



GUI Interface Updates For CMS and Gencade in SMS 13.1+

CMS/GENCADE WORK UNITS

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FY20 IN PROGRESS REVIEW

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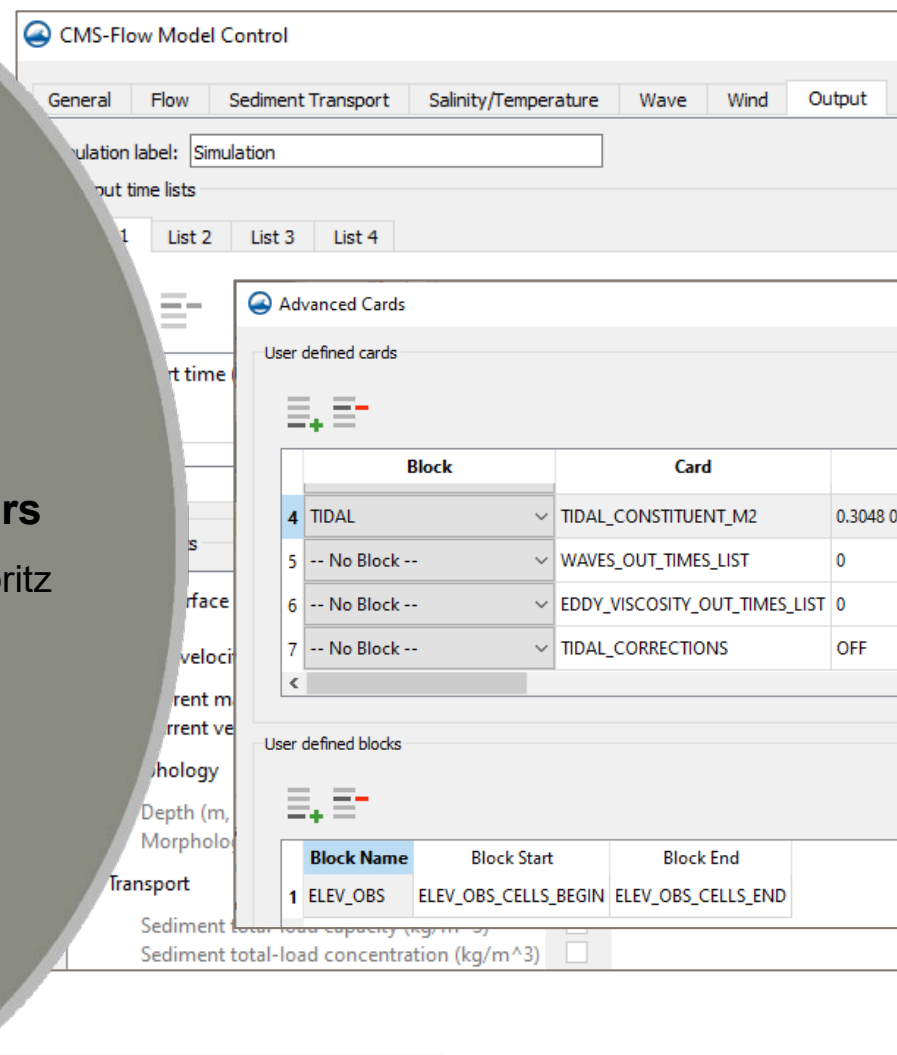
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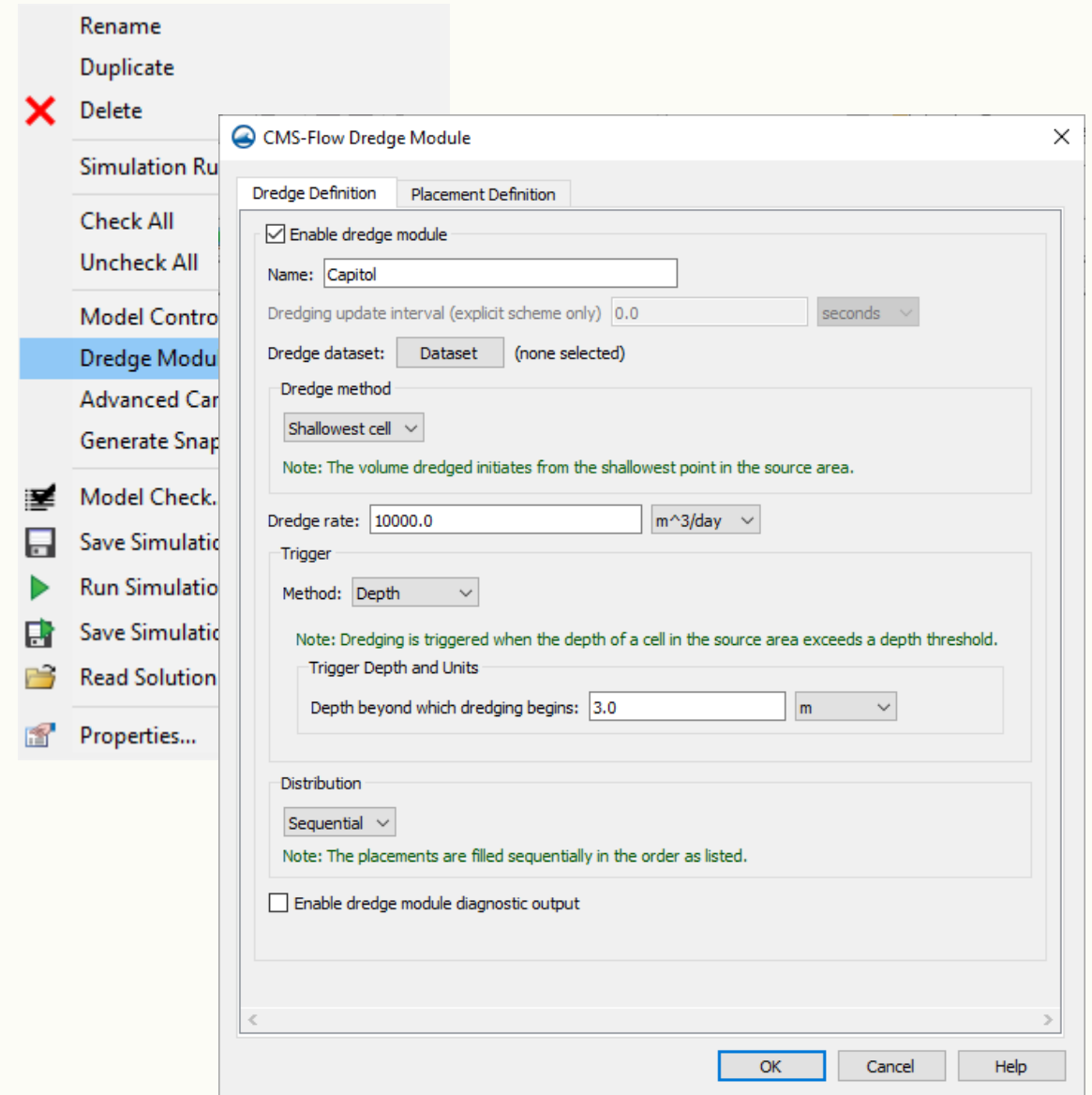
DISCOVER | DEVELOP | DELIVER

Problem Statement

- As CMS incorporates new features, the corresponding SMS interfaces must be created.
- The SMS interface now contains Dynamic Model Interfaces (DMIs) which allow model developers to build new menus to more quickly integrate into SMS and make the features available.

Navigation Statements of Need

- 2019-N-1370: Testing and Evaluation of USACE Coastal Numerical Models.



Capability and Strategic Impact Statement

- **Some features in CMS were never integrated into the SMS. The DMI capability now allows us to create them.**
- **CIRP has been the primary ERDC program to make use of the new capabilities, however ADCIRC and ADH teams will soon learn and follow our lead.**

CMS GUI Updates

- CMS Dynamic Model Interface (DMI) is complete.
- Model Control Interface has been fully tested and improved
 - More user-friendly flow of data entry.
 - Incorporates some additional enforcing of rules (ie. Bed layering, multiple grain sizes, etc) before finding issues at run time.
- SMS 13.1 reintroduces the CMS Advanced card tab which now works with blocks of data.
 - Populated from unknown cards upon reading in of older grids
 - Written out to the bottom of the CMS Parameter file upon saving of the simulation.

The screenshot shows the 'CMS-Flow Model Control' window with the 'Output' tab selected. The 'Simulation label' is 'Simulation'. Under 'Output time lists', 'List 1' is active, showing a table with one entry:

	Start time (hrs)	Increment (hrs)	End time (hrs)
1	0.0	0.25	1200.0

The 'Output datasets' section is expanded to show a tree view of data categories:

- Water surface elevation (m)
- Current velocity
 - Current magnitude (m/s)
 - Current velocity (m/s)
- Morphology
 - Depth (m, through time)
 - Morphology (m)
- Transport
 - Sediment total-load capacity (k)
 - Sediment total-load concentrat

The 'Advanced Cards' dialog box shows 'User defined cards' with a table of configurations:

	Block	Card	
4	TIDAL	TIDAL_CONSTITUENT_M2	0.3048 0.0
5	-- No Block --	WAVES_OUT_TIMES_LIST	0
6	-- No Block --	EDDY_VISCOSITY_OUT_TIMES_LIST	0
7	-- No Block --	TIDAL_CORRECTIONS	OFF

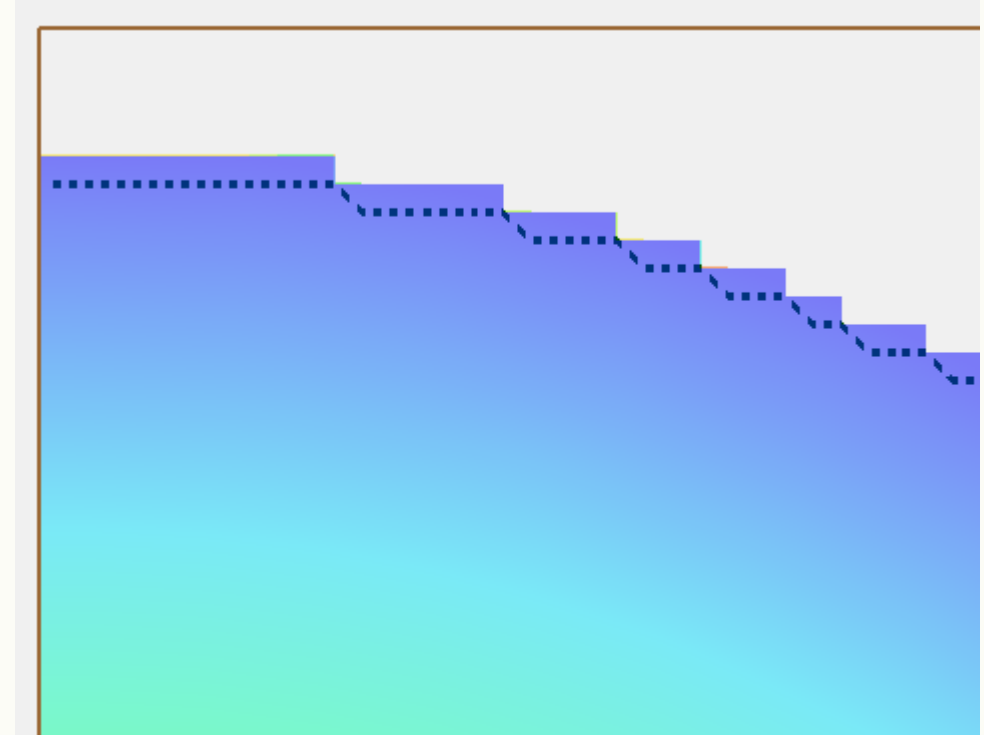
Below, the 'User defined blocks' section shows a table:

Block Name	Block Start	Block End
1 ELEV_OBS	ELEV_OBS_CELLS_BEGIN	ELEV_OBS_CELLS_END

Buttons for 'OK', 'Cancel', and 'Help' are at the bottom right.

CMS GUI Updates

- **SMS 13.1 now has better display of where boundary condition cells are located**
 - Now supports internal and external BC for all BC types according to location of designated inactive areas.
- **Added support for CSHORE into the SMS interface.**
 - Due to the rush to get SMS 13.1 fully tested and debugged with CMS for release, the CSHORE option will be added to a later version of SMS 13.1 (or 13.2 to be released in the fall)



Transport formula			
Transport formula:	CSHORE ▾		
Concentration profile:	Exponential ▾		
CSHORE -	Breaking Efficiency:	0.003	Bed Load Parameter: 0.002
			Suspended Load Parameter: 0.3

GenCade GUI Updates

- Full migration of Gencade from Static to Dynamic Model Interface (DMI) is partially complete.
 - Necessary components from Aquaveo in SMS 13.1 interface were delayed.
- User interfaces have been created for Arc/Point assignments (1) and to enable newly added features (2):
 - Cross-shore Sediment Transport
 - Monte Carlo Scenario Simulations
- These will be incorporated into the finished DMI in FY21 (SMS 13.2+)

(1)

(2)

Summary

FY20 Major Advances in Capability

- Work with Aquaveo on SMS updates.
- Continue to incorporate new CMS features in SMS.

FY20 Major Products & Collaborations

- Updated GUIs for CMS
- Started preparation for Gencade DMI by creating user interfaces for the new and existing Gencade features.

FY21 Products/Advances

- **CMS-Flow**
 - Full NetCDF capability for input and output for CMS.
 - Ability to hide inactive cells in quadtree.
- **Gencade**
 - Fully dynamic interface incorporating Monte Carlo and Cross-shore transport.

