

Assignments Battjes-Janssen wave model

Coastal and River Modeling Course, University of Utrecht
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1. Translate the wave model formulations to Matlab code. The profile is given in Table 1
2. Show the wave height distribution across the profile in a figure
3. Show the undertow distribution across the profile in a figure
4. What happens when you change the roughness height k_{sw} and why?
5. What happens when you change the wave front steepness β and why?
6. Measured H en U_m are given in Table 2. What is the optimum k_{sw} en β combination?
7. Add the alongshore current module to the model
8. Make the wave come in at an angle
9. Show the alongshore current across the profile in a figure
10. What is the effect of changing the eddy viscosity and why?
11. Add the orbital velocity computation to the model
12. Show the bedload and suspended load transport rates across the profile in a figure
13. Add a bed update script to the model
14. Show the morphological changes after 3 hours of wave action in a figure

Table 1. profile

x	Z
0	-0.60
3	-0.60
6	-0.59
8	-0.51
10	-0.39
12	-0.32
13	-0.33
14.5	-0.41
17	-0.51
20	-0.46
23	-0.40
26	-0.36

Table 2. Measured wave heights and undertow velocities

x	H	U_m
3	0.134	-0.017
6	0.131	-0.019
8	0.130	-0.023
10	0.137	-0.038
12	0.145	-0.044
13	0.138	-0.054
14.5	0.121	-0.042
17	0.109	-0.017
20	0.103	-0.017
23	0.108	-0.024