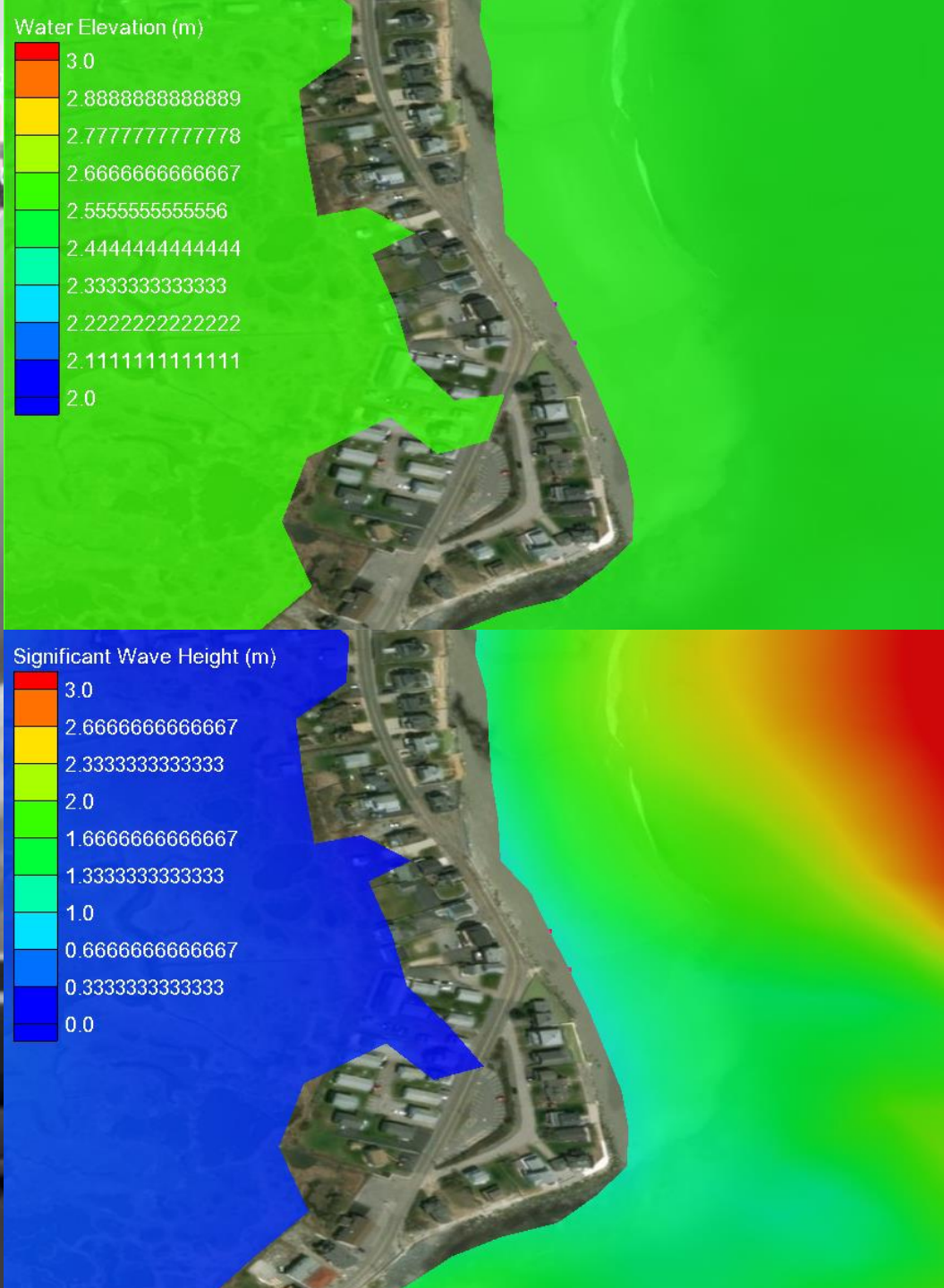


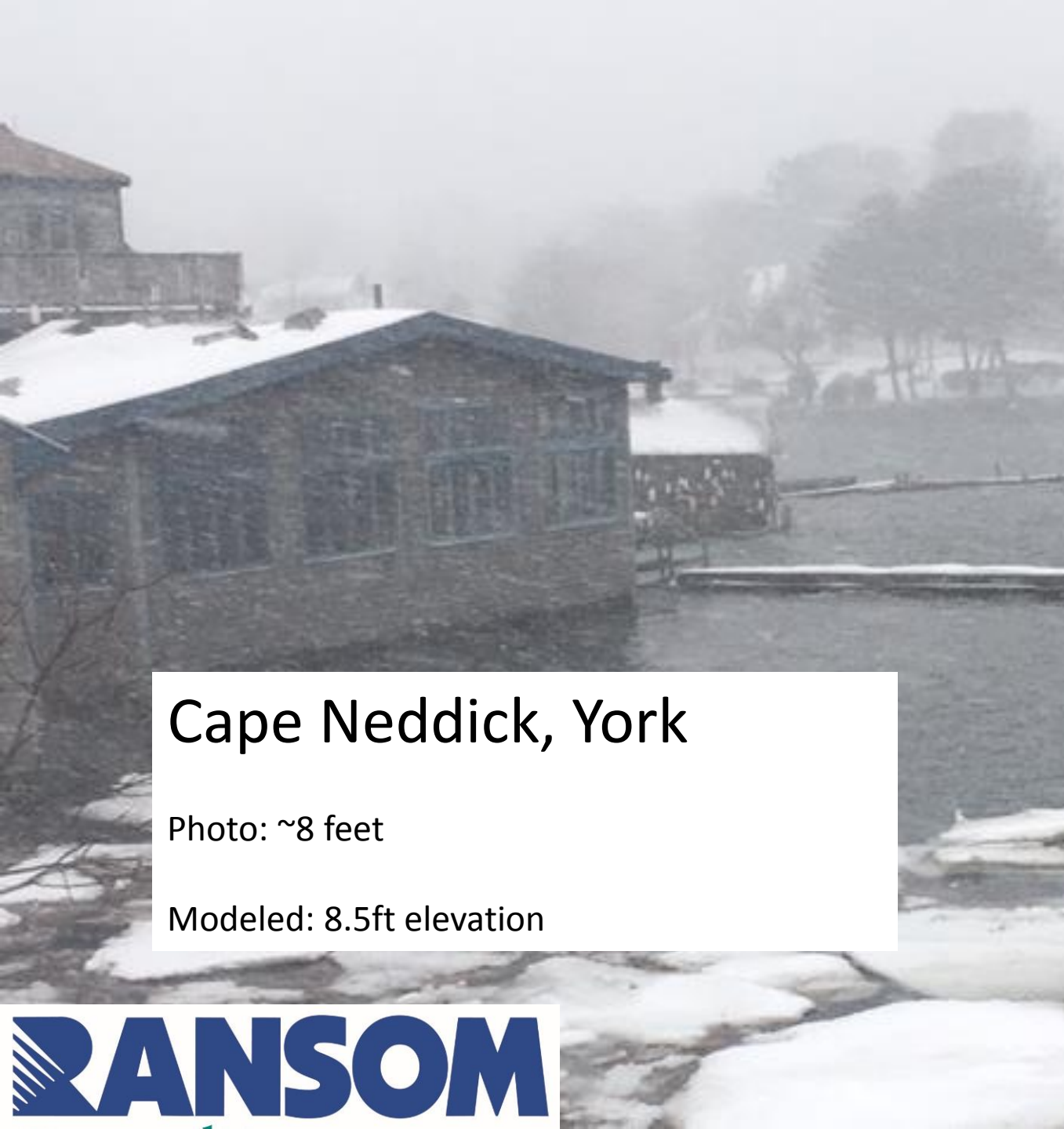


Wells Seawall

Photo: 22 feet (10+12 feet runup)

Modeled: 8.28ft SWL, 6 foot waves directly offshore





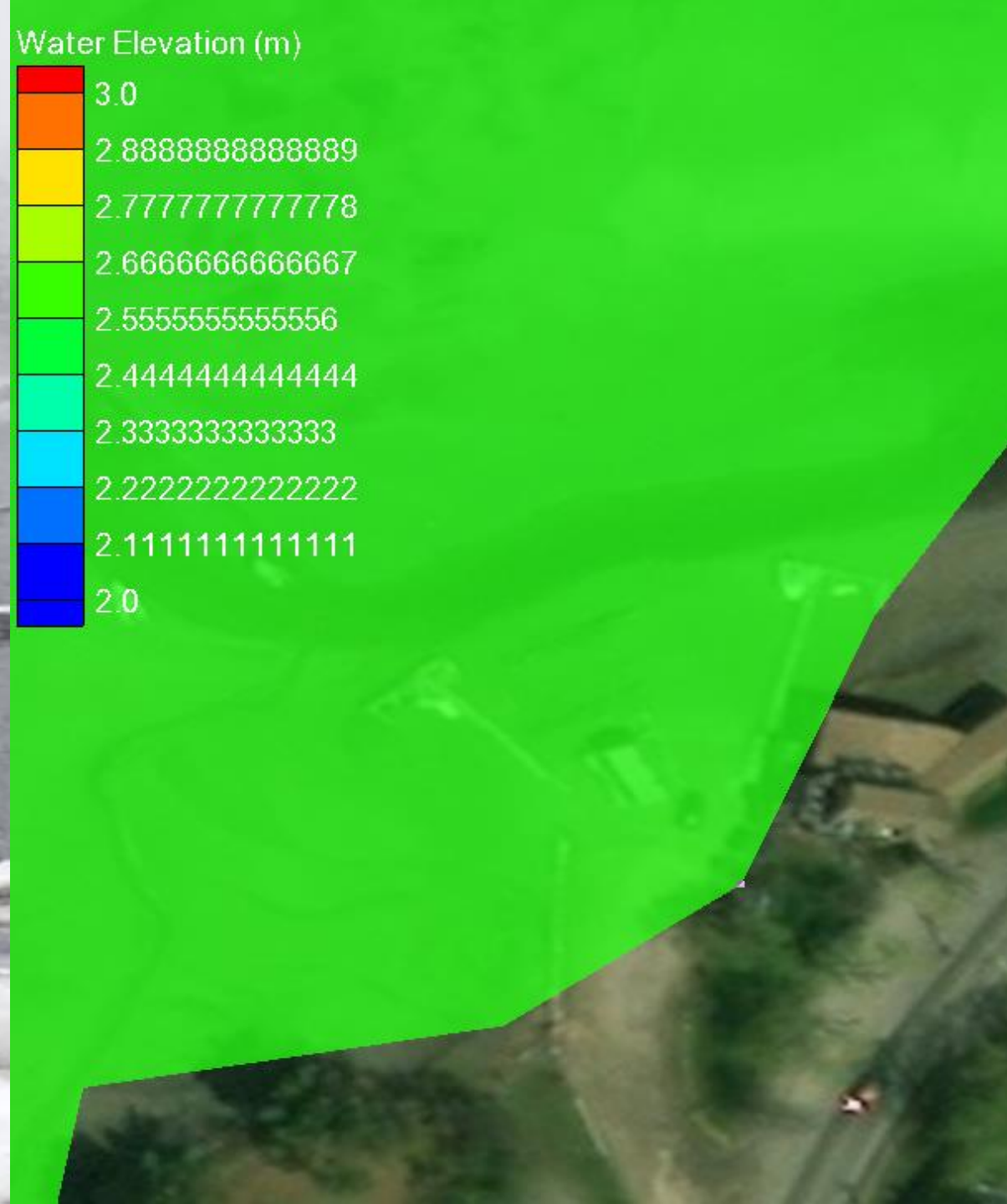
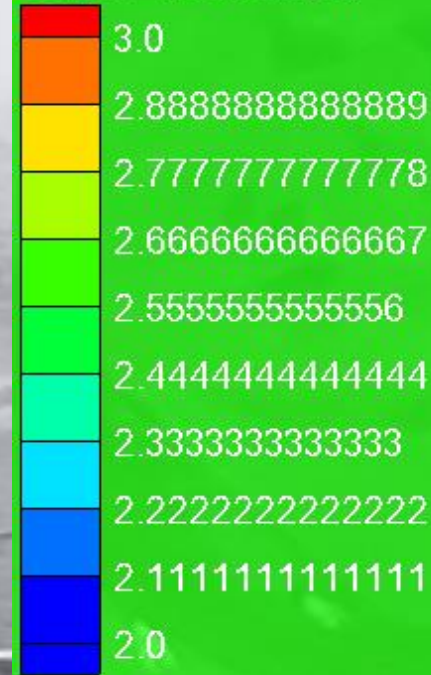
Cape Neddick, York

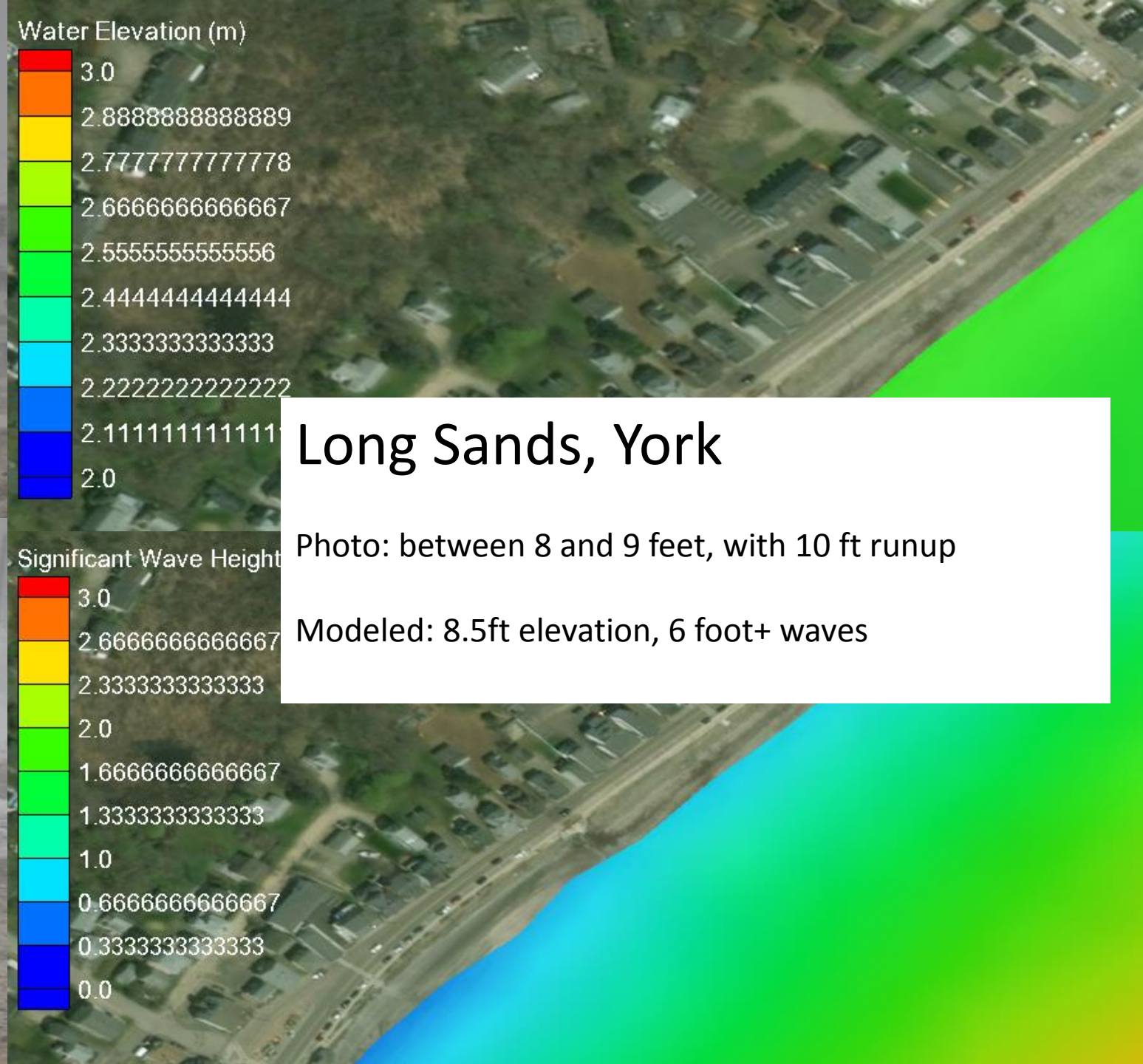
Photo: ~8 feet

Modeled: 8.5ft elevation



Water Elevation (m)





Long Sands, York

Photo: between 8 and 9 feet, with 10 ft runup

Modeled: 8.5ft elevation, 6 foot+ waves

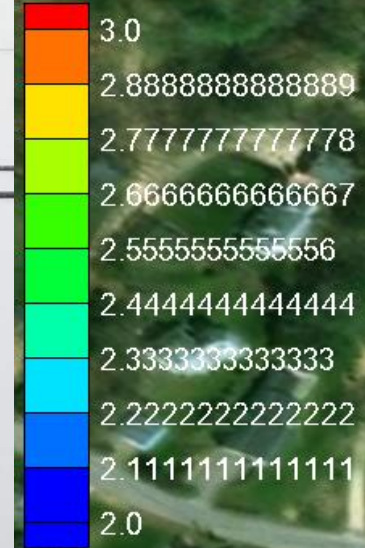


Cutts Island, Kittery

Photo: road elevation 7 feet, fully inundated

Modeled: 8.4ft Still Water Level

Water Elevation (m)



High Water Mark Photos Summary

Location	Estimated Observed	Modeled
Cooks Lobster House, Harpswell	9 ft + 1ft waves	8.28 +2ft waves
Commercial St., Portland	9 ft	8.86
Spurwink Rd., Scarborough	9 feet	8.07
Ocean Ave., Kennebunport	8-9 feet	8.12 feet
Webhannet Dr., Wells	22 feet (runup)	TBD (likely 20+ feet)
Cape Neddick, York	8-9 feet	8.5 feet
Long Sands, York	19+ feet (runup)	TBD (likely 20+ feet)
Cutts Island, Kittery	9 feet	8.4 feet

- Elevations are NAVD88

Thank You

Photo archive provided by Peter Slovinsky, Marine Geologist, Maine Geological Survey

<https://drive.google.com/drive/folders/1dP3VQaN3YnrGAnHLRkJYw3X7DJJsYdSi>

Photos also provided by the communities: Kittery, Kennebunkport, and Harpswell.

References

1. Chen, C. (2017). The hindcast wind data for Hurricane Sandy based on WRF output. Personal Communication (January 12, 2017).
2. Luettich, R.A., Jr., J. Hudgins and C. Goodall, 1996, Initial results from a combined tide and storm surge forecast model of the U.S. East Coast, Gulf of Mexico and Caribbean Sea, Proceedings, 15th Conference on Weather Analysis and Forecasting, American Meteorological Society, Norfolk, VA., August 1996, pp. 547-550. [Click here to request publication.](#)