

Table 1. Wetting and drying test cases.

Model Parameter	Test case1: Sloping channel	Test case2: Dam break	Test case 3: Grizzly Bay
Ncells: x, y, z	100, 4, 10	102, 27, 8	
Spacings (m): dx, dy, dz	250, 200, 1	0.04, 0.08, variable	
Duration	12 hr	10 s	
dt (s)	1.0	0.001	

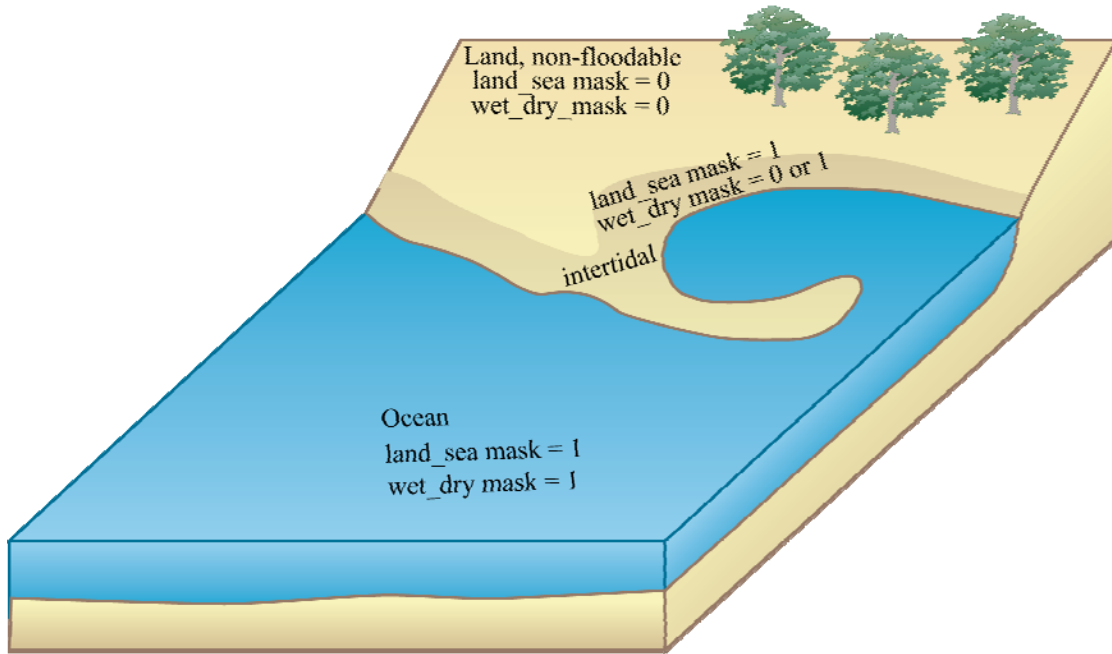


Figure 1. Two types of grid masking: land_sea and wet_dry. The land_sea mask remains fixed for the entire simulation and identifies regions that will be permanently dry (land_sea mask = 0, non-floodable) and regions that can be wet or dry (land_sea mask = 1, floodable). The wet_dry mask varies during the simulation and identifies if a region is wet (wet_dry mask = 1, $h + \eta > D_{crit}$) or dry (wet_dry mask = 0, $h + \eta < D_{crit}$).

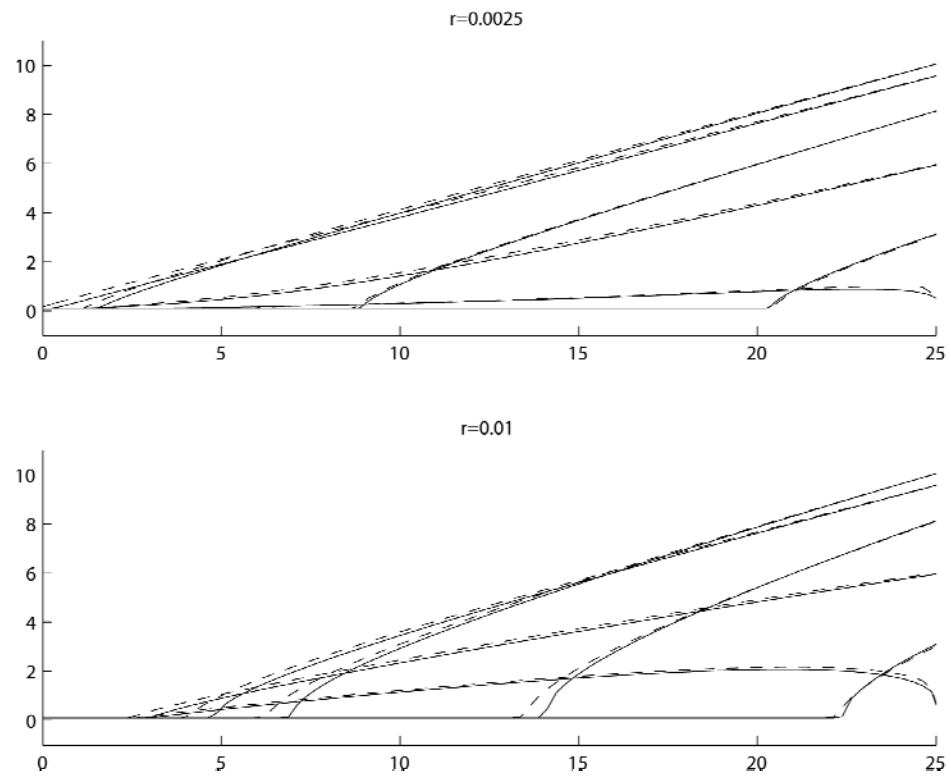


Figure 2. Test case 1: Sloping channel- Analytical solution from equation XX (solid) and ROMS (dashed).

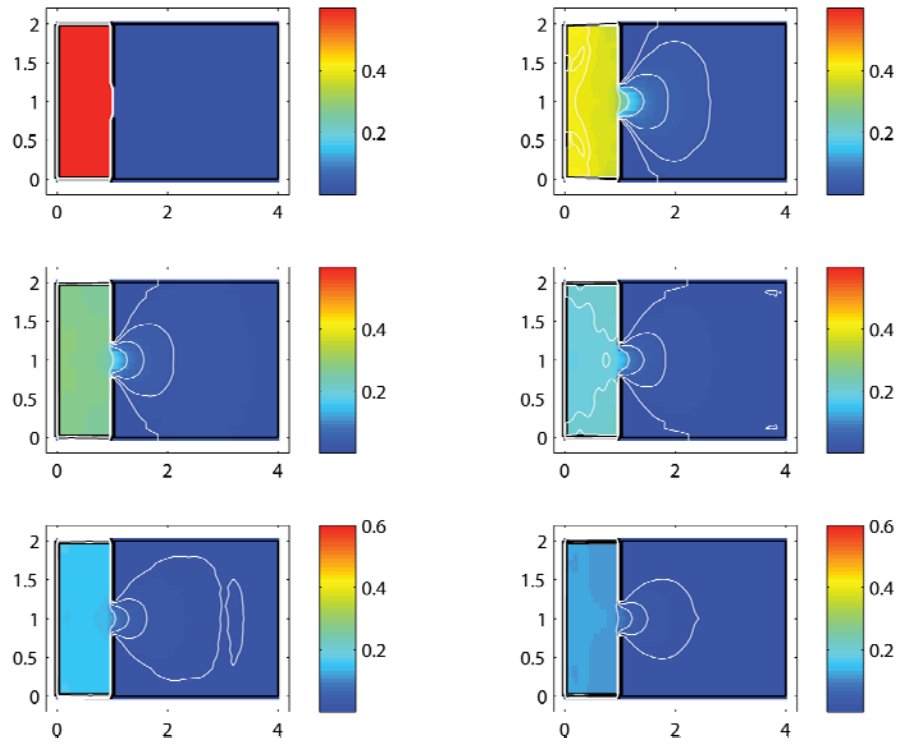


Figure 3. Test Case 2: Dam break- Plan views of free surface at different moments in time (0, 2, 4, 6, 8, and 10 s).

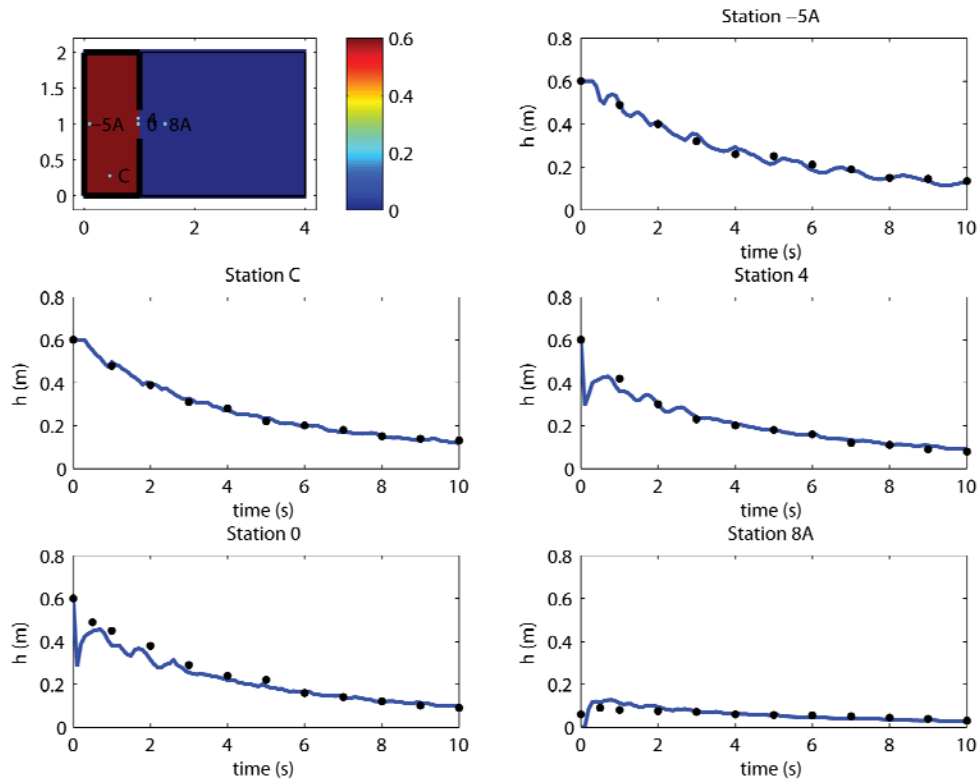


Figure 4. Test Case 2: Dam break- Time series plots from stations -5A, C, 4, 0, and 8A comparing measured water levels (dots) and model results (solid line).

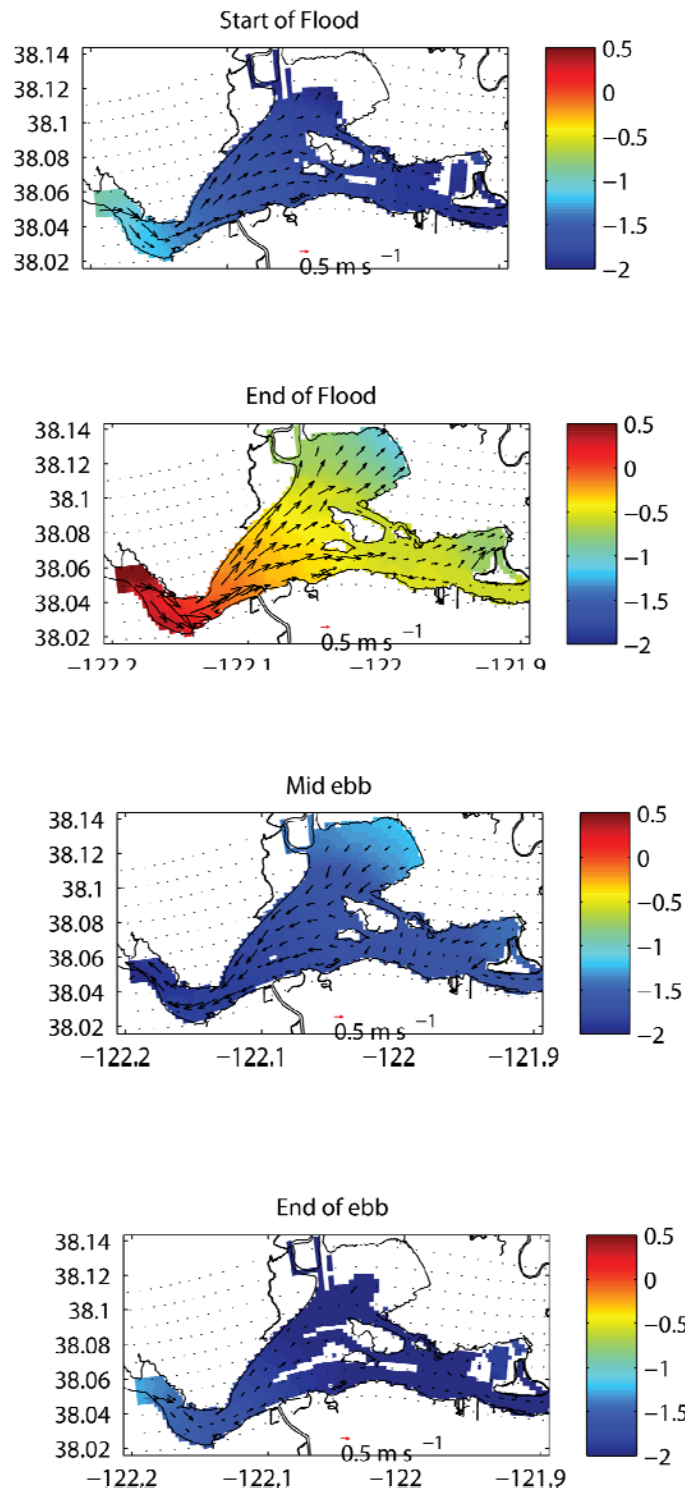


Figure 5. Test Case 3: Grizzly Bay – Plan views of water level during stages of tide. Upper part of Grizzly Bay dewateres at low tide.