# A stereoscopic view on the coast

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# Introduction

## Fedor Baart

PhD thesis: Operational forecasts of morphological effects of storms

## Links

http://graphics.tudelft.nl
http://www.openearth.nl
http://www.micore.eu

# Goal of today

## Visualization of coastal data

How can we use 3D scientific visualization to add extra insight for coastal applications? What is the extra value of stereoscopy?



Figure: Policymaker using stereoscopy to examine scientific results.

# Dataset 1: The Rhine ROFI

## PhD thesis of Gerben de Boer

Published in "On the interaction between tides and stratification in the Rhine Region of Freshwater Influence" de Boer (2009)
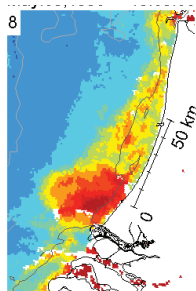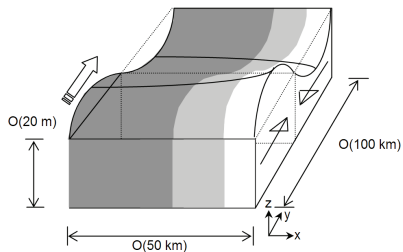


Figure: Kelvin wave (left) and sea surface temperature in the North Sea (right)

# Dataset 1: The Rhine ROFI

## Facts and figures

Size: 2GB

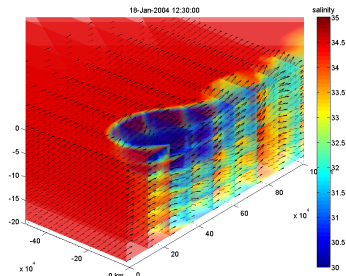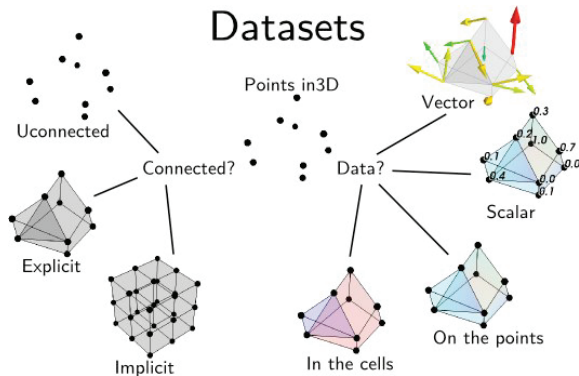Grid size: $155 \times 235 \times 16 \times 77(cross \times along \times sigma \times time)$



Figure: Original visualization

# Technique

## Techniques used for visualization

Software: netCDF & python & VTK & Mayavi
Model: Delft3D

# Dataset 2: Vluchtenburg LiDAR

## Facts and figures

Location: Vluchtenburg
Size: 15GB
Points: 20 million



Figure: Chopper with lidar attached

# Technique

## Techniques used for visualization

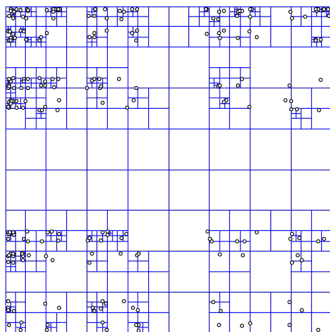Software: OpenSceneGraph & gdal & python



Figure: Geospatial tiling using a quadtree

## Conclusions

- 3D scientific visualization is easy to use
- Fast rendering visualizations require moving of logic to GPU
- Stereoscopy has added value mainly in high "3D intensive" visualizations
- Making 3D interactive applications provide with better insights into data with high dimensionality