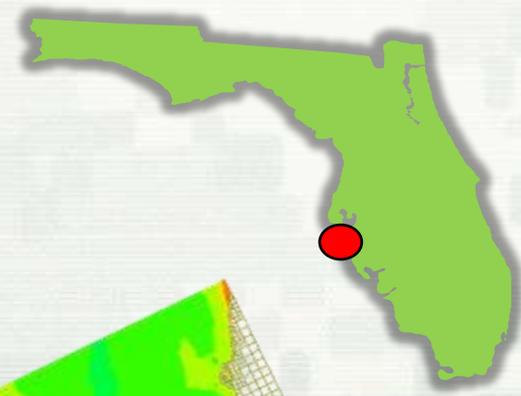


# SAJ – Southwest Florida RSM Challenges and Goals

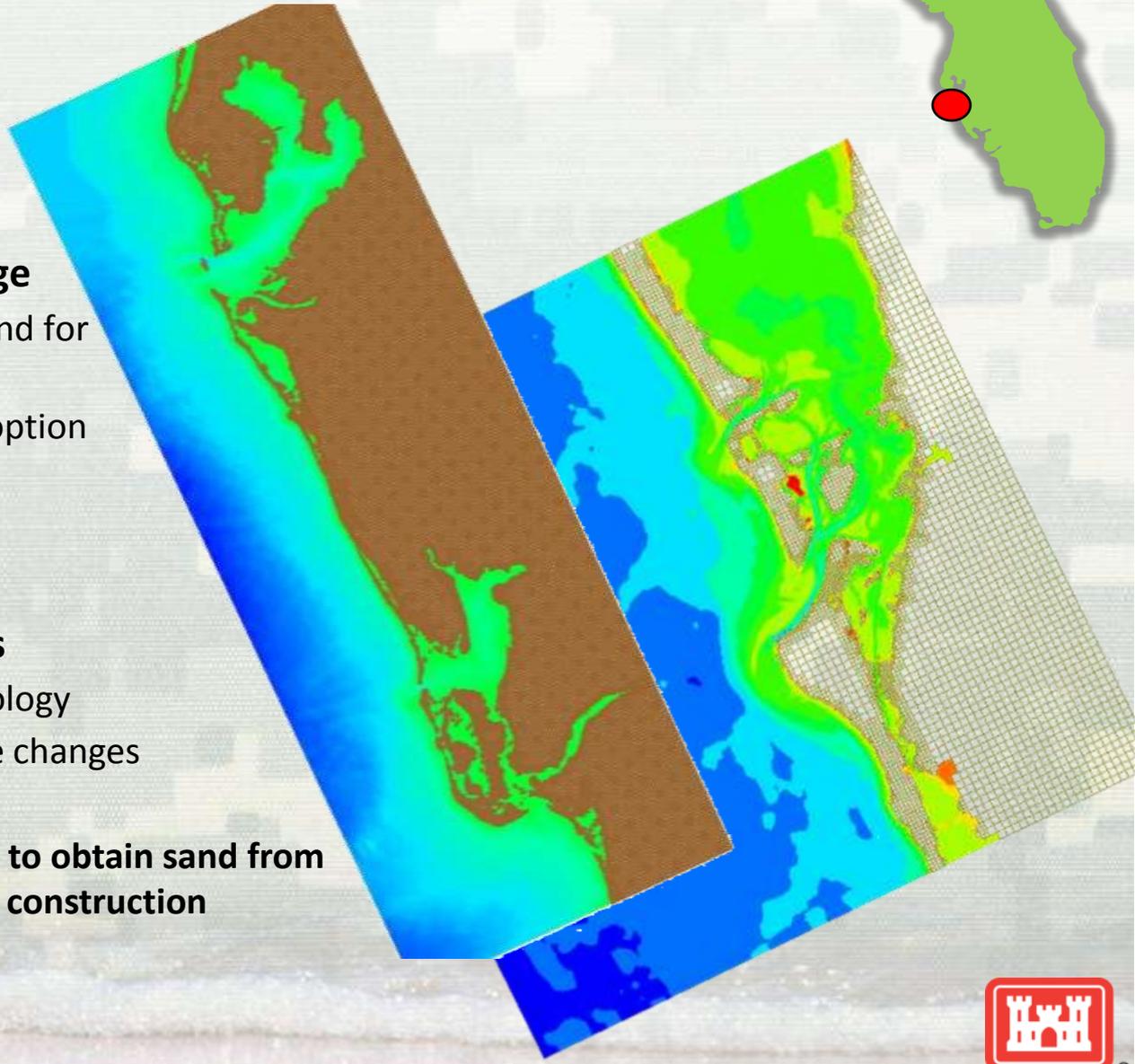


## *Initial Description/Challenge*

- Inadequate volume of offshore sand for Lido Key SPP
- Big Sarasota Pass a controversial option
- Finish RSM work initiated in 2006

## *Initial Goals*

- Understand regional/local morphology
- Develop detailed, synoptic volume changes
- Update regional sediment budget
- **Obtain state water quality permit to obtain sand from NP and/or BSP for Lido Key Initial construction**



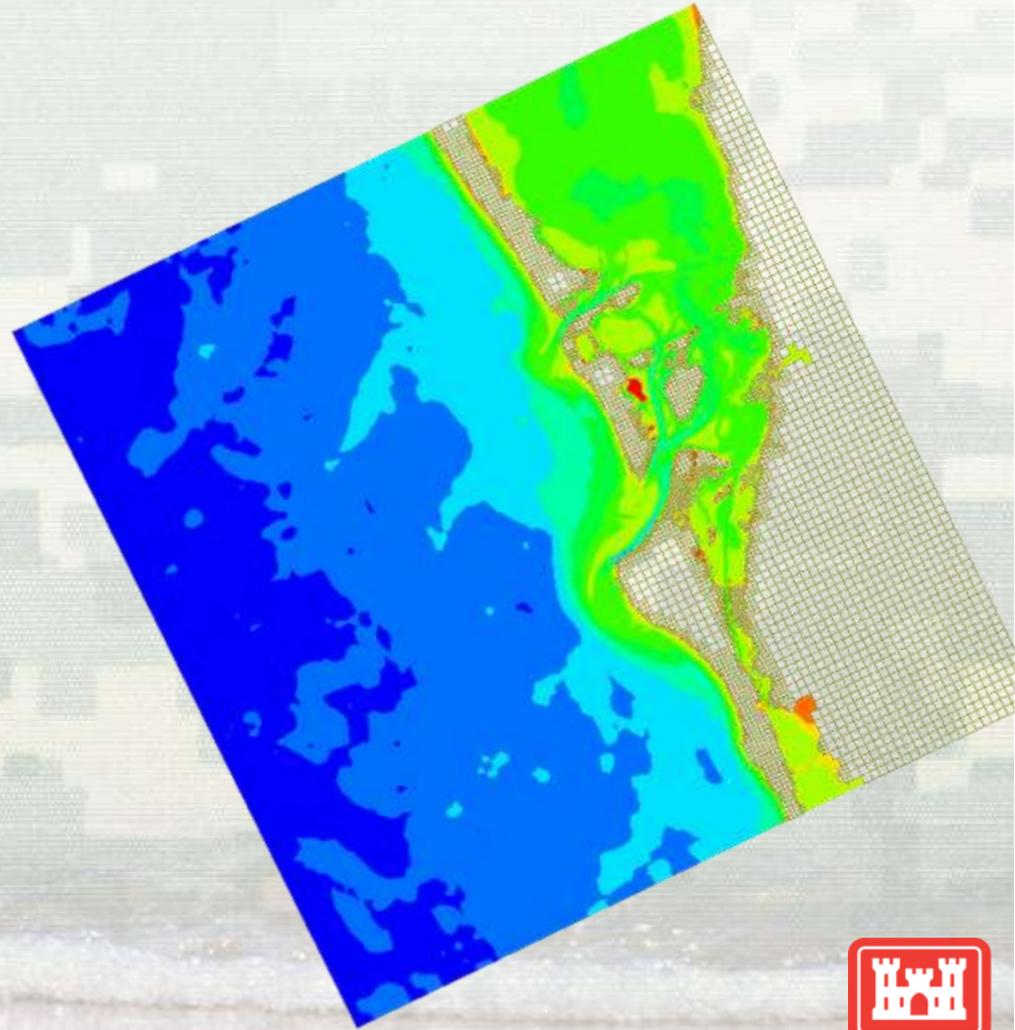


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# SW Florida RSM Overview

## District PDT Members

- Sirisha Rayaprolu - Project Management (Ops)
- Jason Engle, Kelly Legault- Coastal Engineering
- Mike Neves – Geotechnical
- Paul DeMarco – Environmental
- Geoff Klug – Permitting
- Matt Schrader, Marty Durkin, Stephanie Groleau, Eddie Douglas – Planning
- Idris Dobbs – Economics



# The Tools Used: Understanding Expected Morphologic Change

• MEASURE

• CALCULATE

• RUN

Waves,  
Currents, Water  
Levels



- $D$
- $H_{char}$
- $U, V$
- $\rho, \nu$

Sediment  
Characteristics



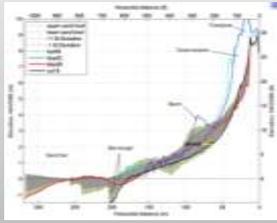
- $\rho_s$
- $d$
- Color, quality
- Grain size dist

Beach / Ebb Shoal

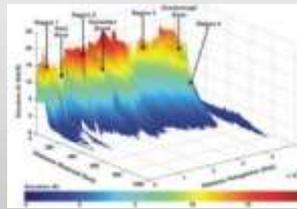


- Elevation
- Morphology
- Beach Surveys
- Hydrographic Surveys

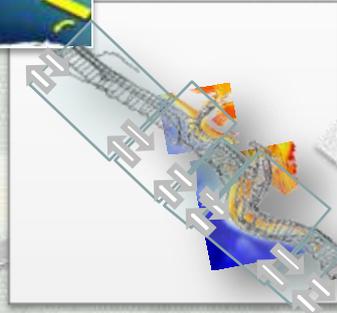
Elevation  
 $\Delta$



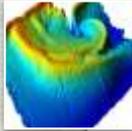
Integrated  
Volume



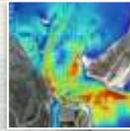
Sediment Budget



Bathymetry

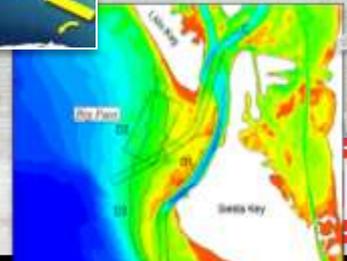


Sediment  
Transport



• rates/gradients/pathwa

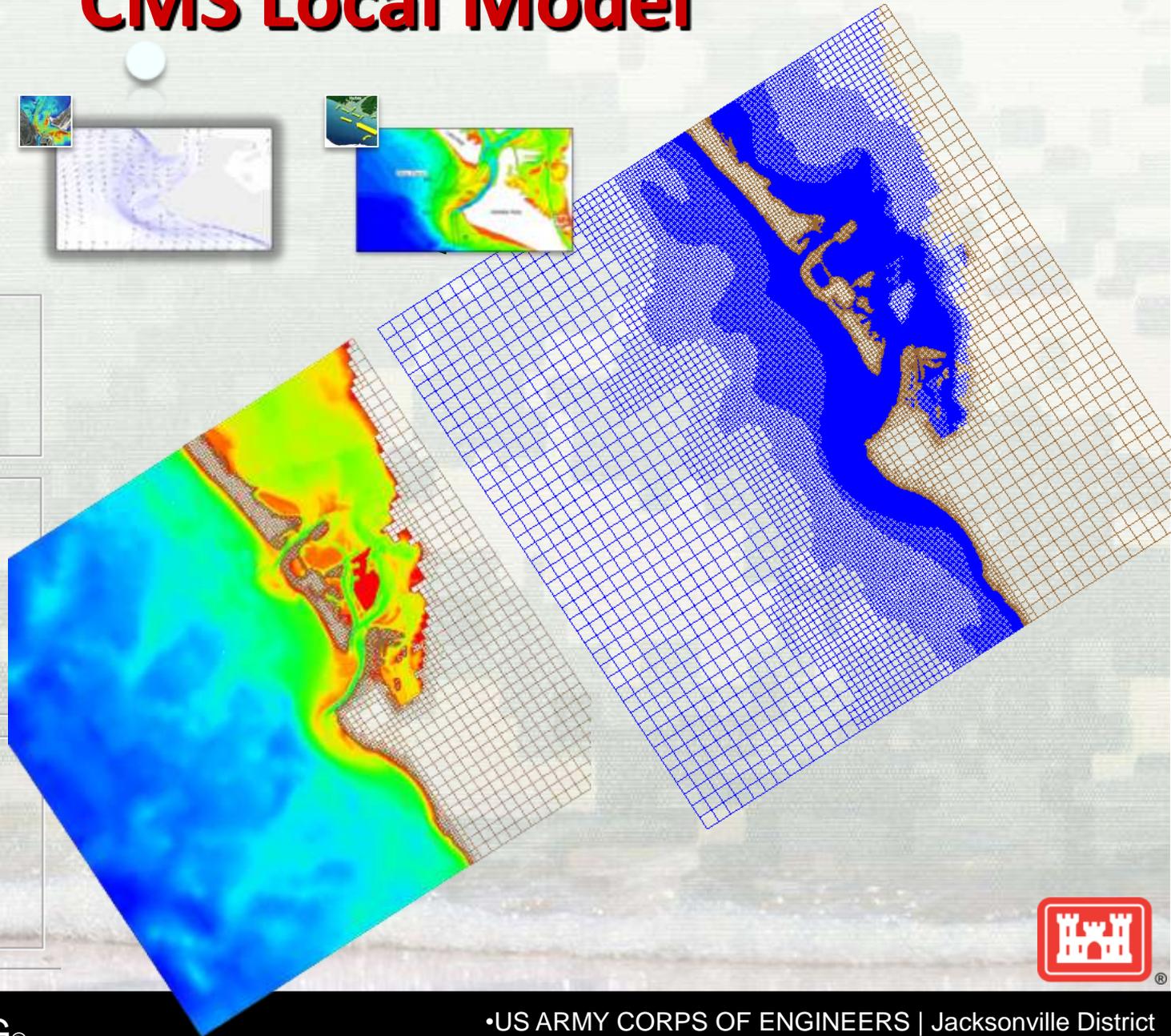
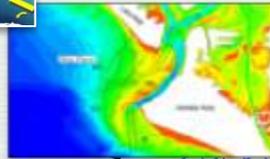
3. Alternatives



• decisions/consequence District



# CMS Local Model



Number of cells: 77155  
Number of rows: 43  
Number of columns: 43  
Number of subgrids: 6

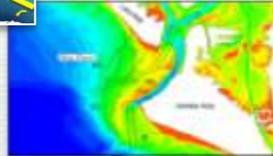
Minimum Z value: -20.97  
Maximum Z value: 12.11  
Angle: 33.00

Number of ocean cells: 71064  
Number of land cells: 6091

Minimum row height: 12.50  
Maximum row height: 400.00  
Minimum column width: 12.50  
Maximum column width: 400.00



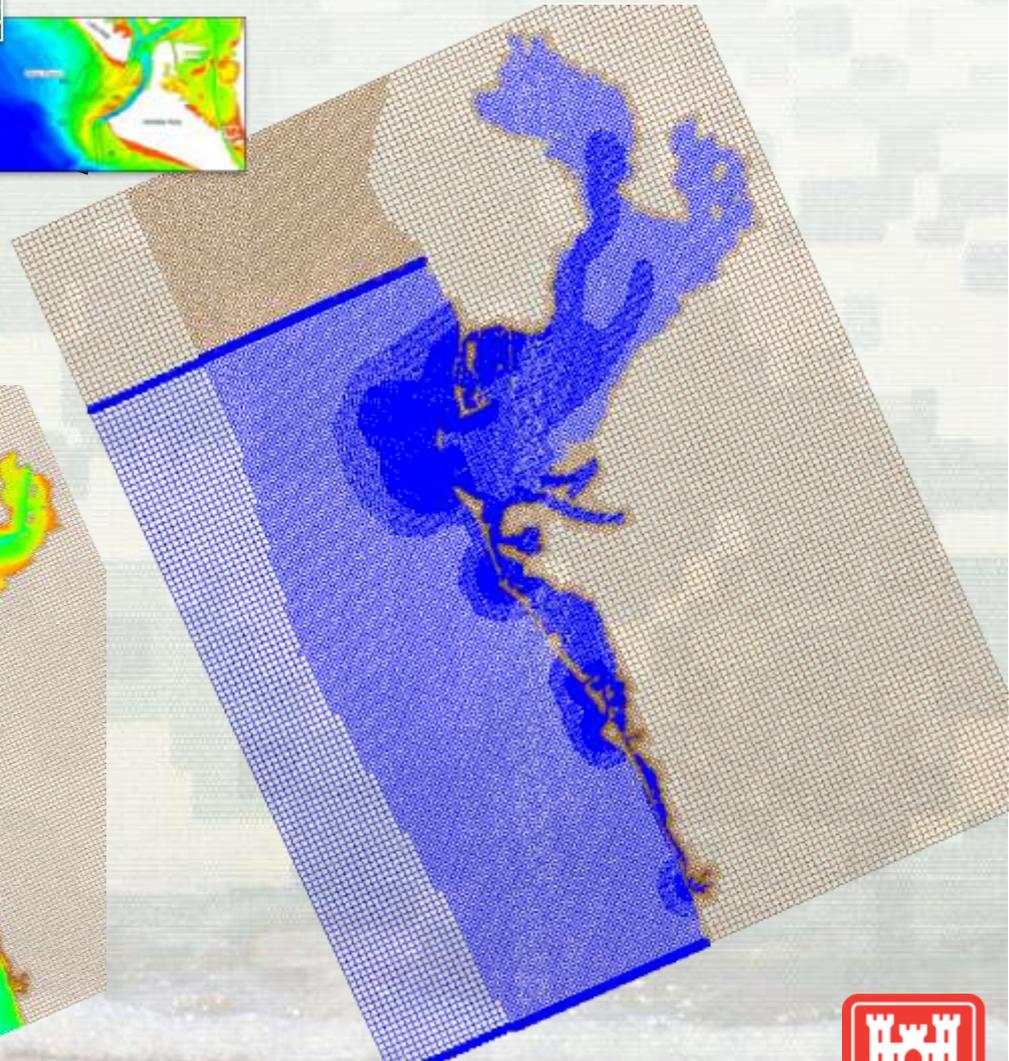
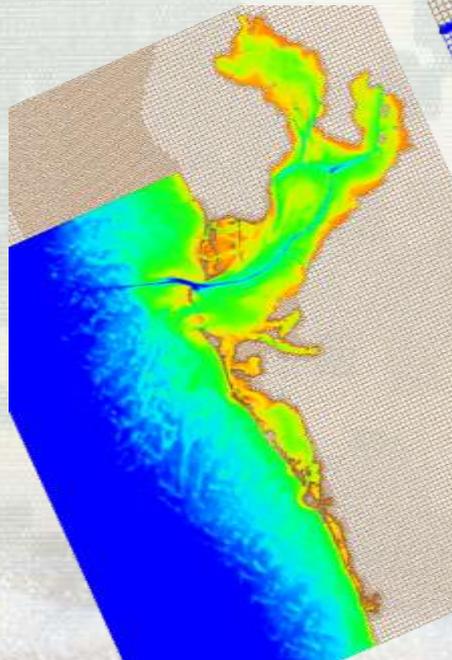
# CMS Regional Model



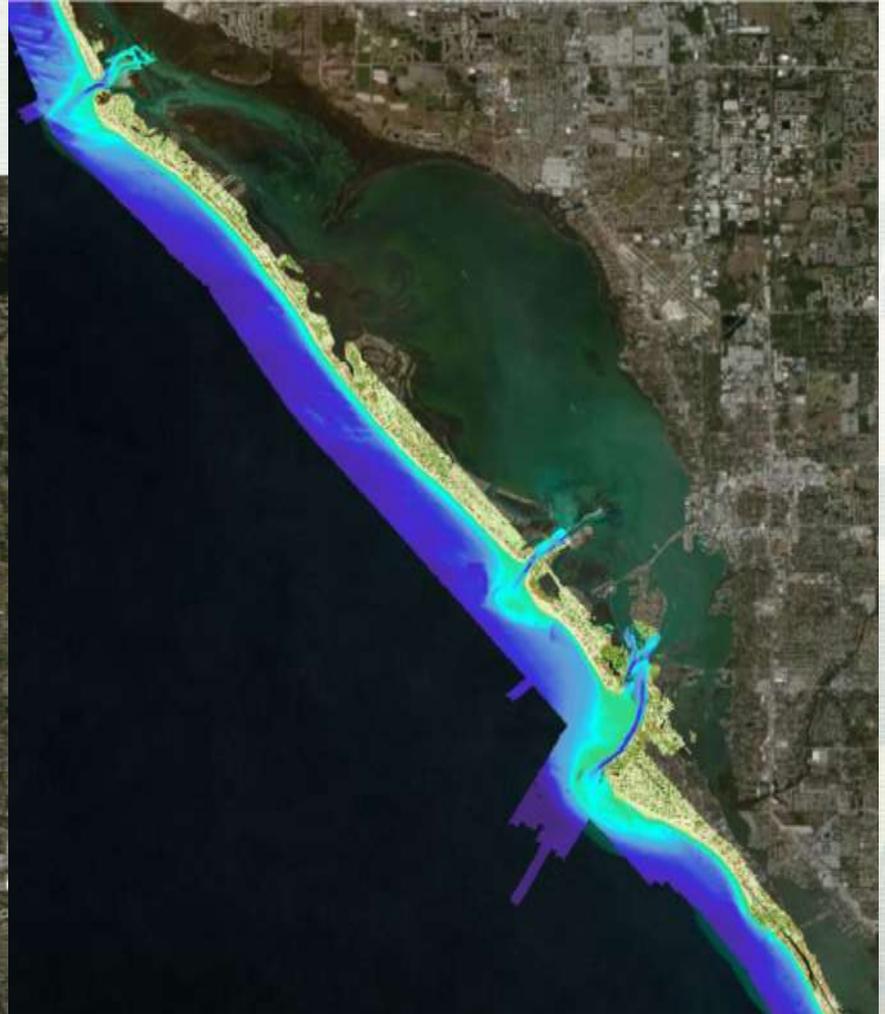
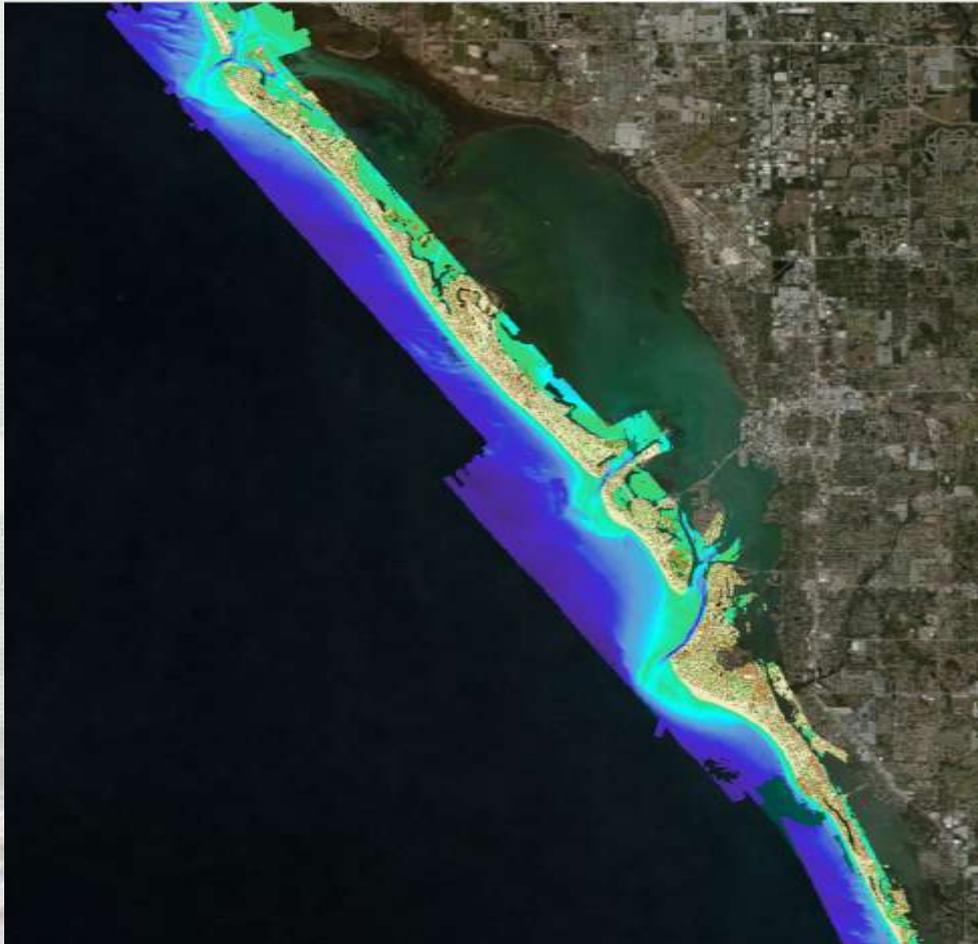
Number of cells: 156444  
Number of rows: 136  
Number of columns: 105  
Number of subgrids: 7

Minimum Z value: -28.64  
Maximum Z value: 29.66  
Angle: 24.14  
Number of ocean cells: 132265  
Number of land cells: 24179

Minimum row height: 12.50  
Maximum row height: 800.00  
Minimum column width: 12.50  
Maximum column width: 800.00



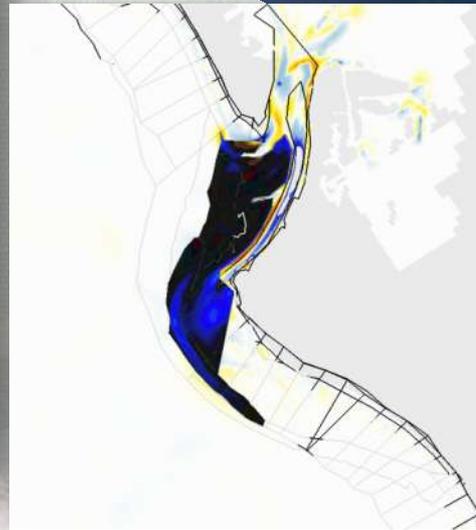
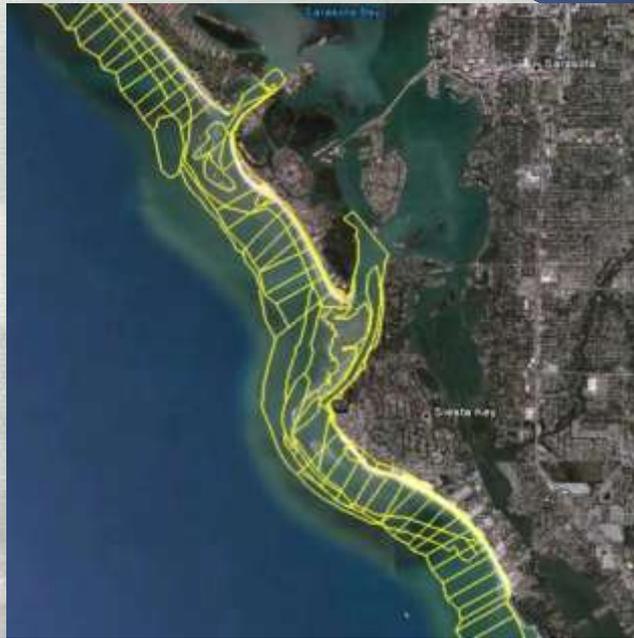
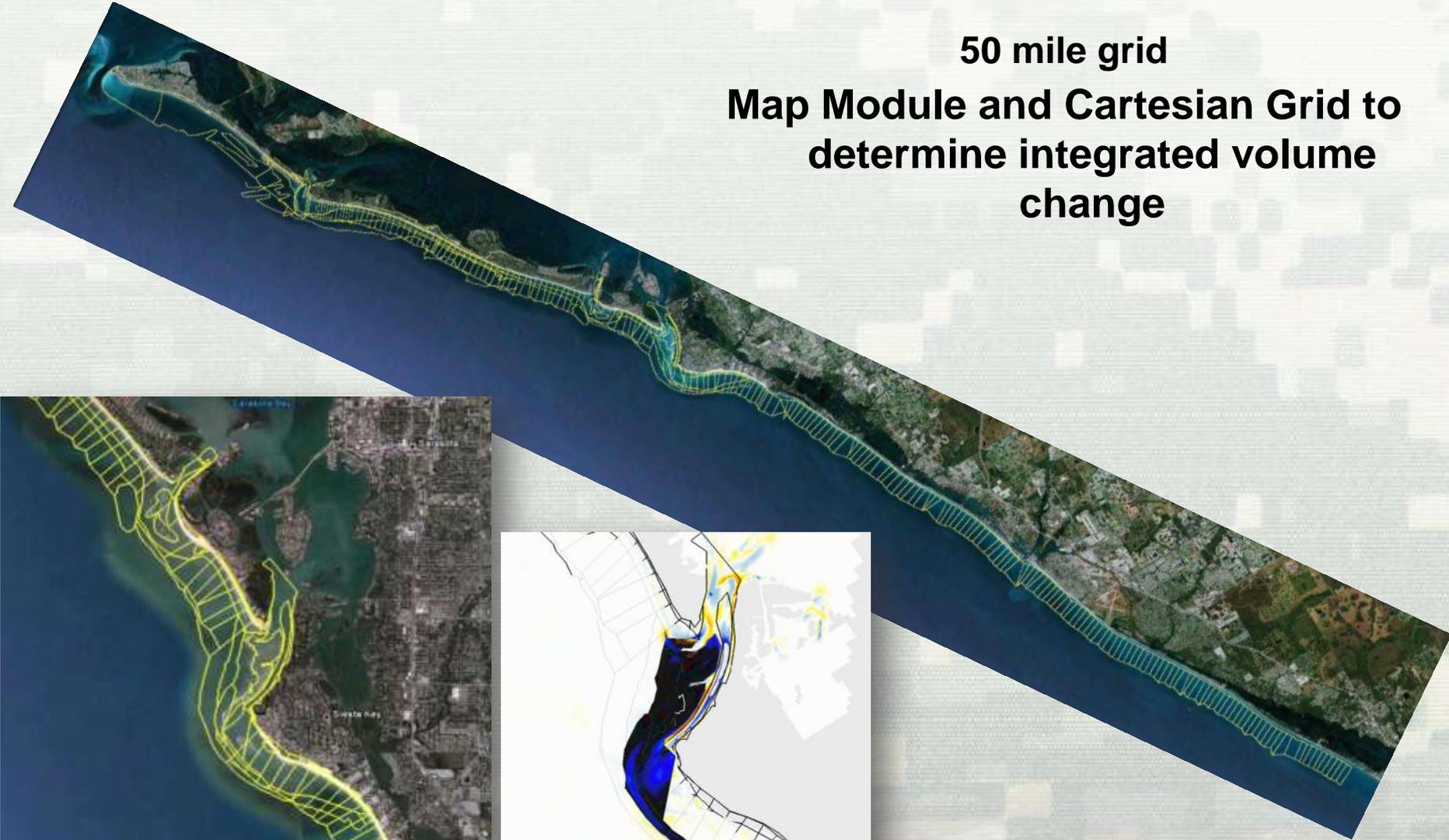
# Tools & Technology: LIDAR



# Tools & Technology: Surface Water Modeling System (SMS)

50 mile grid

Map Module and Cartesian Grid to determine integrated volume change



# Inlets Shoaling with Sand



- Anna Maria Island—nourished
- Long Boat Pass—dredged
- Longboat Key—nourished
- New Pass—dredged
- Lido Key—nourished
- *BSP—not dredged*
- Siesta Key—not nourished
- Venice Inlet—dredged
- Venice Beach—nourished



# Our New, Bigger Goals (in addition to original ones)

## The Real Challenge!

- Scarce offshore sand for beach nourishment projects
- Unbudgeted IWW and shallow draft inlets
- **Clear pattern of high value beach sand moving into inlet channels/shoals for which we have ever more limited funding**

## Long-Term, Large Scale Goals

- Understand the dredging/nourishment cycle
- Update regional sediment budget
- **Work with State and local stakeholder to develop a sustainable plan for management**



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## Leveraging/Collaborative Opportunities

- Federal Projects within Study Area
- Pinellas County SPP (Egmont Borrow)
- Manatee County SPP
- Tampa Harbor O&M
- Egmont Key Disposal/Borrow Area
- Longboat Pass O&M
- New Pass O&M
- Sarasota County SPP (Lido Key, Venice Beach)

## Stakeholders and Partners

- FL Dept. of Environmental Protection
- Federal Shore Protection Project sponsors
- Municipalities with locally-funded beach nourishments
- Federal navigation project sponsors

## Milestones/Deliverables

- Technical Notes
  - CMS (Regional)
  - CMS (NP/BSP)
  - CMS (*Venice/LB*)
  - Inlet Sink NP/BSP
  - Longboat Pass Historical Change
- **FDEP Permit BSP Borrow Area for Lido Key**



# RSM FY12 IPR

## District, RSM Activity Title

### Opportunities to take action

- Who has regional mission? USACE & FDEP
- Use RSM funding to do comprehensive regional analyses that no one else will do
- Inlets are going to be critical source of sand in future

### Volume of Sediment Moved

- None to date
- ~1.1 MCY initial construction Lido Key
- ~6 MCY renourishments, 5-year interval
- Up to \$10M saved at initial construction with inlet borrow site
- Up to \$6M saved each renourishment

### Accomplishments

- Analysis of LIDAR data was a breakthrough perspective
- St Johns success created inherent trust with FDEP and other stakeholders with RSM analysis approach

### Lessons Learned

- Allow for changing RSM goals
- **Consider unique USACE role as regional influence**

