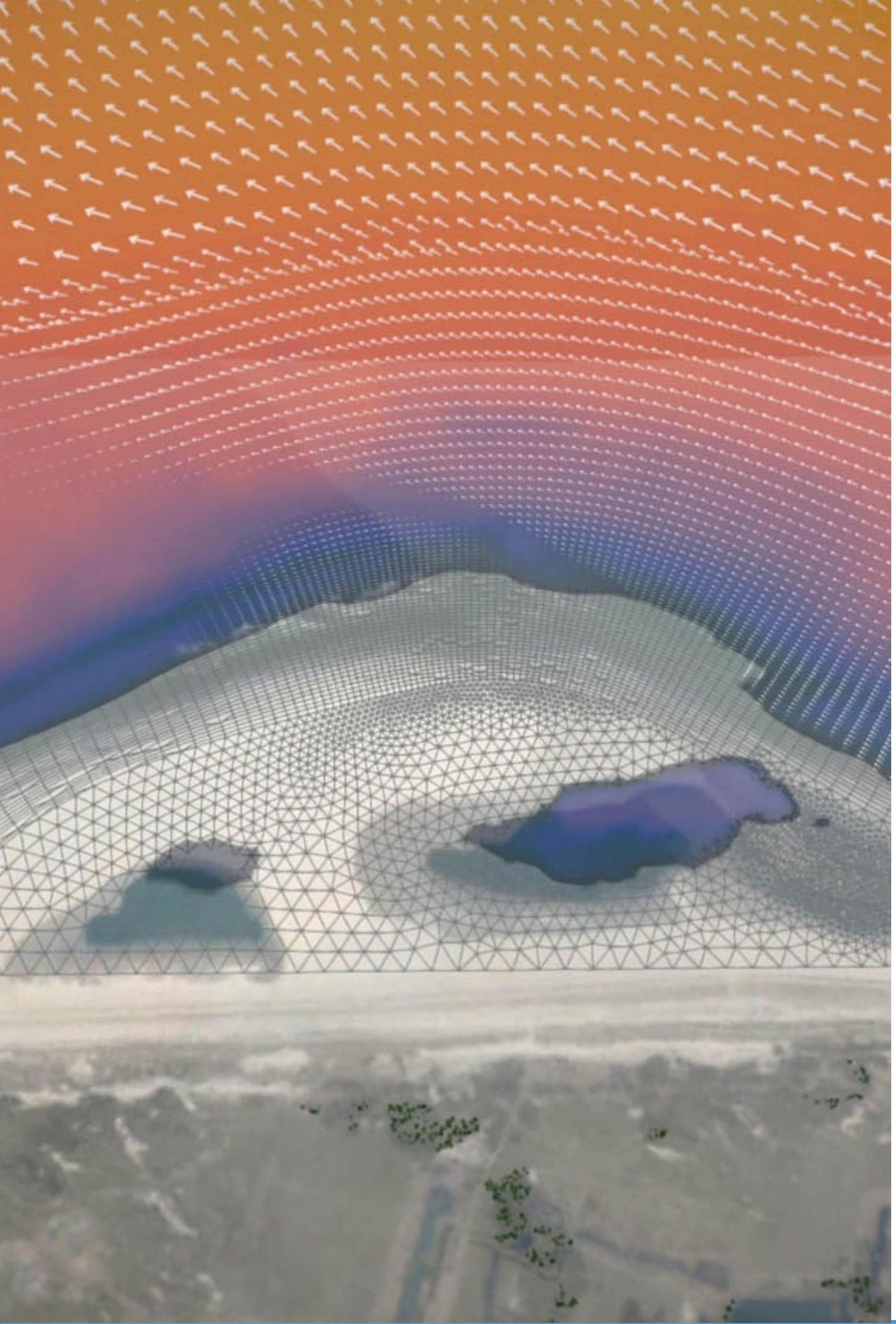


DIGISHAPE
DATASCIENCE FOR DELTAS

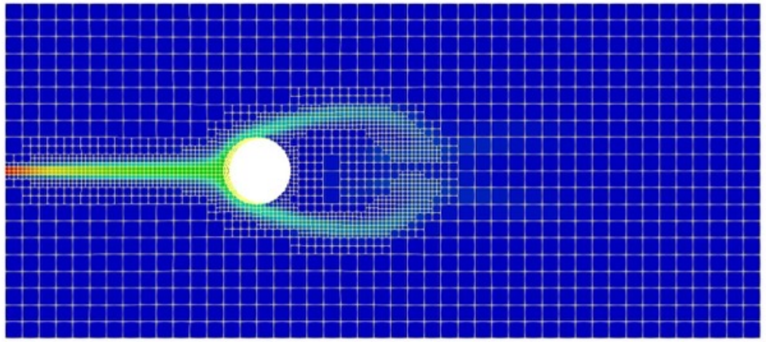
Emulators

FEDOR BAART (DELTARES)

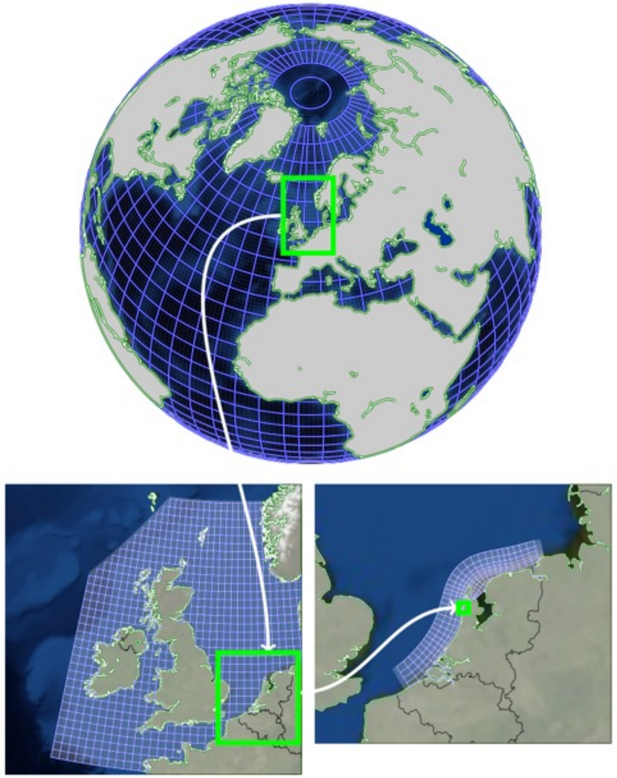
Goal: fast responsive models

src: 3di

Existing approaches



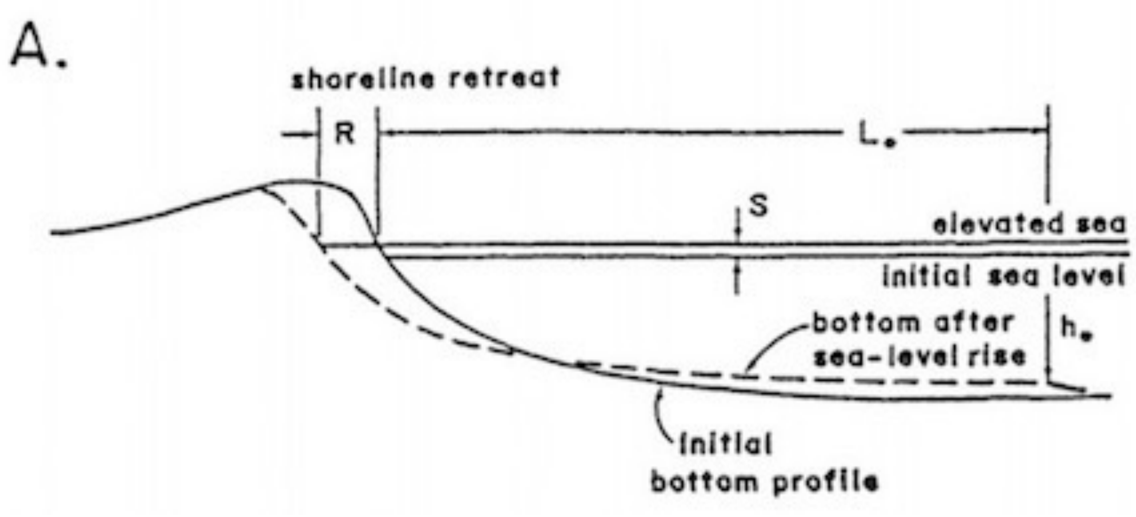
src: hollzmann-cfd



src: artell blender

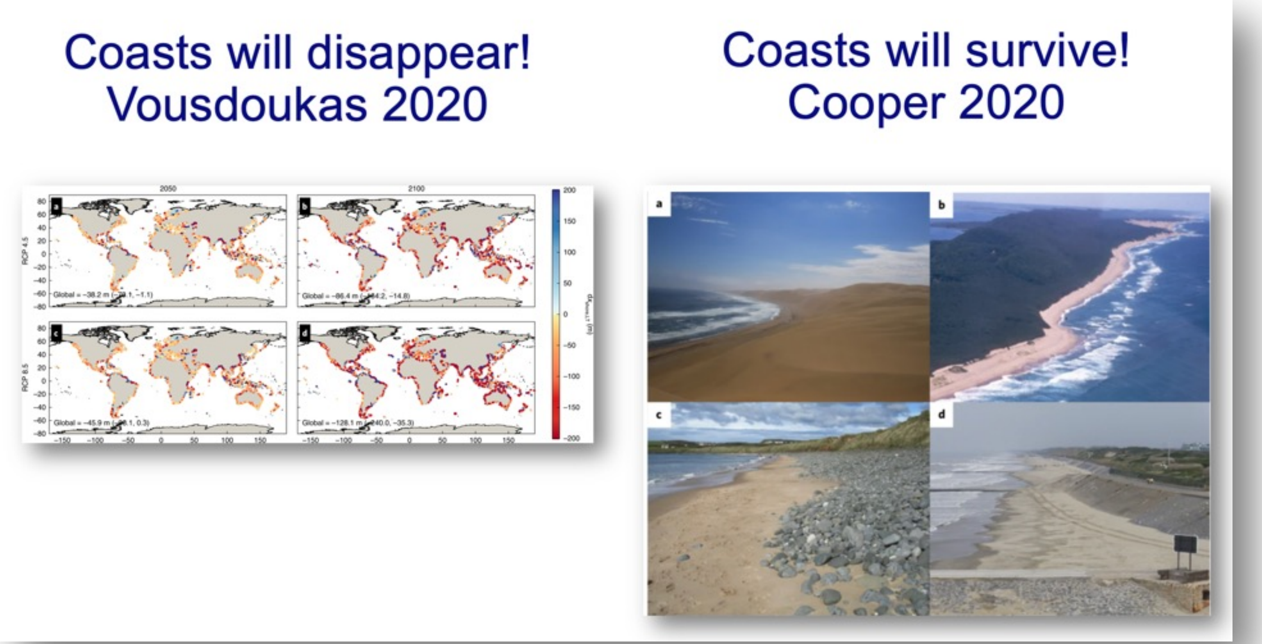
src: tomshardware

Empircal models



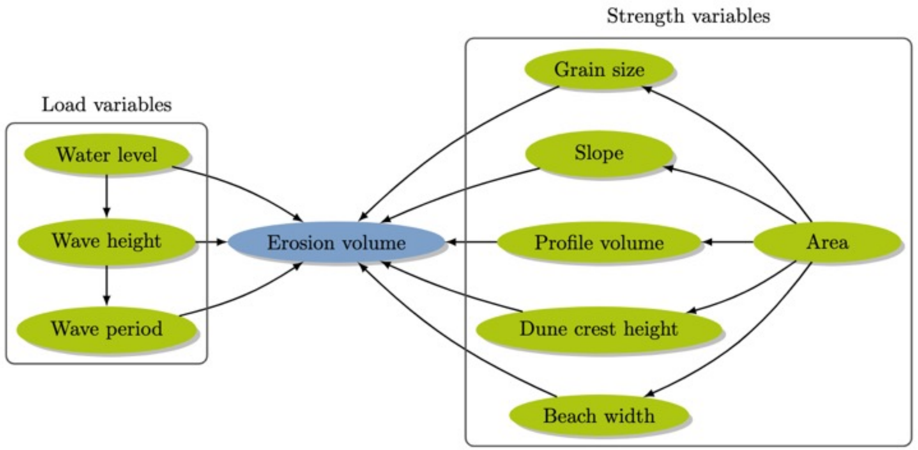
$$R = \frac{SL}{h+B} = \frac{S}{\tan\beta}$$

src: wikipedia

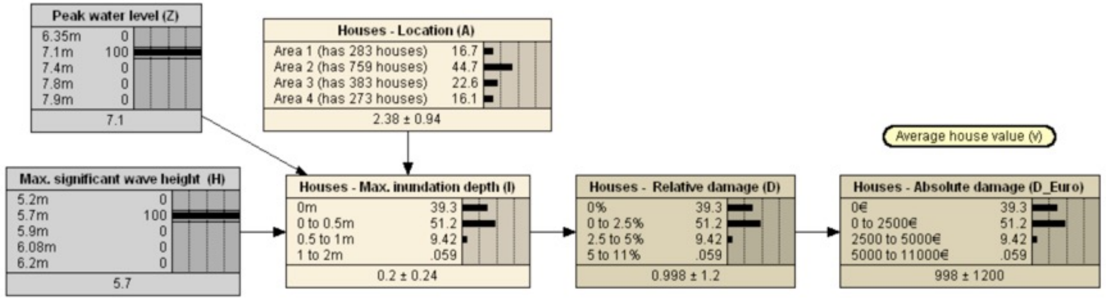


Surrogate models

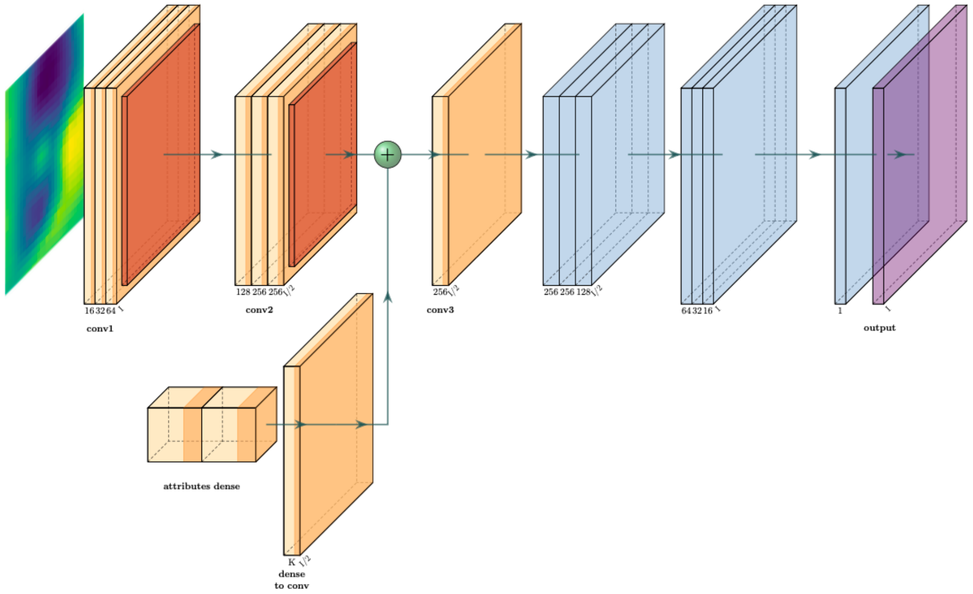
Emulators



src: den Heijer



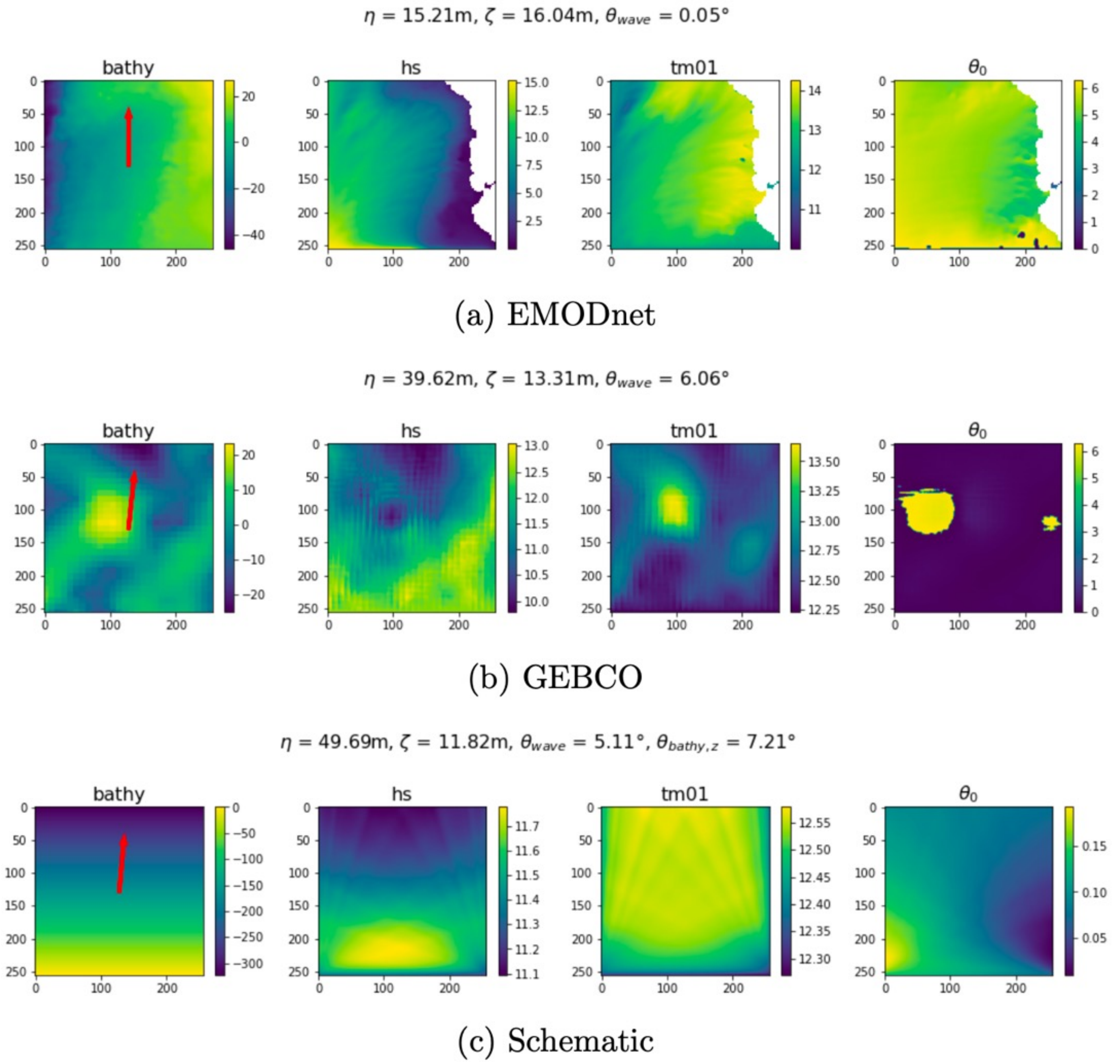
src: Jäger



src: van Hemert

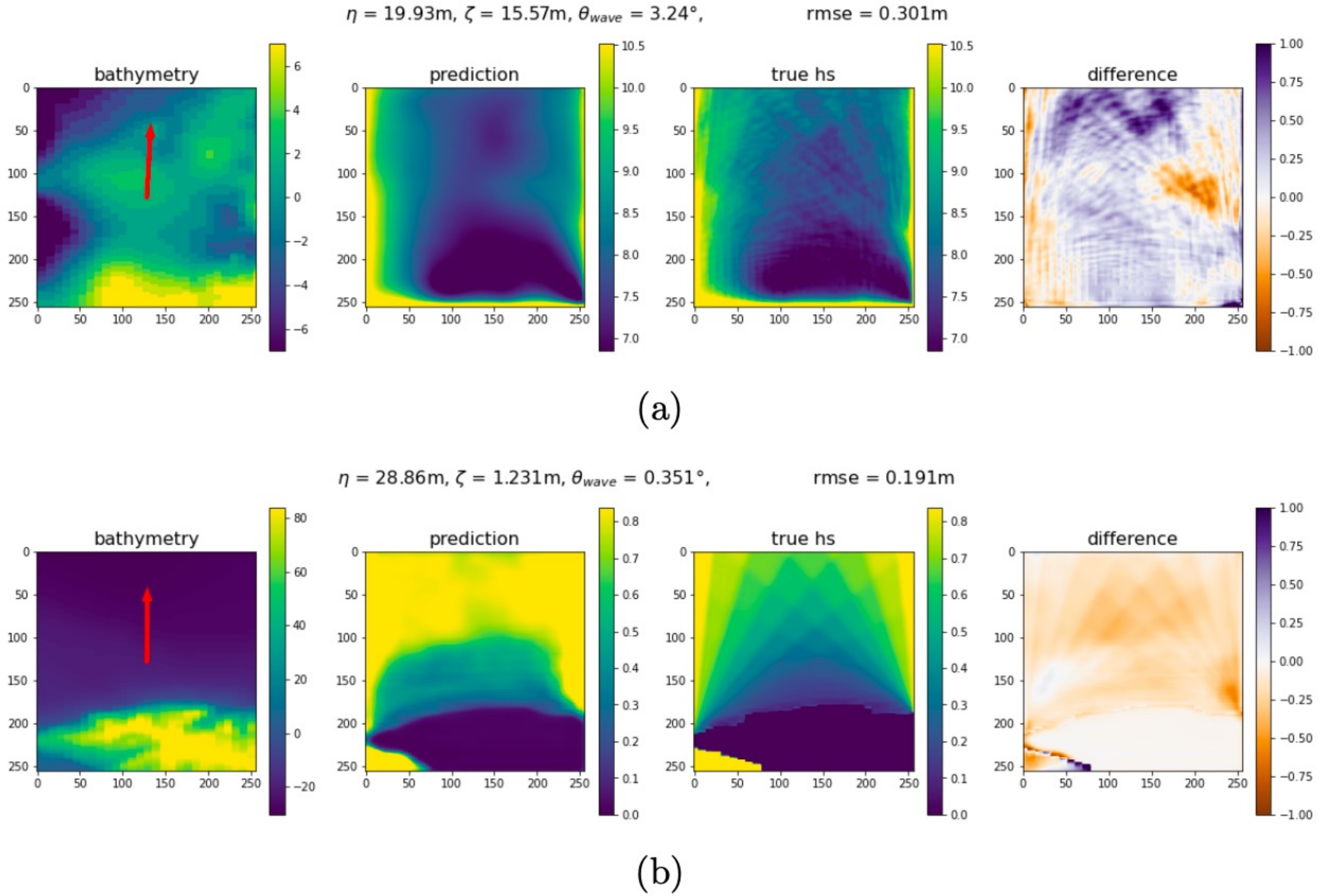
Input

20k SWAN models
6min per run



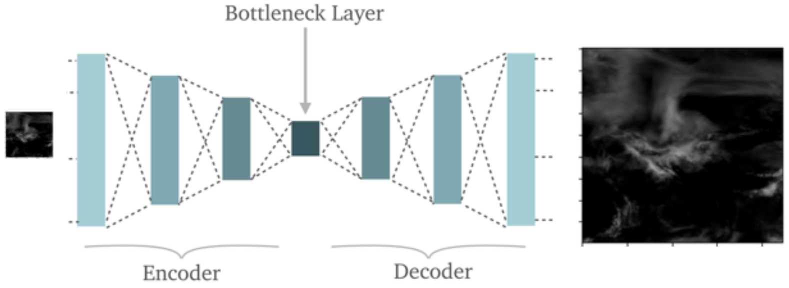
Frankfurt
GraphCore clusters

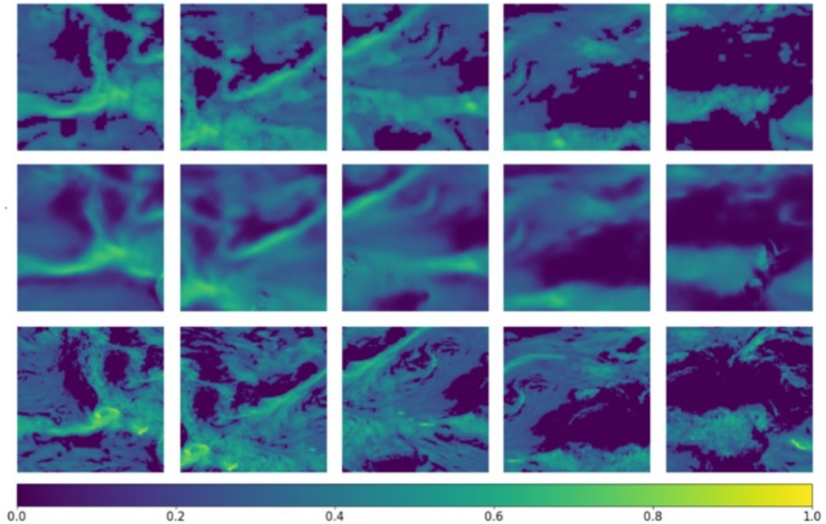
Output

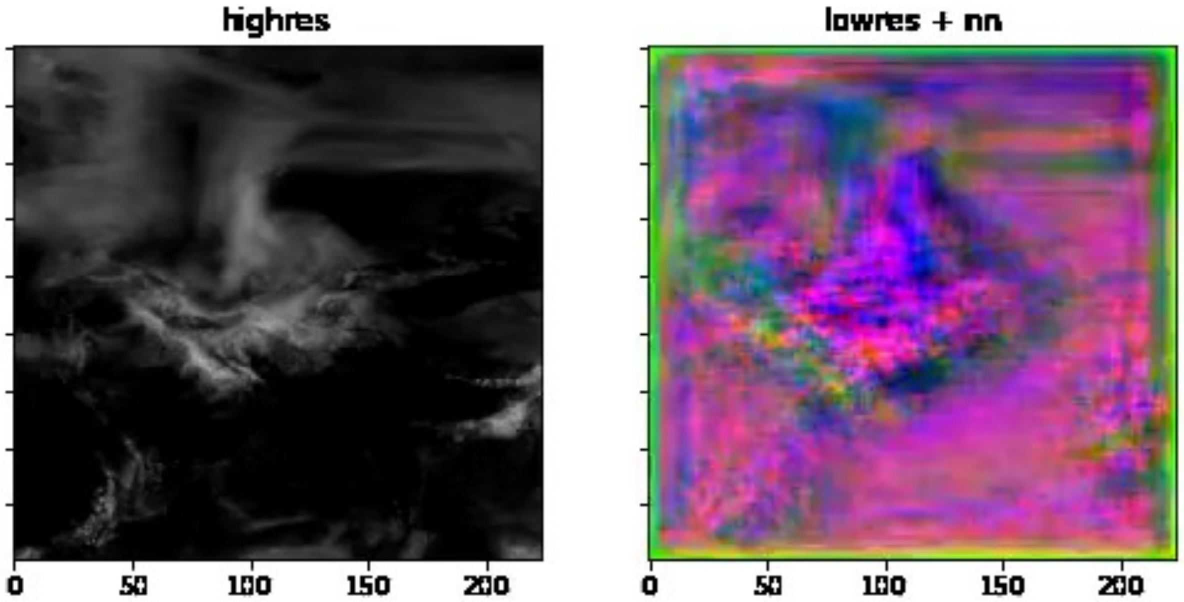


η = 19.93m, ζ = 15.57m, θ_wave = 3.24°, rmse = 0.301m
bathymetry
prediction
true hs
difference
(a)
η = 28.86m, ζ = 1.231m, θ_wave = 0.351°, rmse = 0.191m
bathymetry
prediction
true hs
difference
(b)

Add resolution







Src: Avelon Gerritsma

Emulators

Pro:

- Fast
- Simple to use (just inputs)

Con:

- Hard to create (weeks – months)
- Only as a good as the original