

Development of Regional Sediment Management Plan for Ocean City, MD



NAB: Anthony Clark, Andrew Roach

ERDC: Jesse McNinch, Heidi Wadman, Tate McAlpin

BLUF: Perform a comprehensive, observational & numerical modeling study of the relationships between hydrodynamics, sediment transport, and morphology changes in the vicinity of Ocean City, MD.

Challenge/Objectives

- Shoaling in the Ocean City inlet channel, and portions of the regional ICW
- Scour hole evolution/migration near Stinky Beach and along portions of the estuarine shorelines
- Coastal erosion along Assateague and Ocean City shorelines

Approach – High-Resolution Measurements Conducted on a Regional Scale

- Hydrodynamic observations (tripods and shipboard measurements)
- Chirp sub-bottom imagery (subsurface stratigraphy)
- Two- and three-dimensional hydrodynamic modeling

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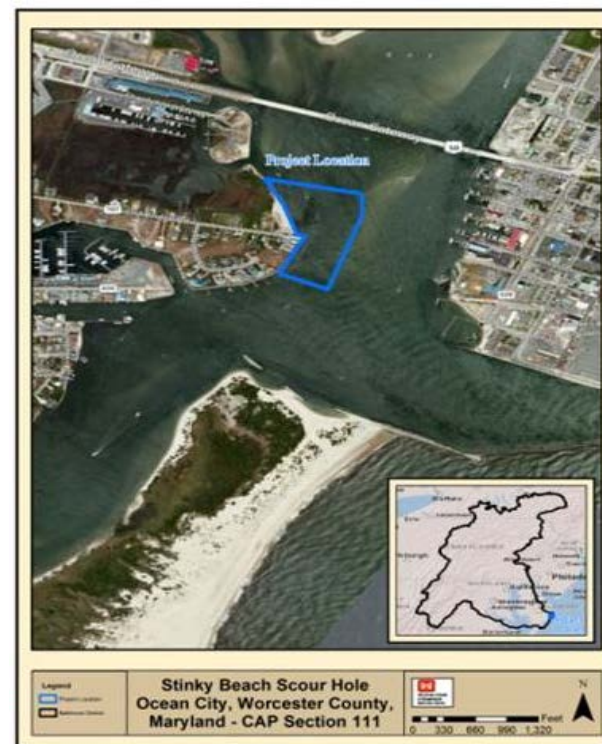
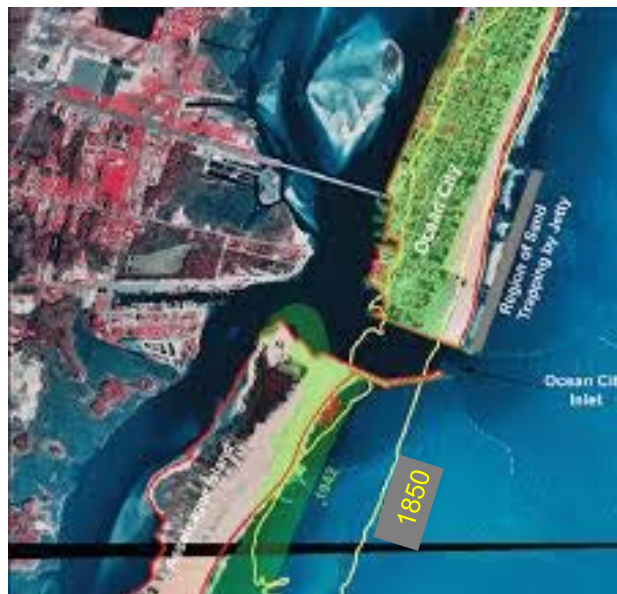
ERDC: Jesse McNinch, Heidi Wadman, Tate McAlpin

District/Other USACE PDT Members

Thomas Laczo
Danielle Szimanski
Keaton Jones
Allen Hammock
Charles, McKnight
Mary Cialone

Stakeholders/Partners

Ocean City MD Historical Harbor
Foundation



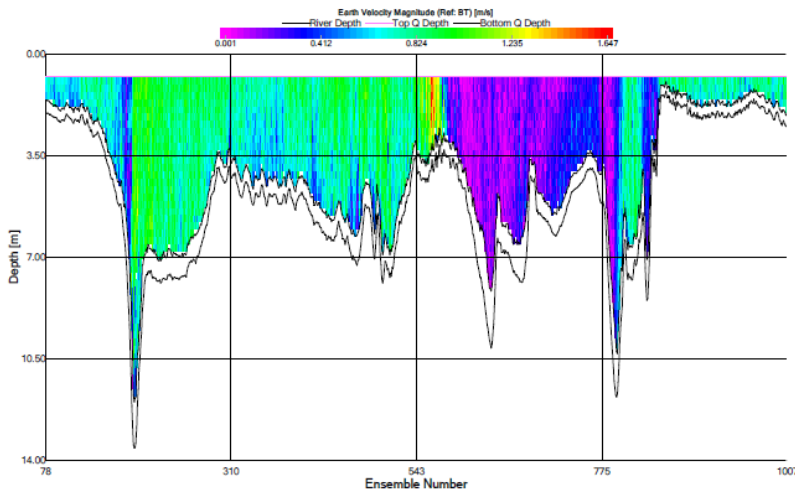
Great team for very challenging problems



Comprehensive observational approach



hydrodynamics



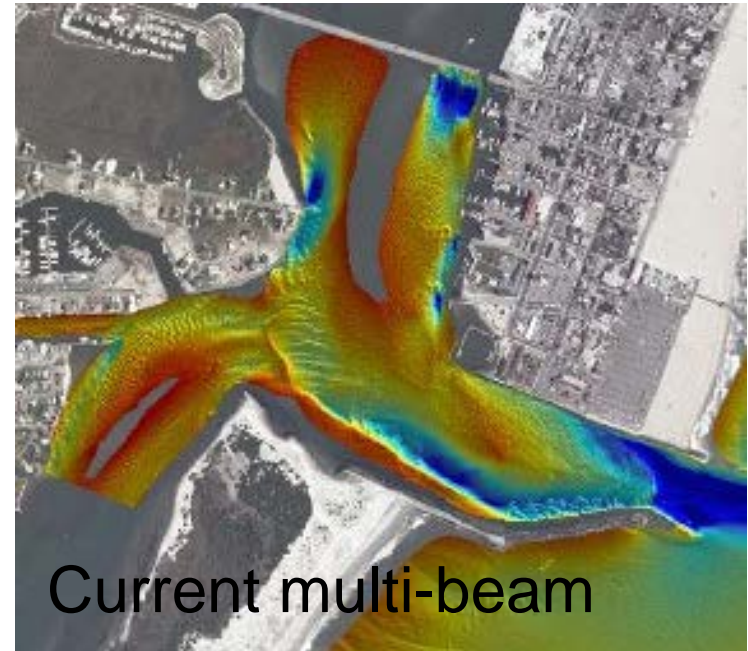
Investigating Causes of Scour Hole Deepening and Movement



H -- migration of channel eastward?

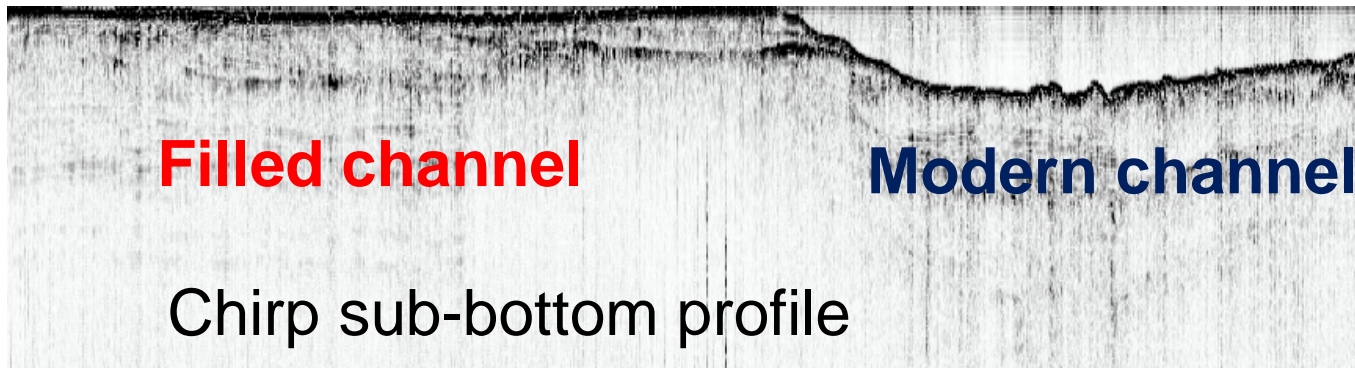
-- evidence in chirp sub-bottom and early charts

old channel path



pre-1933

Current multi-beam

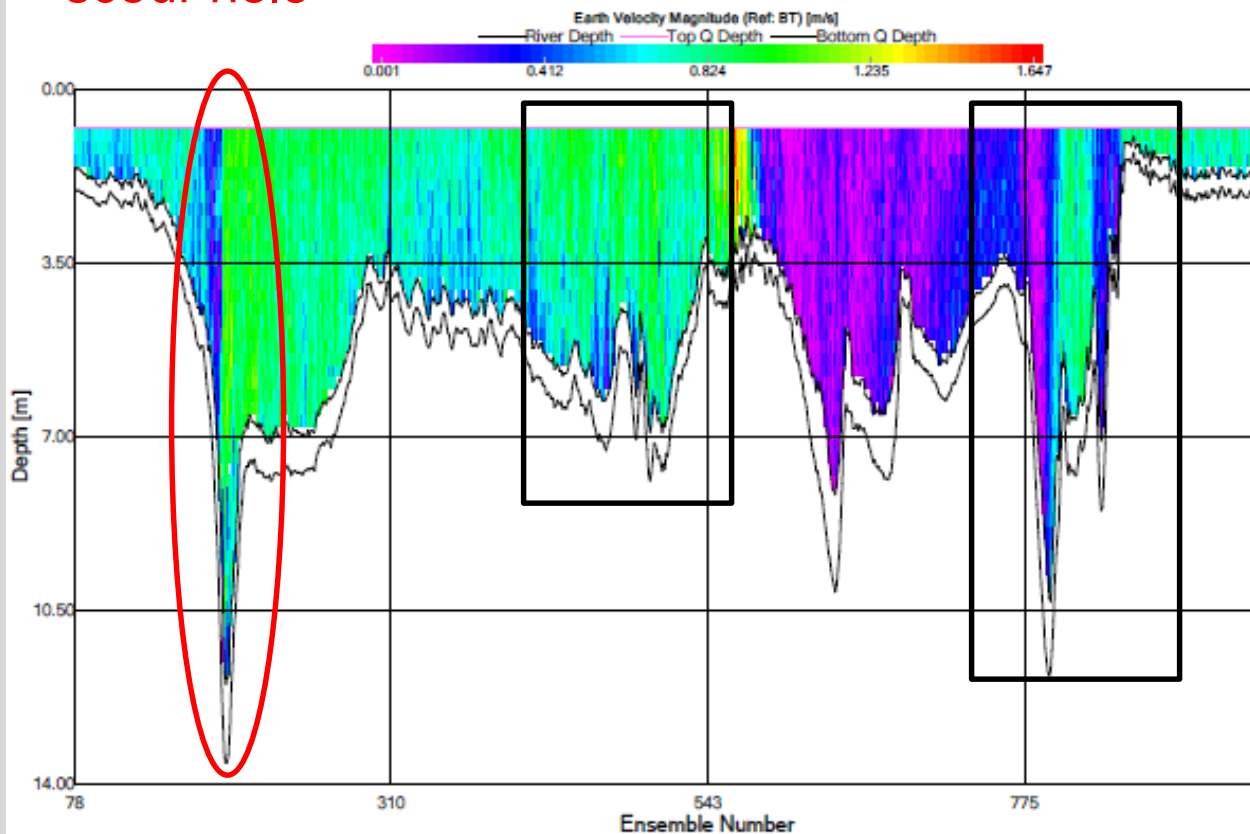


Chirp sub-bottom profile

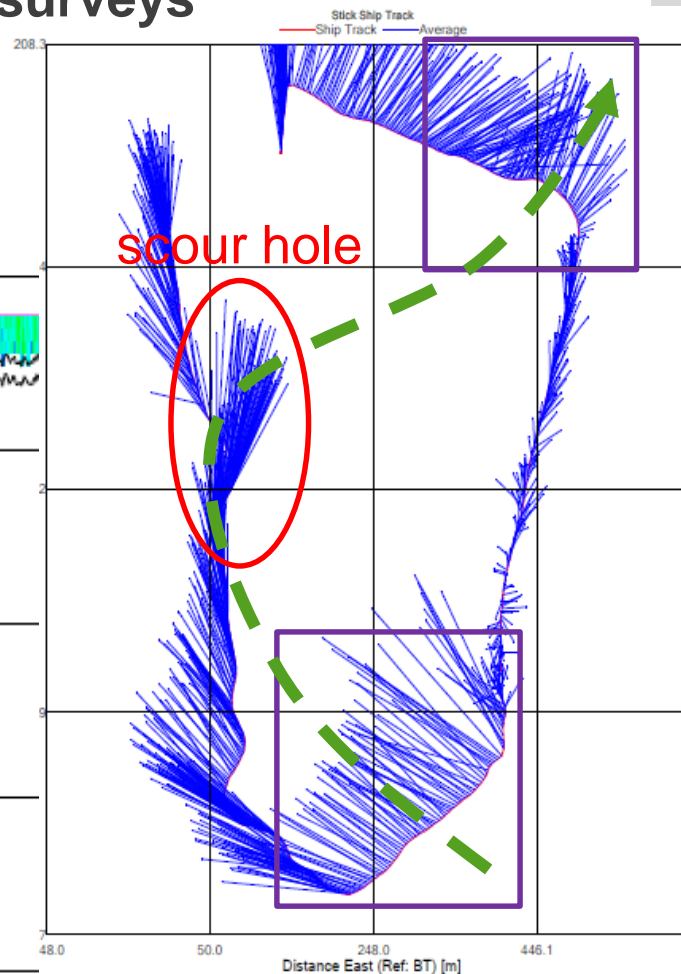
Investigating Causes of Scour Hole Deepening and Movement: H – increased channel curvature? -- evidence in vessel-mounted ADCP surveys



scour hole

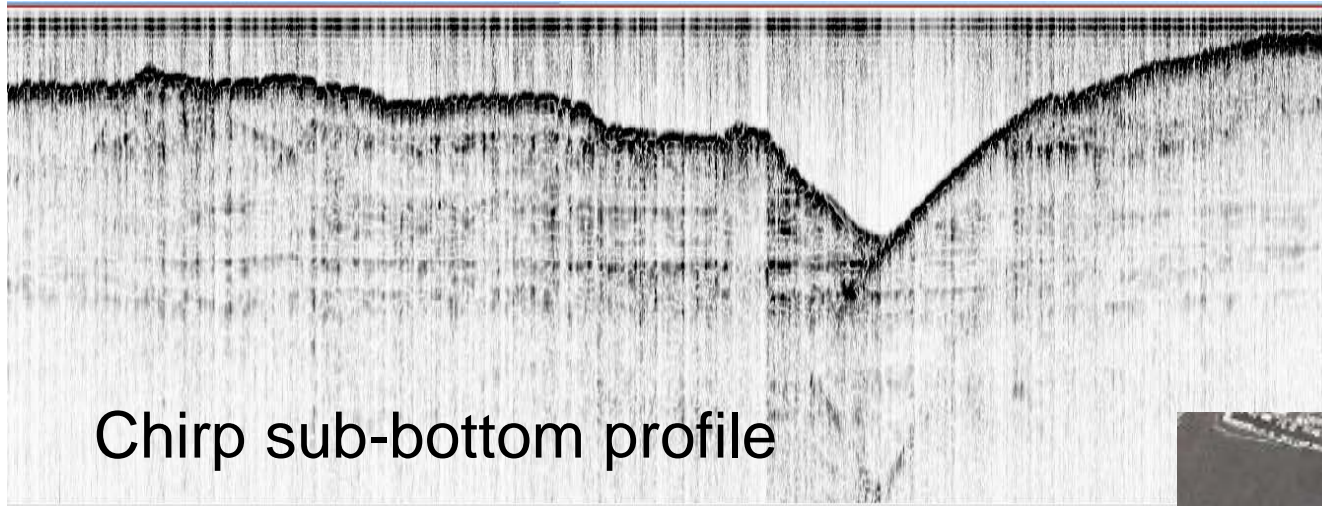


scour hole

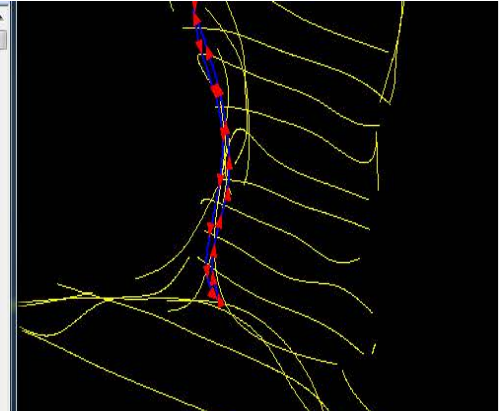


Investigating Causes of Scour Hole Deepening and Movement.

No obvious sub-surface controls
-- evidence in chirp sub-bottom



Chirp sub-bottom profile



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Challenges/Lessons Learned

- Previous studies – all isolated to small, specific project; ignored regional influences on project/study
 - Limited scope and ultimate application
- Required extensive external process to secure sufficient funding/time (CAP process)

Benefits

- comprehensive understanding and modeling tools that can be utilized by NAB in project management of existing problems and factored in designs of future projects