NEW DATA IMPORTATION CAPABILITIES FOR THE SEDIMENT BUDGET ANALYSIS SYSTEM

SEDIMENT BUDGET ANALYSIS SYSTEM (SBAS) TEAM

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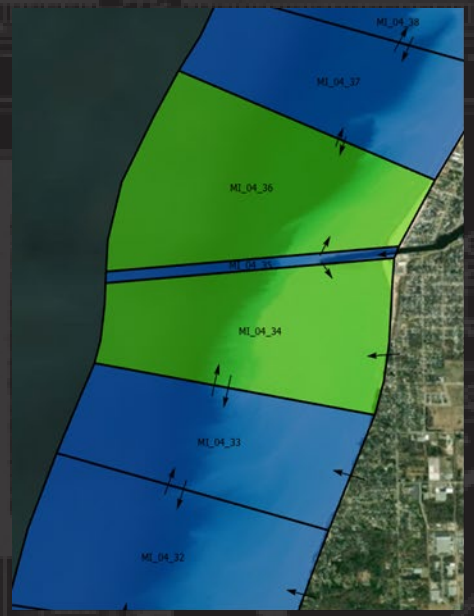
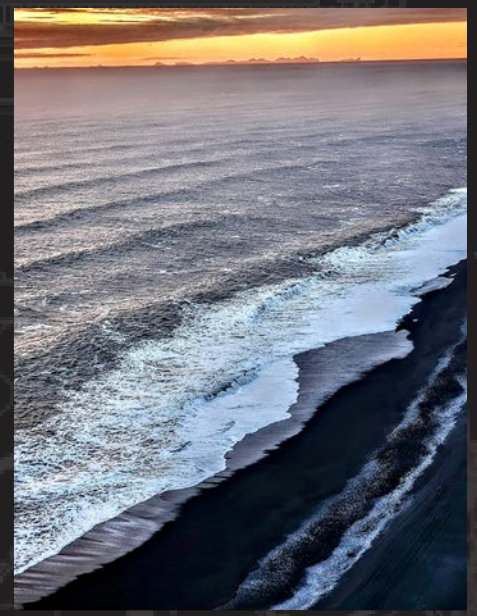




COASTAL INLETS RESEARCH PROGRAM

FY24 IN PROGRESS REVIEW

U.S. ARMY

US Army Corps of Engineers®

ERDC

CIRP

PROBLEM STATEMENT

Problem: Sediment budgets are an important component of any coastal engineering project, and the Sediment Budget Analysis System (SBAS) is a USACE developed toolbox for creating sediment budgets. Depending on the fidelity of the sediment budget, the time required to collect and process data to quantify budgets can be on the timescale of months to years. Except for GenCade, any volume change or sediment transport rates calculated from field measurements, literature values, or other USACE tools must be manually entered into SBAS.

Solution: Add new tools and capabilities to the SBAS, allowing users to quickly and easily import data from commonly used USACE tools, saving time and money.

Statements of Need

SON 1968: “New volume-change tools to improve sediment management”

SON 1969: “Incorporating shoaling rates into sediment budget creation to improve sediment management”

FY24 was Year 1 of 2

CIRP TD, Aeolian Transportation Script

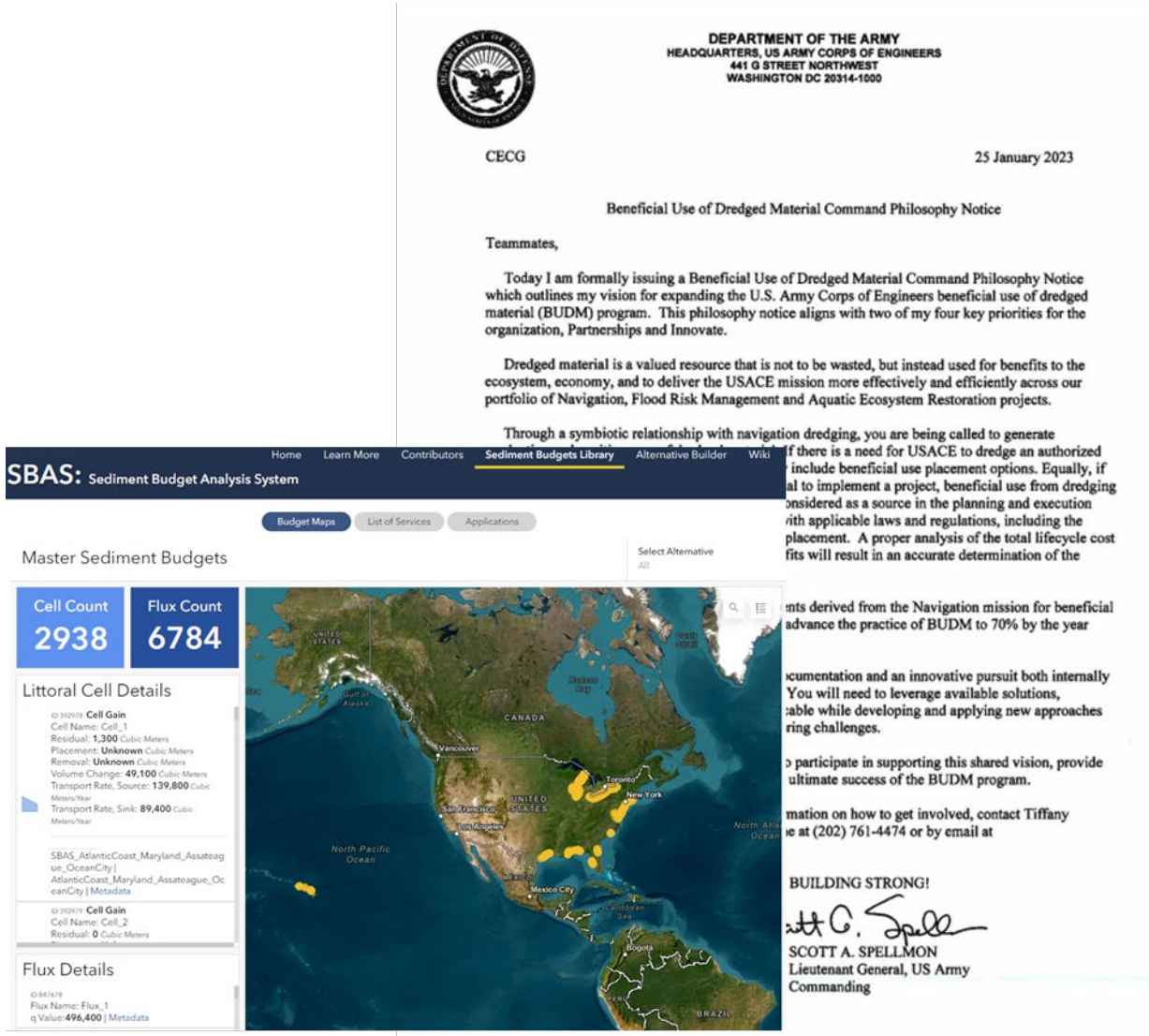
CAPABILITY AND STRATEGIC IMPACT

Capability

- Create, modify, and publish sediment budgets
- Tool for communicating with clients, sponsors, and partners
- Important for planning/investigating feasibility for projects

Strategic Impact

- Increase ease of use (and therefore increase userbase) of SBAS
  - Increase in published sediment budgets
- Help District better monitor BUDM to meet 70% by 2030 goal



SEDIMENT BUDGETS

Size of sediment budgets

Q_{source} = input of sediment into a cell

Q_{sink} = loss of sediment from a cell

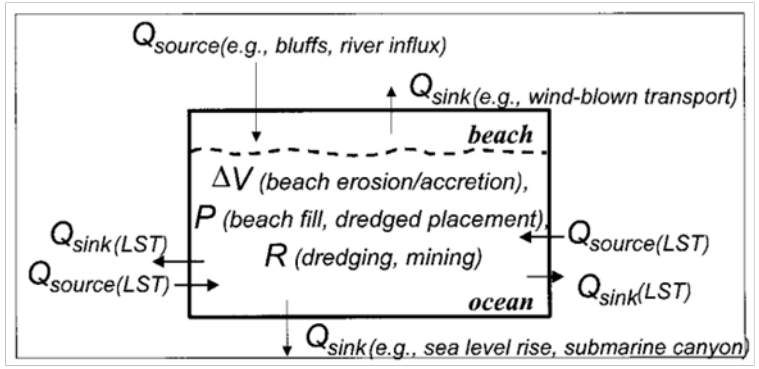
ΔV = volume change within a cell

P = placement into a cell (e.g., beach fill or dredged material)

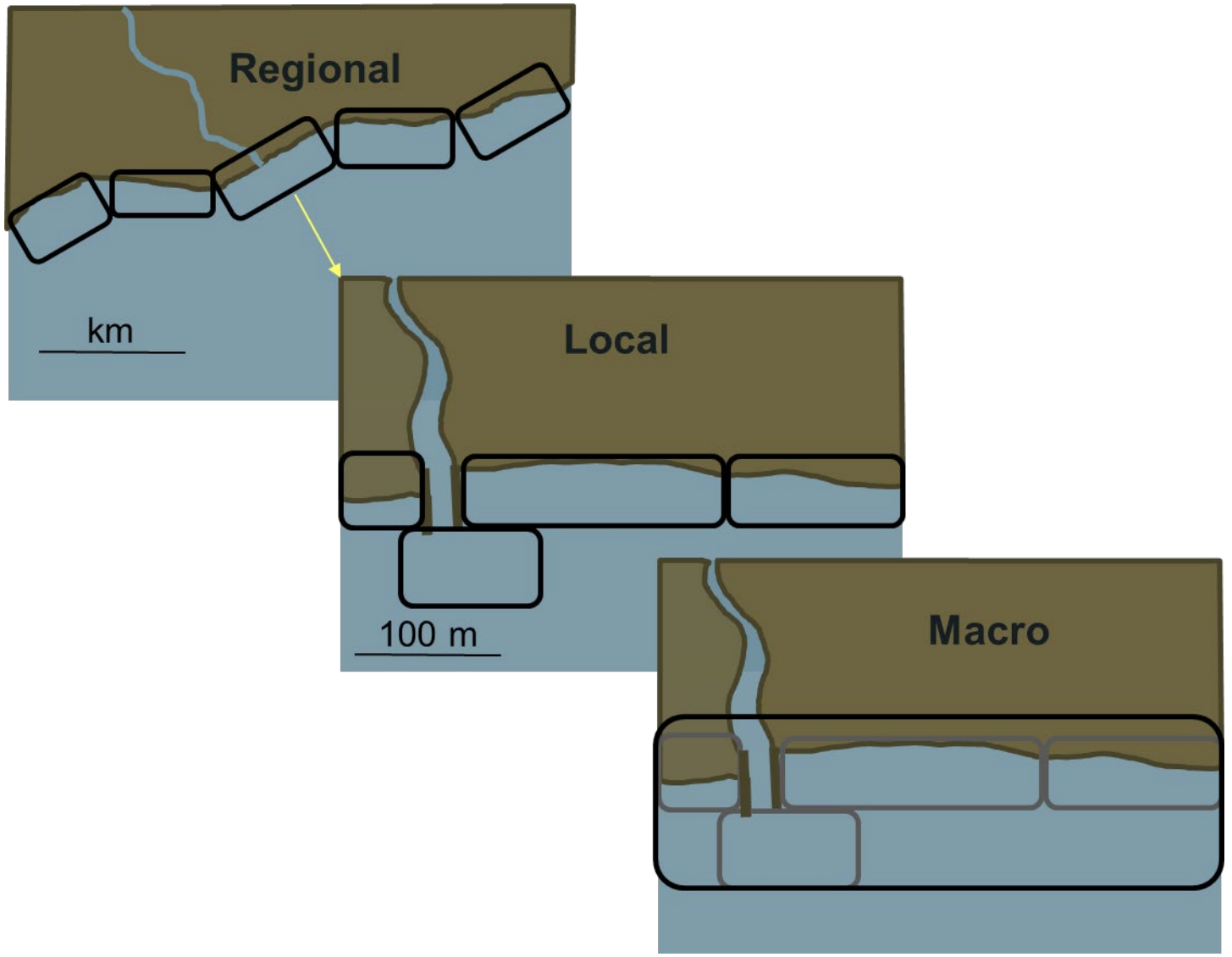
R = removal from a cell (e.g., dredging or mining)

$Residual$ = 0 for a balanced cell

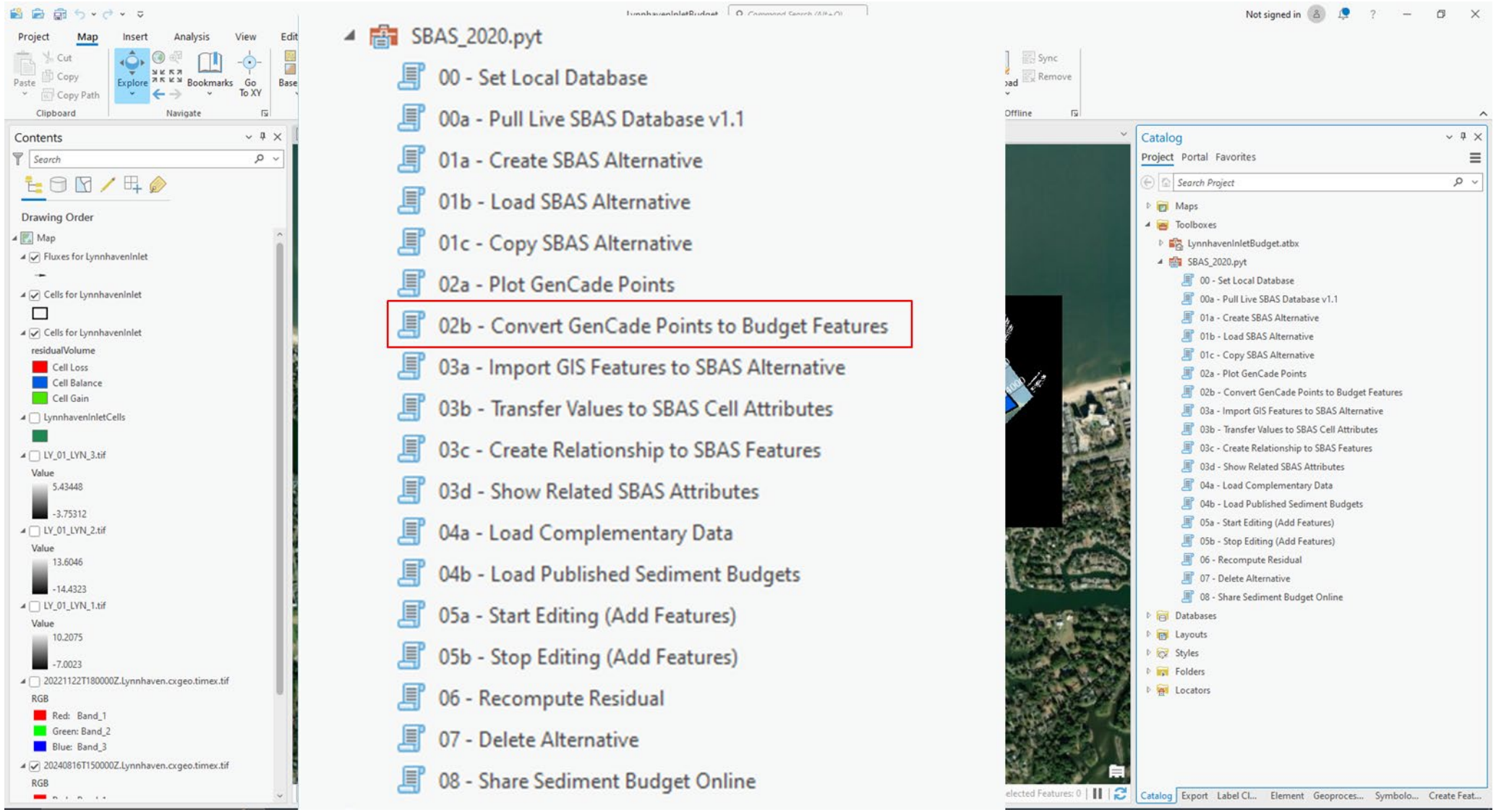
$$\sum Q_{source} - \sum Q_{sink} - \Delta V + P - R = Residual$$



(Rosati, 2005)

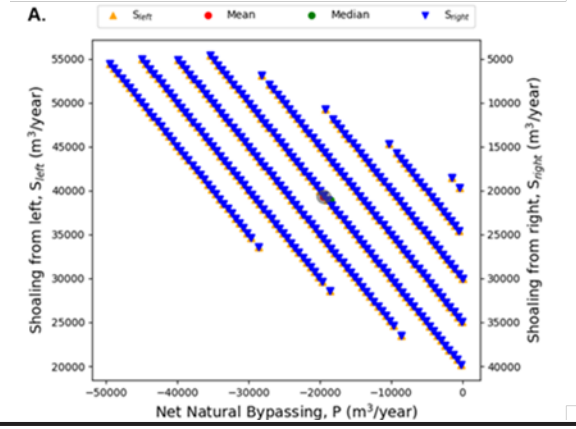


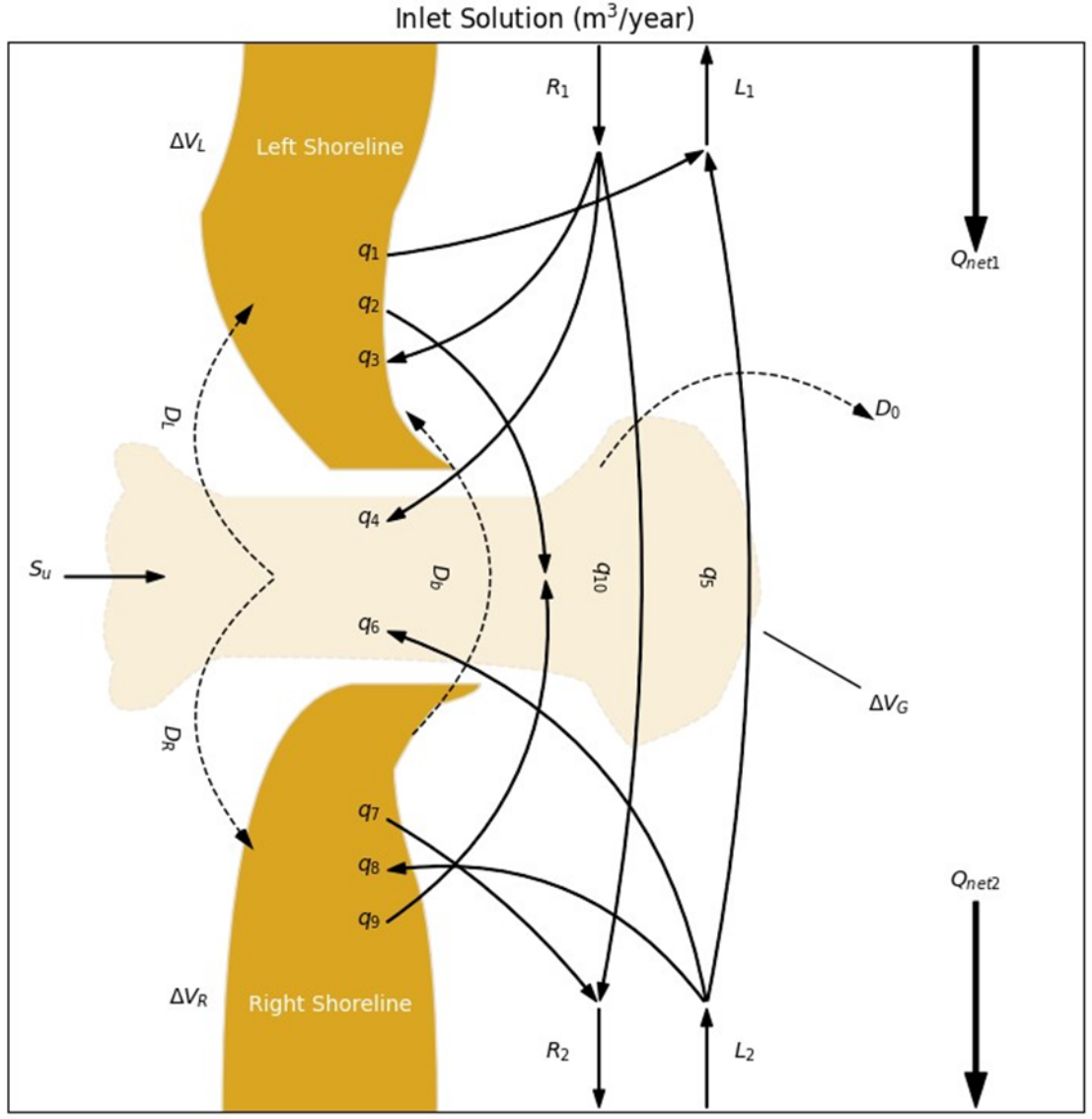
THE SEDIMENT BUDGET ANALYSIS SYSTEM



SEDIMENT BUDGET CALCULATOR

- Sediment Budget Calculator (Rosati et al. 2013) was developed to calculate a suite of possible sediment transport rates around inlets
- Inputs
  - Volume change on adjacent beaches
  - Longshore transport rates
  - Jetty permeability
- Incorporated into SBAS by converting to Python, validating using JALBTCX data
- Nearshore transport, but no aeolian component





PROJECT ROADMAP…

FY24

- Q3: Internal Kickoff Meeting
- Q4: Aeolian Transportation Script

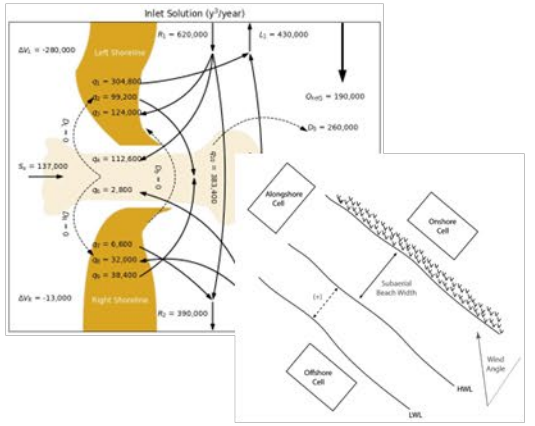
FY25

- Q1: Stakeholder Meeting
- Q2: Data Importation Tool
- Q3: SBAS 2025 Release
- Q4: SBAS 2025 Workshop

…TO THE FUTURE OF SBAS

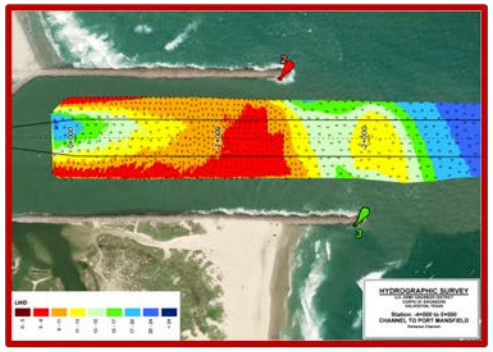
CoastSat

Calculators

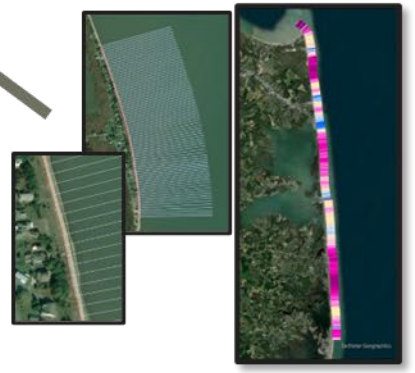


SBAS 2025

CSAT



JALBTCX Volume Change Toolbox



SUMMARY

FY24 Major Advancements in Capability
- Aeolian transportation script written

FY24 Major Products & Collaborations
- Collaboration/leverage across multiple funding lines (RSM, HH&C, DOER, CIRP) and projects

FY25 Products & Advancements
- New Data Importation Capabilities
- New Case Studies and Sediment Budgets
- SBAS 2025 Release
  - SR User Guide
  - Workshop