CADMAS-SURF/3D calculation results

○What is CADMAS-SURF/3D

Liquid single-phase model for incompressible viscous fluids

○Governing equation

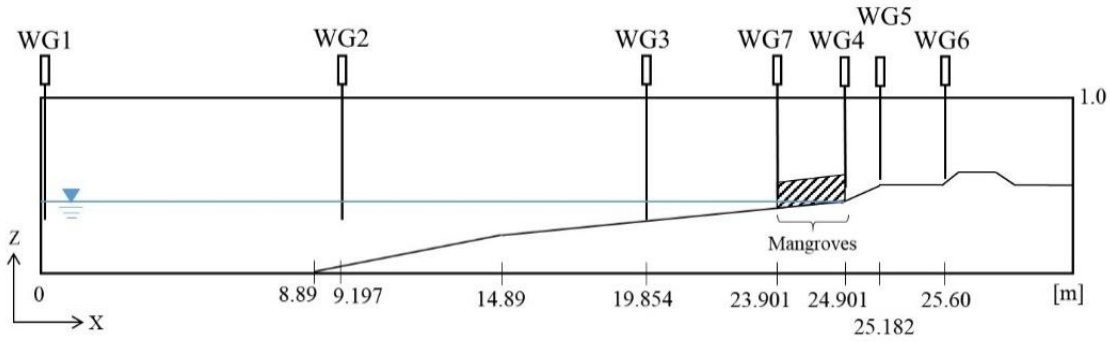
- Continuous equation
- Navier-Stokes equation

○Feature

- Complex flows with free surface multivalued functions
- The VOF method is used for the free surface analysis model
- Use a porous model to improve the accuracy of shape approximation
- Allows structures and boundary conditions to be set at arbitrary locations on a cell-by-cell basis
- Adopt two wave making models: wave making boundary and wave making source
- Six types of wave making functions, such as Stokes wave, are adopted
- Adopt Sommerfeld's radiation boundary and energy decay band as non-reflective models
- TimerDoor method is adopted to treat bubbles and water droplets

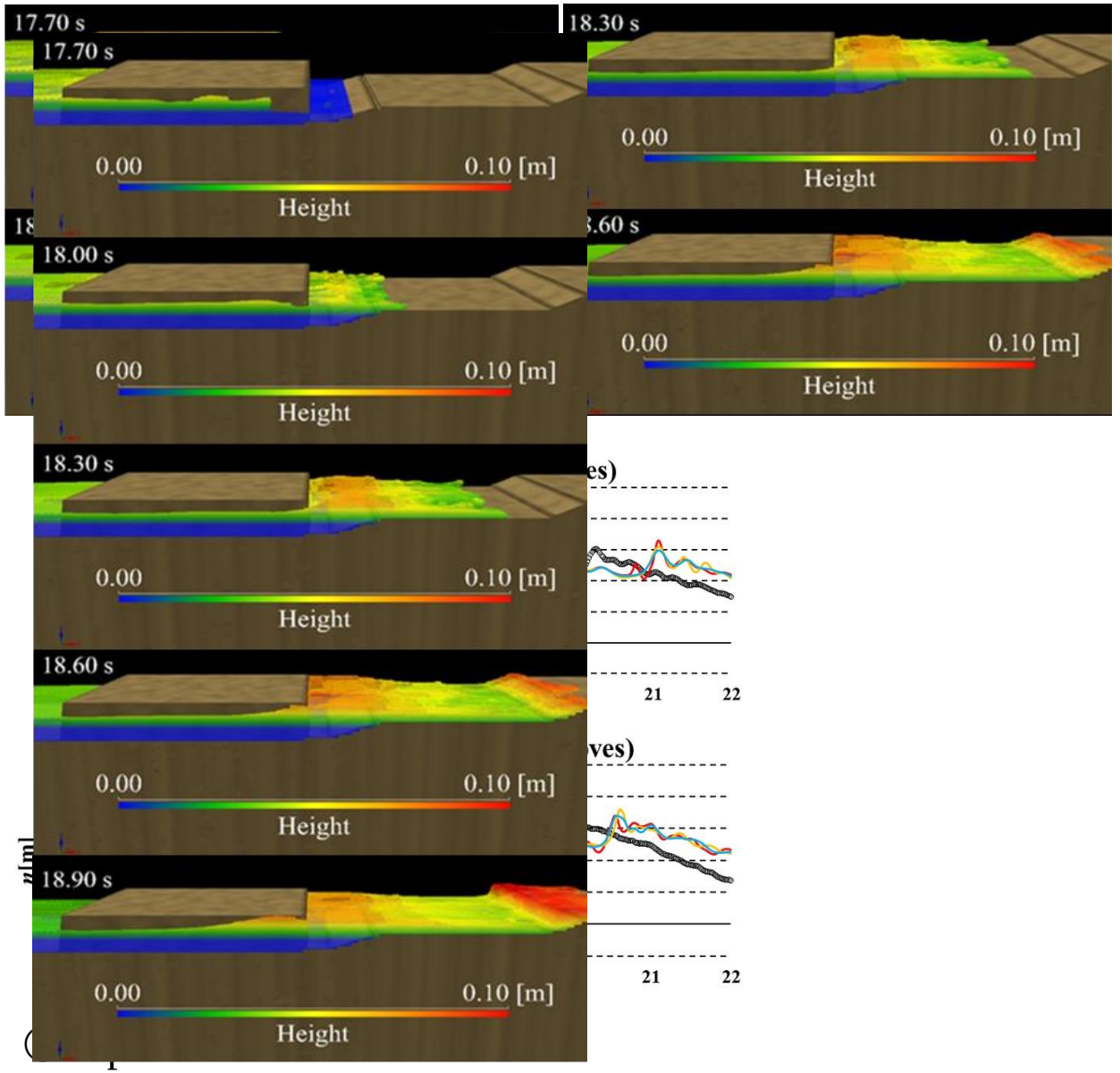
Reproduction of tsunami attenuation effect by mangroves using CADMAS-SURF/3D

○Calculation conditions



Water level (m)	Wave height (m)	Mangrove length (m)
0.4, 0.428	0.07, 0.09	0.4, 0.7, 1.0

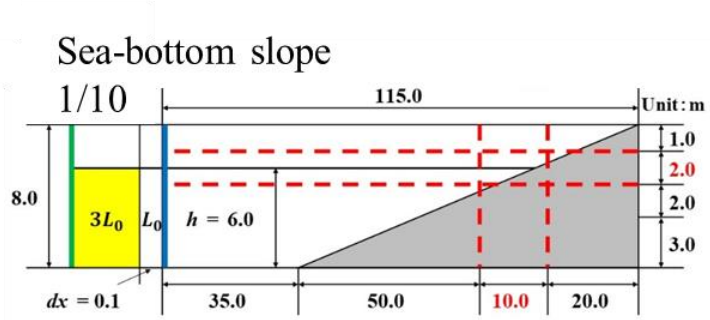
	Range (m)	Grid size (m)	Number of grids
x	0～24.5	0.5	49
	24.5～27	0.25	10
	27～29	0.1	20
	29～29.8	0.05	16
	29.8～30	0.02	10
	30～56.6	0.01	2660
y	0～1.0	0.01	100
z	0～1.0	0.01	100

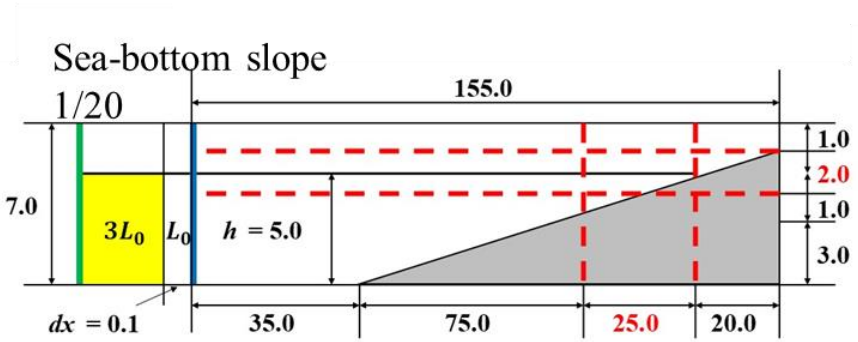


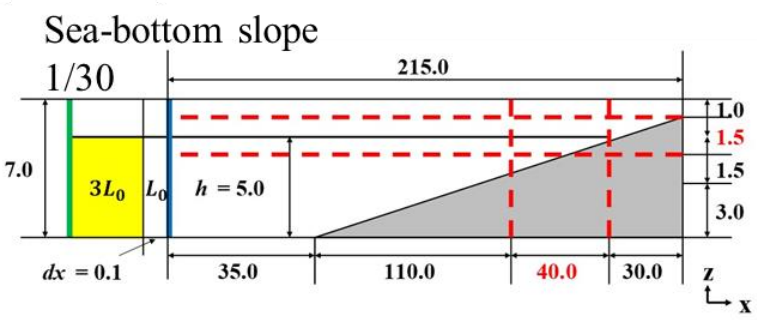
Mei YOSHIDA, Ayaka TADOKORO, Taro ARIKAWA,
NUMERICAL MODELING METHOD FOR MANGROVES USING THE DUPUIT-FORCHHEIMER LAW,
Journal of Japan Society of Civil Engineers, Ser. B2 (Coastal Engineering), 2022, Volume 78, Issue 2, Pages I_883-I_888

STUDY ON BREAK WATER INDEX USING CADMAS-SURF/3D

○Calculation conditions

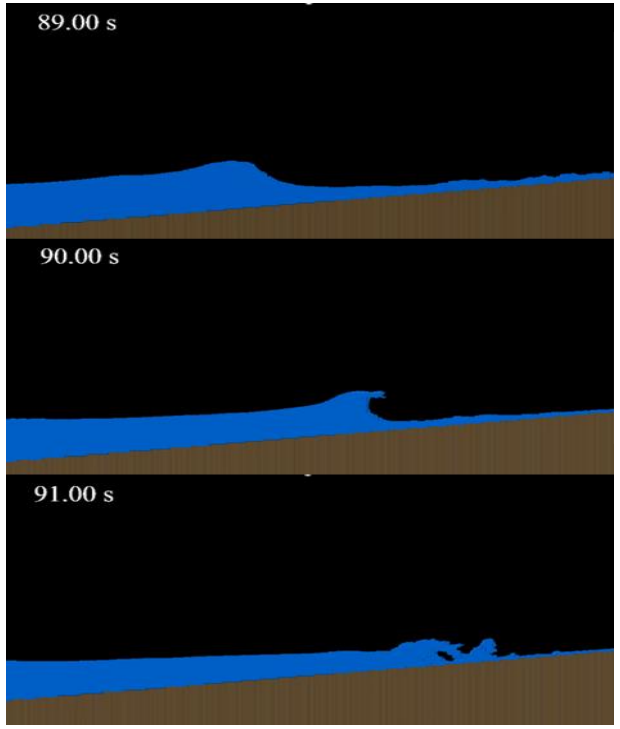


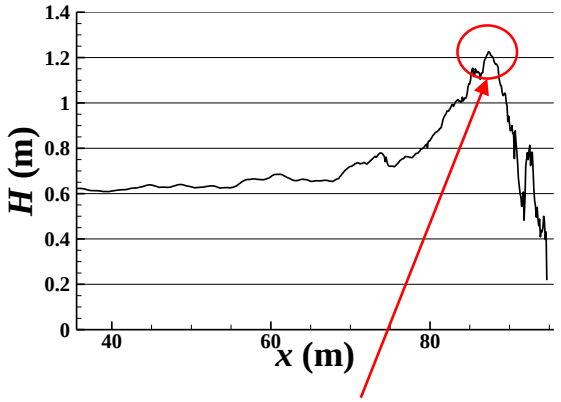




Water level (m)	Wave height (m)	Period (s)
6.0, 5.0	0.60	1.0, 2.0, 3.0, ・・・10.0

	Range (m)	Grid size (m)	Number of grids
x	0～85	isosceles lattice 0.99	1060
	85～95	0.06	165
	95～115	isosceles lattice 1.01	250
y	0～0.1	0.1	1
z	0～3.0	0.1	30
	3.0～5.0	isosceles lattice 0.99	25
	5.0～7.0	0.06	33
	7.0～8.0	isosceles lattice 1.01	13





Wave breaking point

○Paper information

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