



U.S. ARMY

CORSED: CONSOLIDATED SEDIMENT TRANSPORT CODE (FY18-FY22)

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COASTAL INLETS RESEARCH PROGRAM

FY20 IN PROGRESS REVIEW

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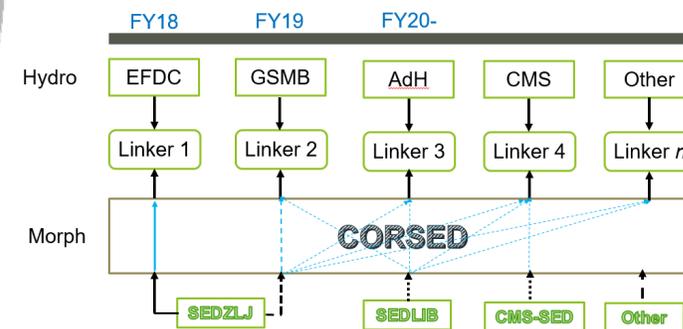
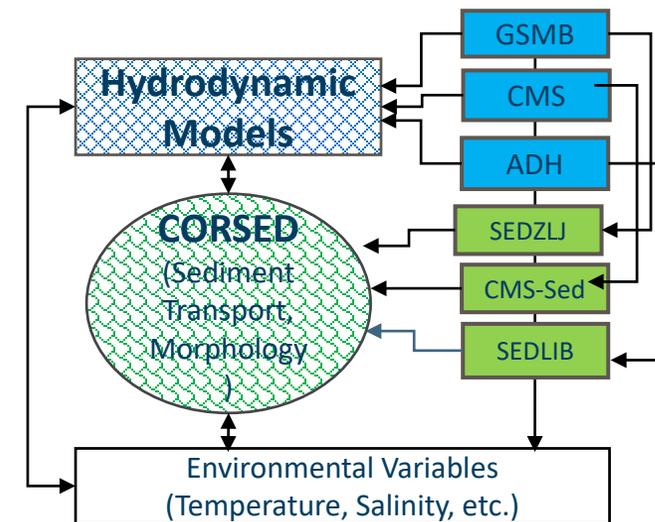
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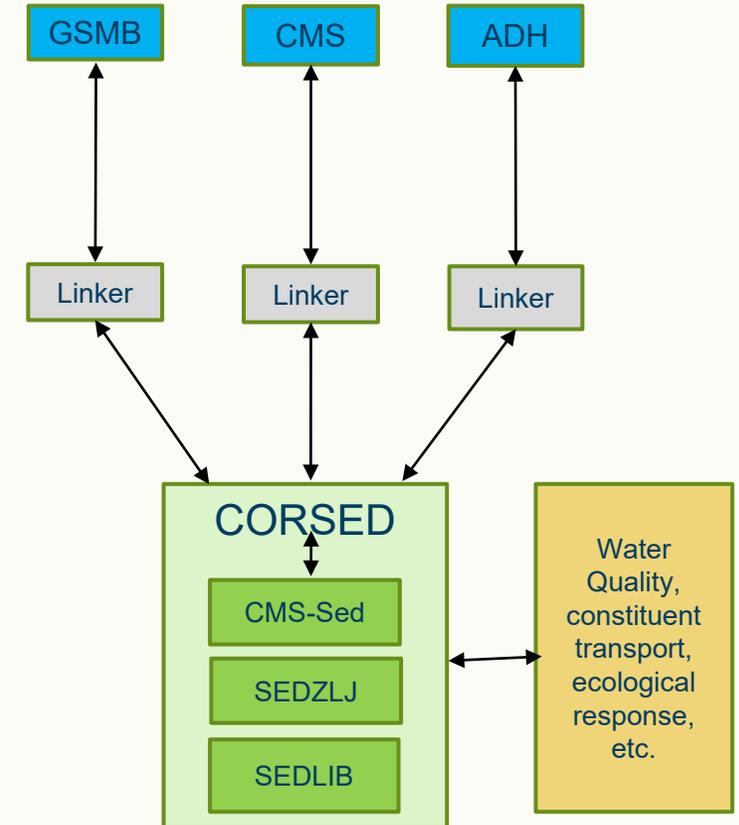


ERDC
ENGINEER RESEARCH & DEVELOPMENT CENTER

Problem Statement

- ERDC has invested significant manpower and funding to developing two alternative sediment transport frameworks. What is required is one sediment transport code which operates across multiple hydrodynamic platforms and permits user-selected features from both SEDZLJ and SEDLIB. This unitary library code will permit ERDC to compete efficiently with other models (e.g., DELFT3D, MIKE21, TELEMAC) and provide the best transport predictions to clients in a cost effective manner.

- This project derives from CHL management discussion and the following SoNs:
 - 2017-N-1: Testing and evaluation of USACE coastal numerical models.
 - 2016-N-4: Quantifying wave and current driven sediment transport at nearshore dredge disposal sites.



Capability and Strategic Impact Statement

- **This project will provide USACE projects which require sediment transport modeling a flexible, adaptable sediment transport framework which has been applied at multiple sites where validation data are available. These previous validations will provide confidence that the model can represent systems where sufficient validation data may not be available.**
- **The sediment transport library will operate across hydrodynamic frameworks typically used by ERDC for reimbursable projects and research, including ADH, CH3D/GSMB, and CMS.**
- **In addition, ERDC and USACE will benefit from a new team of sediment transport modelers who understand the complexity of cohesive sediment model parameterization and interpretation.**

Challenges Faced to Date

Challenges resulting in delays and other issues

- Original SEDLZJ library code “false start” – proper SEDZLJ version not used, requiring restart of SEDZLJ-Lib-v1
- Team overcommitted and prioritizing challenges
- Changes in team membership
- We still have not identified an ERDC development team which will be the subject matter experts for model development and application

How we are resolving these issues

- Identified versions of each code (hydrodynamic and transport) for use in CORSED and linker codes
- Experienced top-down management (led by Earl Hayter and Joe Gailani)
- Broadened the PDT team (added Gaurav Savant and David Smith)
- We now have a well-established vision and better understanding of Phase 1 level of effort
- Working on improving communication with Program management
- Working on improving guidance from CHL management

Summary

FY20 Major Advances in Capability

- Develop and debug CORSED-SEDZLJ linker codes for GSMB
- Model validation using reimbursable modeling studies
- Develop and test linkages between SEDZLJ-Lib-v1 and CMS and ADH
- Design CORSED for connecting the existing sediment libraries SEDLIB and SEDZLJ-Lib-v1
- Create CORSED so that SEDLIB and SEDZLJ-Lib-v1 are both able to exist side-by-side

FY20 Major Products & Collaborations

- 1 Technical Note published
- 1 Technical Report submitted for review
- 2 Technical Notes submitted for review
- 1 CIRP Technical Discussion
- External Advisory Team being established
- Funding also provided by DOER and RSM

FY21-22 Products/Advances

- Develop SEDLIB-Lib-v1 and CMS-Lib v1 Library for CORSED
- Finalize SEDZLJ-Lib-v1 linkage for AdH and CMS-Flow/Wave
- SEDZLJ-Lib;v1 linkage for AdH and CMS-Flow demonstration/validation
- Incorporate all sediment libraries into CORSED framework
- Create/test/document linkage codes between CORSED and all three hydro models
- Document CORSED-v1 with three transport codes
- CORSED Version Control and Code Management Using GitLab (<https://git.erd.c.dren.mil/groups/corsed>)
- Establish CORSED development and application teams
- Online/in-person training and materials to support District users