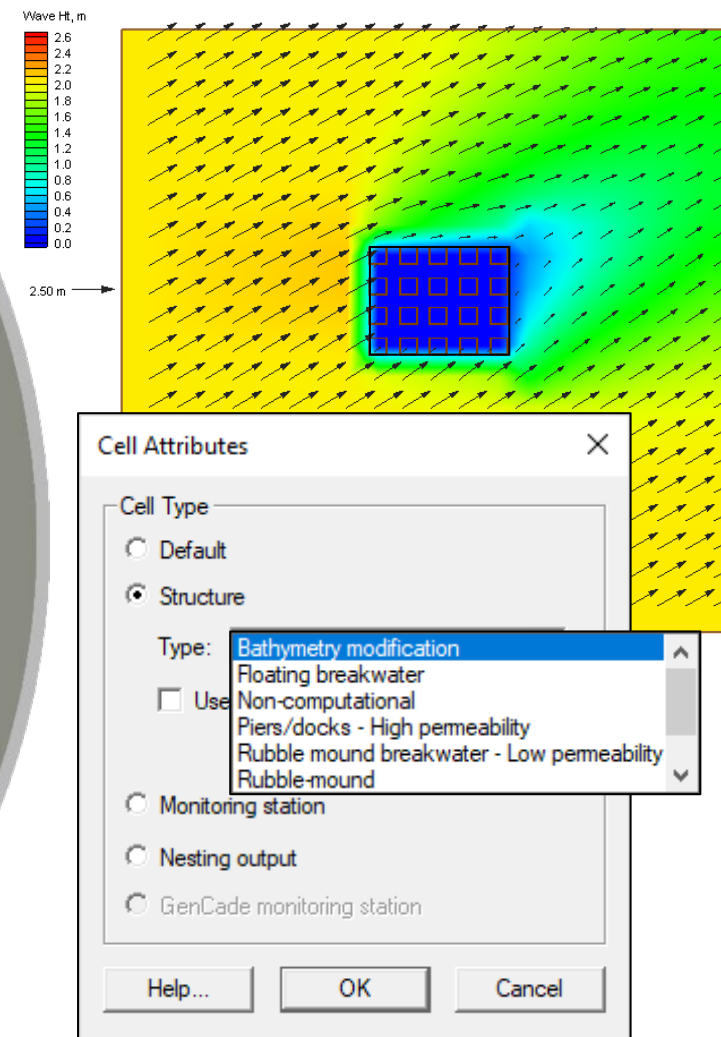# COASTAL MODELING SYSTEM: ADVANCED TOPICS USING CMS 5.1 AND SMS 13.0

DAY 5: CMS-WAVE STRUCTURES

Mitchell Brown, Lihwa Lin

Specify Feature Cells in SMS13.0
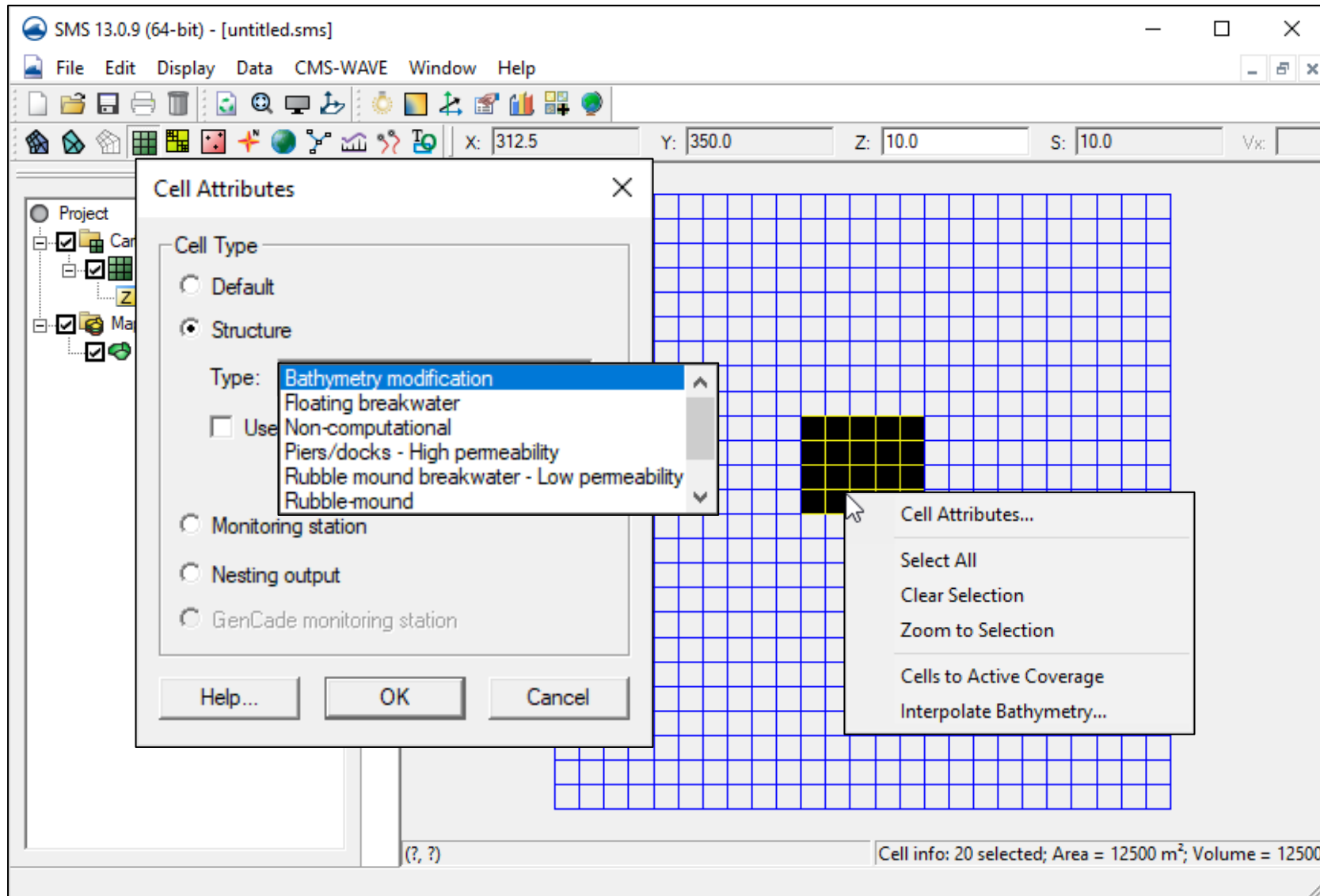

- Select cells to assign as structures

- Right-click | Cell Attributes

- Structure options:
  - Floating Breakwater
  - Non-computational
  - Piers/Docks
  - Rubble-mound Breakwater
  - Rubble-mound
  - Wall Breakwater
  - Wave Run-up

Idealized Island Example
(non-computational)

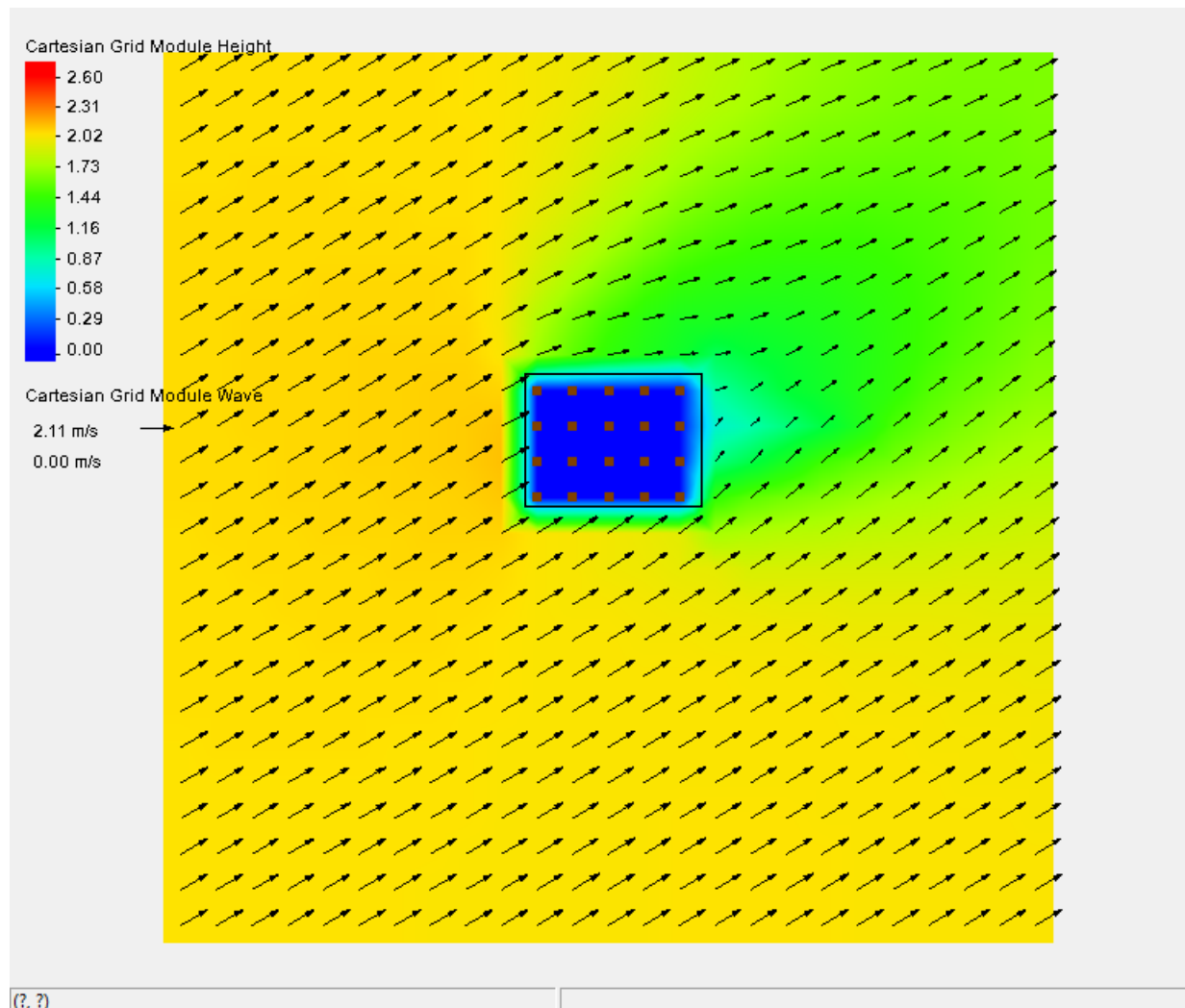```
20
11 13 0
12 13 0
13 13 0
14 13 0
15 13 0
11 14 0
12 14 0
13 14 0
14 14 0
15 14 0
11 15 0
12 15 0
13 15 0
14 15 0
15 15 0
11 16 0
12 16 0
13 16 0
14 16 0
15 16 0
```

.struct file

Cartesian Grid Module Height

- 2.60
- 2.31
- 2.02
- 1.73
- 1.44
- 1.16
- 0.87
- 0.58
- 0.29
- 0.00

Cartesian Grid Module Wave

2.11 m/s
0.00 m/s

(?, ?)

20 feature cells

incident wave:
2 m, 6 sec,
30 deg oblique
(gamma = 4)
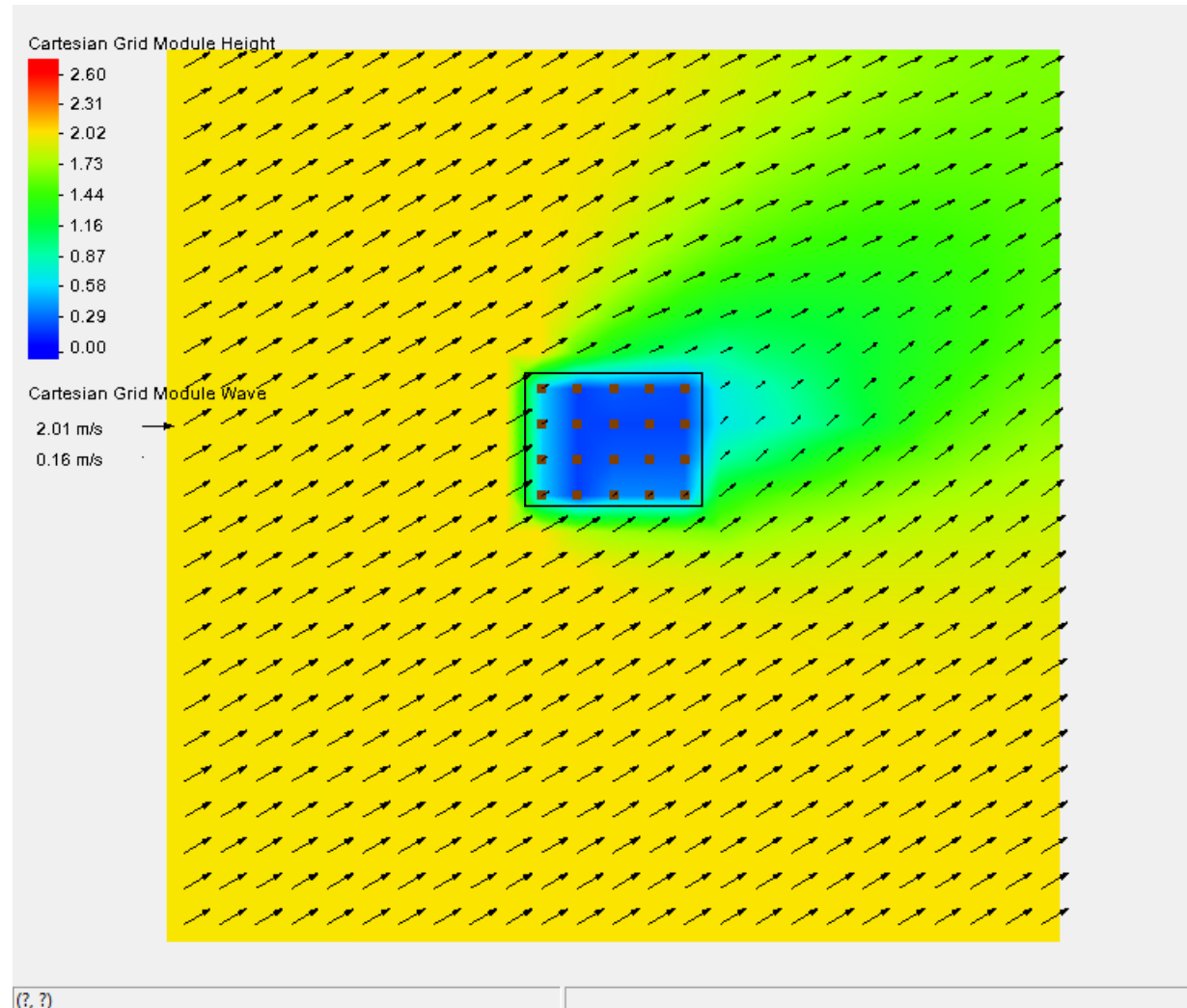
Backward reflection:
0.05

Constant Manning's:
0.025

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# Idealized Floating Breakwater



20 feature cells

Input depth
= 10 m

incident wave:
2 m, 6 sec,
30 deg oblique
(gamma = 4)

draft = 2 m

.struct file

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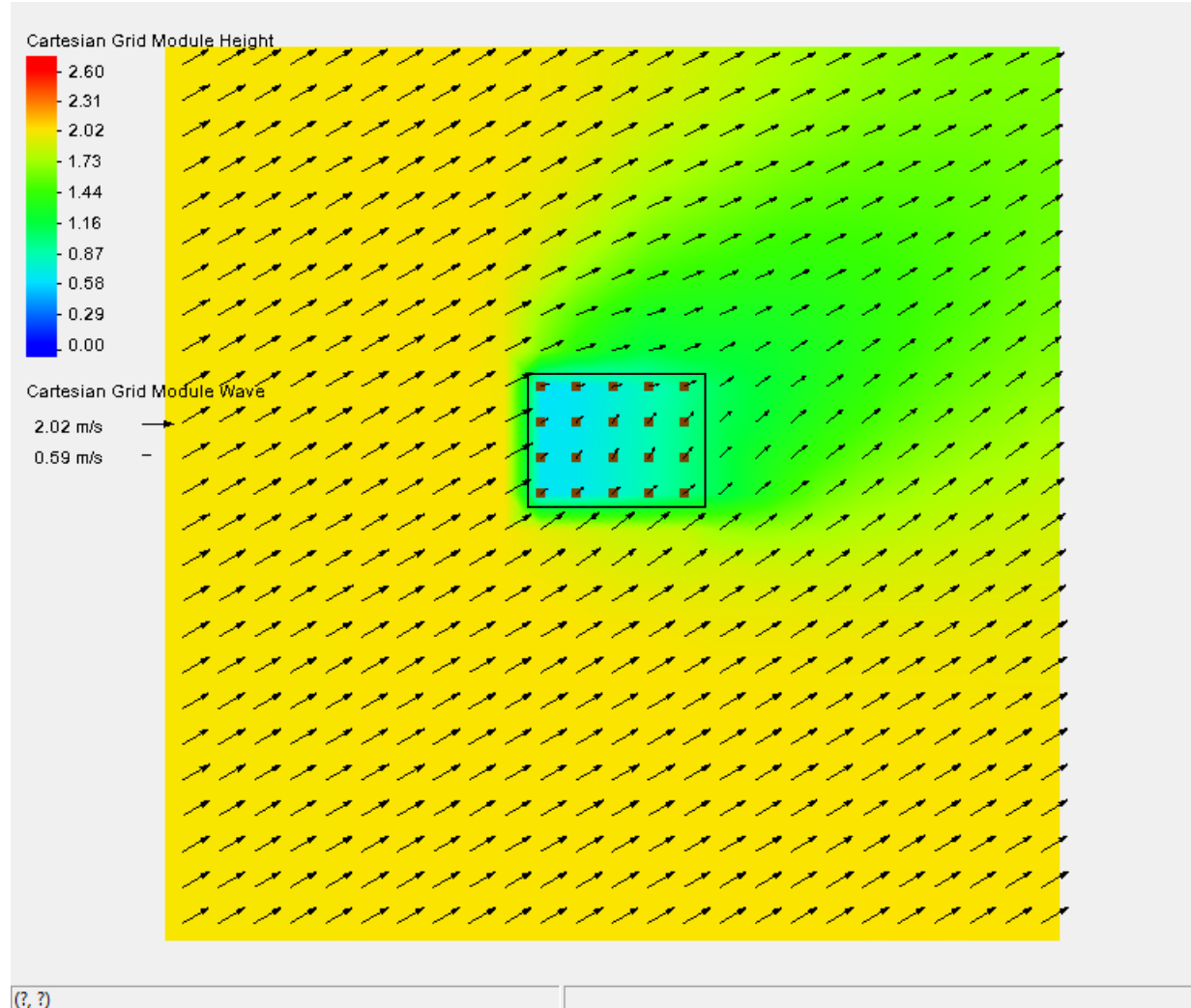
# Idealized Platform
## (Wall Breakwater)

```
20
11  13  4  1
12  13  4  1
13  13  4  1
14  13  4  1
15  13  4  1
11  14  4  1
12  14  4  1
13  14  4  1
14  14  4  1
15  14  4  1
11  15  4  1
12  15  4  1
13  15  4  1
14  15  4  1
15  15  4  1
11  16  4  1
12  16  4  1
13  16  4  1
14  16  4  1
15  16  4  1
```

.struct file

20 feature cells

input depth
= 10 m

incident wave:
2 m, 6 sec,
30 deg oblique
(gamma = 4)

Platform Elevation
 = 1 m (mwl)

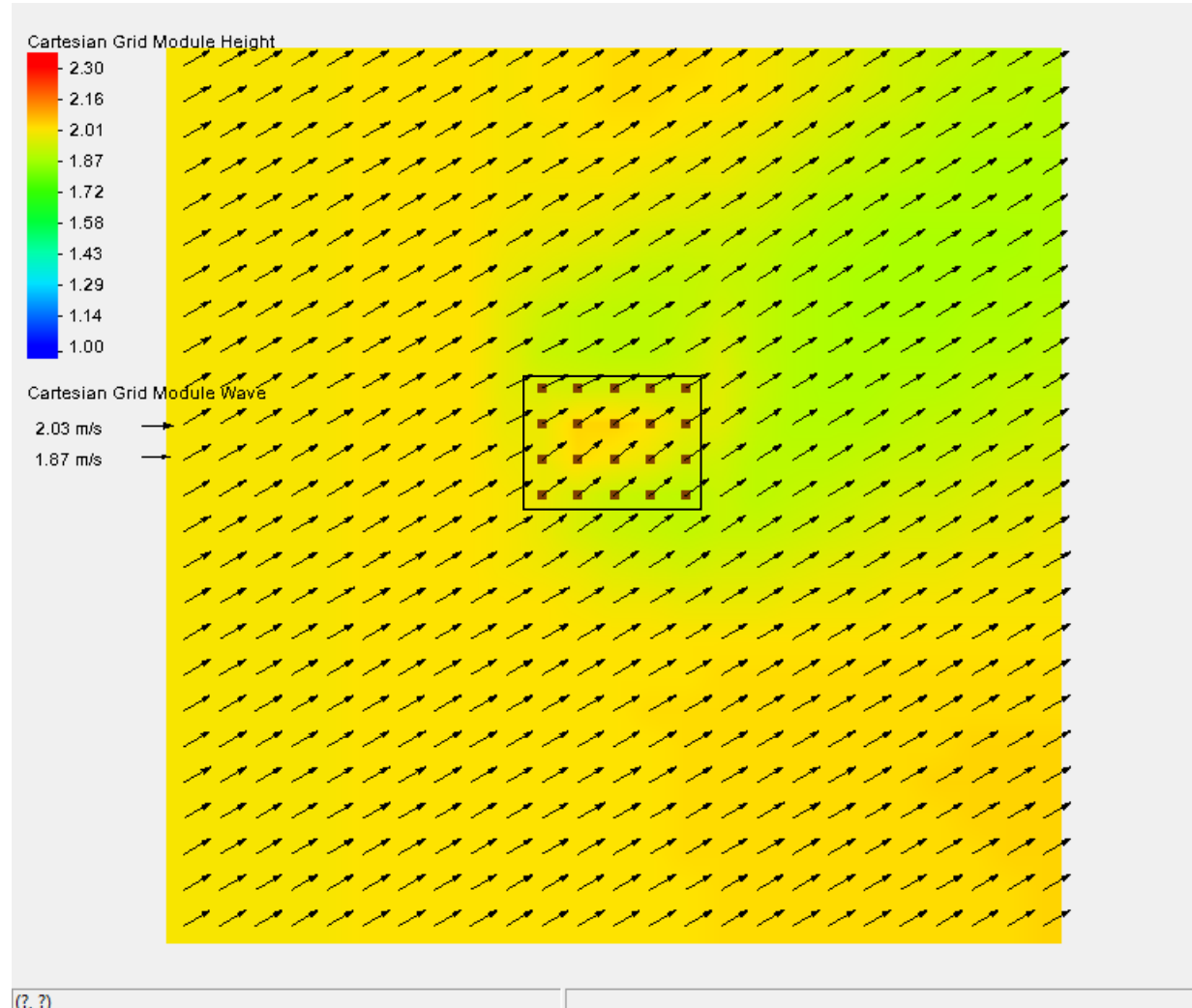US Army Corps of Engineers • Engineer Research and Development Center •

Submerged Platform


```
20
11 13 4 -2
12 13 4 -2
13 13 4 -2
14 13 4 -2
15 13 4 -2
11 14 4 -2
12 14 4 -2
13 14 4 -2
14 14 4 -2
15 14 4 -2
11 15 4 -2
12 15 4 -2
13 15 4 -2
14 15 4 -2
15 15 4 -2
11 16 4 -2
12 16 4 -2
13 16 4 -2
14 16 4 -2
15 16 4 -2
```

.struct file

20 feature cells

input depth
= 10 m

incident wave:
2 m, 6 sec,
30 deg oblique
(gamma = 4)

platform elev.
 = -2 m (mwl)

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References & Contacts

1. Lin, L., H. Mase, F. Yamada, and Z. Demirbilek. 2006. "Wave-Action Balance Equation Diffraction (WABED) Model: Tests of Wave Diffraction and Reflection at Inlets." ERDC/CHL CHETN-III-73.

2. Zheng, J., H. Mase, Z. Demirbilek, and L. Lin. 2008. "Implementation and evaluation of alternative wave breaking formulas in a coastal spectral wave mode." *Ocean Engineering*. Vol. 35., pp.1090-1101.

3. Lin, L., Z. Demirbilek, H. Mase, J. Zheng., and F. Yamada. 2008. "CMS-Wave: A Nearshore Spectral Wave Processes Model for Coastal Inlets and Navigation Projects." ERDC/CHL TR-08-13.

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