l021triad[001]: Triads

Purpose

The purpose of this test is to verify triad wave-wave interactions.

Situation

To test the model capability to reproduce triad interactions the laboratory flume experiment of Beji and Battjes (1993) is used. In their experiment, waves propagate from intermediate water depth over a submerged bar. The still-water depth varies between 0.4 m in the deep section and 0.1 m above the elevated bottom, see Figure 1. The up- and down-wave bottom slopes of the submerged bar are 1:20 and 1:10 respectively. A one-dimensional spectrum, as observed by Beji and Battjes (1993) at station 1, is available as up-wave boundary condition. Ambient currents and wind are absent.
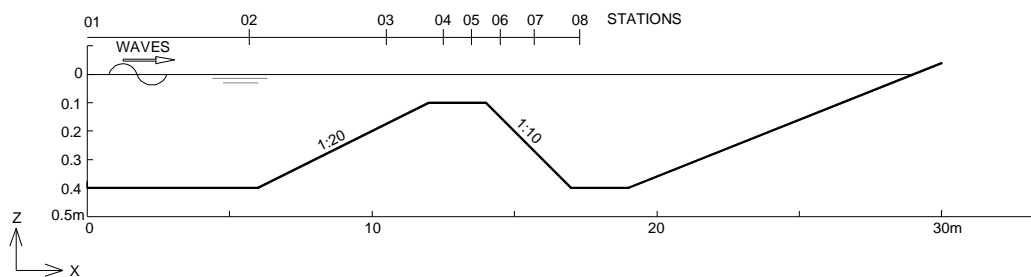

Figure 1 Bathymetry of laboratory experiment of Beji and Battjes (1993)

Comparison

A comparison is made with observations of Beji and Battjes (1993) for energy density spectra and the significant wave height H_{m0} and mean wave period T_{m01}.

Default Model commands

COMPUTATIONAL GRID								
1D/2D	XPC		YPC		ALPC	XLENC		YLENC
ID	0		0		0	30		0
ΔX	ΔY	DIR1	DIR2	Δθ	FLOW	FHIGH		MSC
0.1	0	-10°	10°	0.5°	0.0837	2.5		40
PHYSICS								
GEN	BREAK	FRIC	TRIADS	QUAD	WCAP	REFRAC	FSHIFT	SETUP
3	on	on	on	off	on	on	off	off
BOUNDARY CONDITIONS								
TYPE	BOU	C/V	P/R			NAME OF FILE		
side	W	con	read boundary from file			'l021triad001.bnd'		
BOTTOM:			**WIND:**			**CURRENT:**	**WATER LEVEL:**	
'l021triad001.bot'			-			-	-	

References

Beji, S. and J.A. Battjes, 1993: Experimental investigation of wave propagation over a bar, *Coastal Engineering,* 19, 151-162

Acknowledgements

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