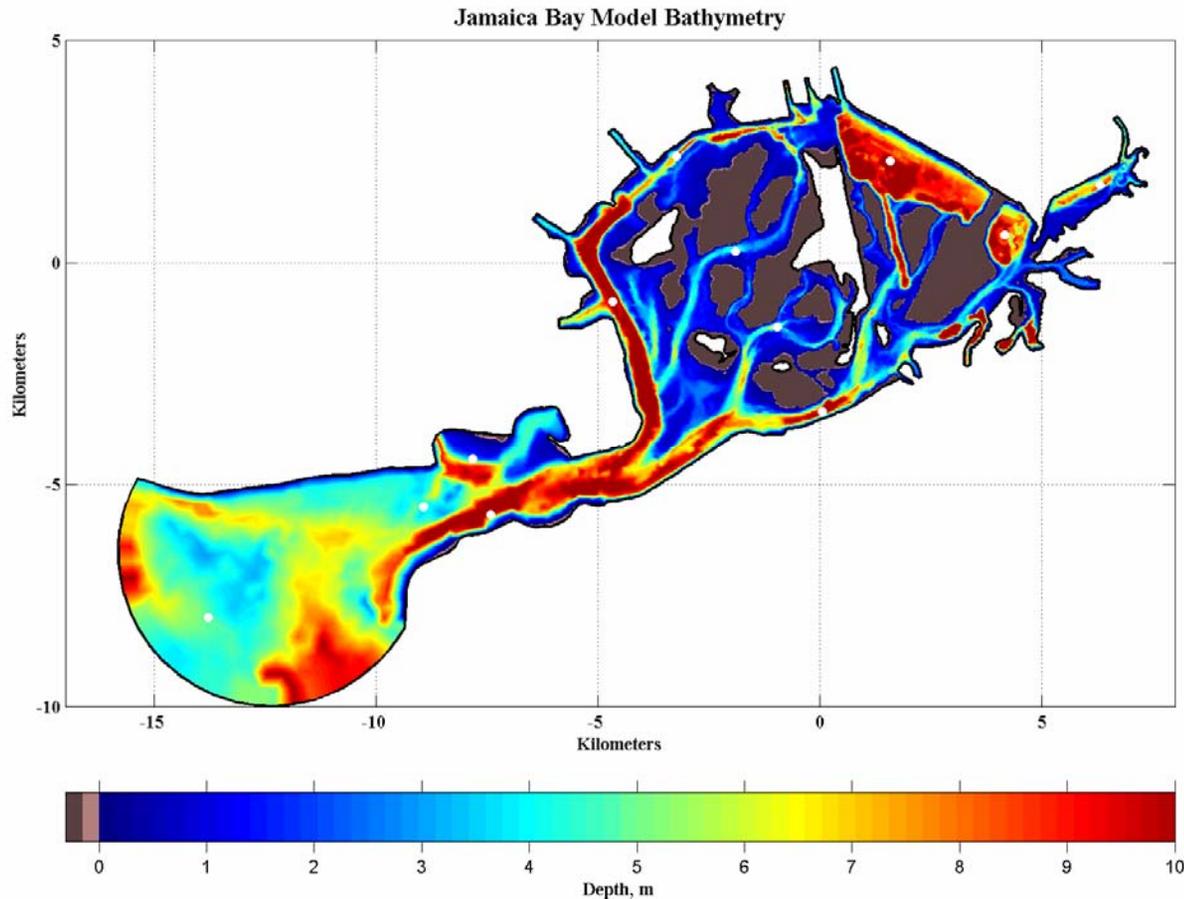


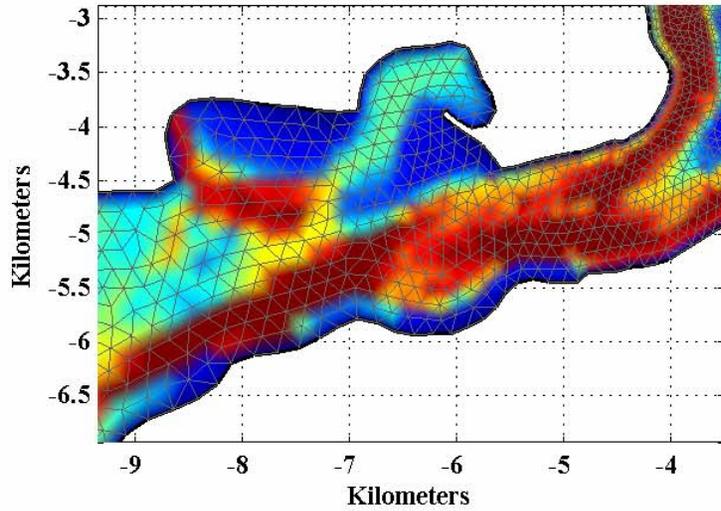
FVCOM Applied to Jamaica Bay

The Finite Volume Coastal Ocean Model (FVCOM) is a primitive equation, fully 3-D Baroclinic Model with Turbulent Closure, using an Unstructured Grid Horizontally and Sigma Vertical Coordinates

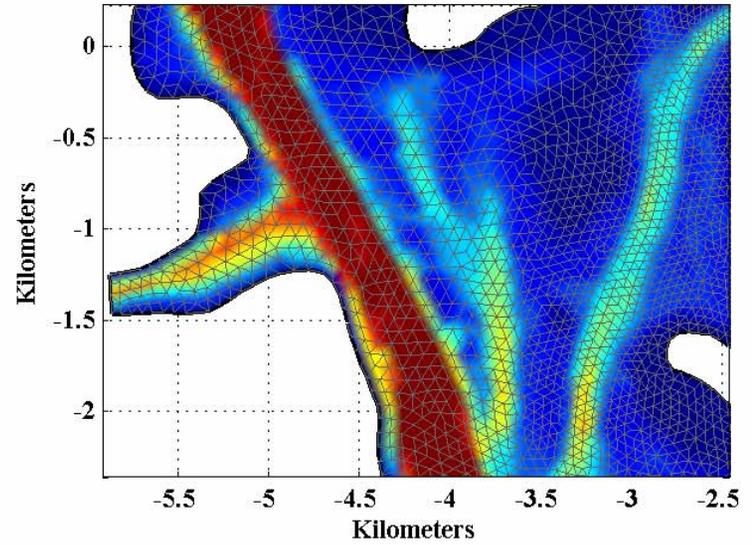


FVCOM Model Gridding

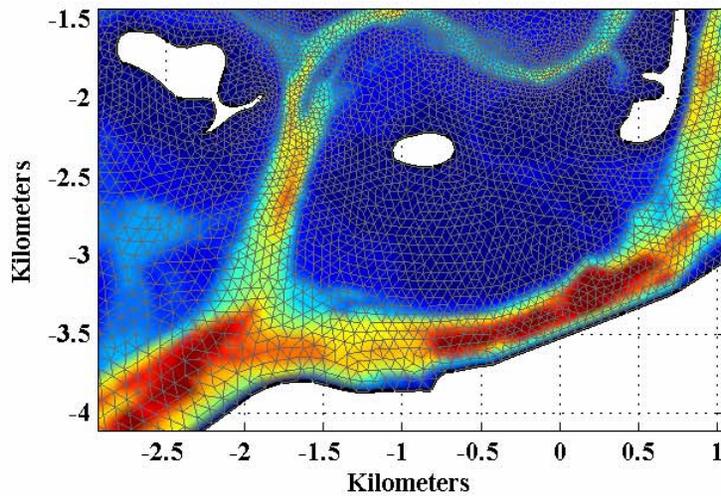
Jamaica Bay Inlet



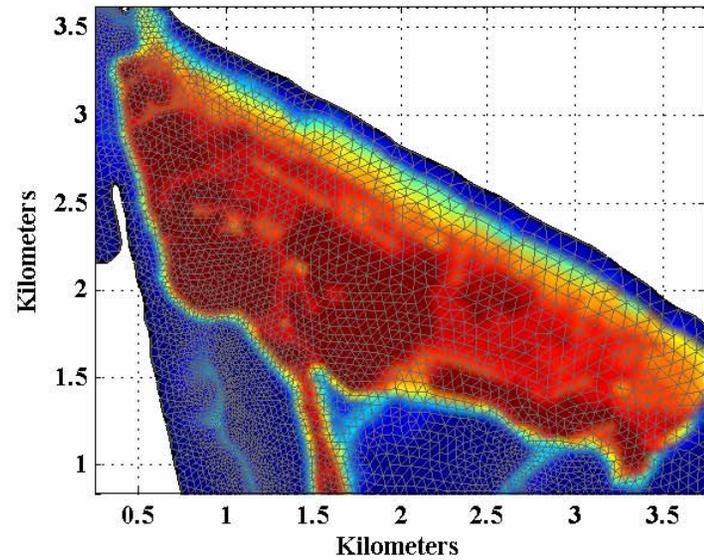
Island Channel



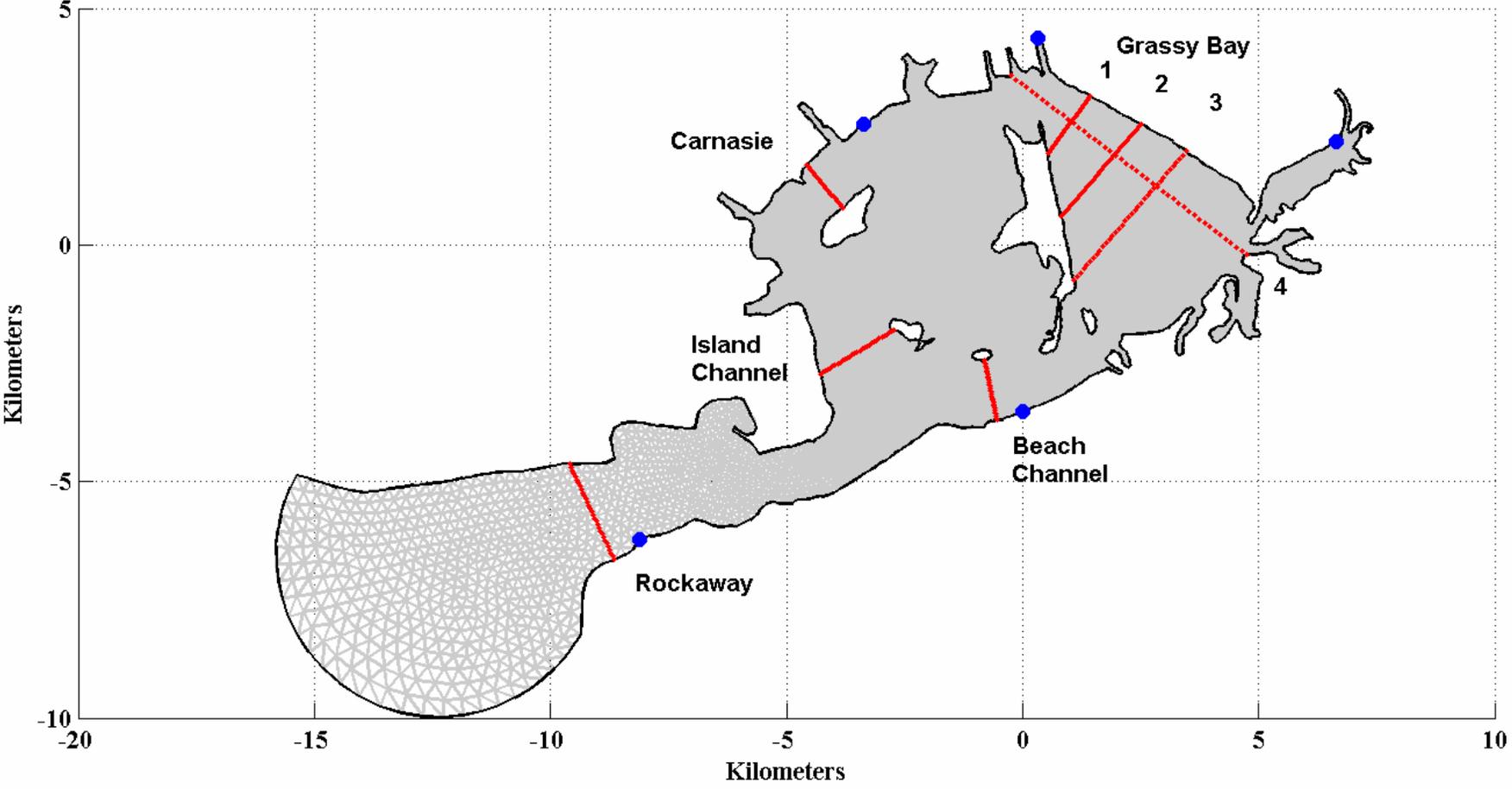
Beach Channel



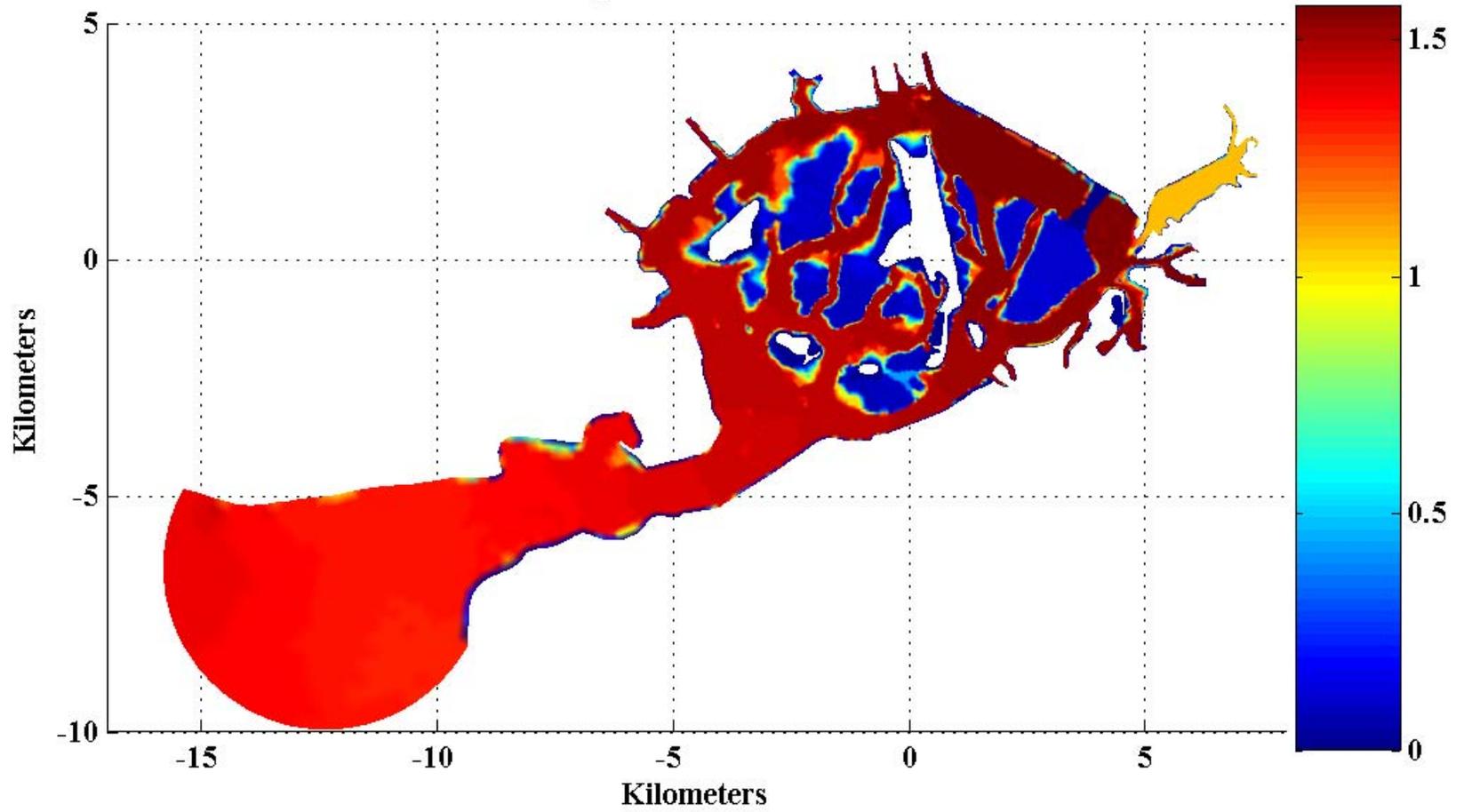
Grassy Bay



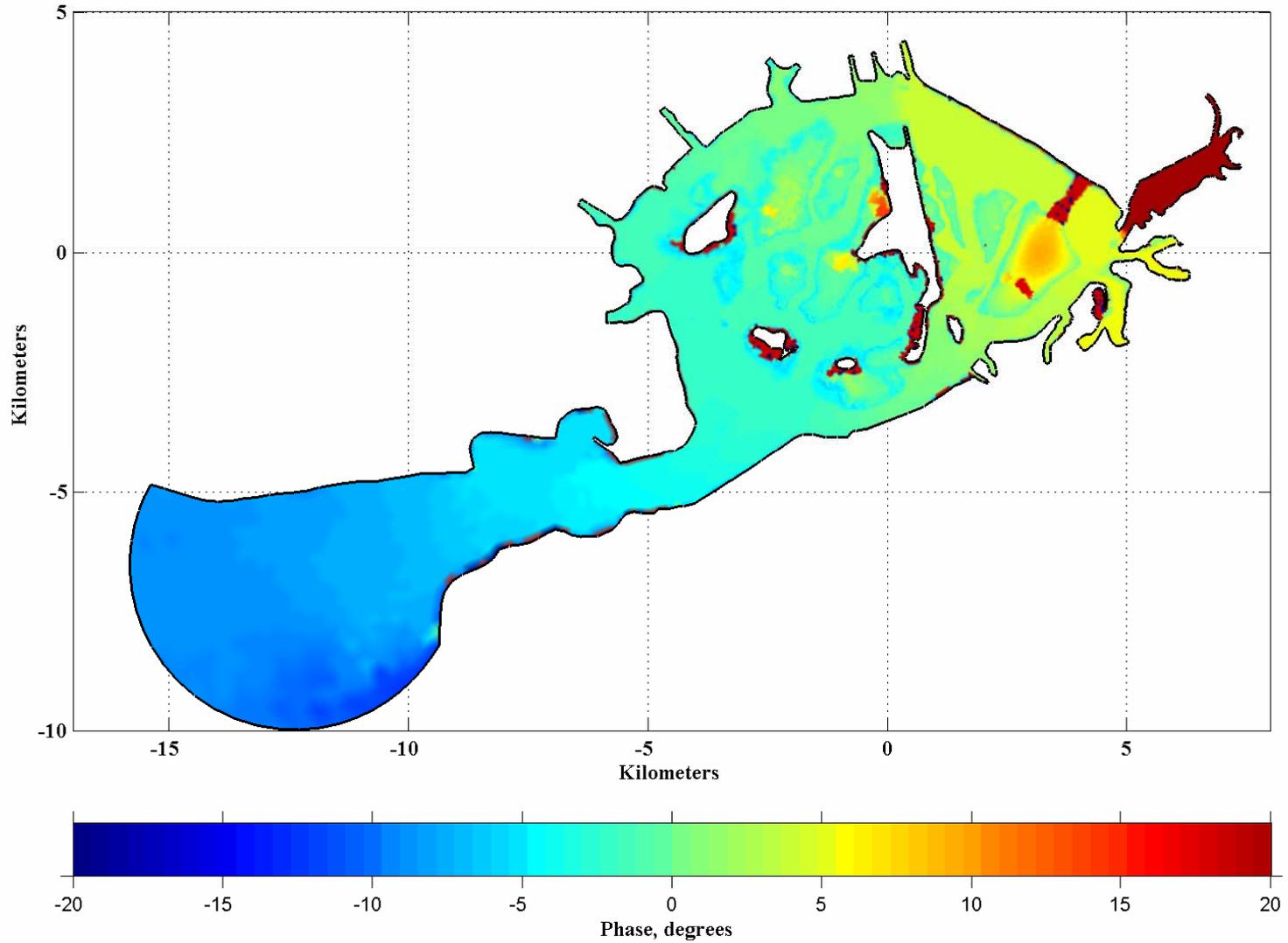
Jamaica Bay Grid and Section Location



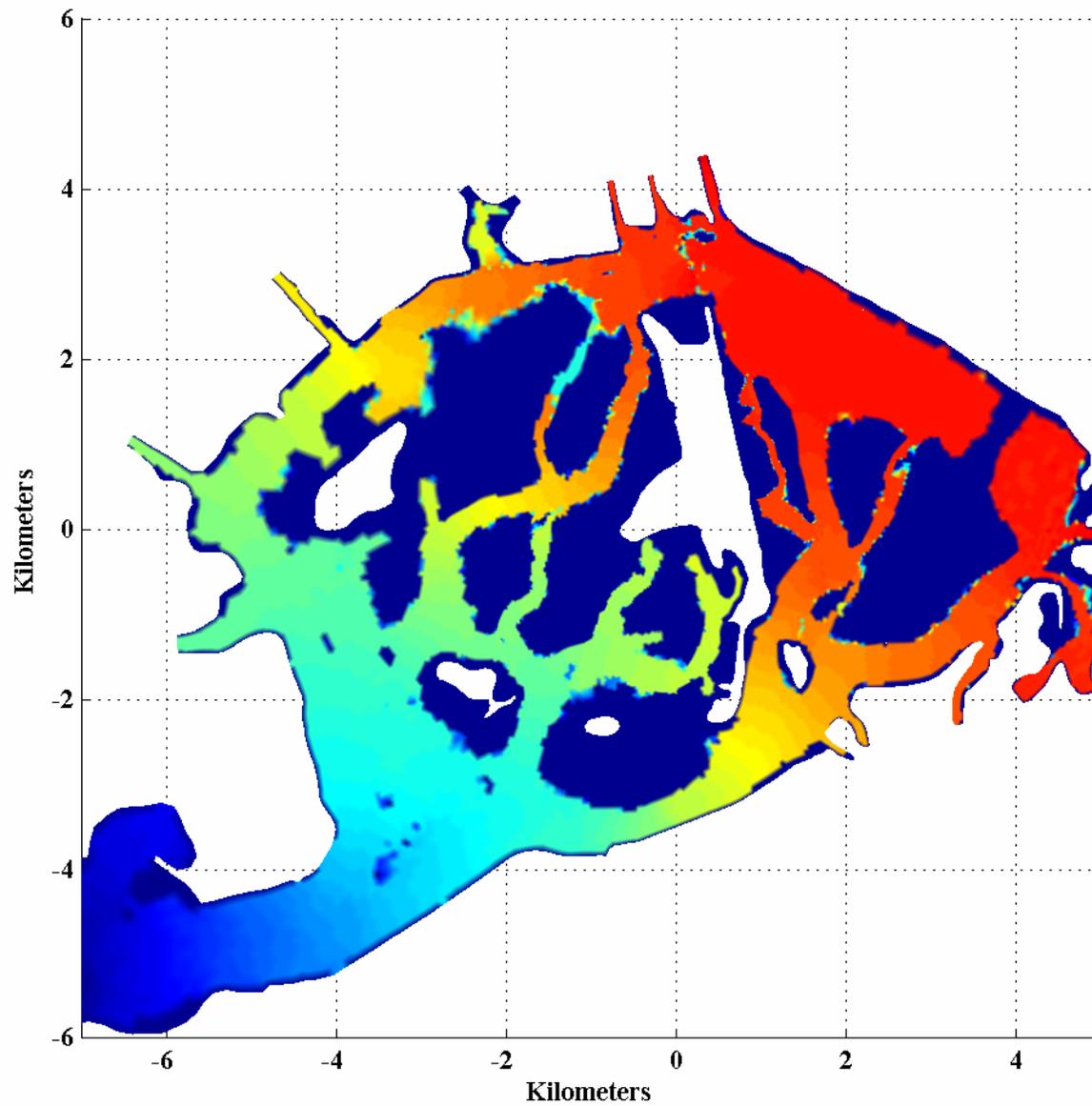
M_2 Tidal range



Jamaica Bay M_2 Tidal Phases



Inner Jamaica Bay, Ratio of M_2 Tidal Ranges



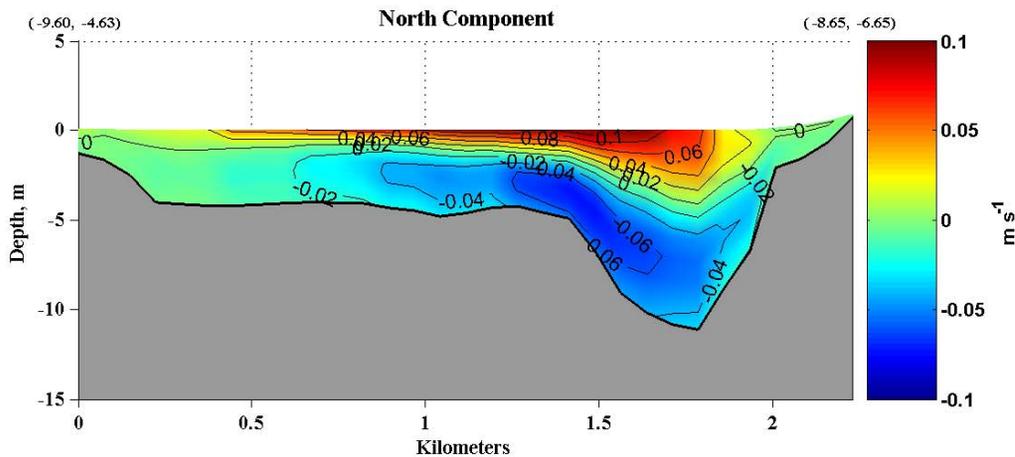
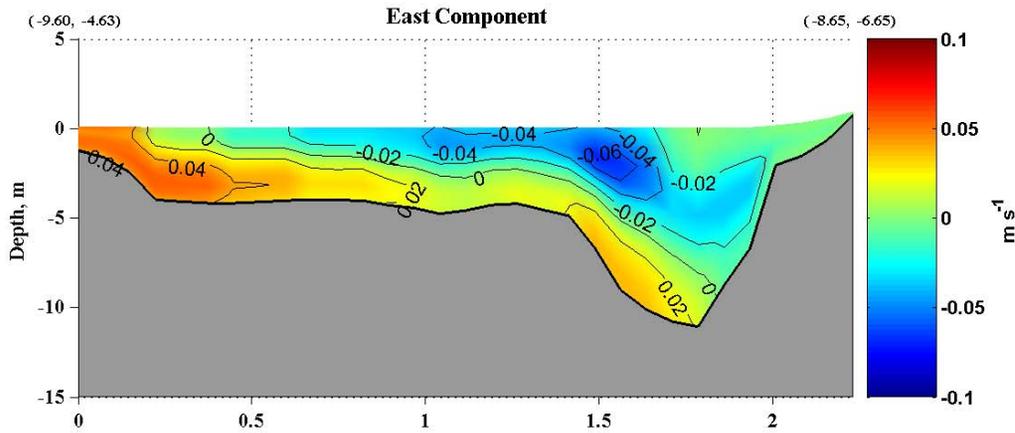
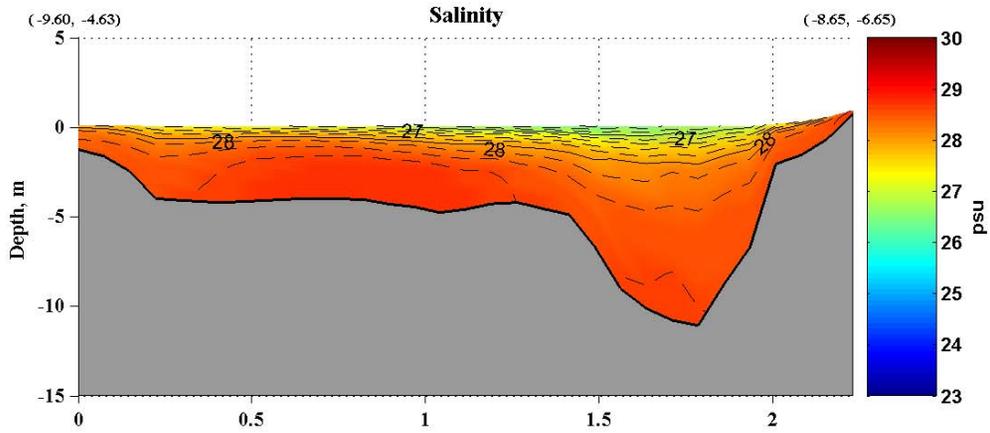
1

1.05

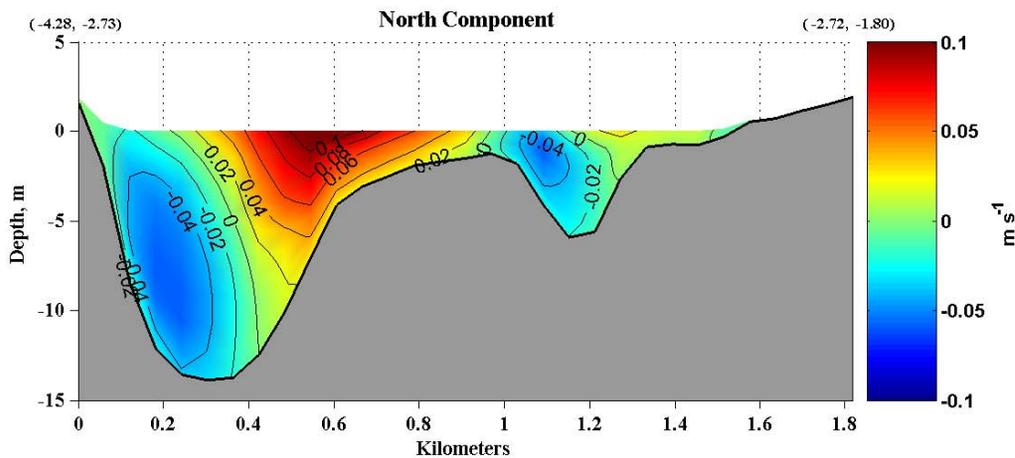
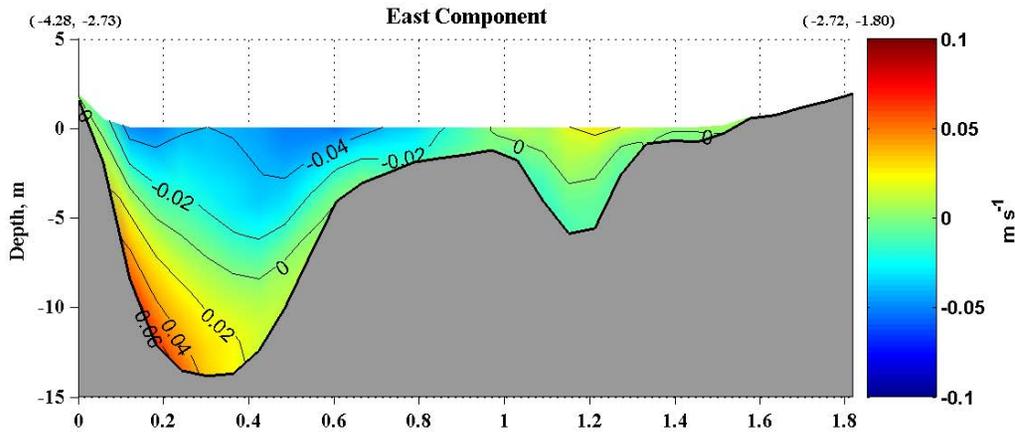
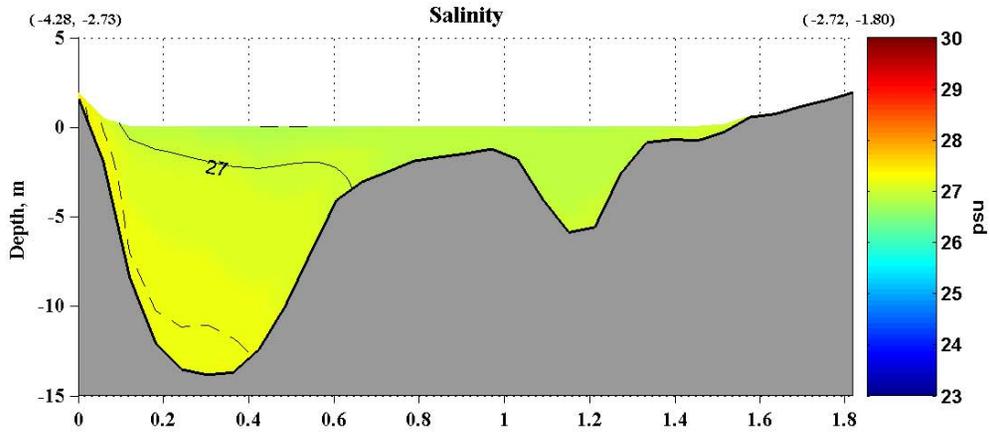
1.1

1.15

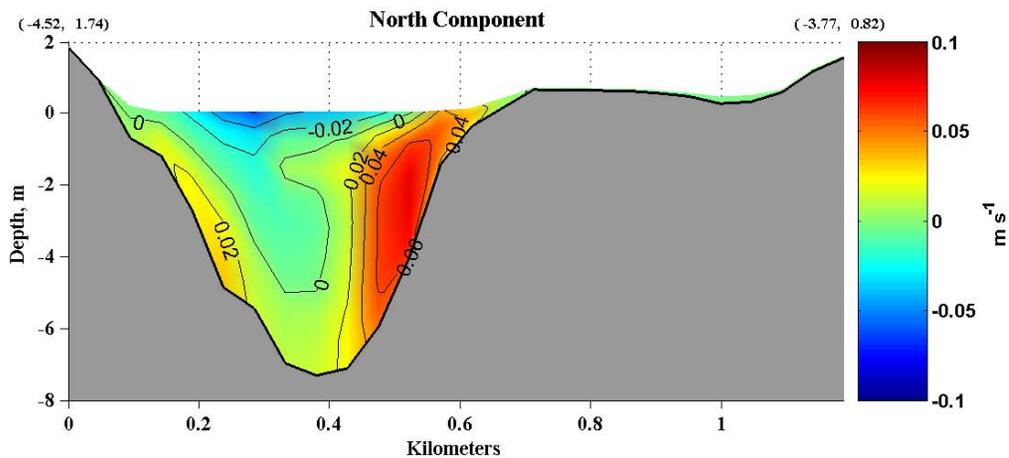
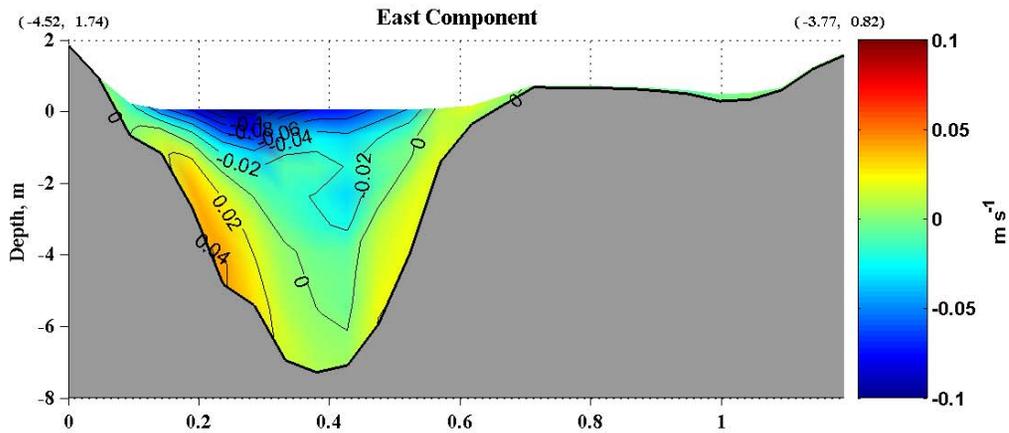
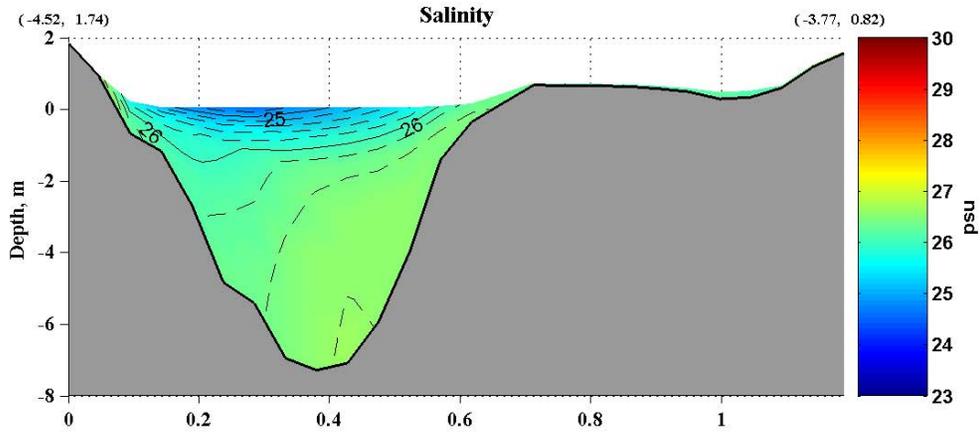
Rockaway Channel Section



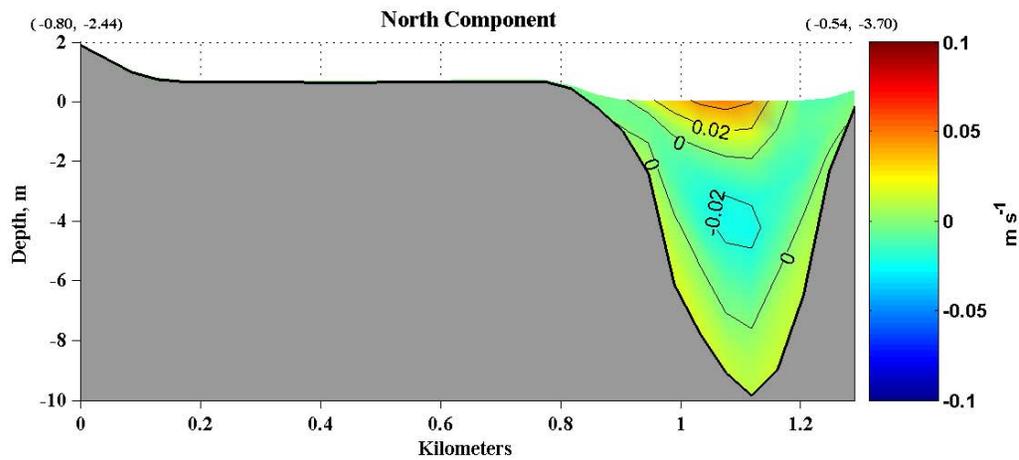
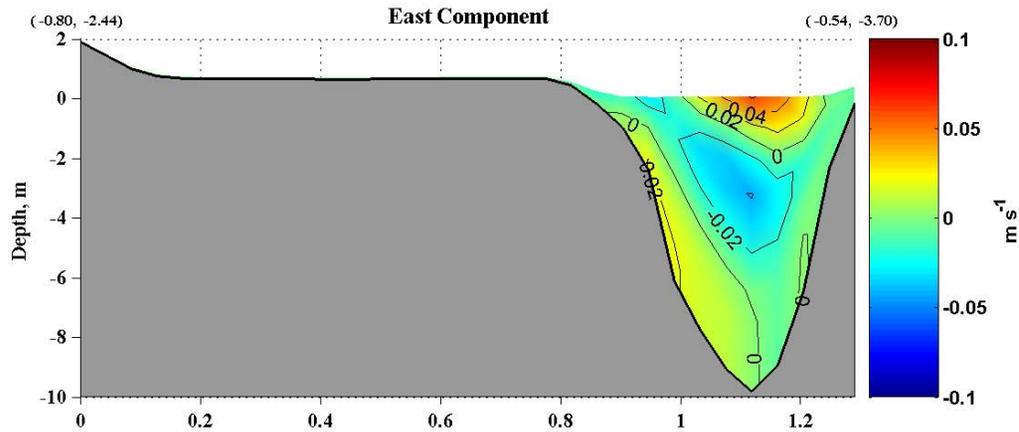
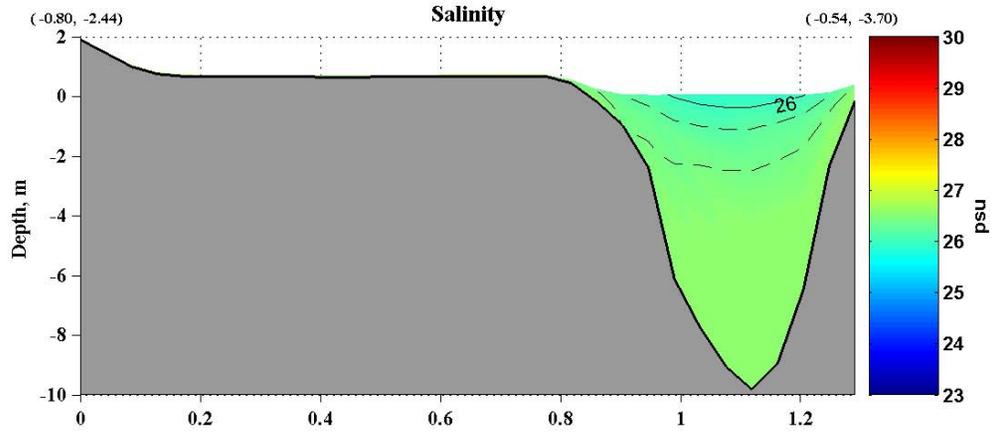
Island Channel Section



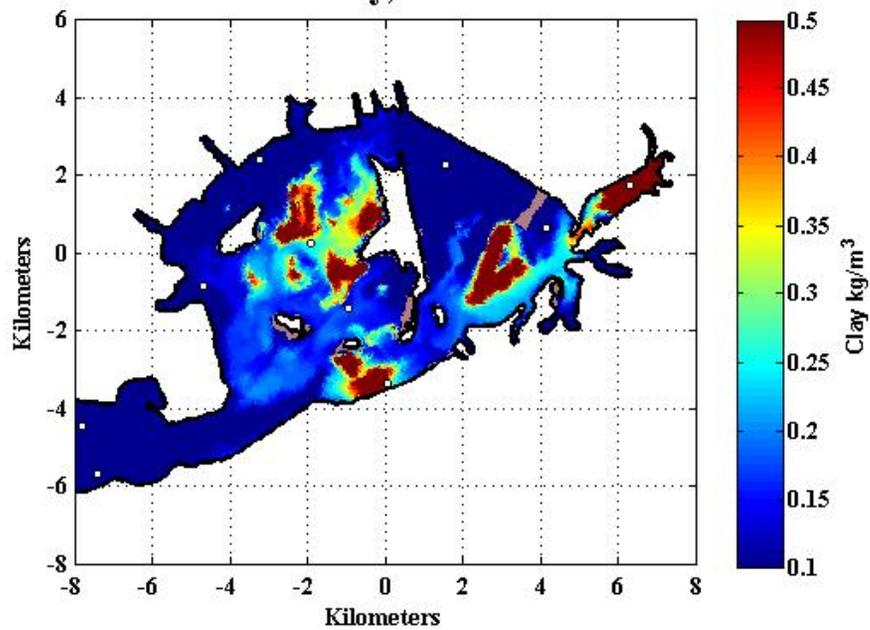
Canarsie Channel Section



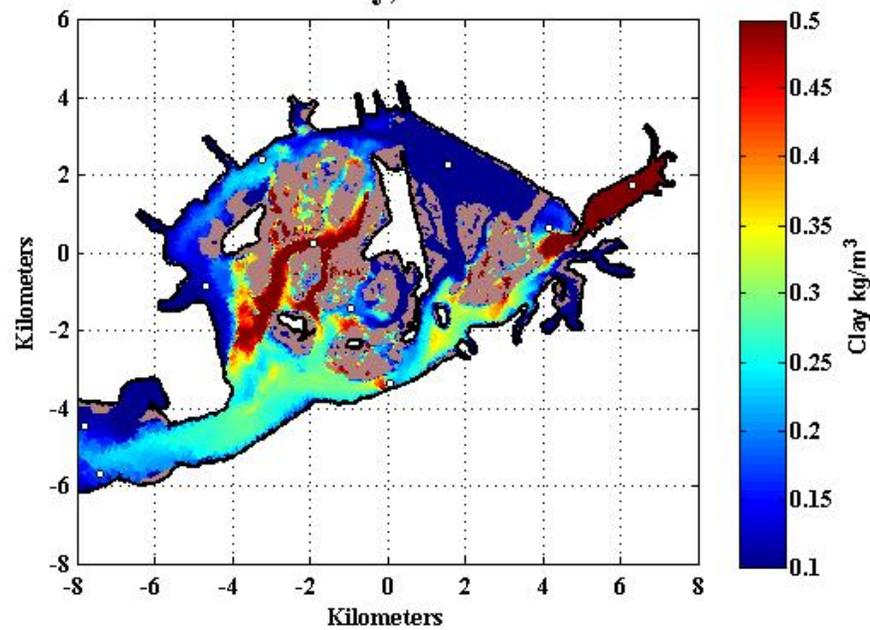
Beach Channel Section



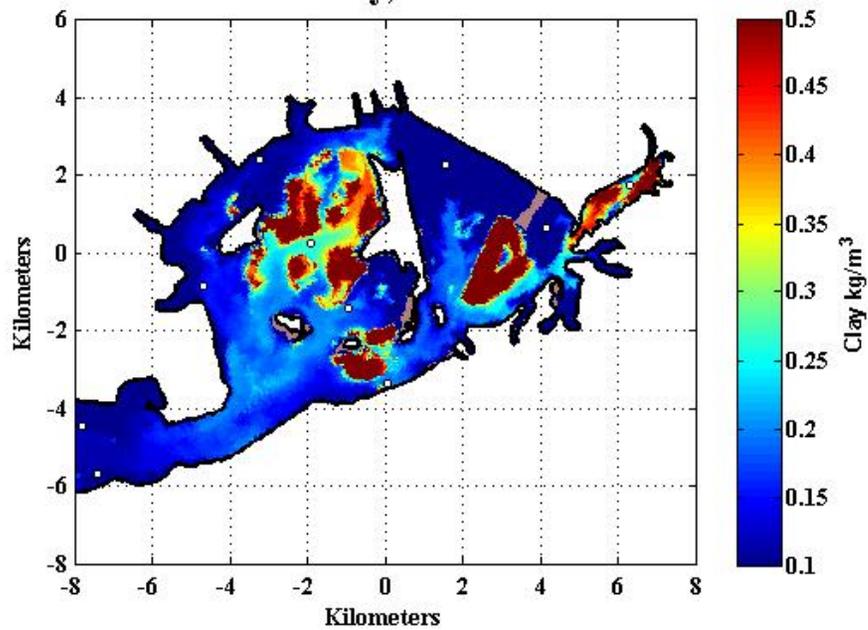
Near Surface Clay, Time: 88.000 hrs



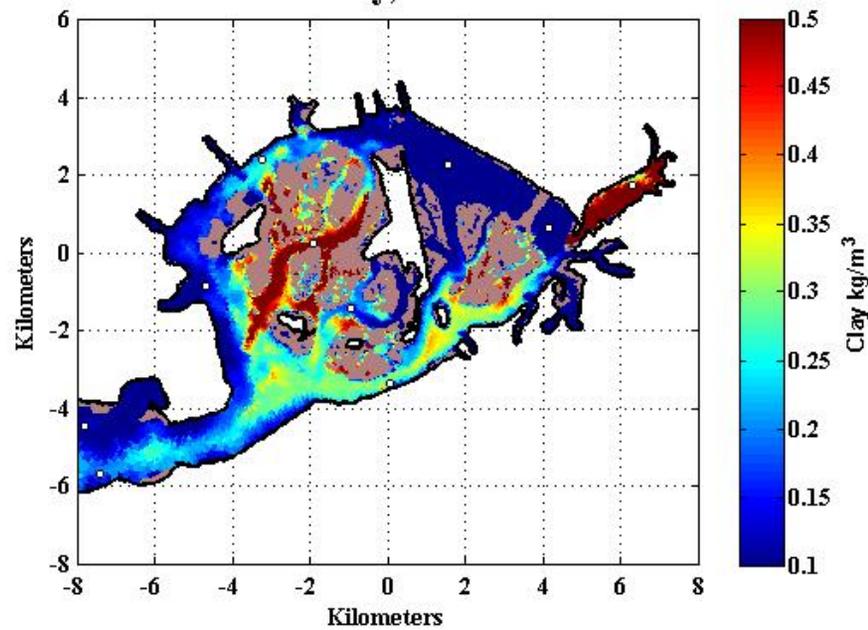
Near Surface Clay, Time: 93.000 hrs



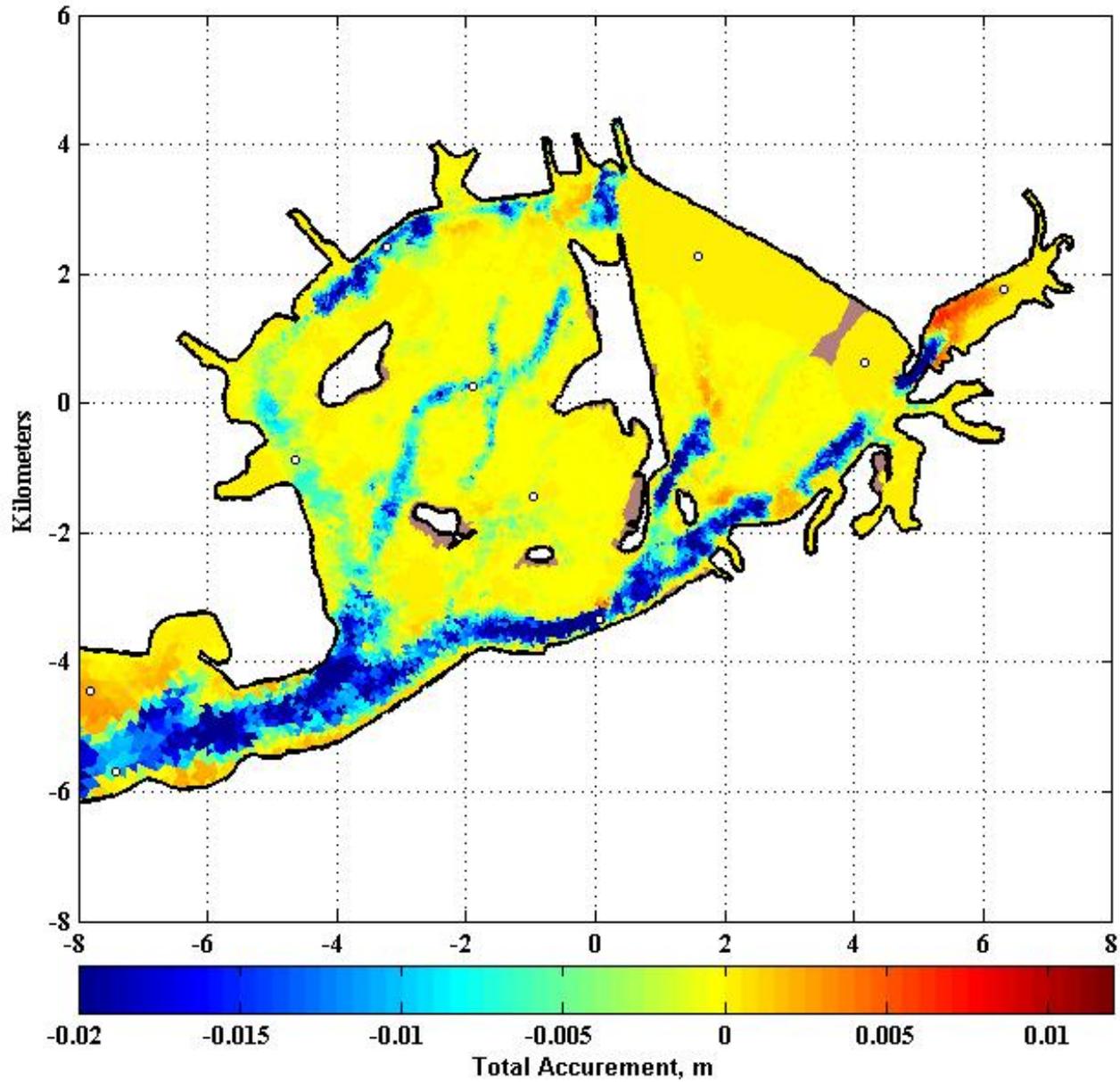
Near Bottom Clay, Time: 88.000 hrs



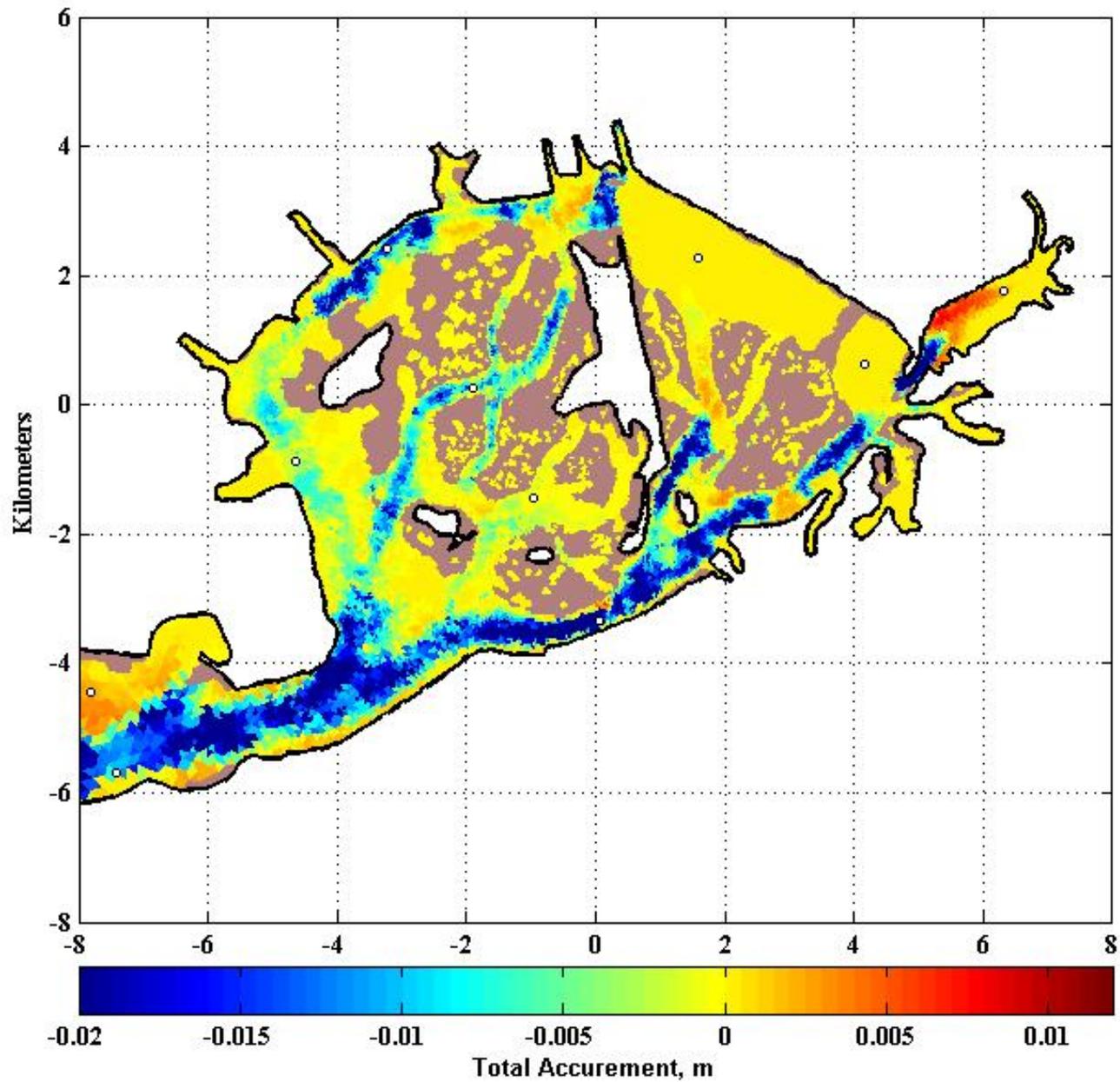
Near Bottom Clay, Time: 93.000 hrs



Time: 88.000 hrs

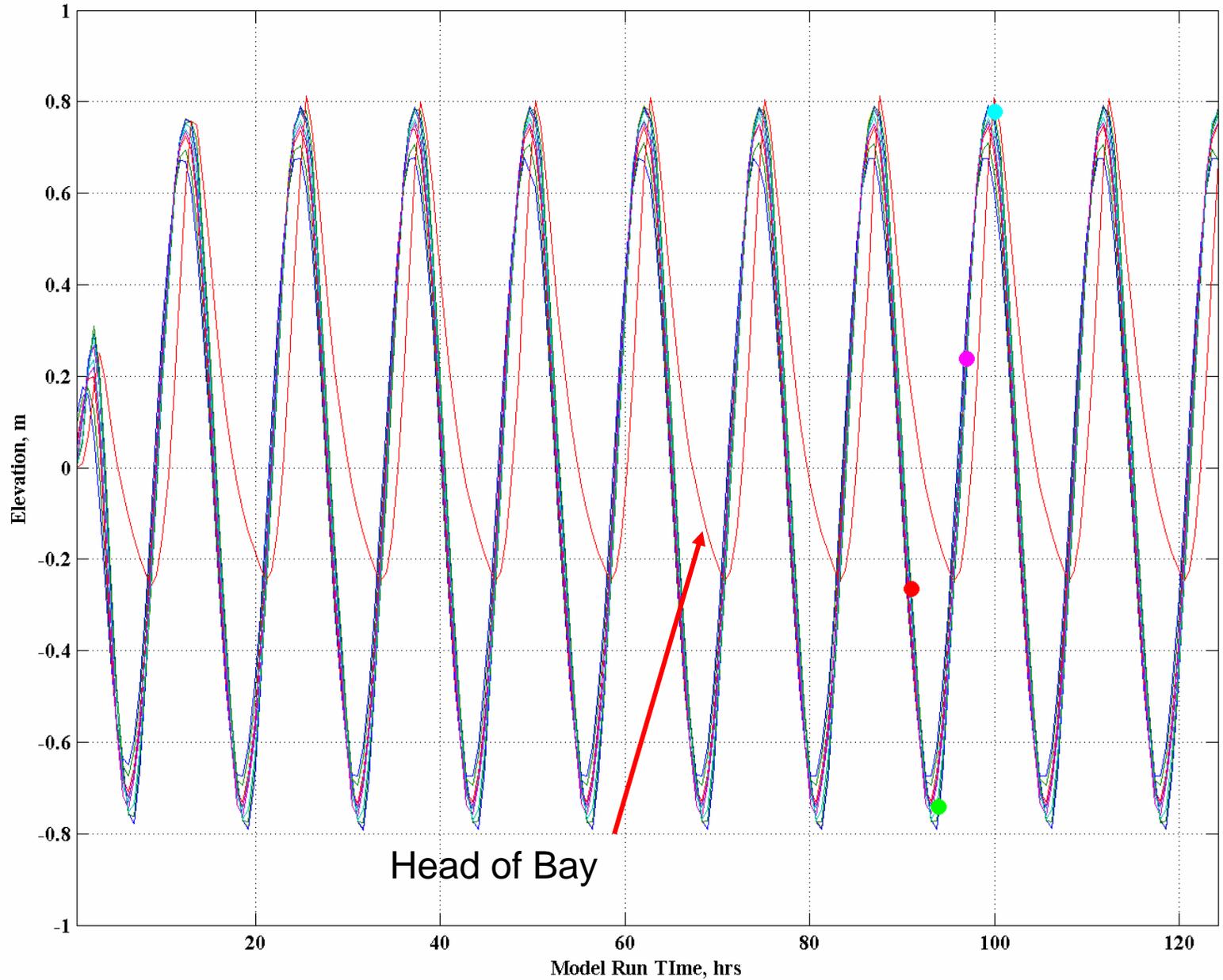


Time: 93.000 hrs



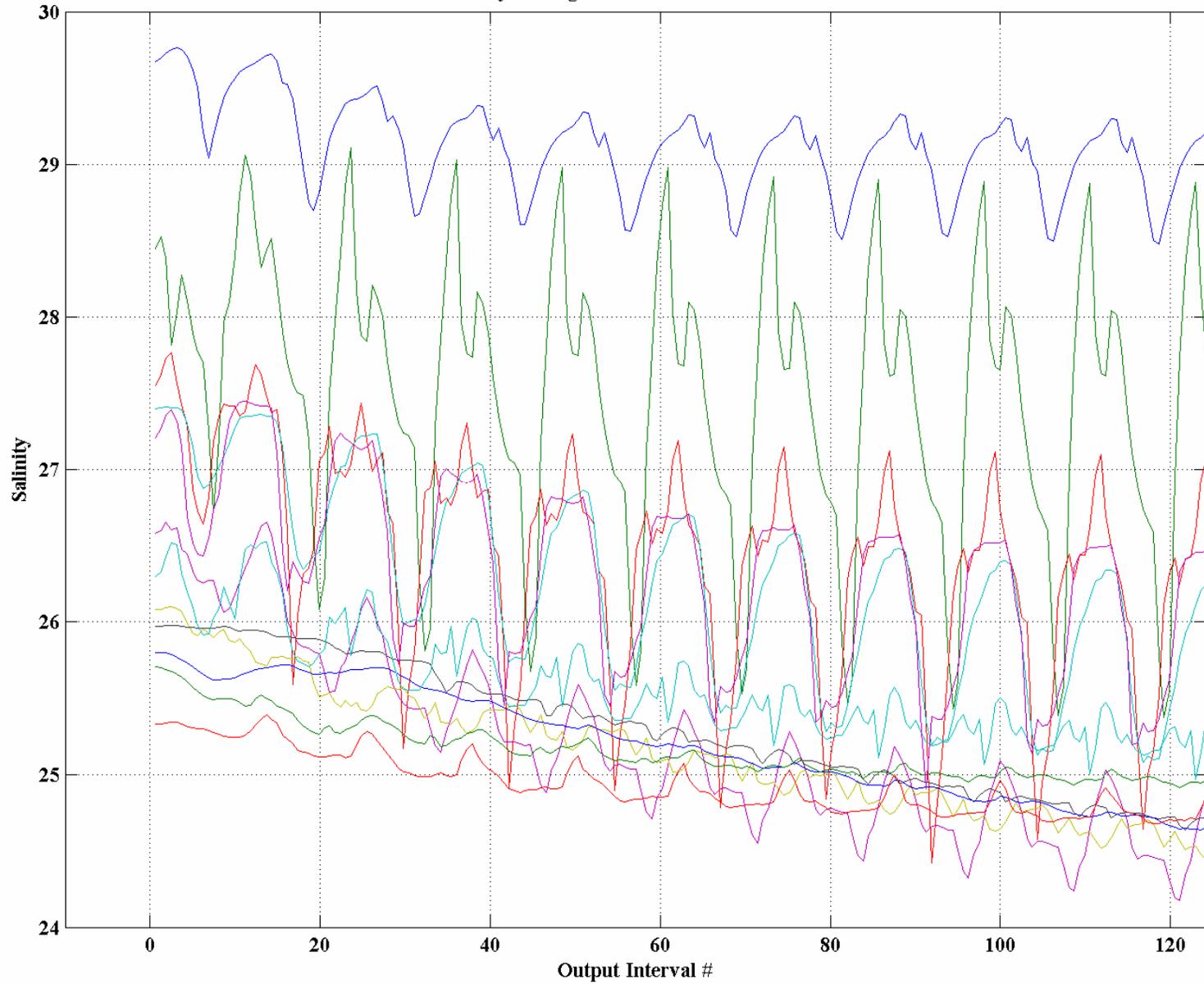
Model Initialization and 5-day Run

Elevations at Selected Nodes



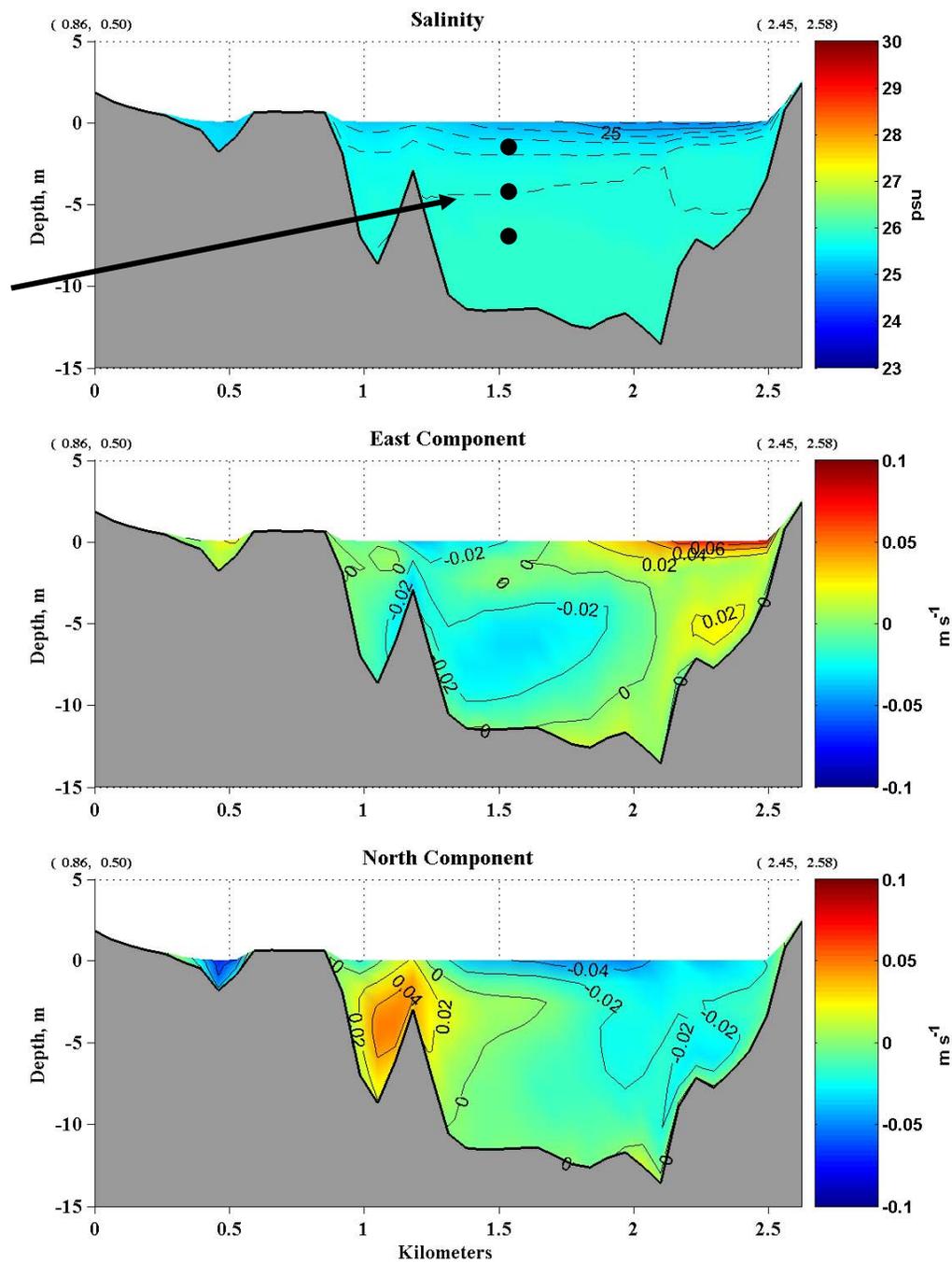
Model Initialization and 5-day Run

Vertically-Averaged Salinities at Selected Nodes



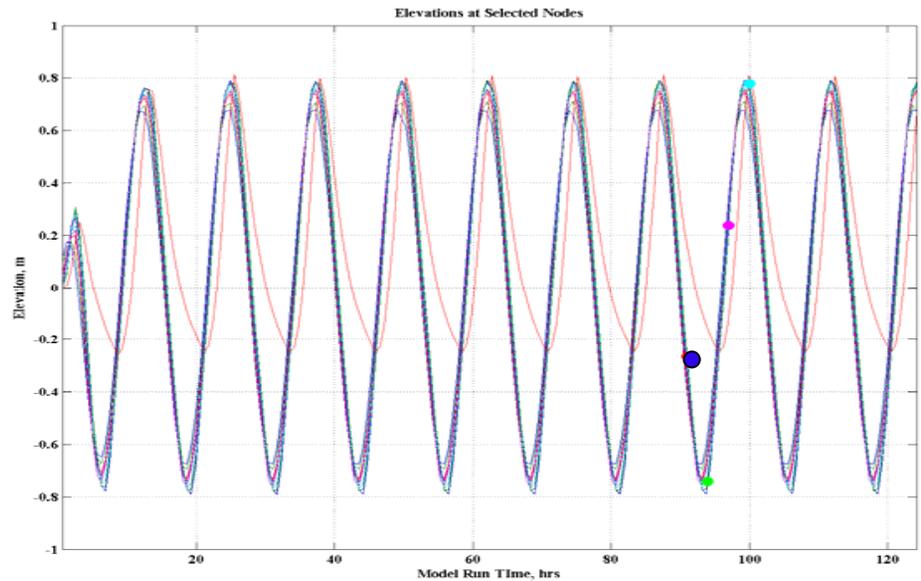
Tidal-Mean Conditions

Lagrangian Drifter
Release Depths

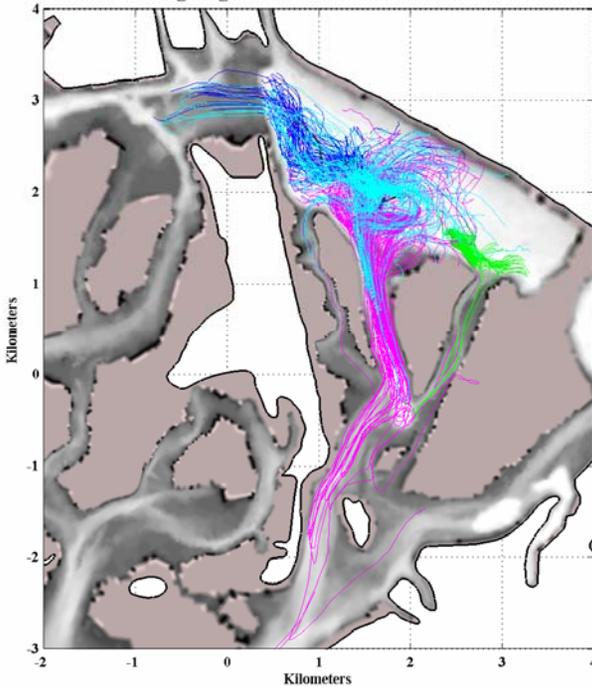


24 hours Lagrangian Particle Tracks in Grassy Bay

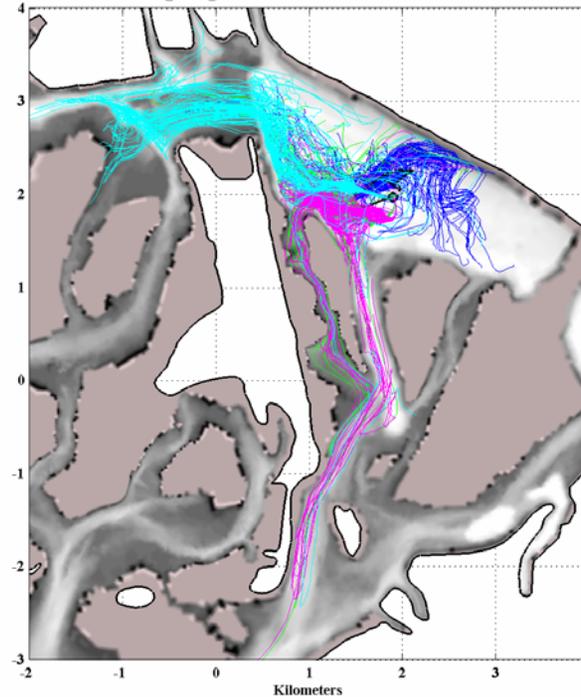
100 drifters released at four stages of the tide (Ebb, Low, Flood and High) and at three depths (2.5m, 5.0m and 7.0m). The drifters are subject to vertical random walk proportional to the vertical diffusivity.



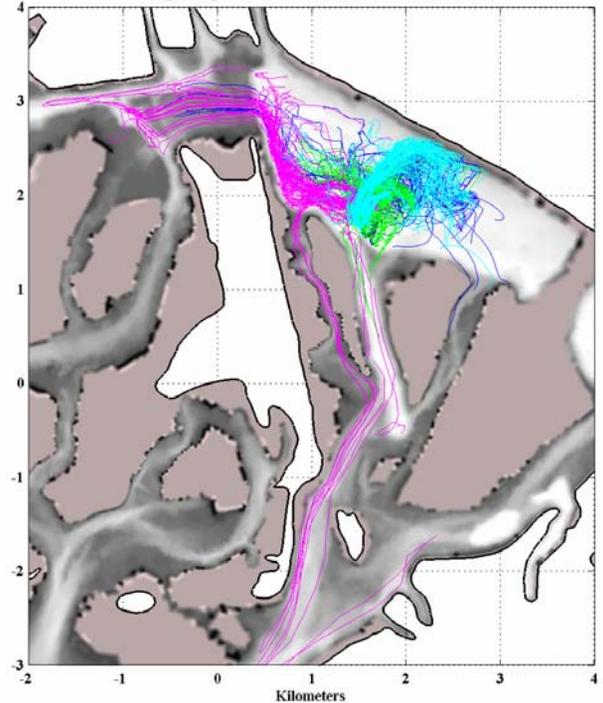
Lagrangian Drifters Released at 2.5m



Lagrangian Drifters Released at 5.0m



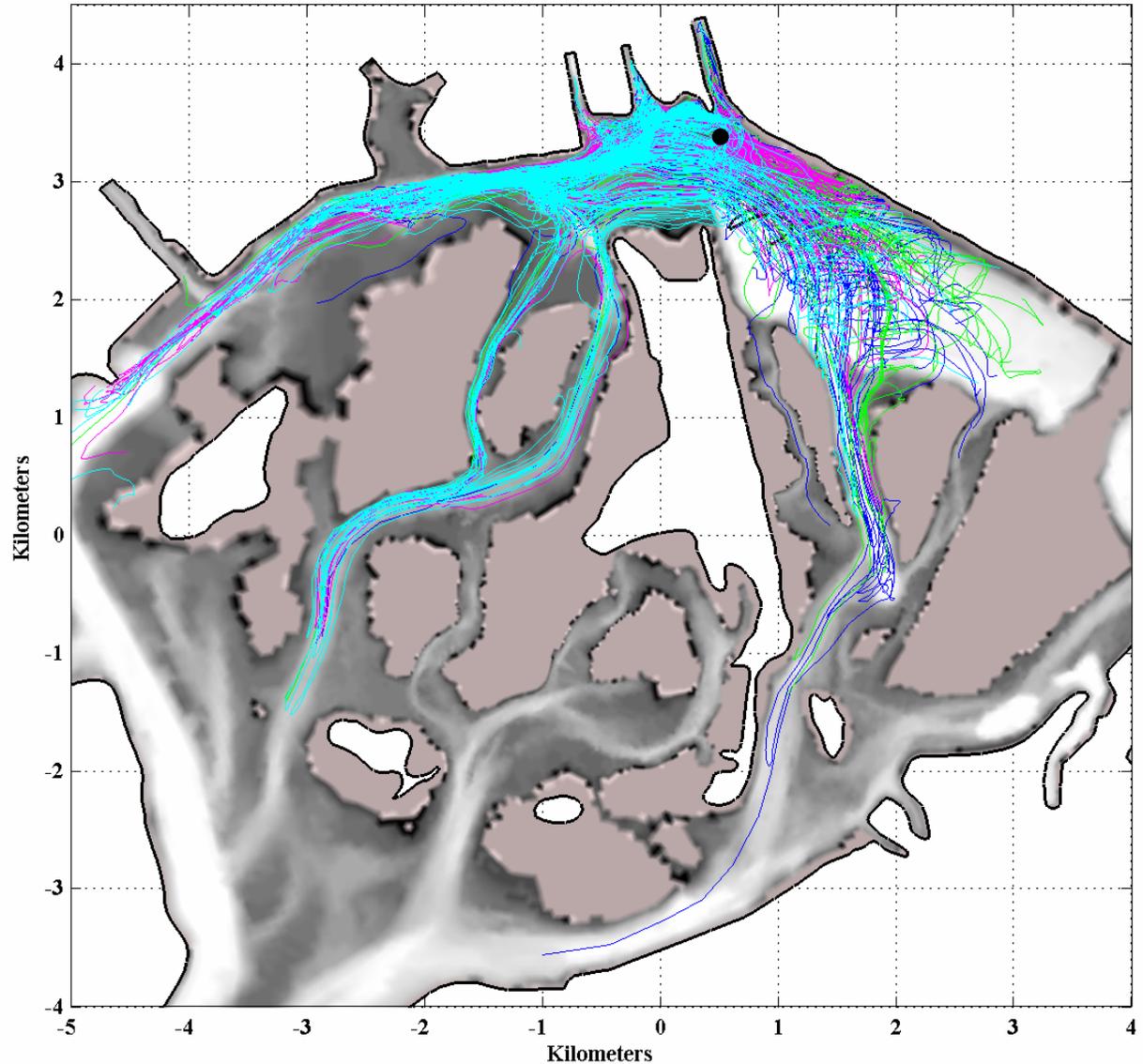
Lagrangian Drifters Released at 7.5m



24 hours Lagrangian Particle Tracks in South of Bergen Basin

100 drifters starting at 2.5m depth were released at four stages of the tide (**Ebb**, **Low**, **Flood** and **High**)

Lagrangian Drifters Released at 2.5m



Summary

- Tidal dynamics indicate weak flood dominance – approximately a standing wave with evidence for tidal amplification. Amplification contributes to maintenance of strong currents in channels.
- All major channels show relatively strong non-tidal estuarine circulation which can provide a mechanism for landward transport of fine sediments
- Simulations indicate that there is little or no deposition of fine sediments in channels.
- Evidence for upstream transport of fine sediments into marsh interior, but depositional areas are spatially limited
- Fine sediments appear to be bypassing marsh and entering Grassy Bay