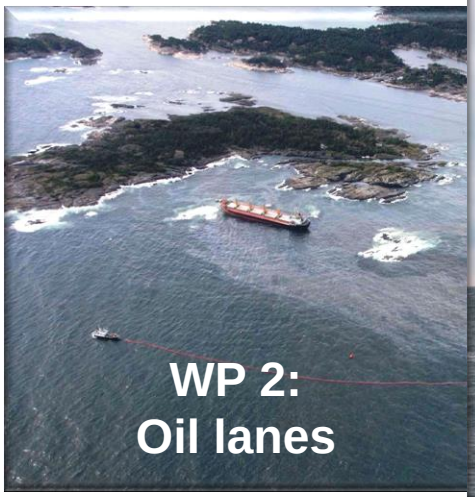
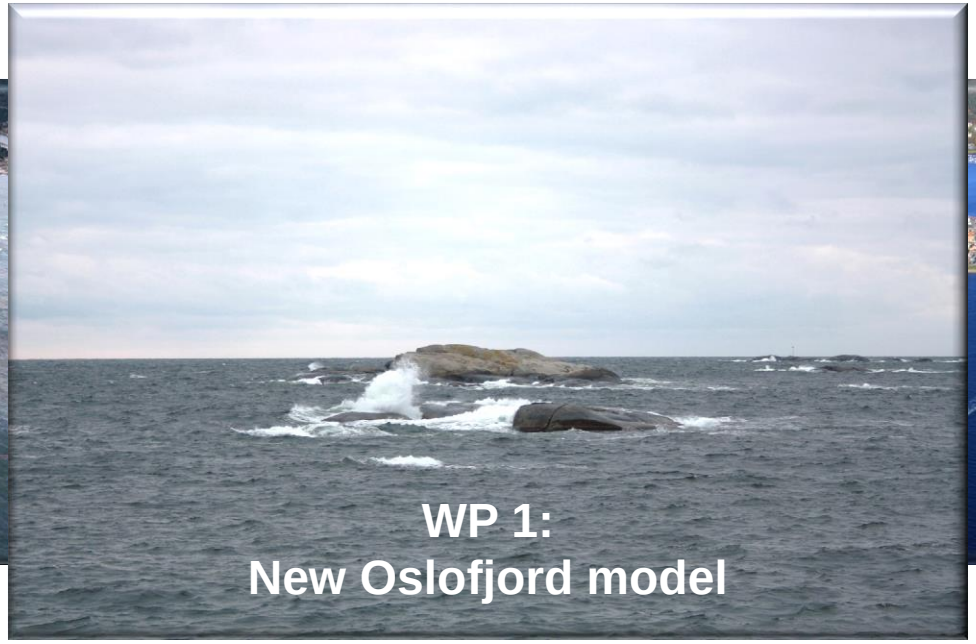
# Refined ocean models for the Oslofjord systems

3 year project





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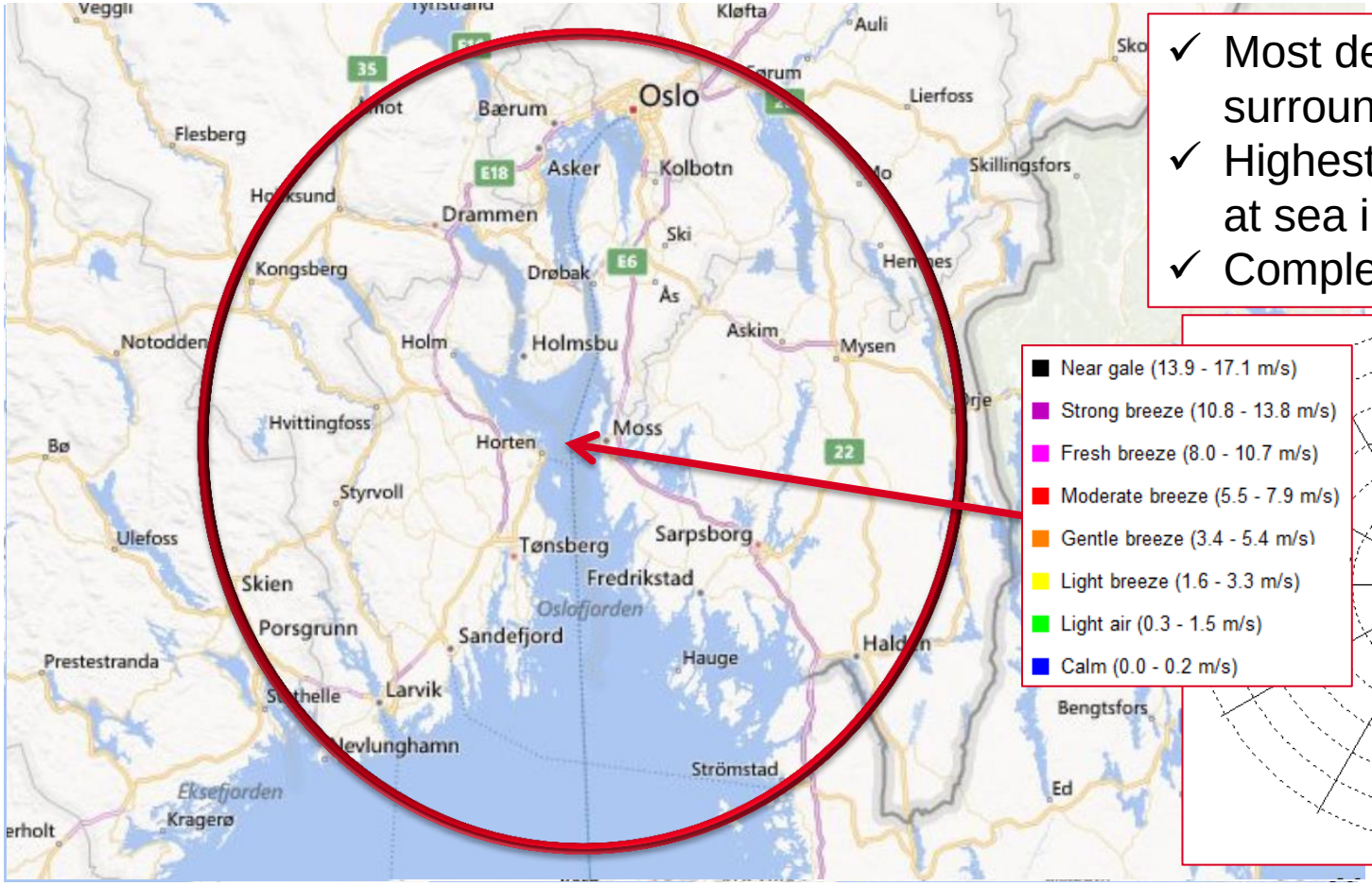
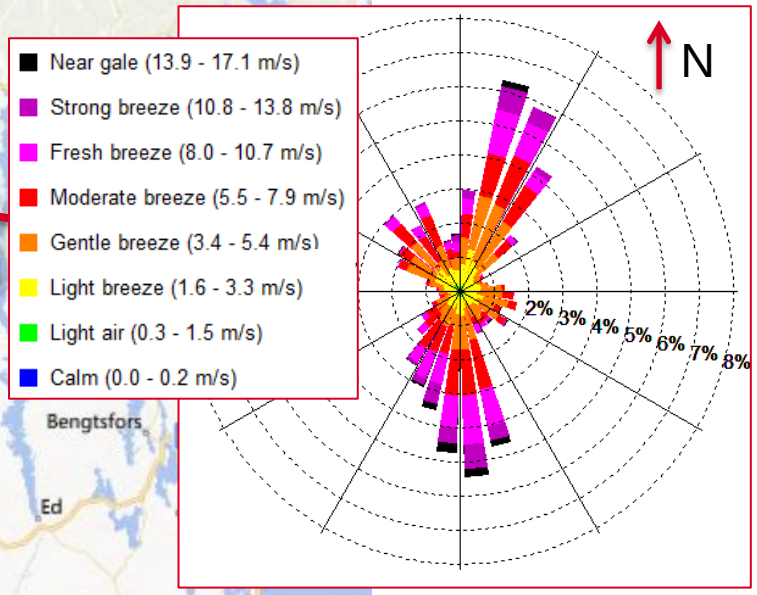
# Outline

- Motivation
- Different grids
- Preliminary results
- Ongoing work
- Summary

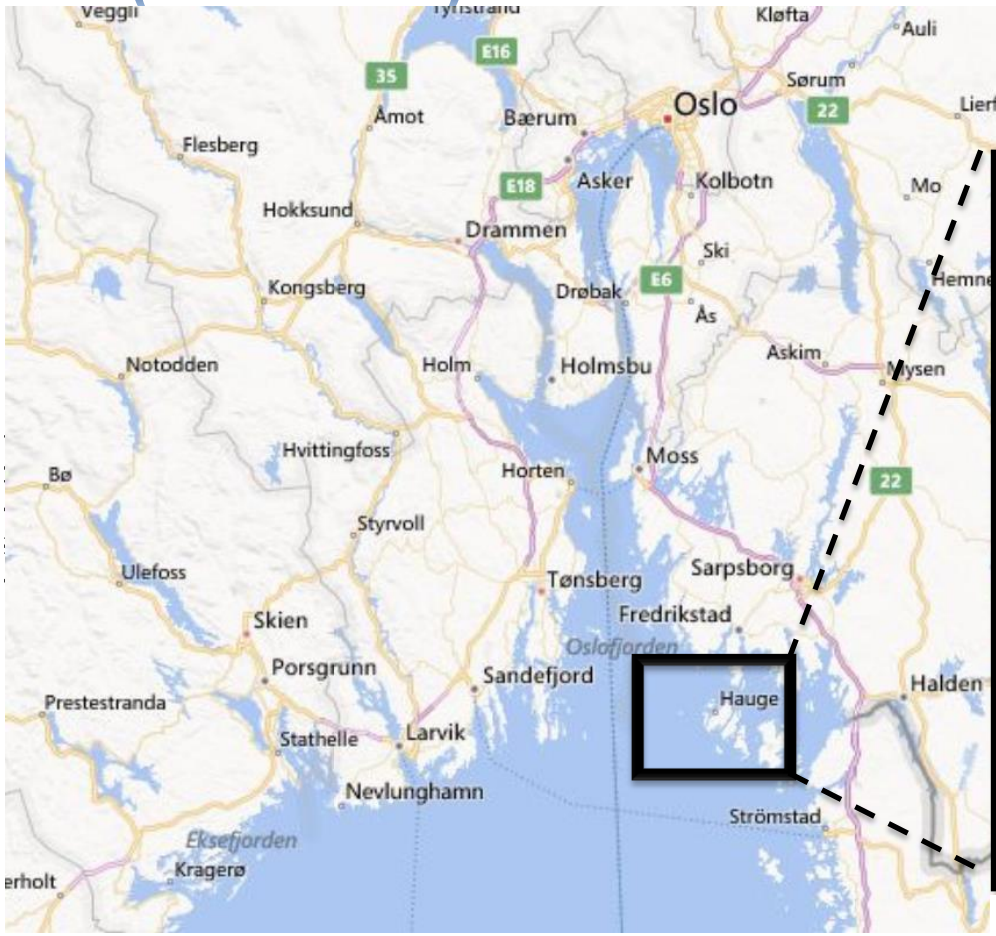
# Area of interest – The Oslofjord

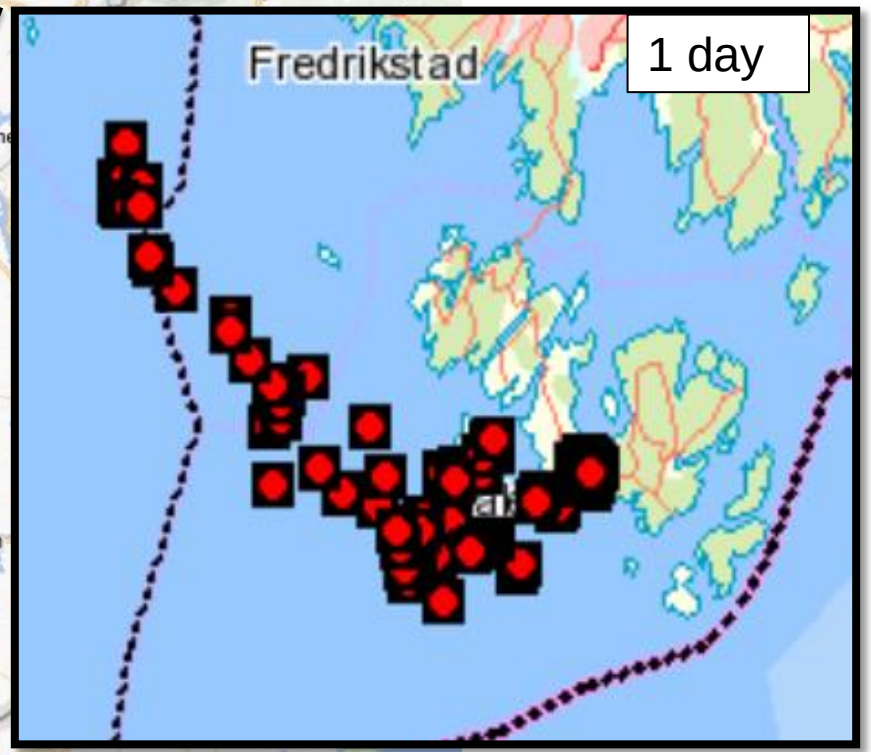



- ✓ Most densely populated surroundings in Norway
- ✓ Highest risk of accidents at sea in Norway
- ✓ Complex topography



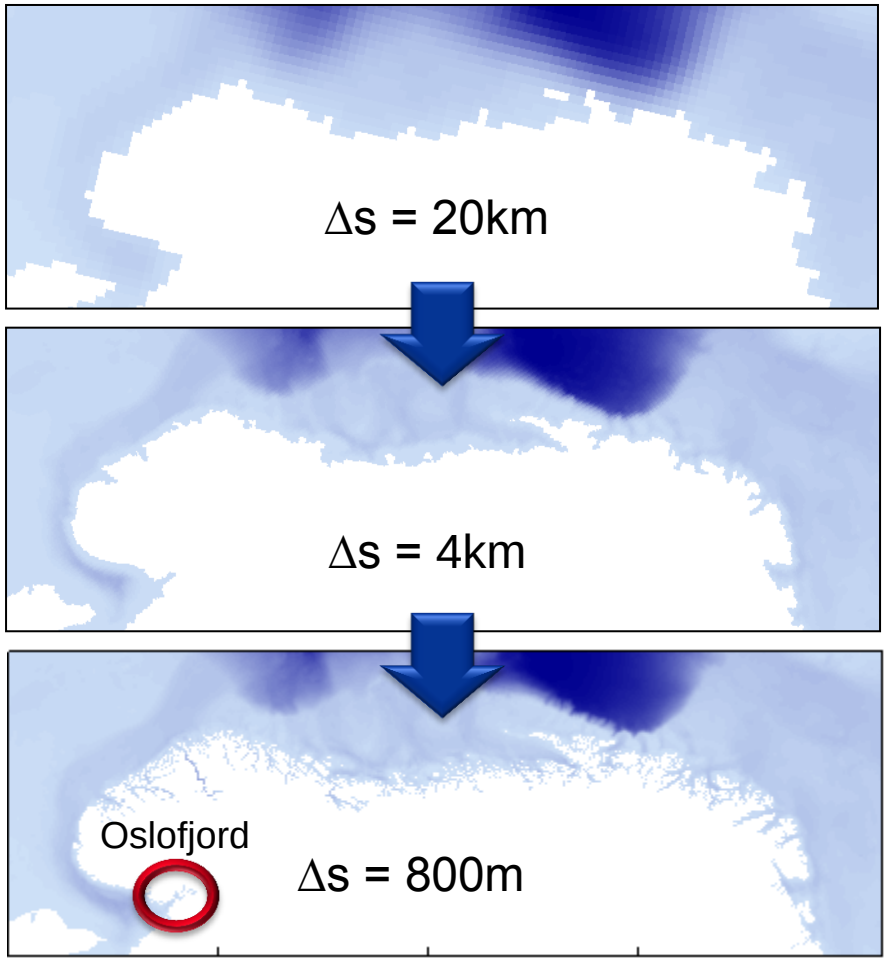
# Godafoss accident (2011-02-17)

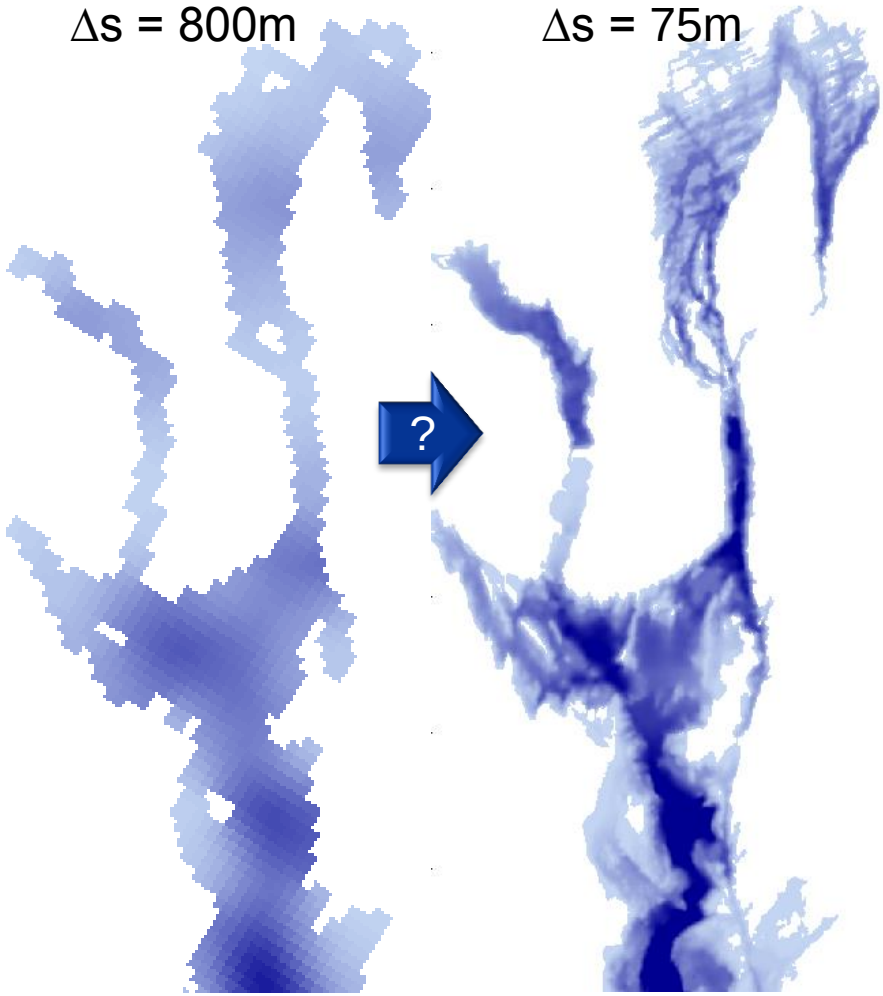



Observations by Norwegian Coastal Administration

# Norwegian coastline

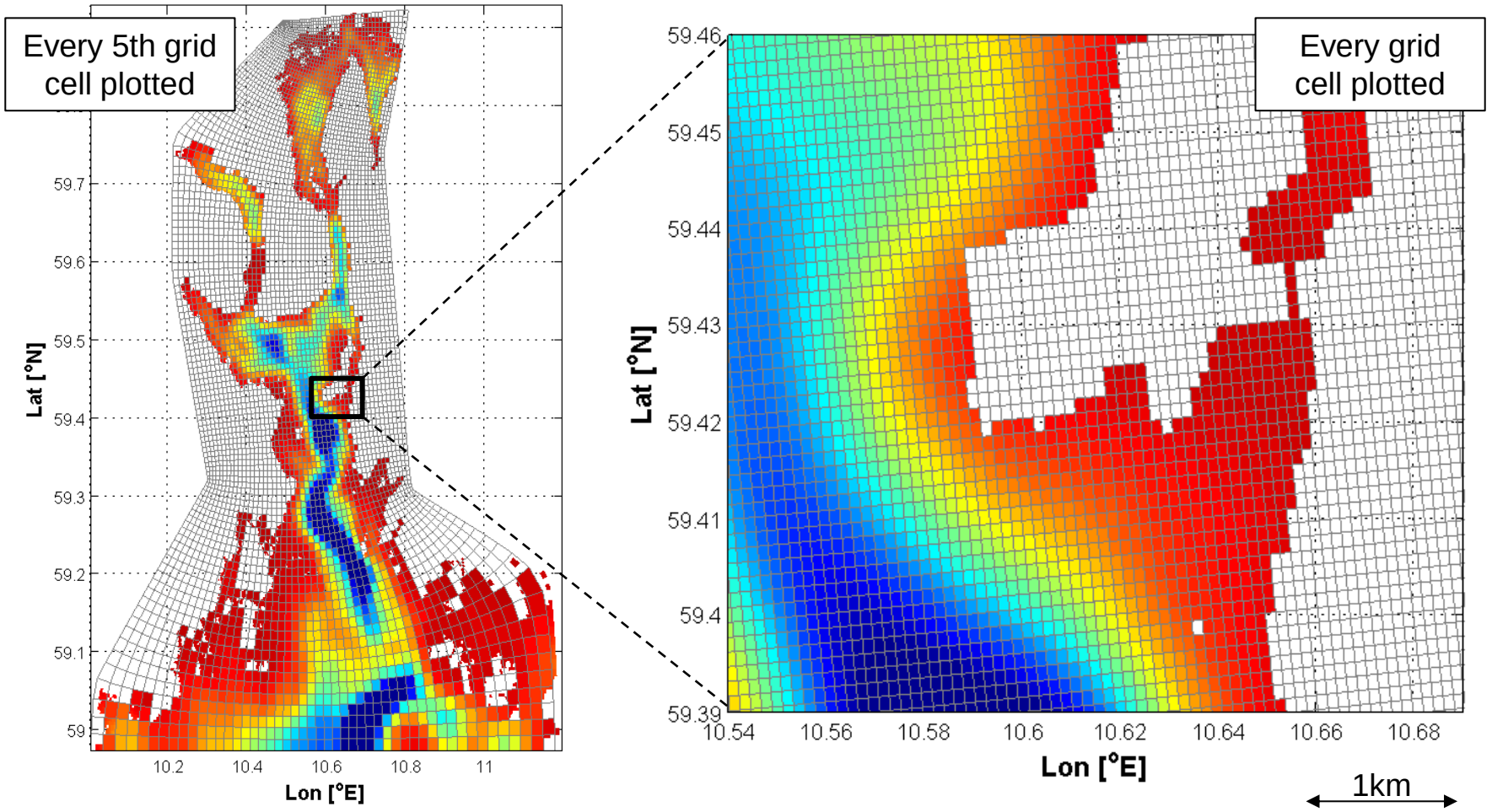


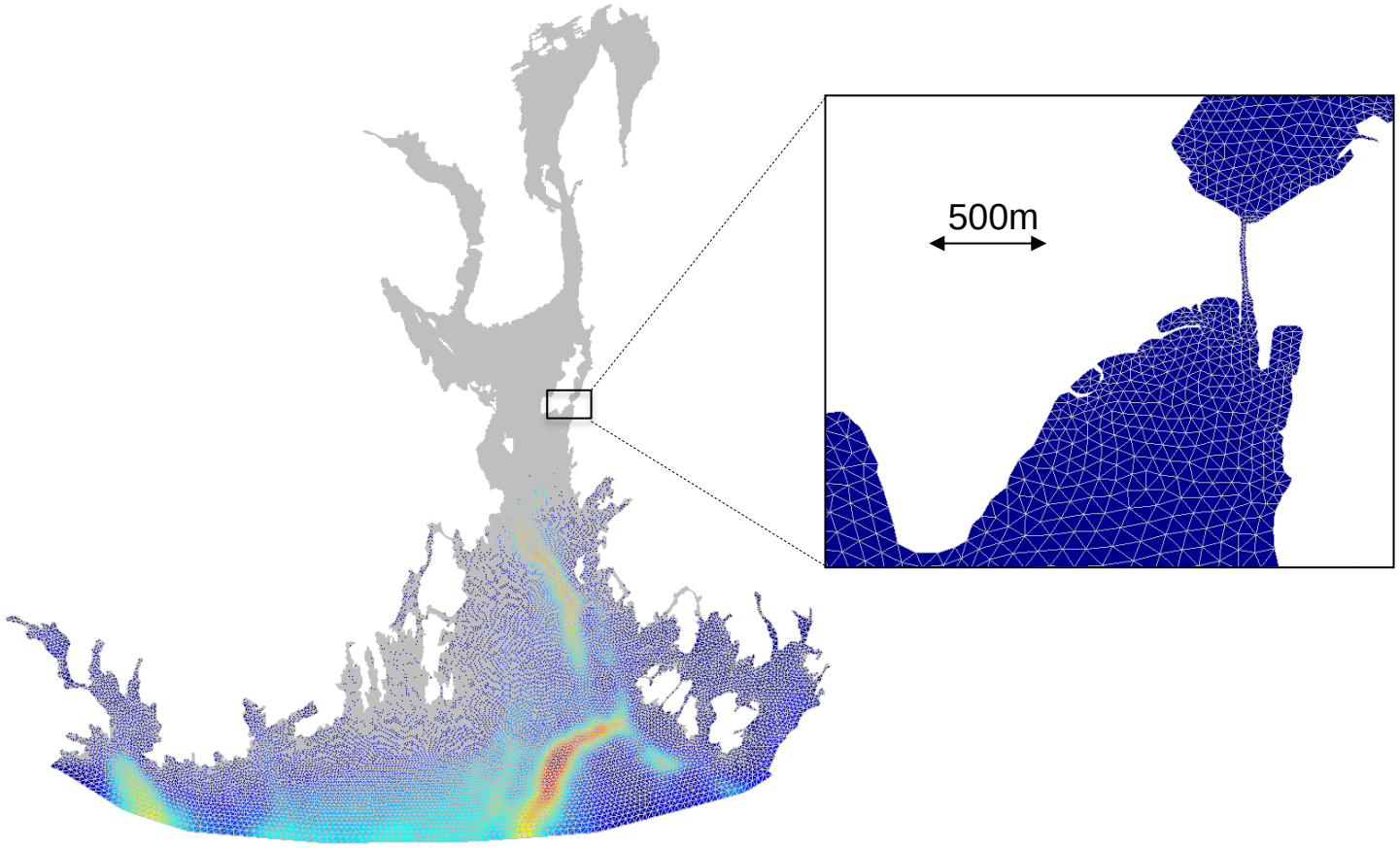

1000 km

10 km

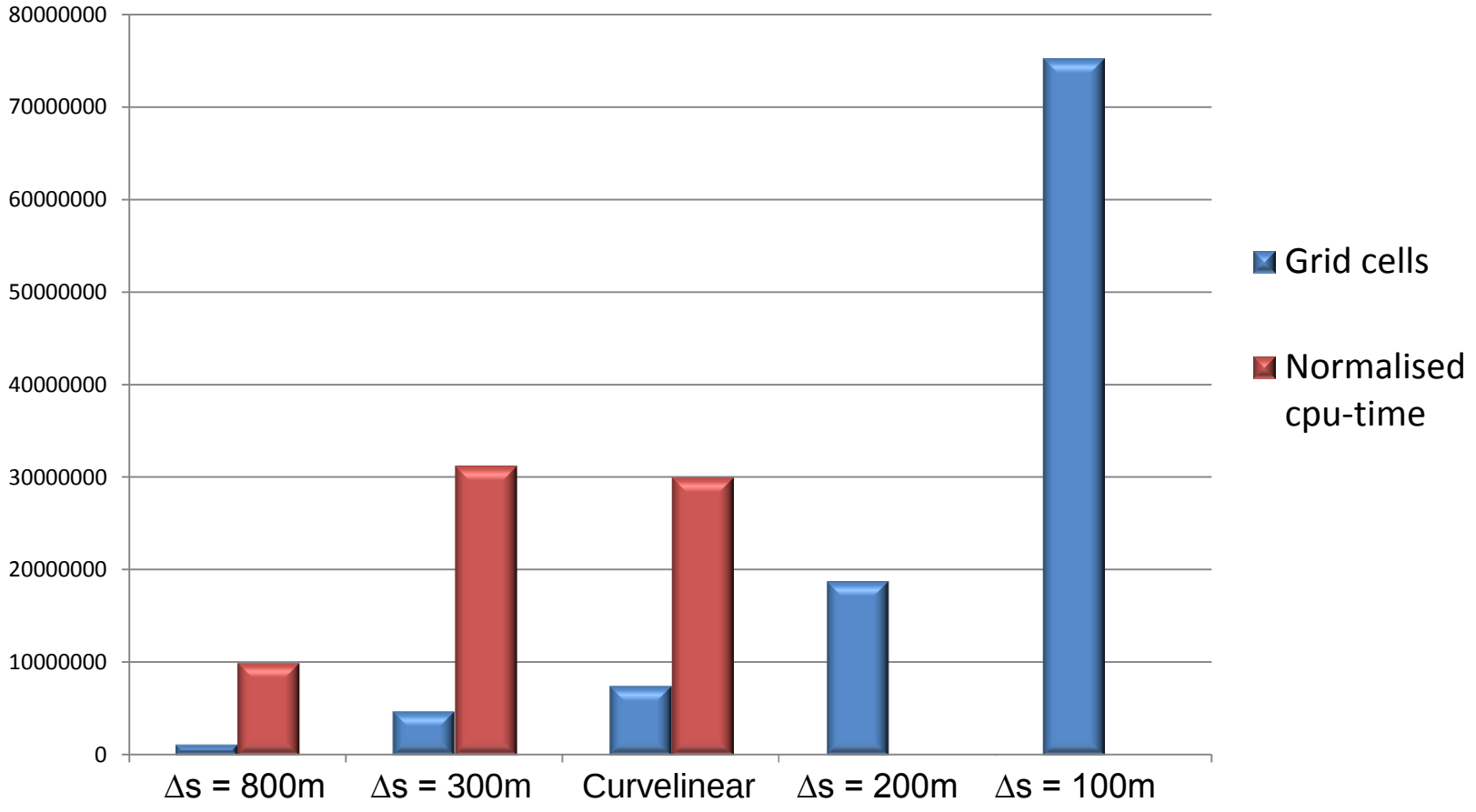
# Curvelinear grid



# Triangular grid

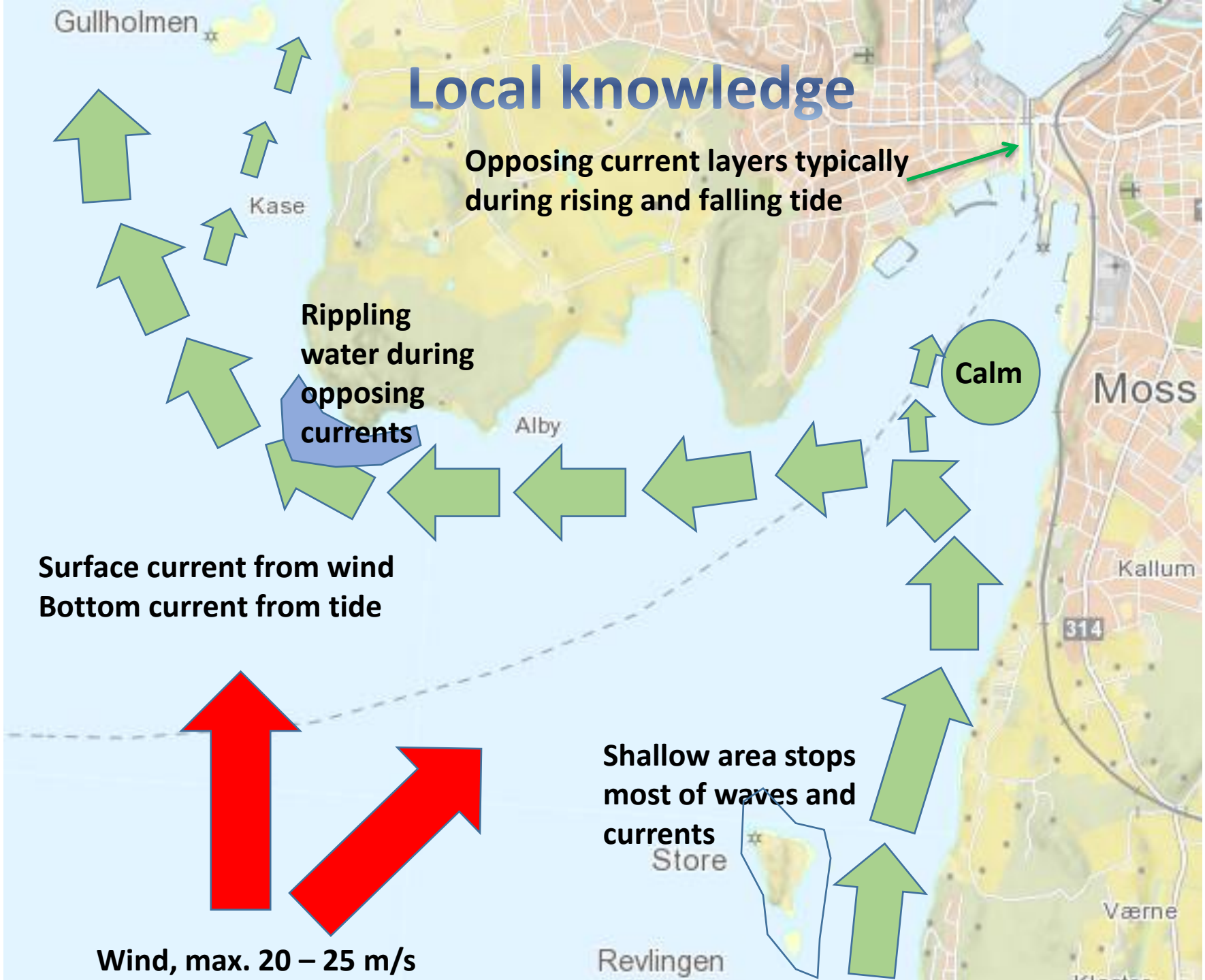


# Number of grid cells and cpu-time



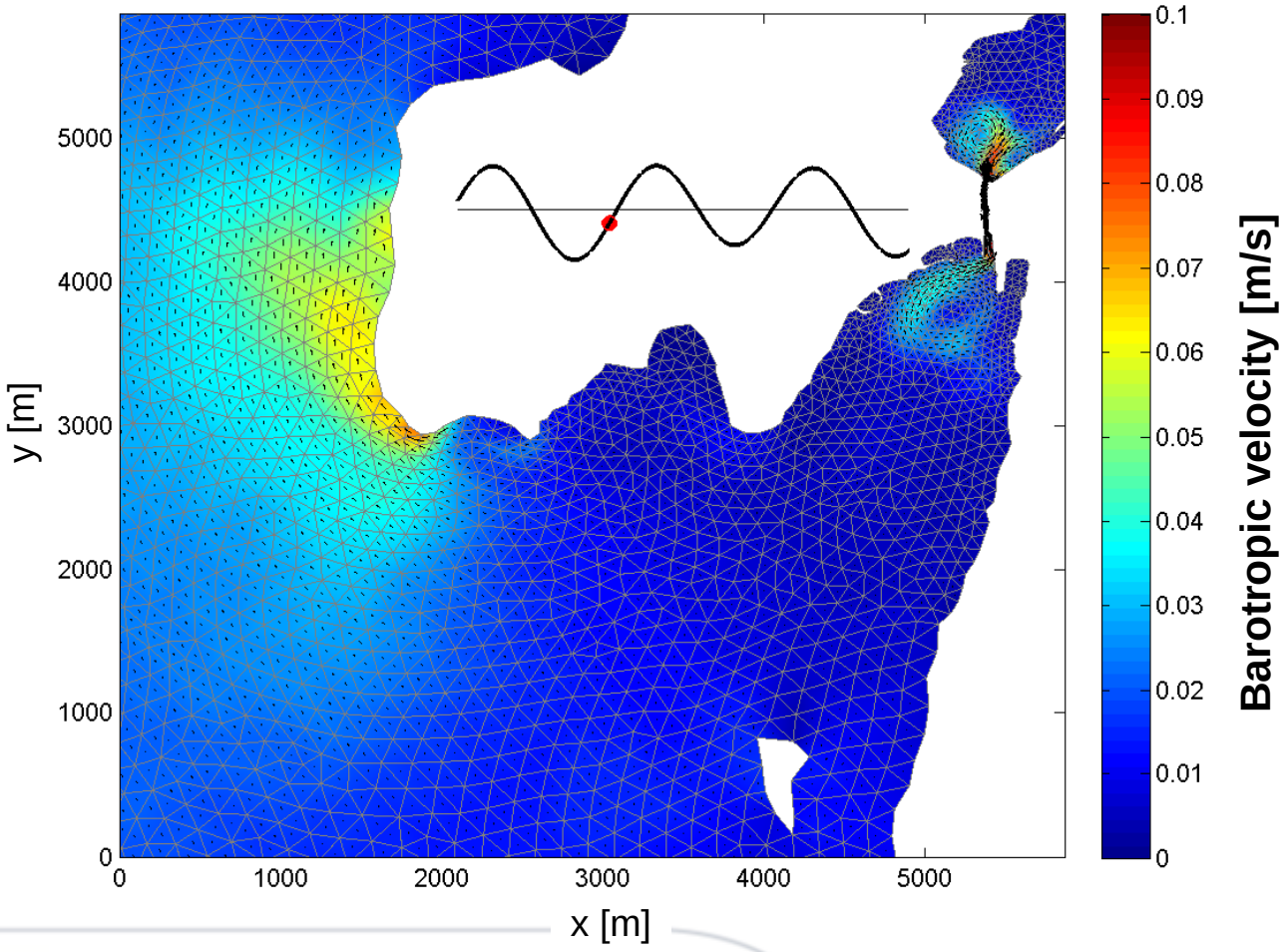
# Harbour design

Moss harbour


Local knowledge
Opposing current layers typically during rising and falling tide
Rippling water during opposing currents
Calm
Surface current from wind
Bottom current from tide
Shallow area stops most of waves and currents
Wind, max. 20 – 25 m/s
Gullholmen
Kase
Alby
Moss
Kallum
314
Store
Værne
Revlingen

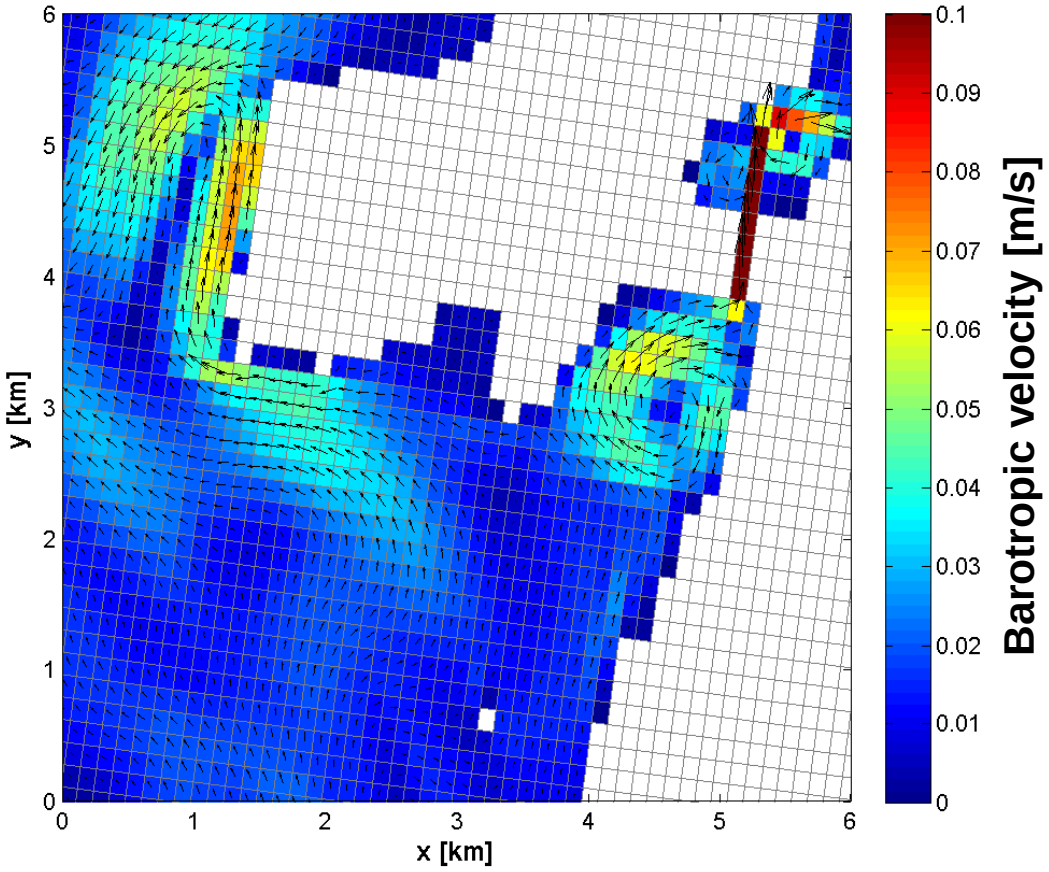
# FVCOM – triangular grid

## 2D simulations driven by tide only



# ROMS – curvelinear grid

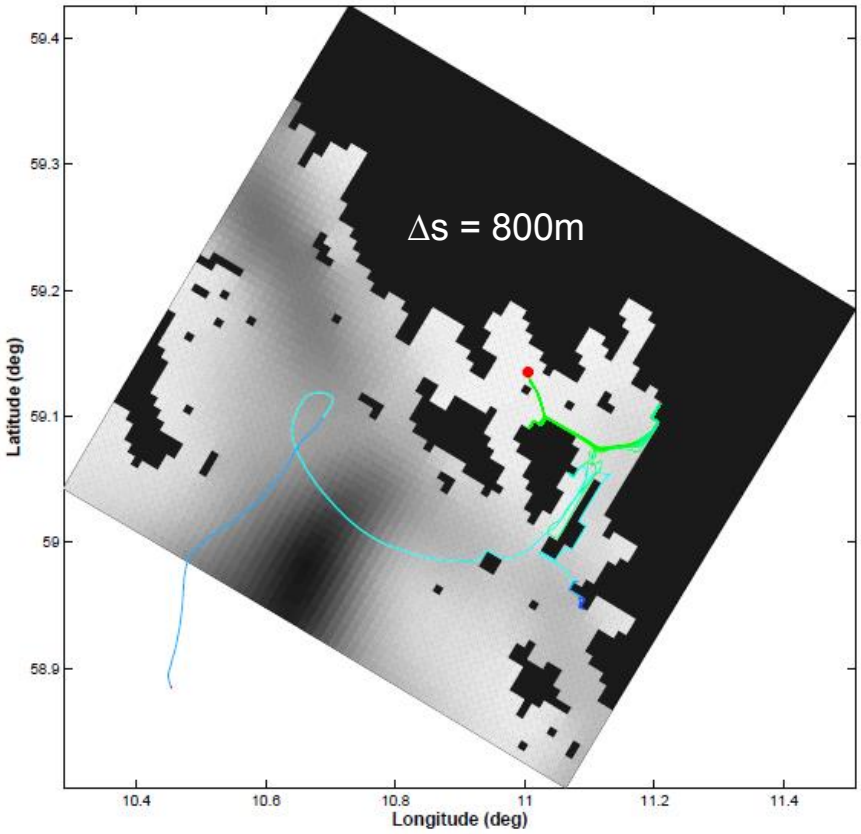
## Test 3D simulations driven by tide only

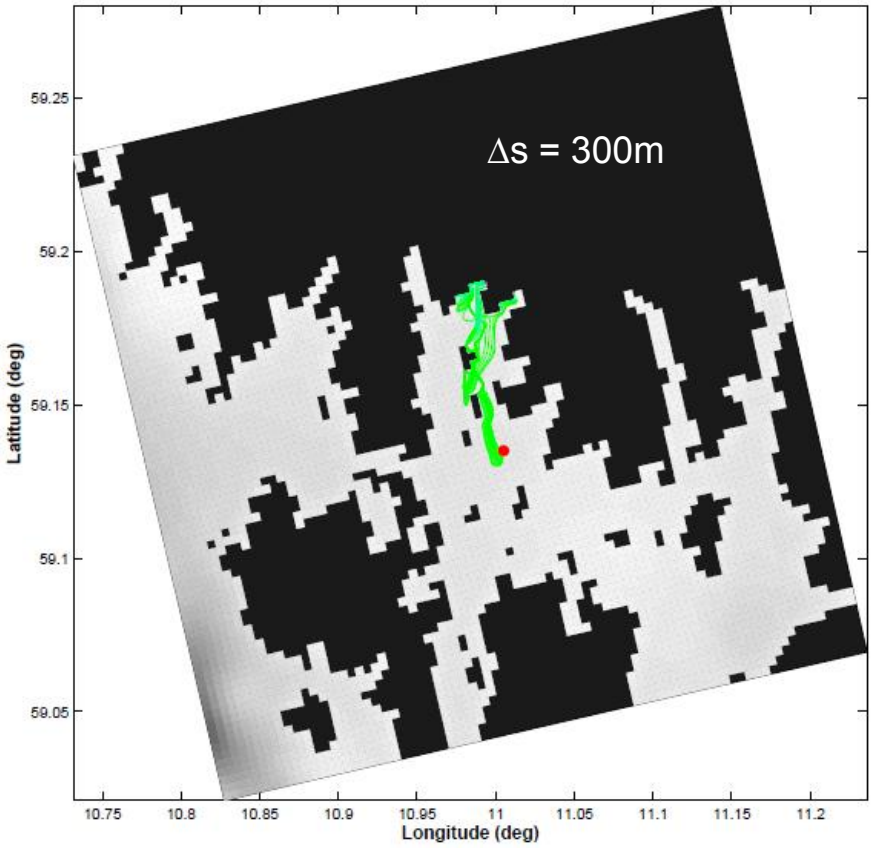


# Ongoing work

- Development and tests of different models with different grid resolutions
- Comparisons of models with different grids
- Evaluation of results using observations
- Impact on trajectories

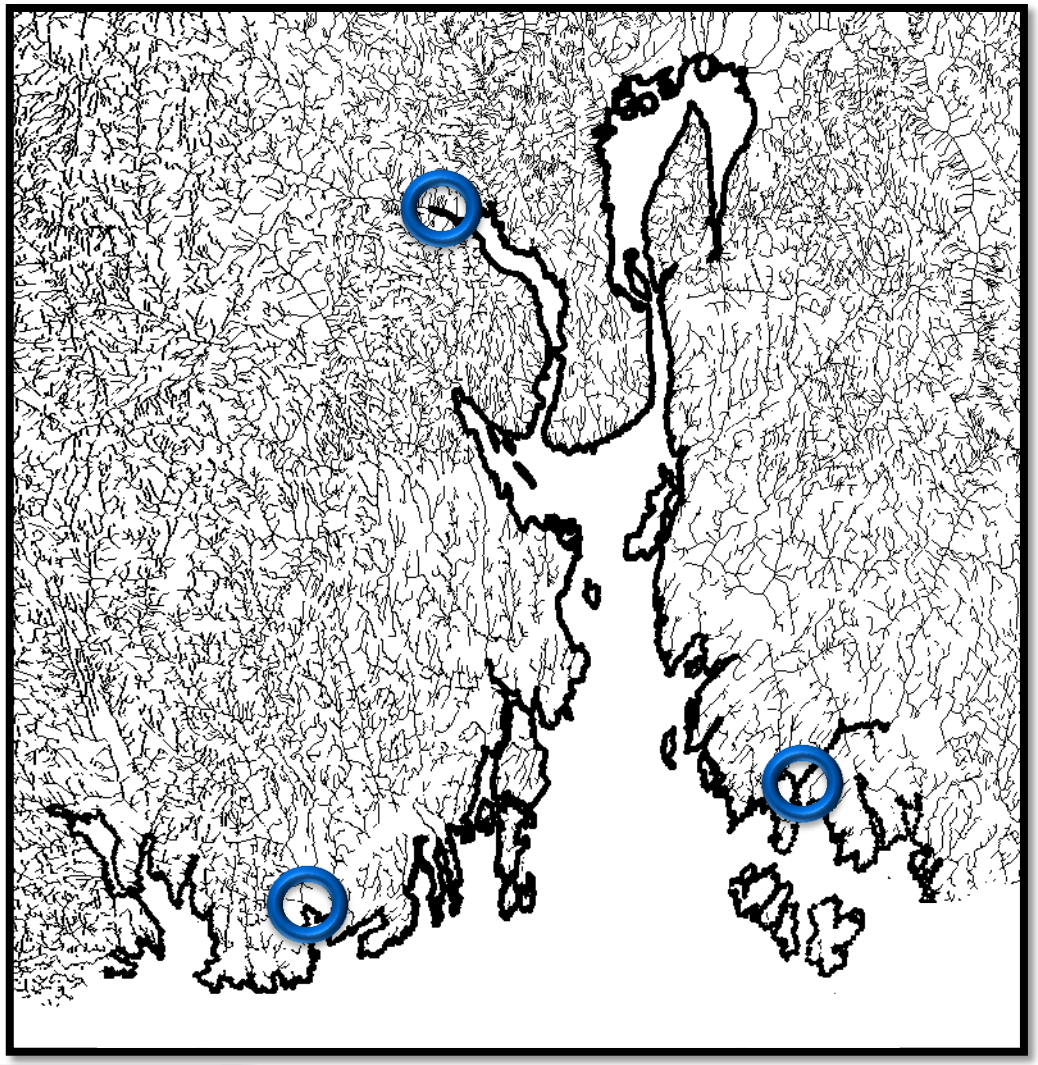
# Trajectories



# Rivers

- Several fresh water inputs:
  - 3 large rivers
  - 48 registered rivers
- Stratified waters



# Summary

- Need for accurate and quick forecast of drifting paths inside fjords
- Several models are being developed for the same area
- Included the users of the model in the project