Wave flume experiments of coastal defence systems with a very shallow foreshore

2nd COB Seminar – 06 February 2020

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GHENT UNIVERSITY

CREST CLIMATE RESILIENT COAST

www.crestproject.be

FACULTY OF ENGINEERING AND ARCHITECTURE

Department of Civil Engineering

CREST project

- Climate REsilient coaST
- Research project on coastal processes
- 10 partner institutes from academia, Flemish government and private sector
- From 01/11/2015 till 31/10/2019, final conference on 26/09/2019

- 9 general and more than 50 detailed take home messages on 4 main themes:

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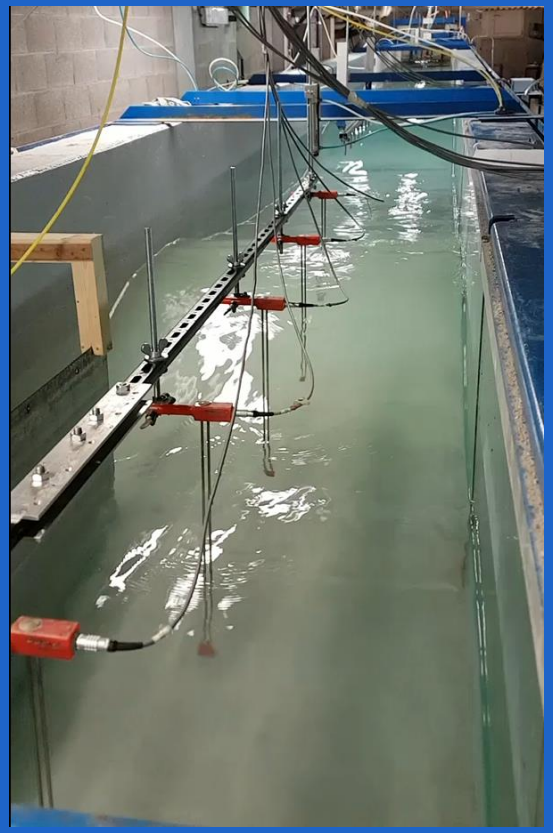
Experimental modelling in CREST

2D wave flume @UGent

3D wave basin @FHR

2D Experimental modelling in CREST – Overview

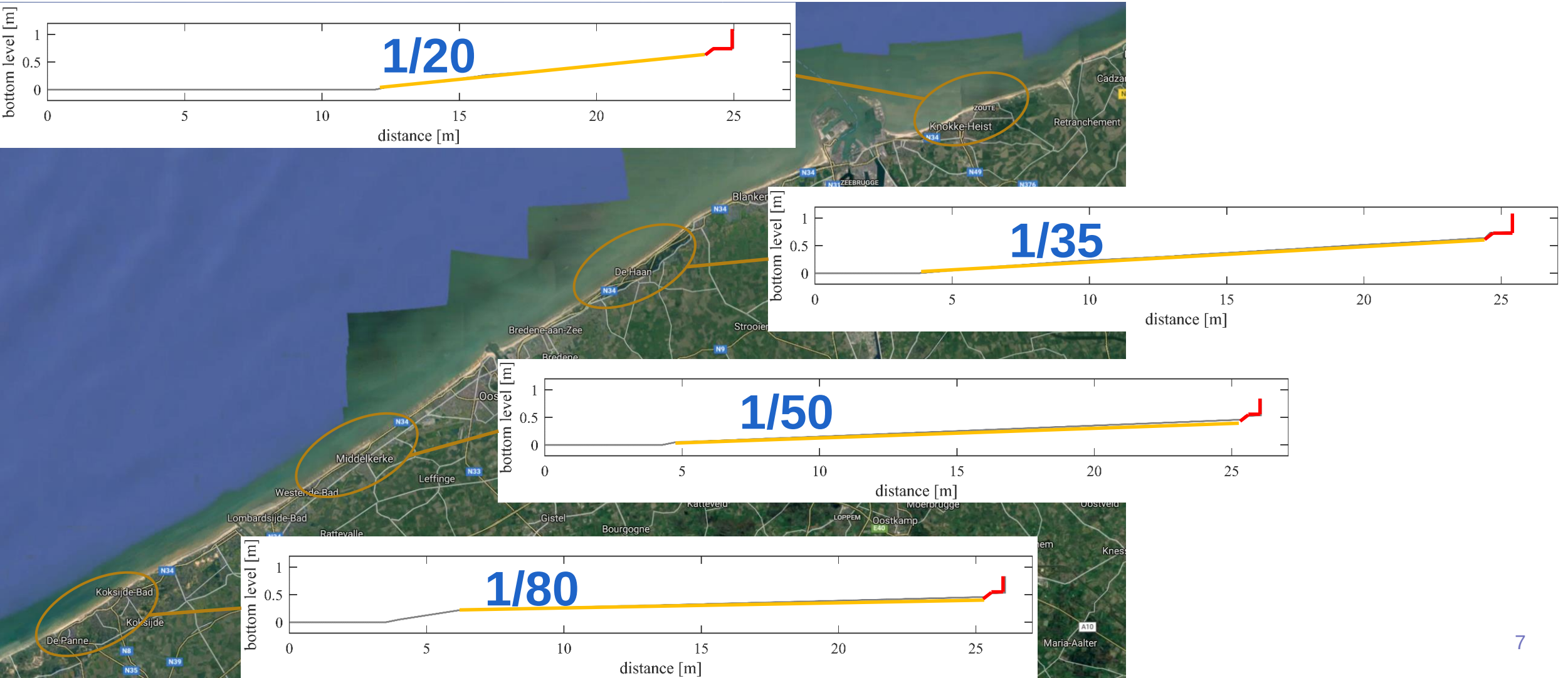
High spatial resolution of surface elevations



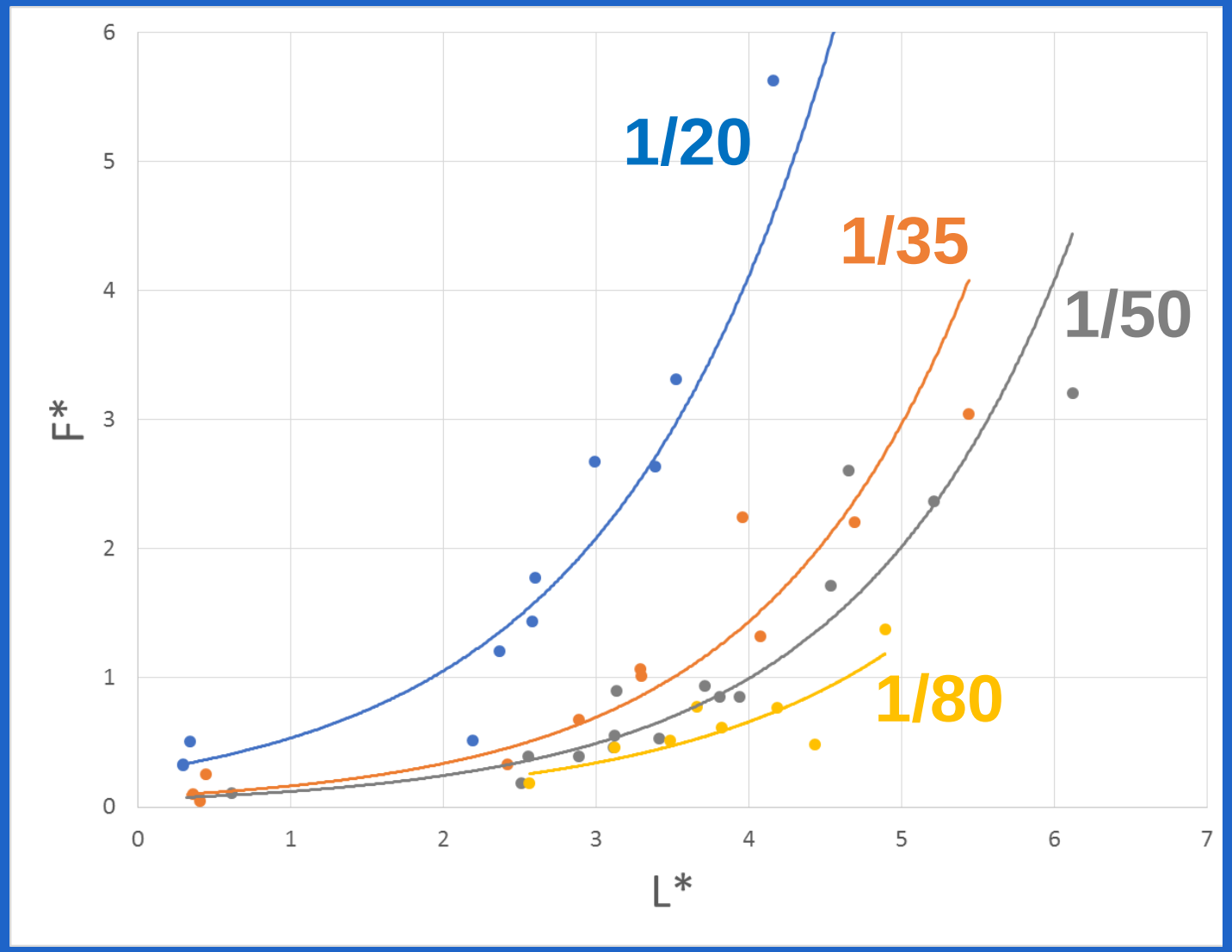
Wave overtopping

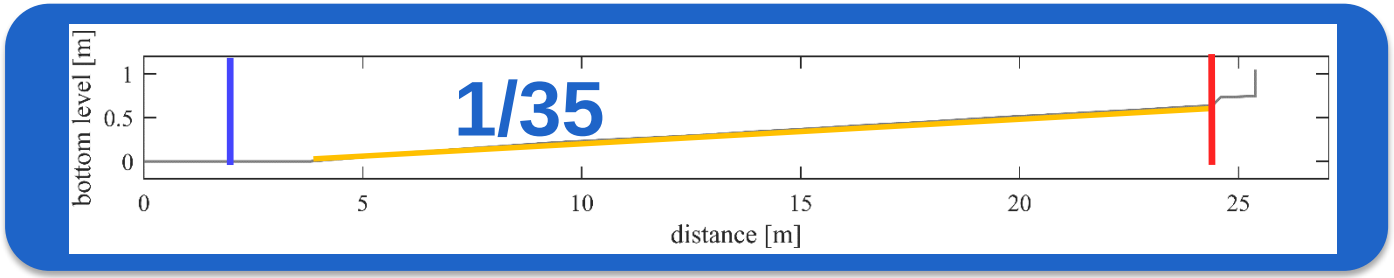
Wave forces

Effect of long waves and foreshore slope angle on wave impact

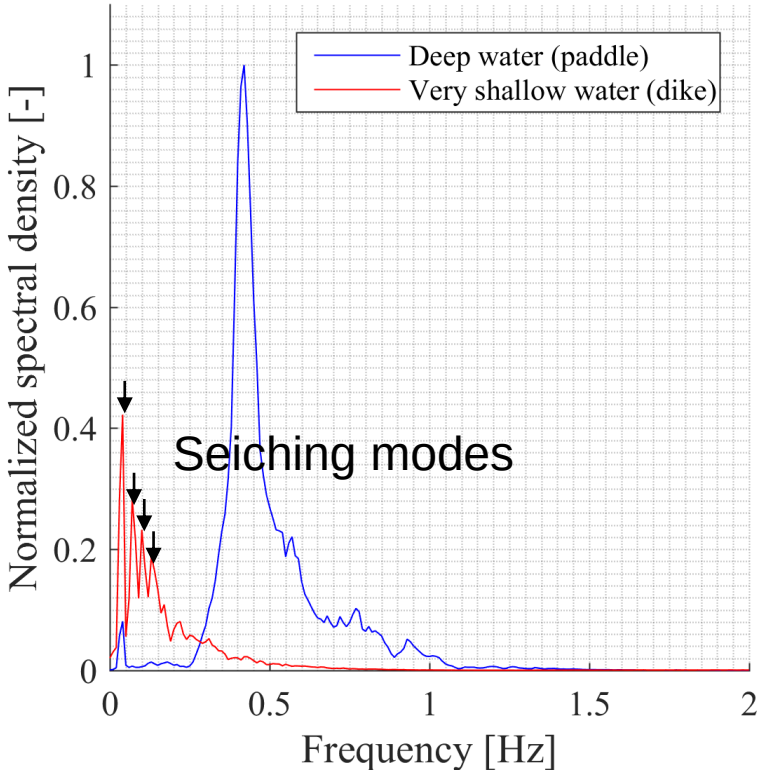


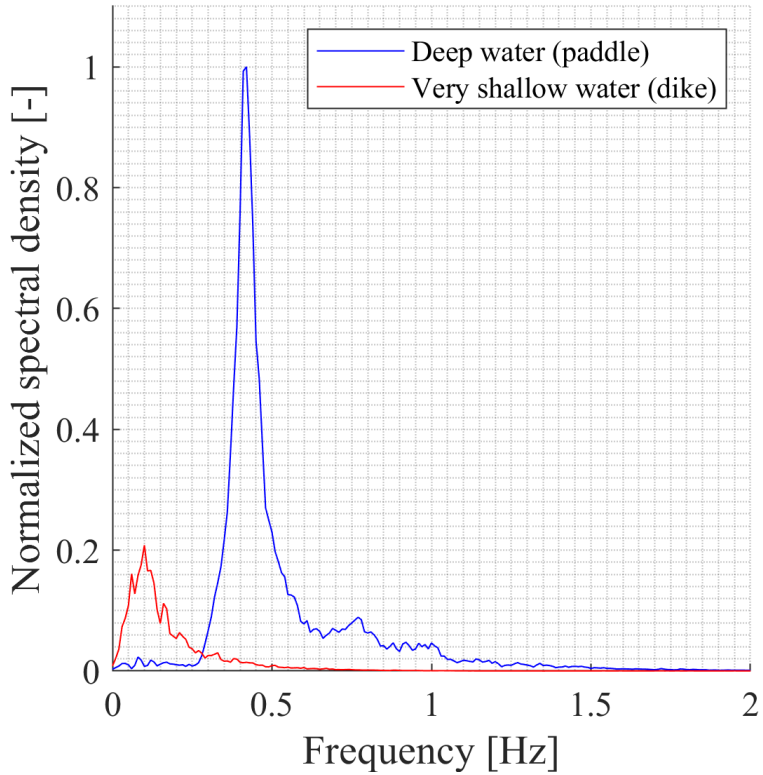
Effect of long waves and foreshore slope angle on wave impact





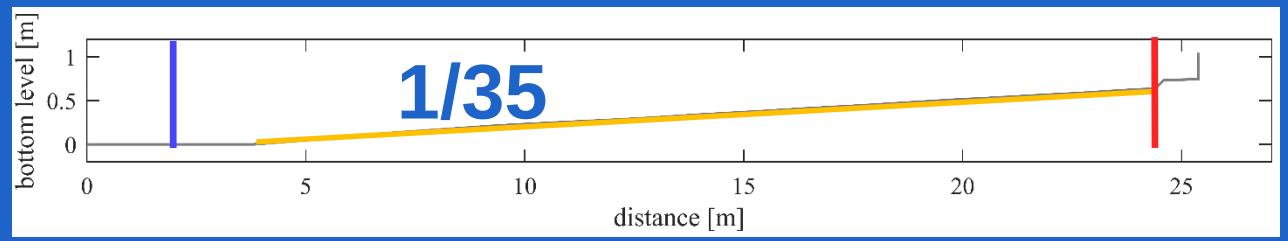
Absorption of reflected long waves



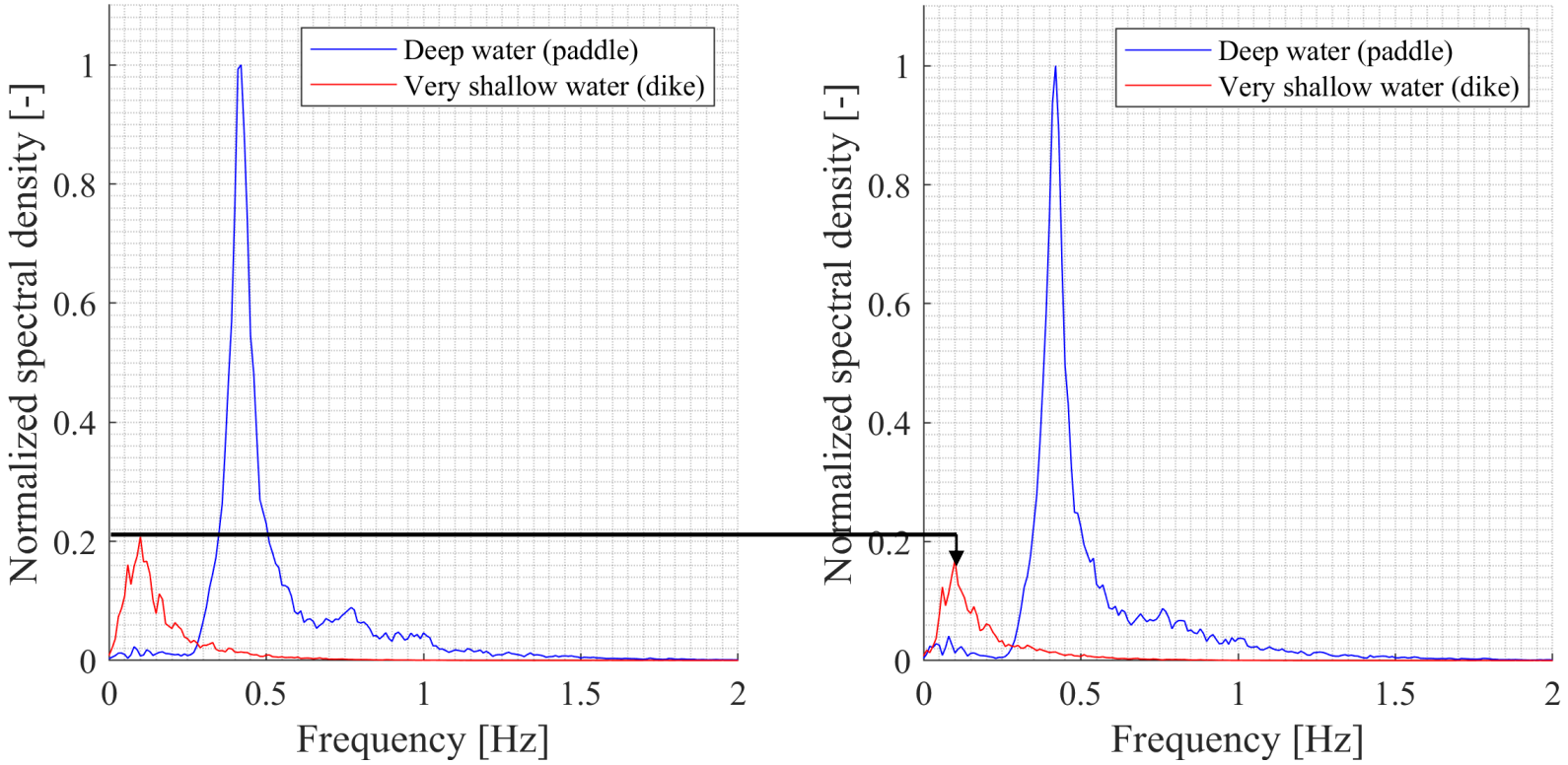


No absorption of long waves

Absorption of long waves



Order of wave generation



1st order wave generation

2nd order wave generation

Conclusions

1. Long waves play a very important role for wave impact on dikes with a very shallow foreshore, and more so for steeper foreshore slopes

2. Therefore correct modelling of long waves proved essential for this case: absorption of reflected long waves and 2nd order wave generation were necessary

Thank you for your attention!

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