NC STATE UNIVERSITY

Updates on Coastal Modeling
Part II – Model Development for Choctawhatchee Bay

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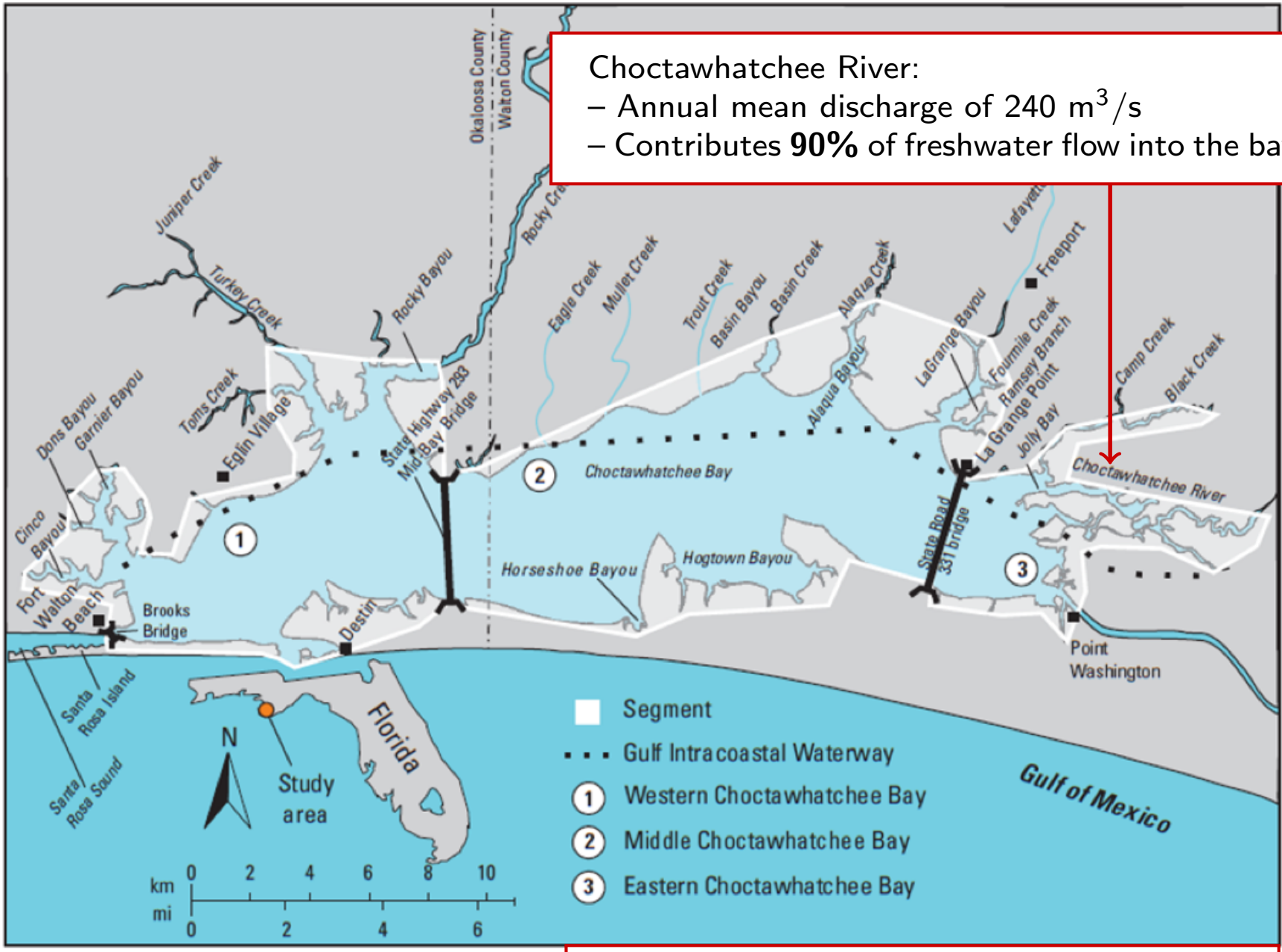
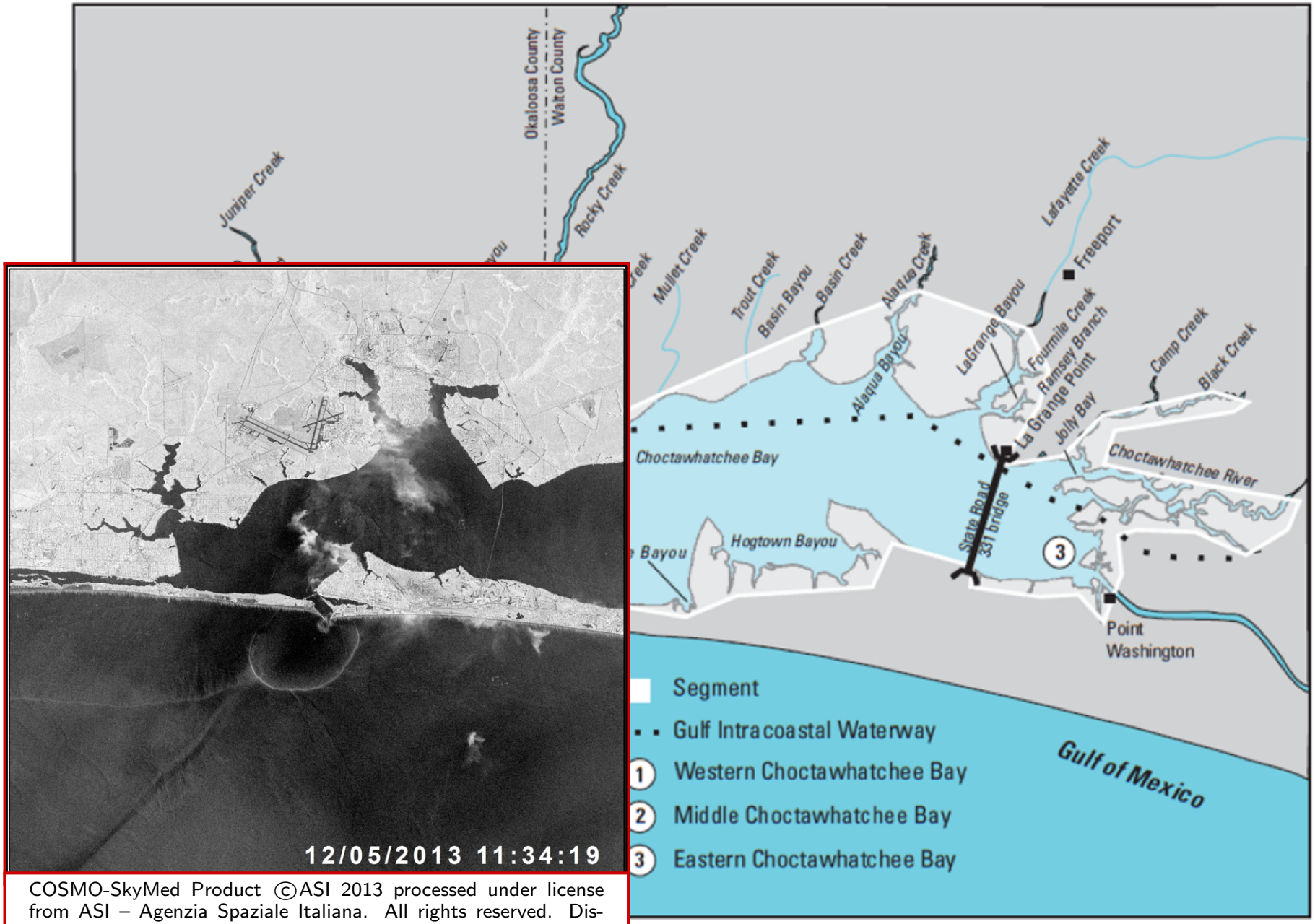
CARTHE CONSORTIUM
for ADVANCED RESEARCH on TRANSPORT of HYDROCARBON in the ENVIRONMENT

Choctawhatchee River and Bay System

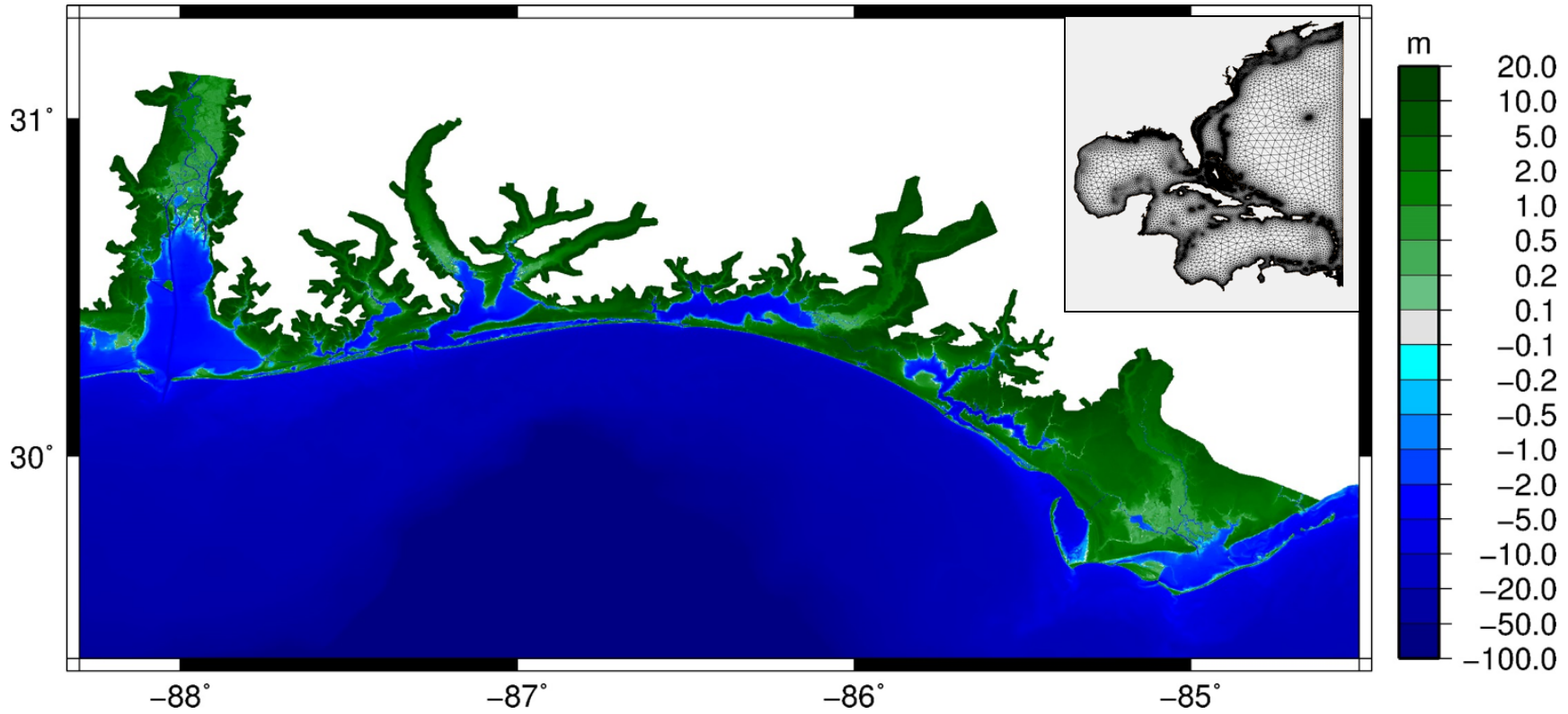


http://pubs.usgs.gov/sir/2006/5287/pdf/ChoctawhatcheeBay.pdf

Choctawhatchee River and Bay System



Existing ADCIRC Mesh for Florida Panhandle



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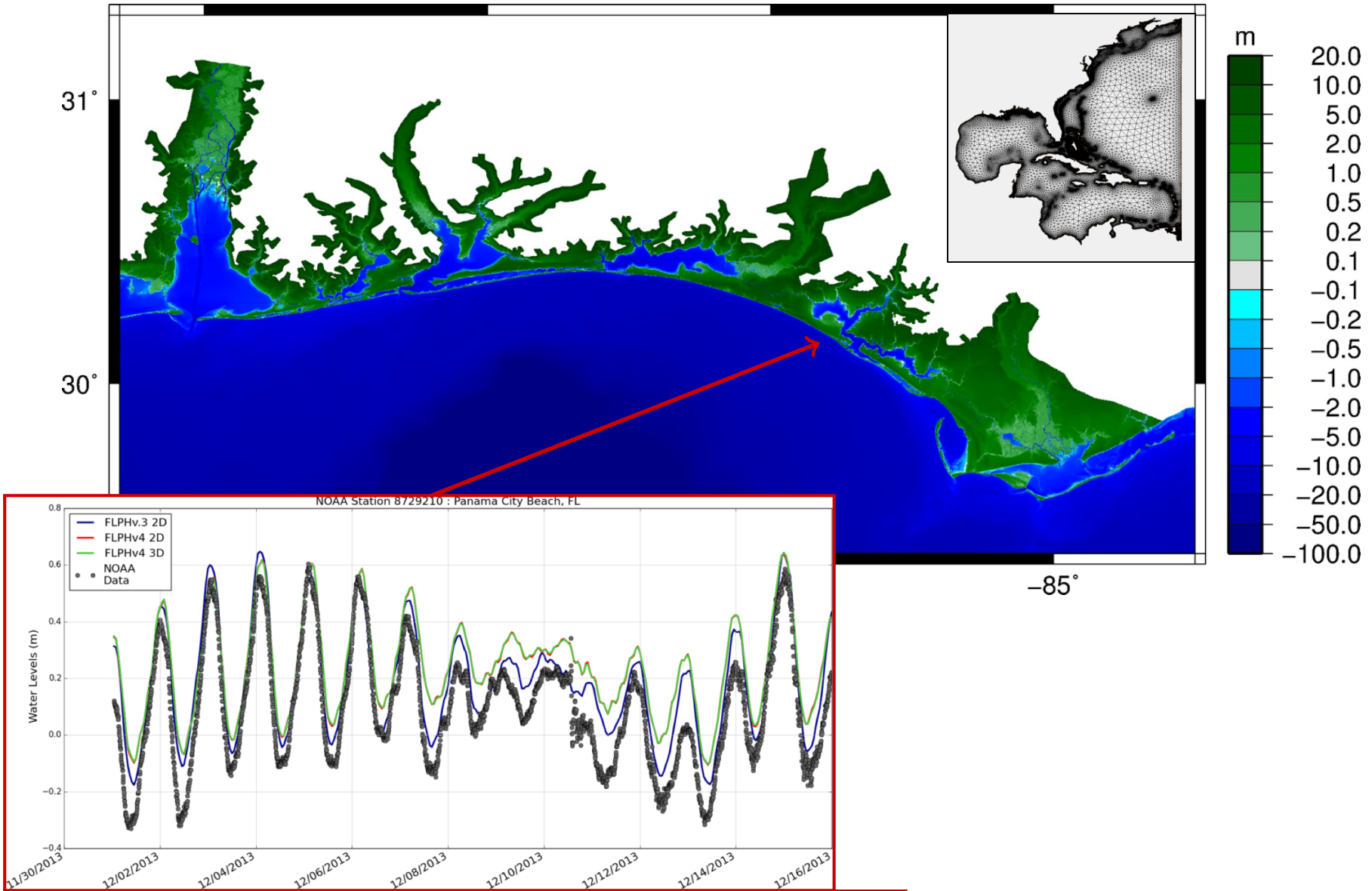
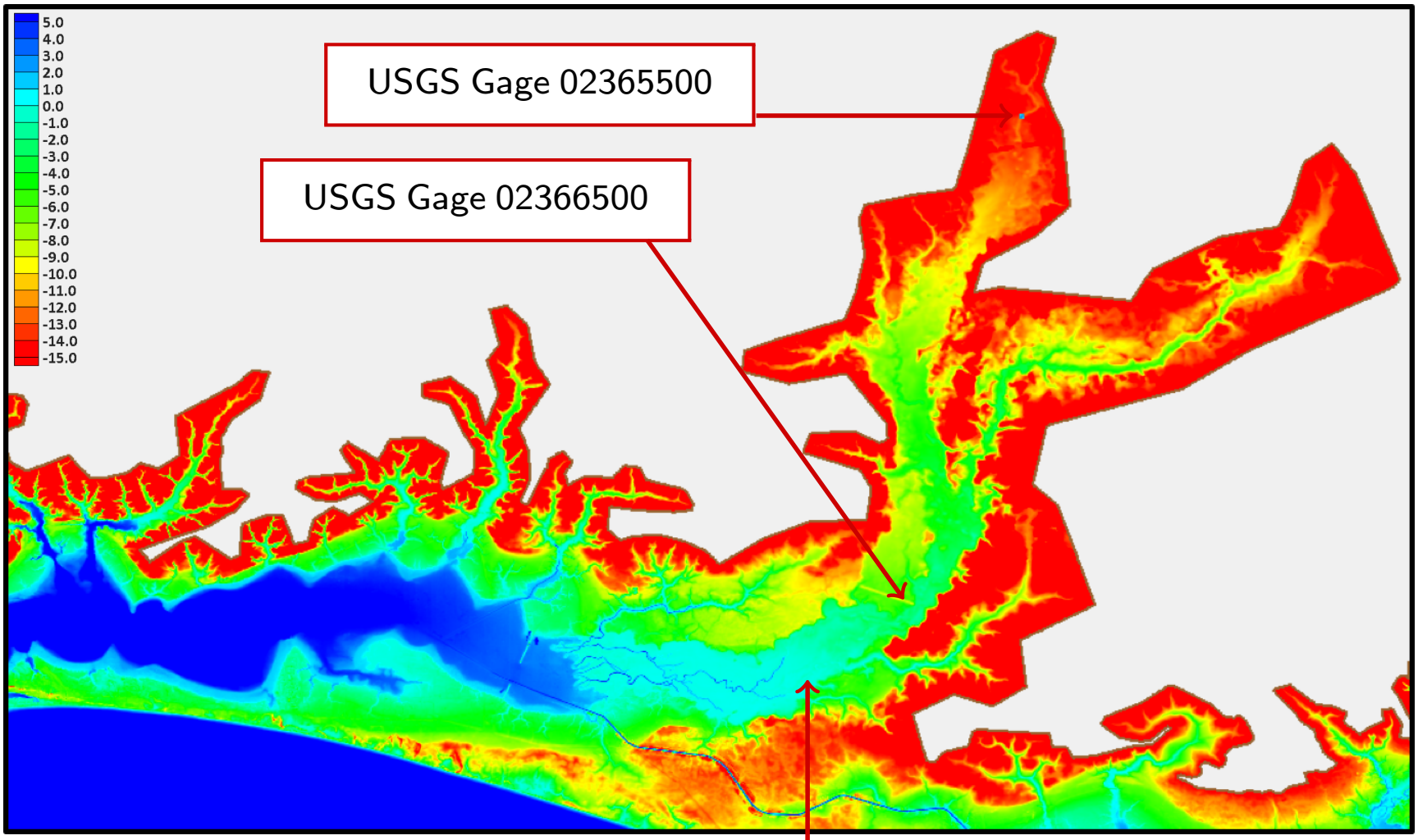


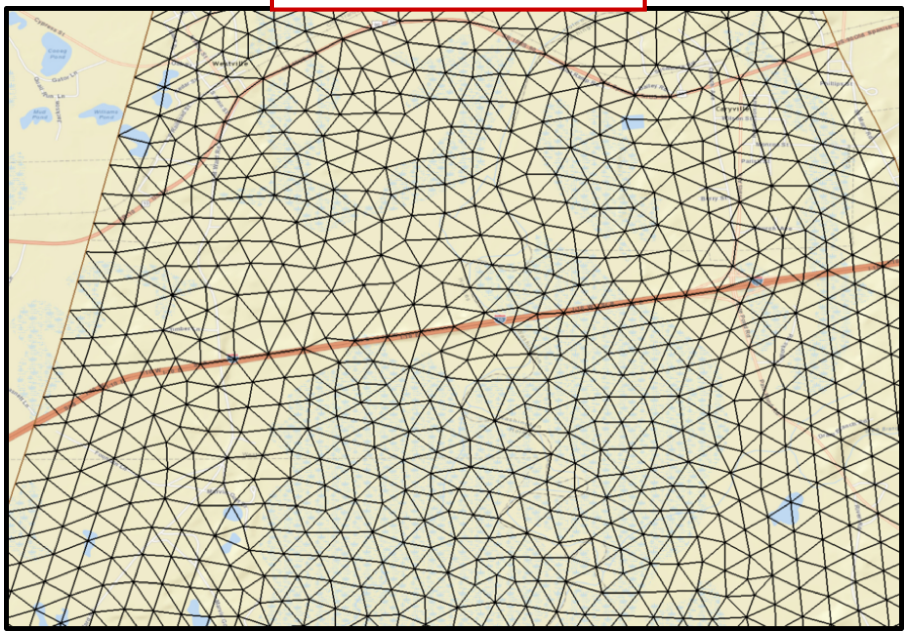
Barotropic ADCIRC – Tides at Panama City Beach

Missing Resolution of Choctawhatchee River

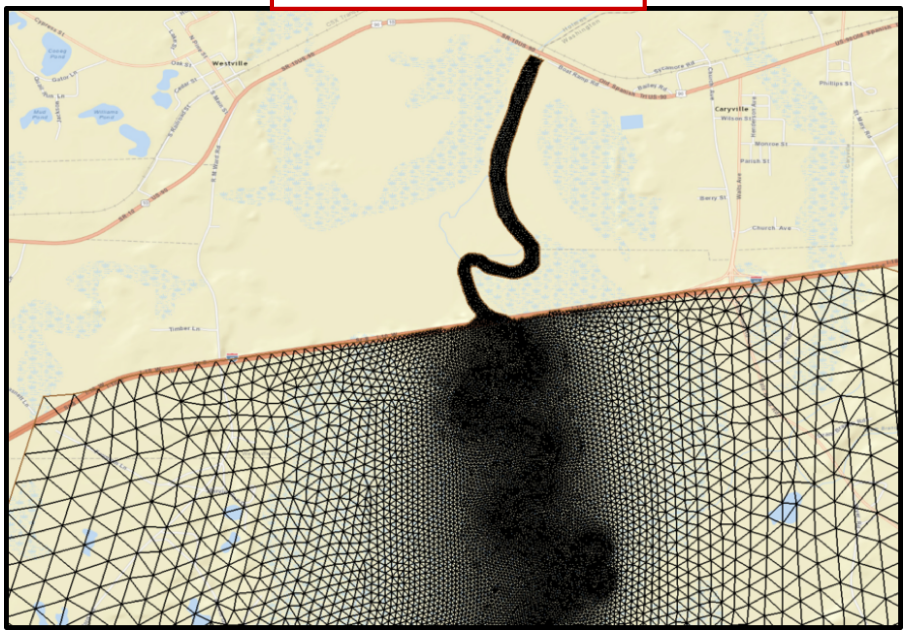


Example of Mesh Refinement near Upstream USGS Gage

Existing Mesh

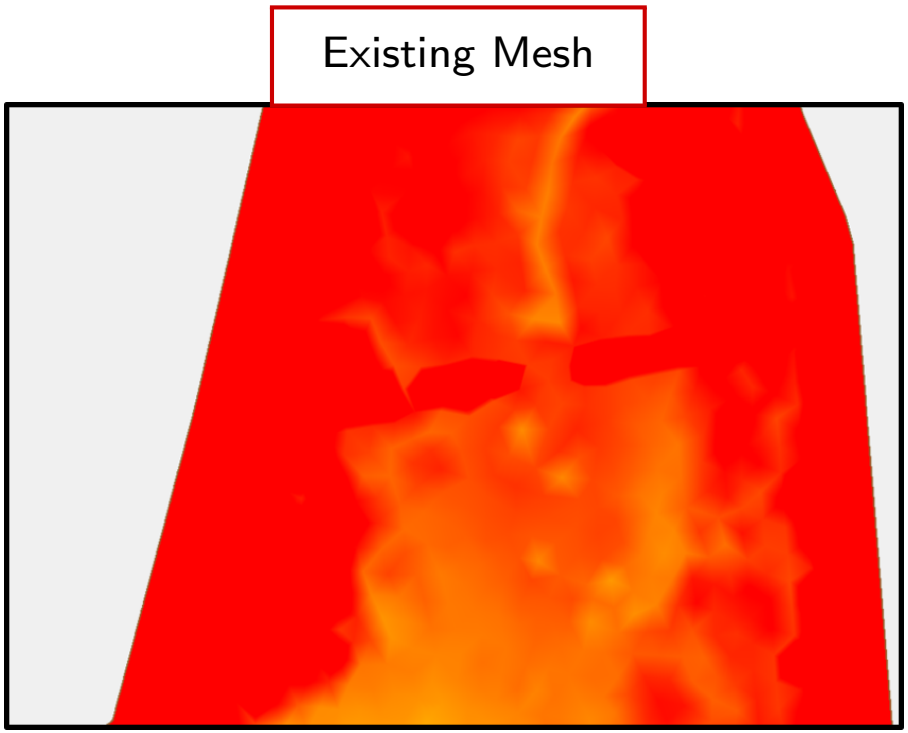


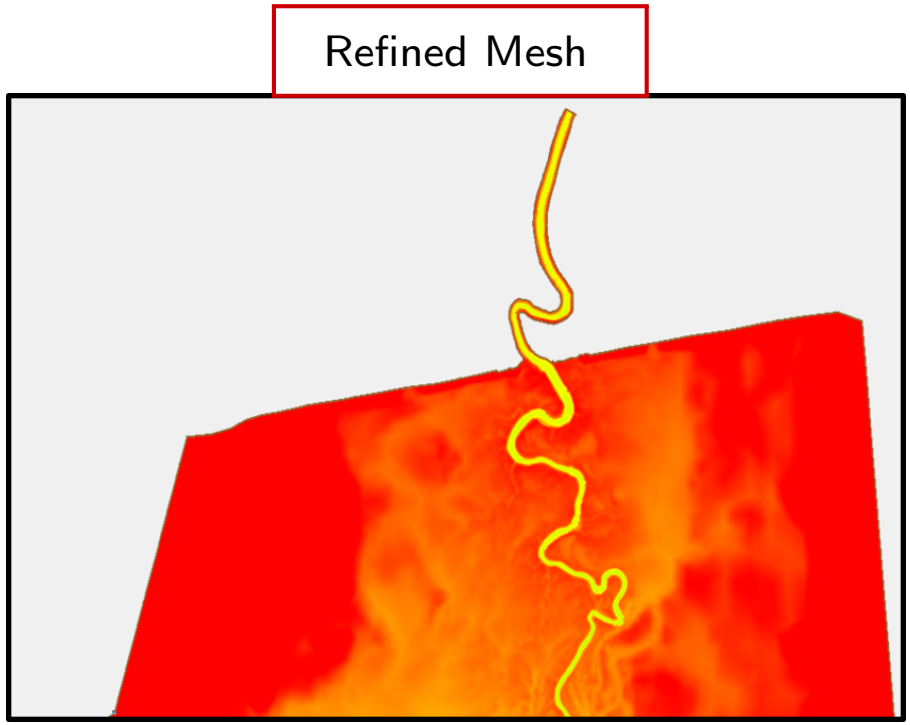
Refined Mesh



Moved upstream boundary to USGS gage near Caryville FL
- Increased refinement from 200 m to 20 m
- Keep at least 2-3 elements inside the river, preferably 4-5 elements
- Combination of science and art

Correcting Channel Depths along River Centerline

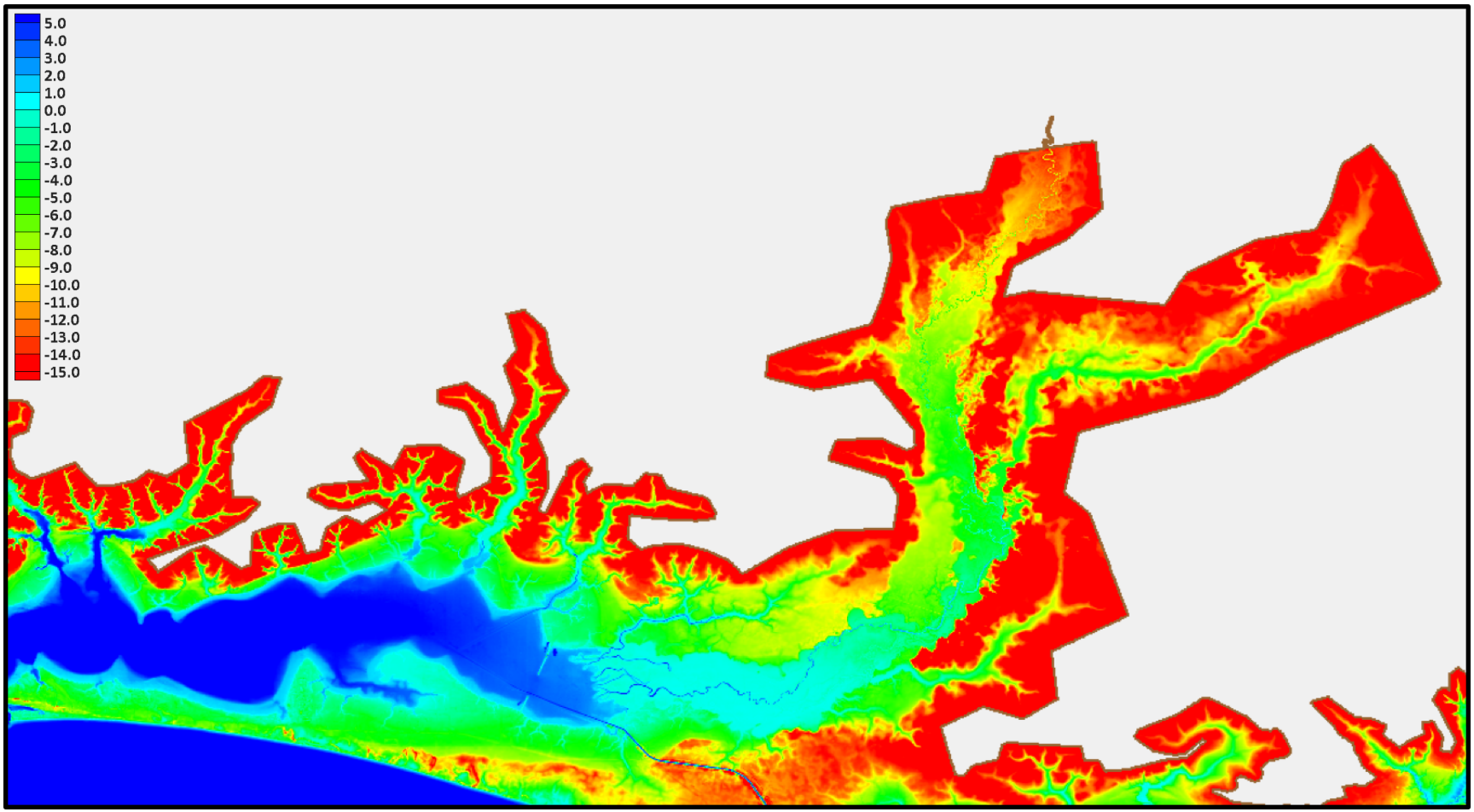




Updated the river bathymetry
– Searched online for bathymetry sources; recent data unavailable
– FOIA request for survey data from USACE Mobile district

Flood Insurance Study for Walton County FL
– Provided channel depths along centerline
– Mapped and compared with existing depths
– Deepened channel by about 3m to be consistent

New Representation of Choctawhatchee River



Increased resolution along river to Choctawhatchee Bay
– Smooth transition to bathymetry inside the bay

Future Work

1. Validate our new representation of Choctawhatchee River
   - Smooth bathy/topo to eliminate instabilities
   - Apply incoming flowrate at upstream USGS gage
   - Compare to observations at downstream USGS gage
2. Implement baroclinic ADCIRC on this mesh
   - Connect with model developments at UT-Austin
   - Initial / boundary conditions from NCOM
   - Comparisons with data from SCOPE
     - Satellite imagery
     - Point observations at inlet, on shelf