STORMSIM: USER INTERFACE FOR RUBBLE MOUND DESIGN/PERFORMANCE

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AGENDA

- Recap
- StormSim UI Goal
- StormSim Refresher
- StormSim UI Walkthrough
  - Project Panel
  - Adding/Removing Project Elements
  - PSE, Storm DB, Simulation Tabs
- Demo
- Closing Remarks

QUICK RECAP

FY 24 Focus:

- StormSim response equation update:
  - Conceptual models for each supported protection system
  - Empirical coefficients refitting
- StormSim guidance documents (draft)
- Further testing with partner projects

Some Challenges

- Data challenges
- DRP Wave

Proposed Framework

Structure Selection	Define base line metrics to determine if a protection system can be evaluated.
Structure Metrics Extraction	Extract protection system metrics from available Lidar datasets (JALBTCX)
Develop Hindcasting Storm Suite	Define how storm modeling results are sampled based on survey data
Model Structure Response	Model structure response with developed storm suite with **StormSim**. Correlate with historical damage records.

STORMSIM UI GOALS

Why develop a UI?

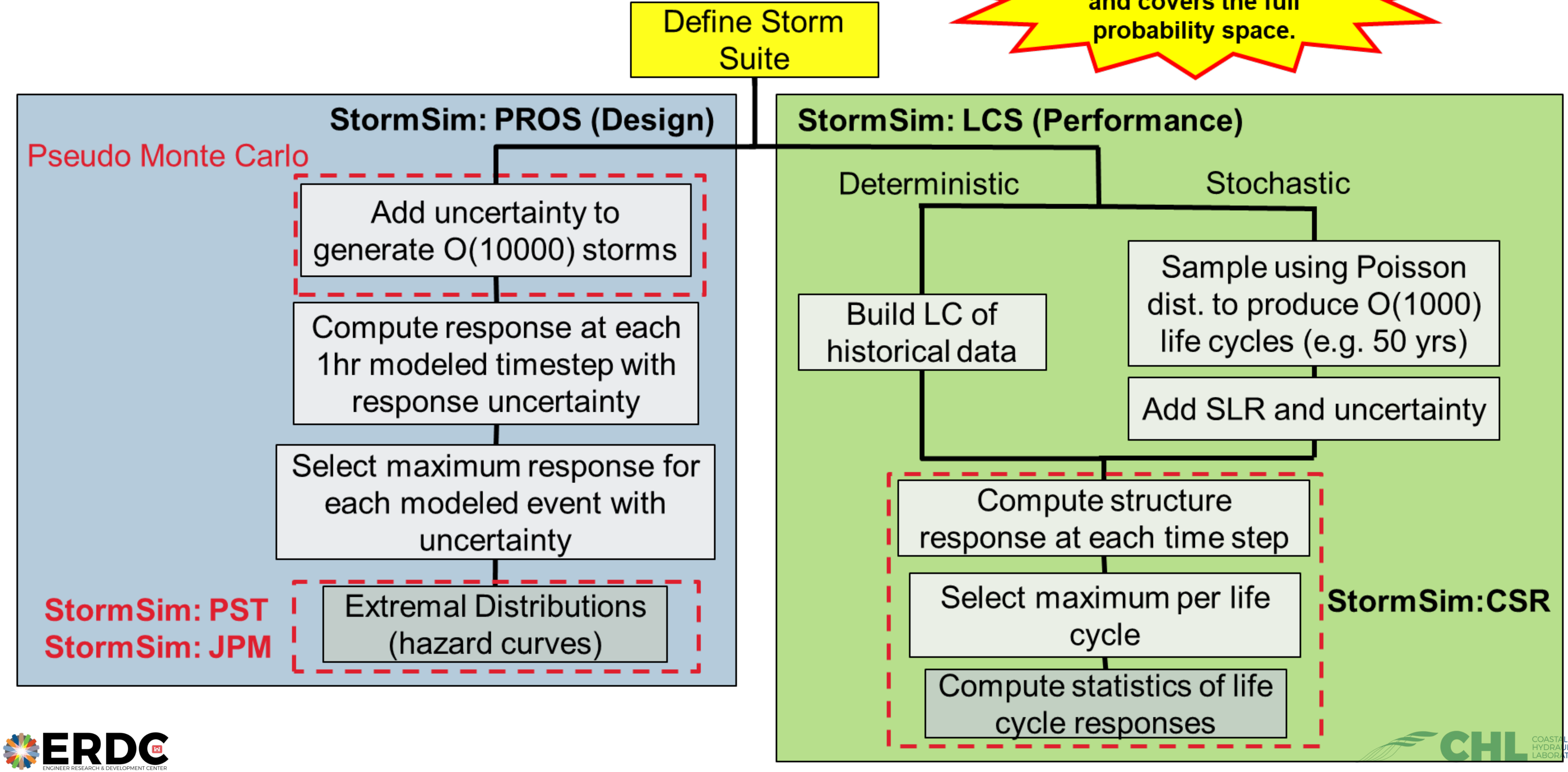
In short , improve user experience. Current implementation of StormSim, although automated, relies on the user keeping track of file dependencies across different simulations and properly stablishing project hierarchy.

UI Goals:

- Facilitate project creation and asset management
- Establish dynamic environment where users can cycle/iterate across projects and its components
- Facilitate input/outputs visualization and interrogation

STORMSIM REFRESHER

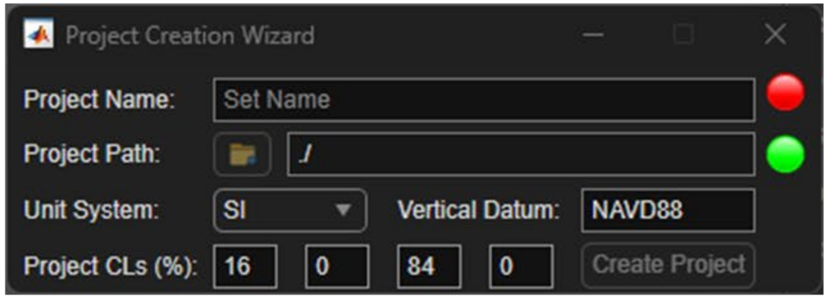
CHS defines the baseline storm suite and covers the full probability space.

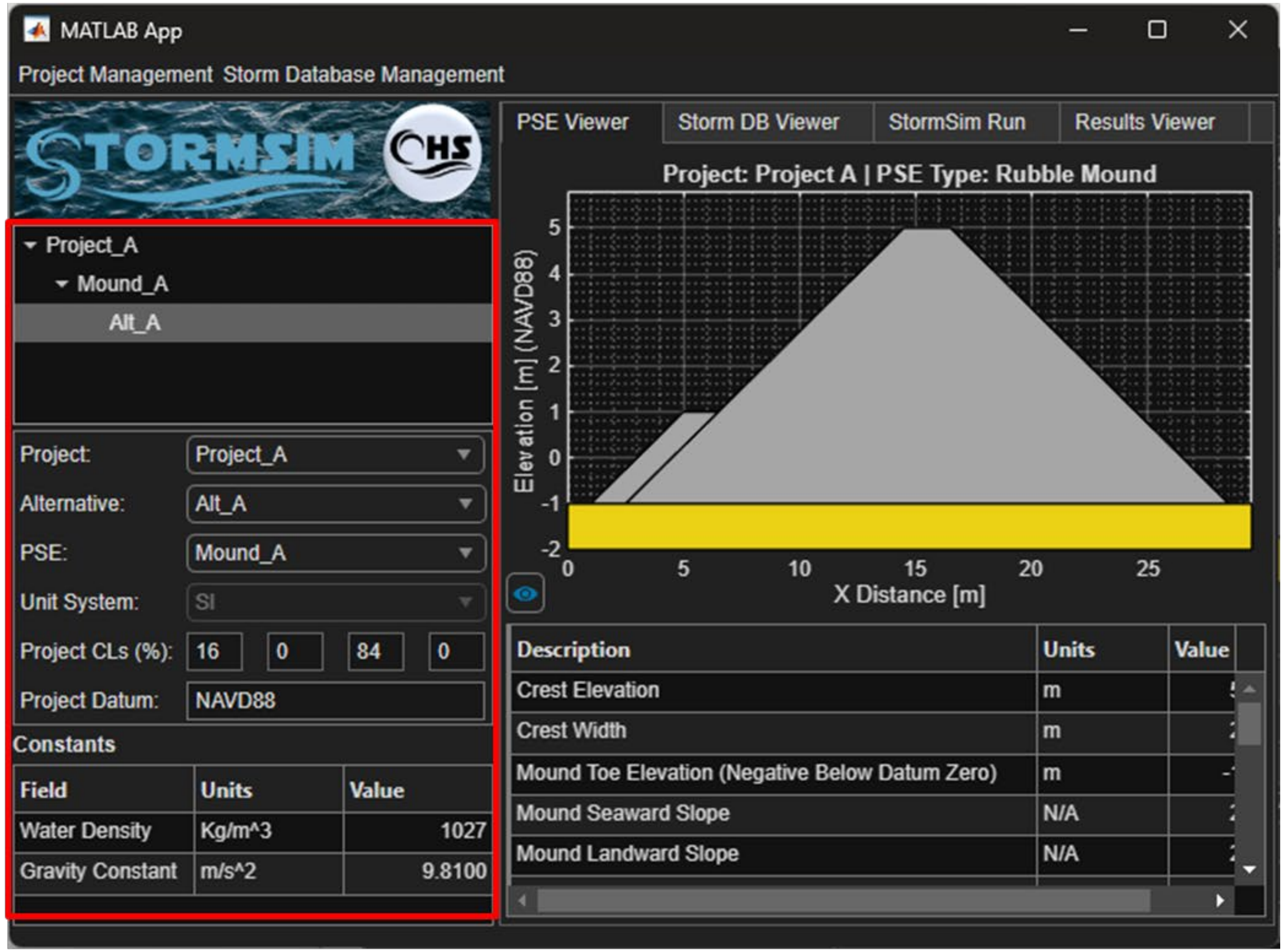


UI WALKTHROUGH: PROJECT PANEL

- Controls/defines project asset hierarchy.
- Defines current working asset and project wide values
- Selection of Project, Alternative, PSE will load state across all tabs.

Project Creation





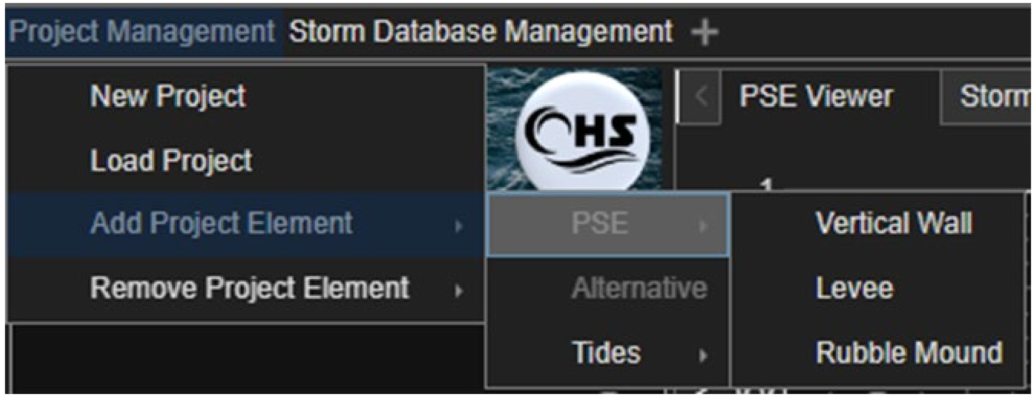
UI WALKTHROUGH: ADD/REMOVE PROJECT ASSET

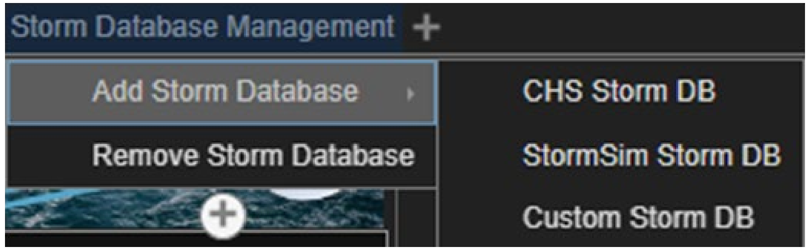
Project assets:

- PSE geometry
- Storm DB (CHS)
- Tidal DB

Asset Management:

- Add/remove -> Menu dropdowns
- Cycle/Change -> Dropdowns

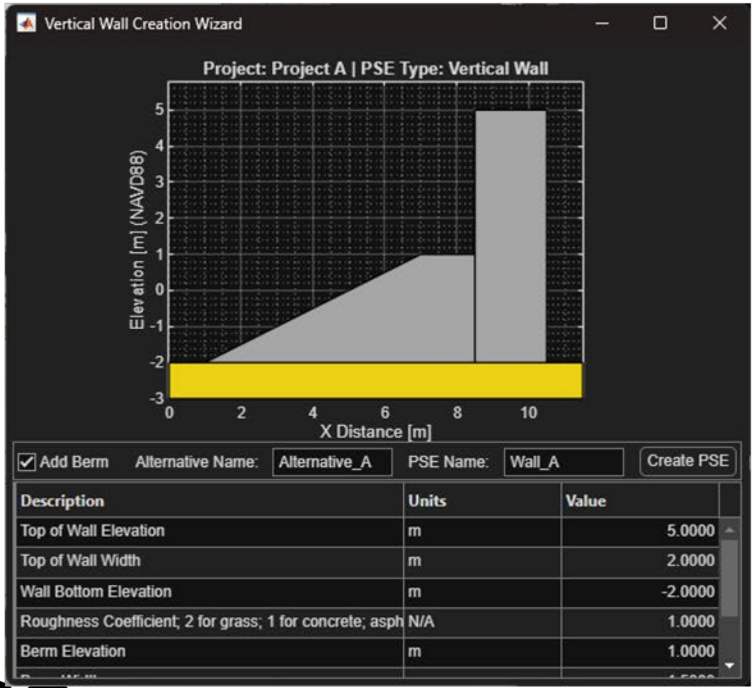


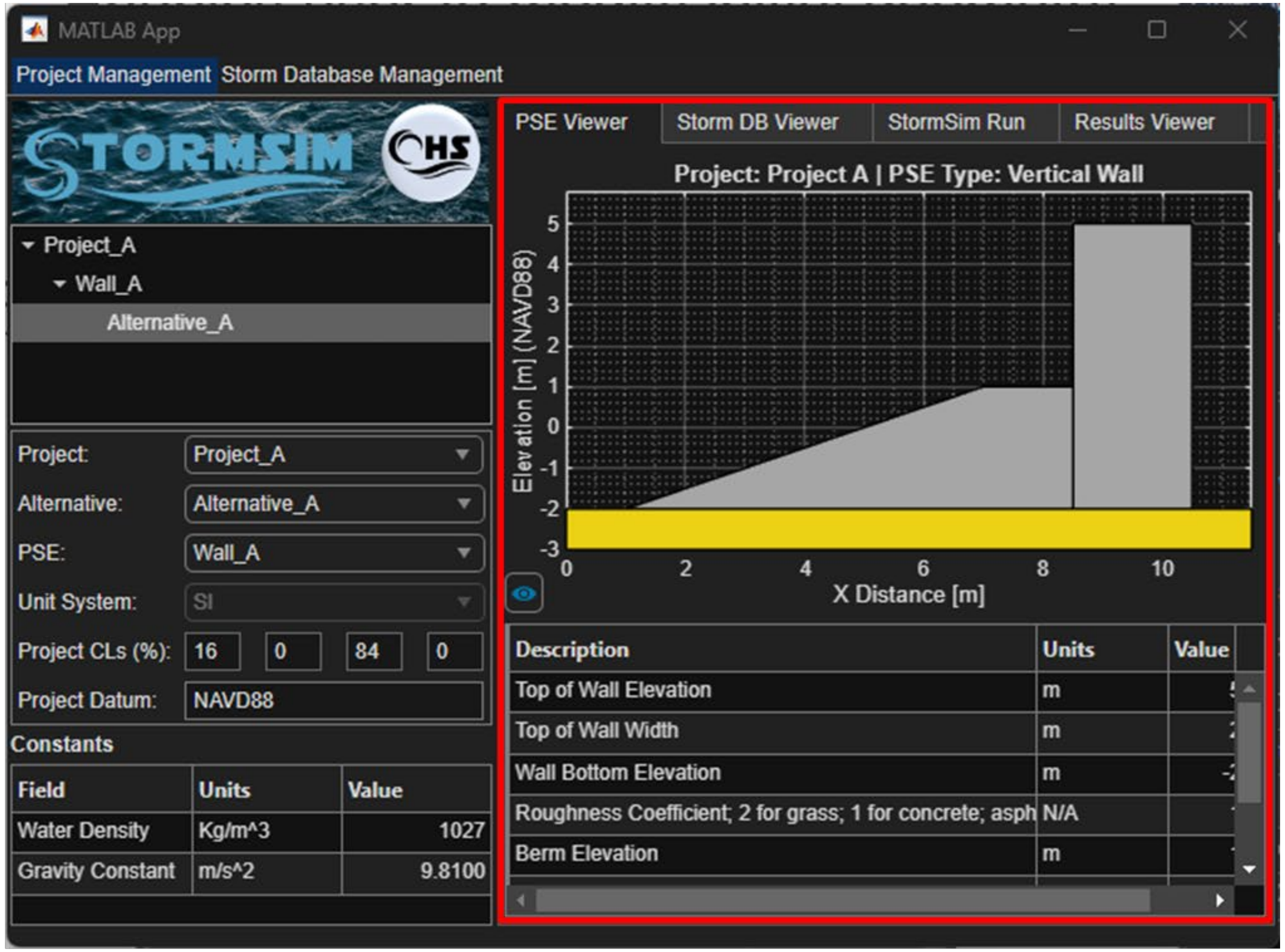


UI WALKTHROUGH: PSE TAB

- Displays selected PSE alternative
- Enables user to modify initial geometry.
- Active PSE alternative is selected through project panel.

PSE Creation

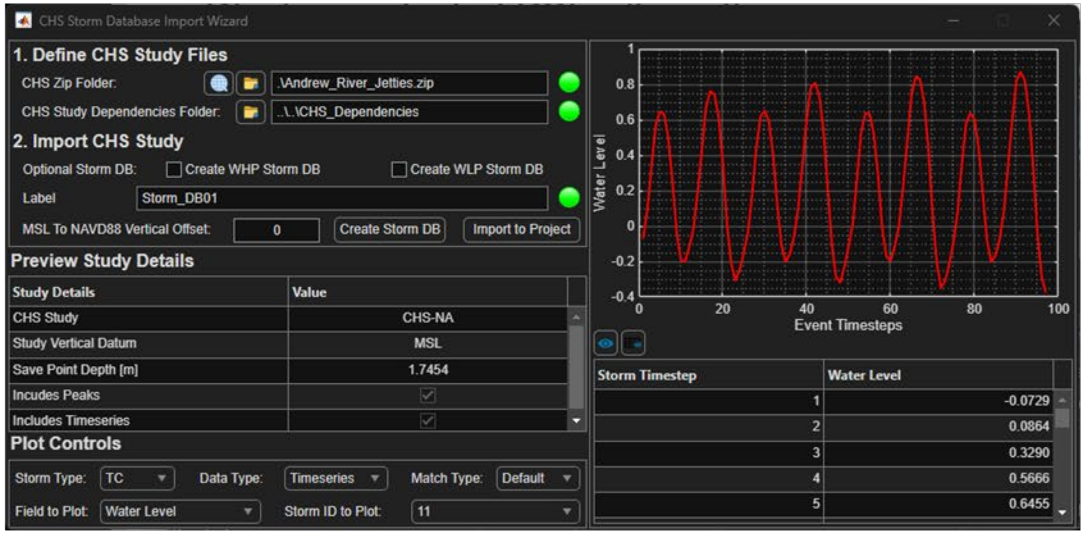




UI WALKTHROUGH: STORM DATABASE

- Displays selected Storm DB
- Storm DBs are accessible by all PSE's

CHS Modeling Import



UI WALKTHROUGH: STORM DATABASE, CONT.

Inputs

Configuration File

Uncertainty

Initialize Project Environment
- Create Project | Parse Configuration

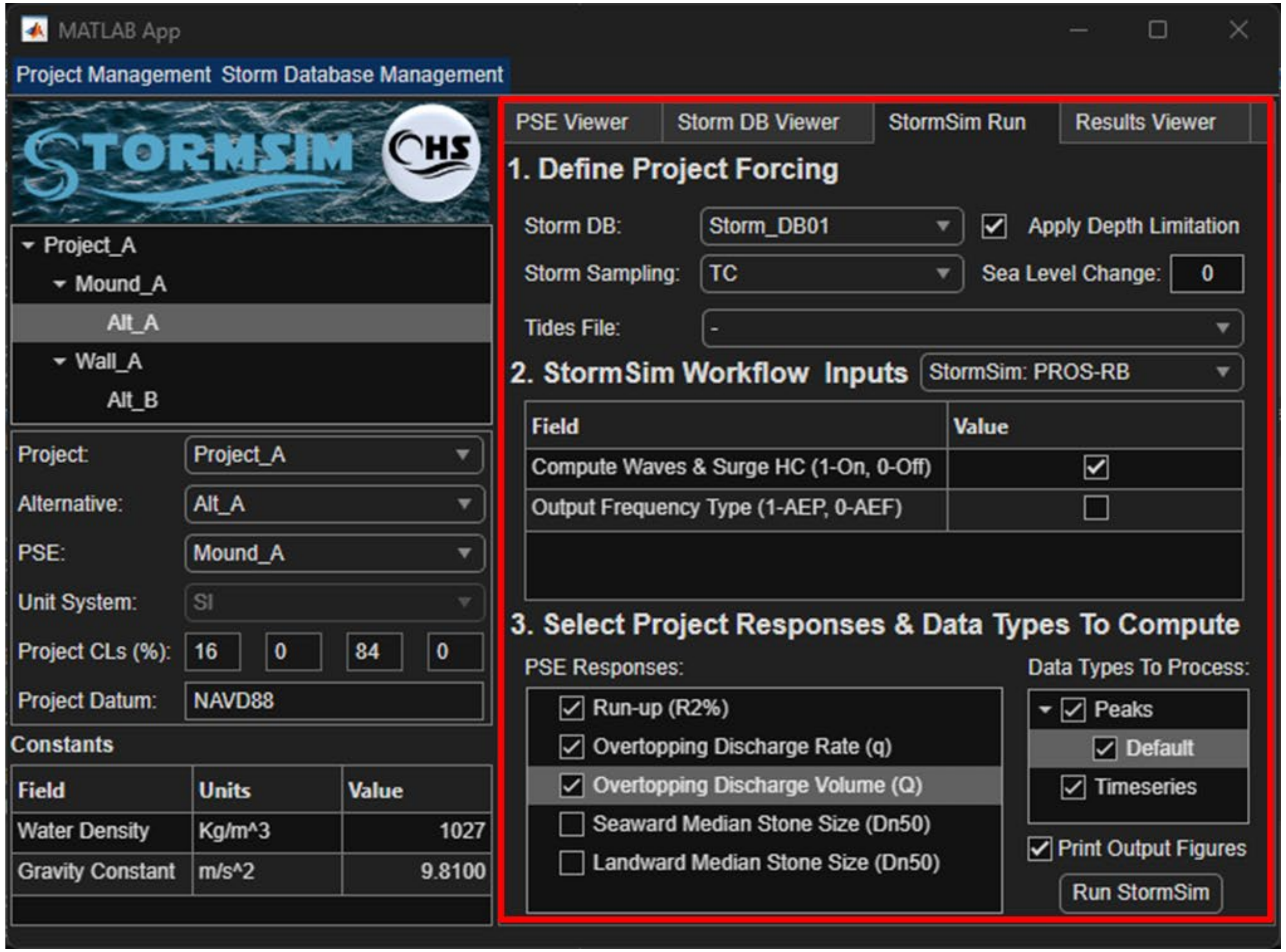
CHS Storms Suite QA/QC
- Storm Screening | Storm Data Pairing

Create Project Forcing
- StormSim: PROS | StormSim: LCS

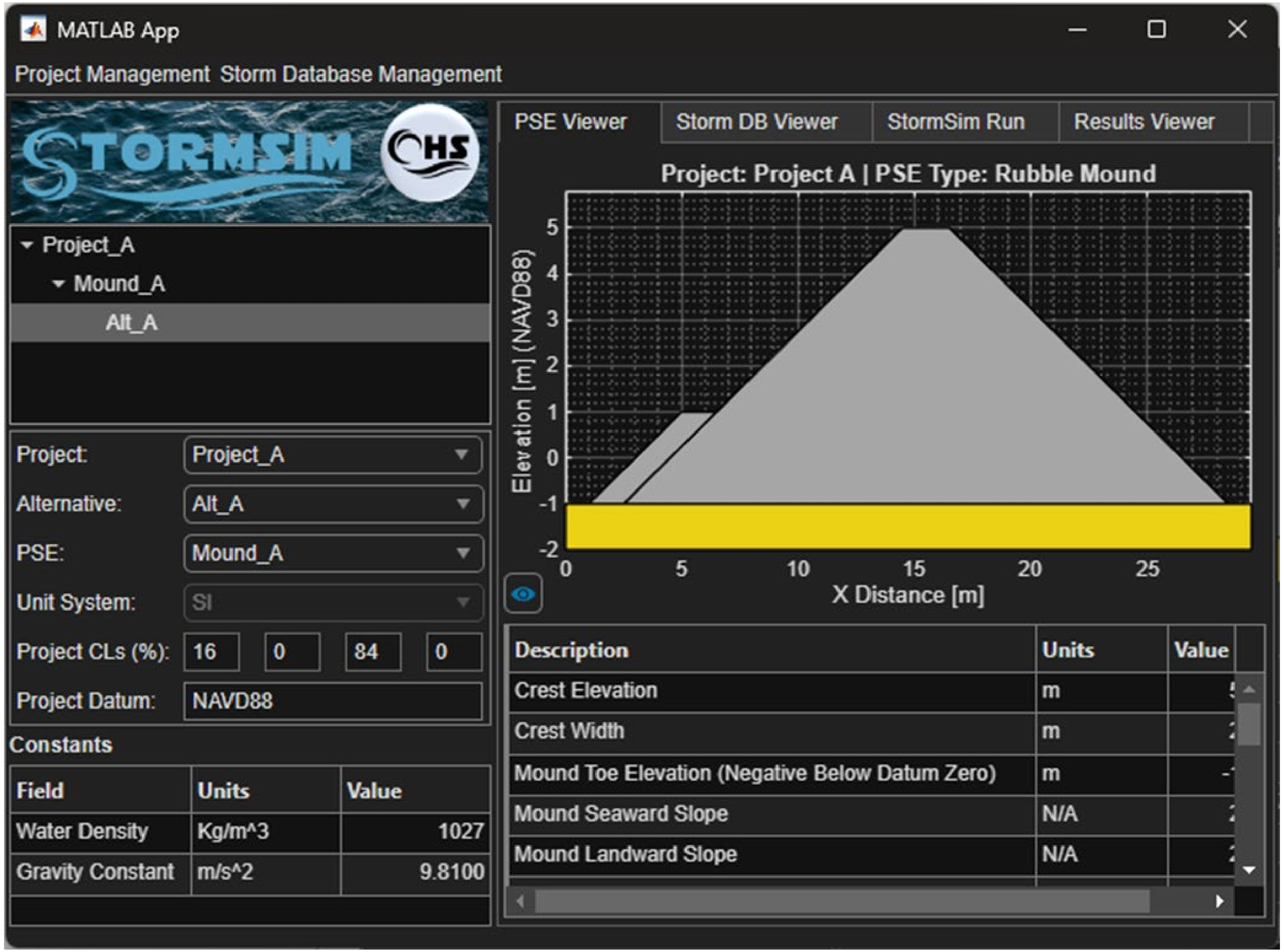
Create PSE
- Geometry | Properties

Project Forcing Adjustments
- Uncertainty | SLR, Rand Tides, DL

Compute Project Responses
- R2%, q, S, Dn50, Goda Wall Pressures,…



DEMO


MATLAB App
Project Management
Storm Database Management
STORMSIM
CHS
Project_A
Mound_A
Alt_A
Project:
Project_A
Alternative:
Alt_A
PSE:
Mound_A
Unit System:
SI
Project CLs (%):
16
0
84
0
Project Datum:
NAVD88
Constants
Field
Units
Value
Water Density
Kg/m^3
1027
Gravity Constant
m/s^2
9.8100
PSE Viewer
Storm DB Viewer
StormSim Run
Results Viewer
Project: Project A | PSE Type: Rubble Mound
Elevation [m] (NAVD88)
X Distance [m]
Description
Units
Value
Crest Elevation
m
Crest Width
m
Mound Toe Elevation (Negative Below Datum Zero)
m
Mound Seaward Slope
N/A
Mound Landward Slope
N/A

CLOSING REMARKS

- UI is well on its way to be completed before EOY (~80% completed)
- The StormSim Team is looking for district partners interested in:
  - Providing feedback on UI capabilities
  - Providing insight into additional output metrics that can facilitate the design/evaluation process
  - Applying StormSim to existing project
  - Participating in StormSim v1.0 release workshop

Looking ahead:
- Python conversion
- West Coast StormSim
- Support of new PSE's

DISCUSSION AND QUESTIONS

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