

MARINE LANDSCAPES

- Topographic and Coastal physiographic features of the Baltic Sea

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Denmark
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Outline

1. Introduction

- Definitions
- Starting shot

2. Topographic features

3. Coastal physiographic features

4. Discussion

- Challenges
- Landscape – Habitat
- 3 ML approaches

5. Conclusions



Introduction

Seabed ML: Seabed and water at the interface

- Benthic features
- Topographic and bedform features

Coastal ML: Seabed and water column are closely interlinked

Landscape – generic term, includes features



Starting shot

Landscape list:

- Estuaries
- Bays and lagoons
- Sounds
- Archipelagos
- Fjords

- Plains
- Mounds
- Sea troughs
- Basins
- Valleys and holes
- Slopes

Coastal
landscapes

**Conspicuous
marine features
that have
familiar names**

Topographic and
bedform features

Topographic and bedforms features

– Methods I

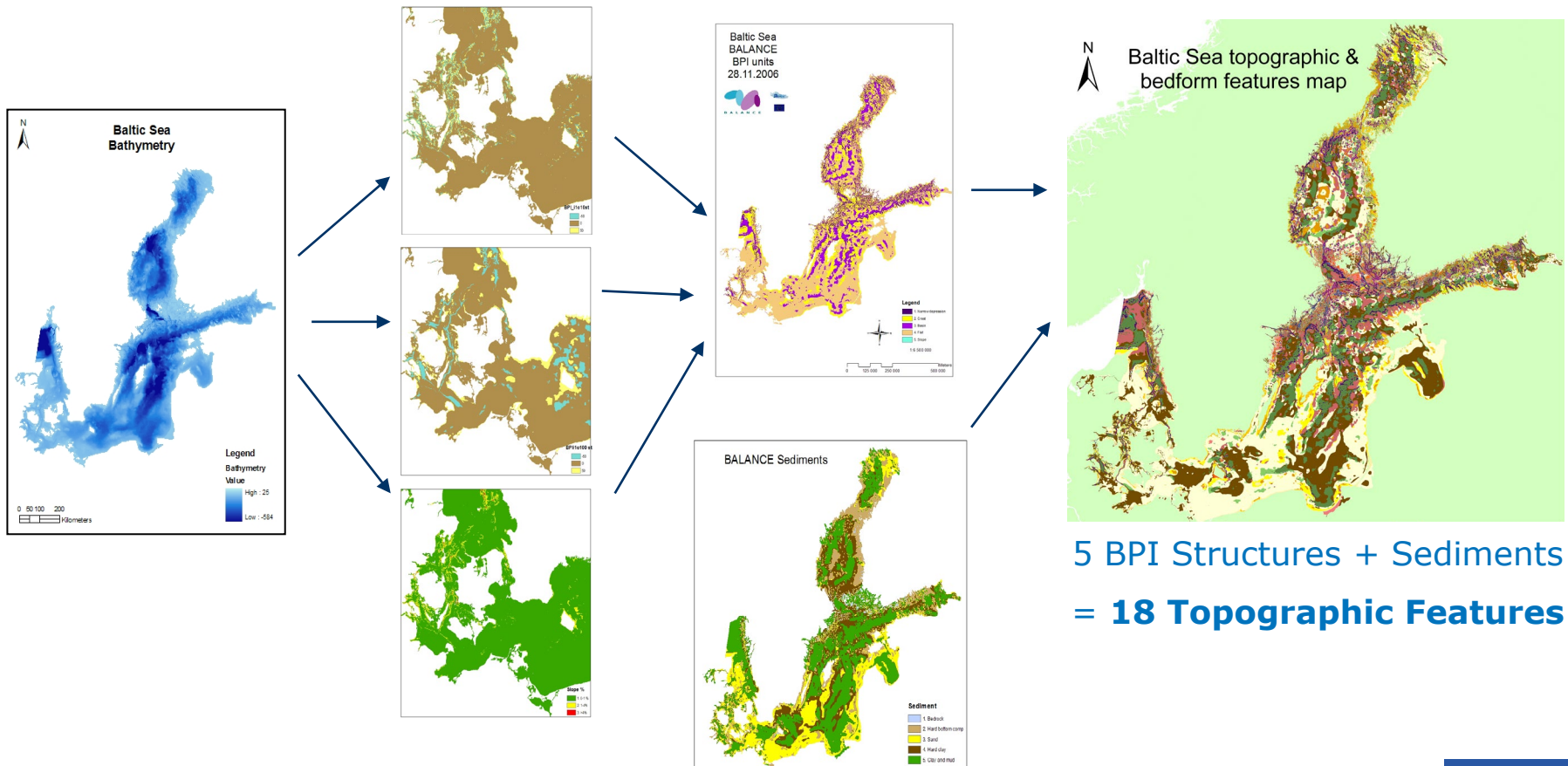
Depend on bedforms (e.g. plain, basin), no data available

Benthic Terrain Modeller (BTM)

- Bathymetric Position Index (BPI)
 - Differences in topography
 - Fine & broad scale BPI and slope
 - 5 BPI features/structures
 - Visual validation

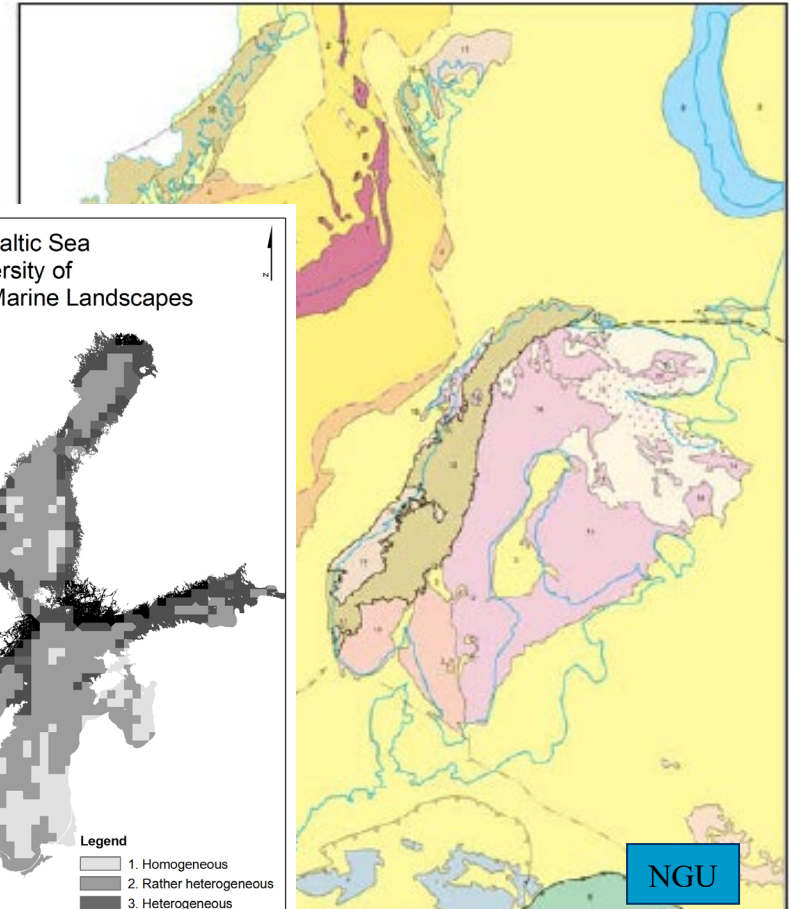
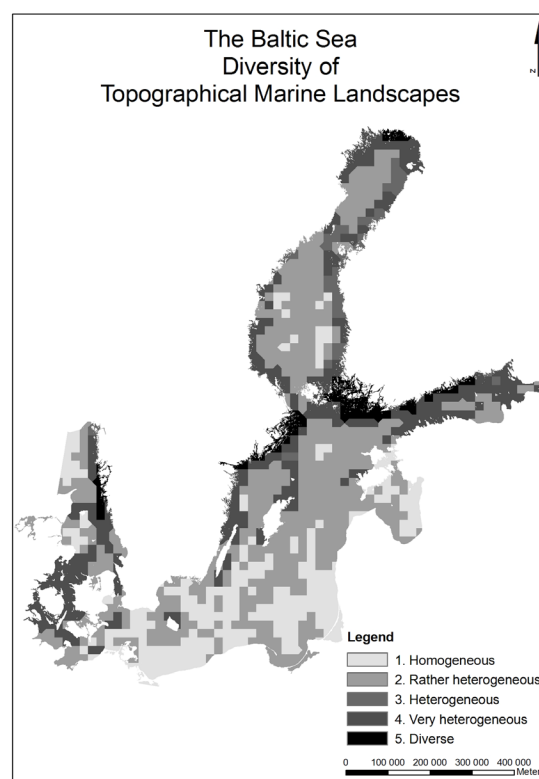
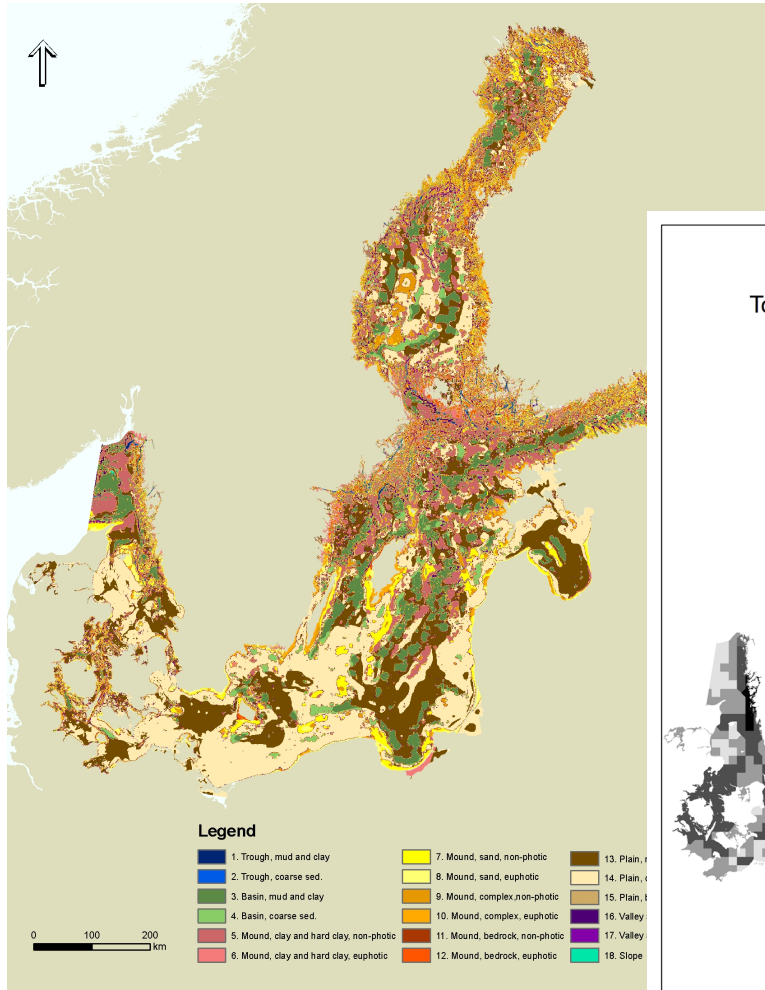
Topographic and bedforms features

- Methods II

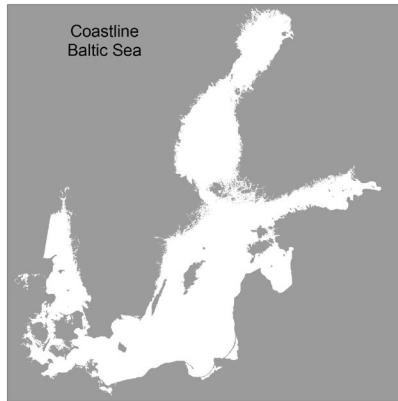


Topographic and bedforms features

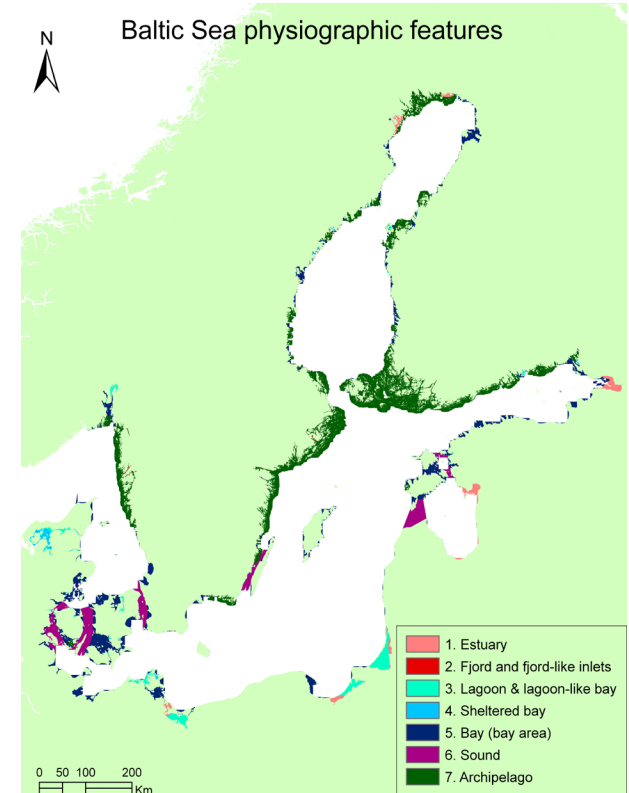
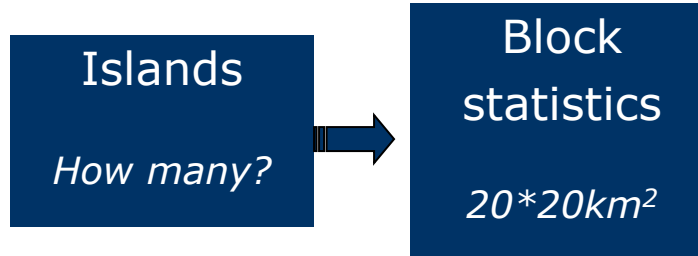
- Results



Coastal features – Methods



Archipelago



Bay

Coastal zone

Sheltered
area

Sheltered bay

Entrance
< 1km

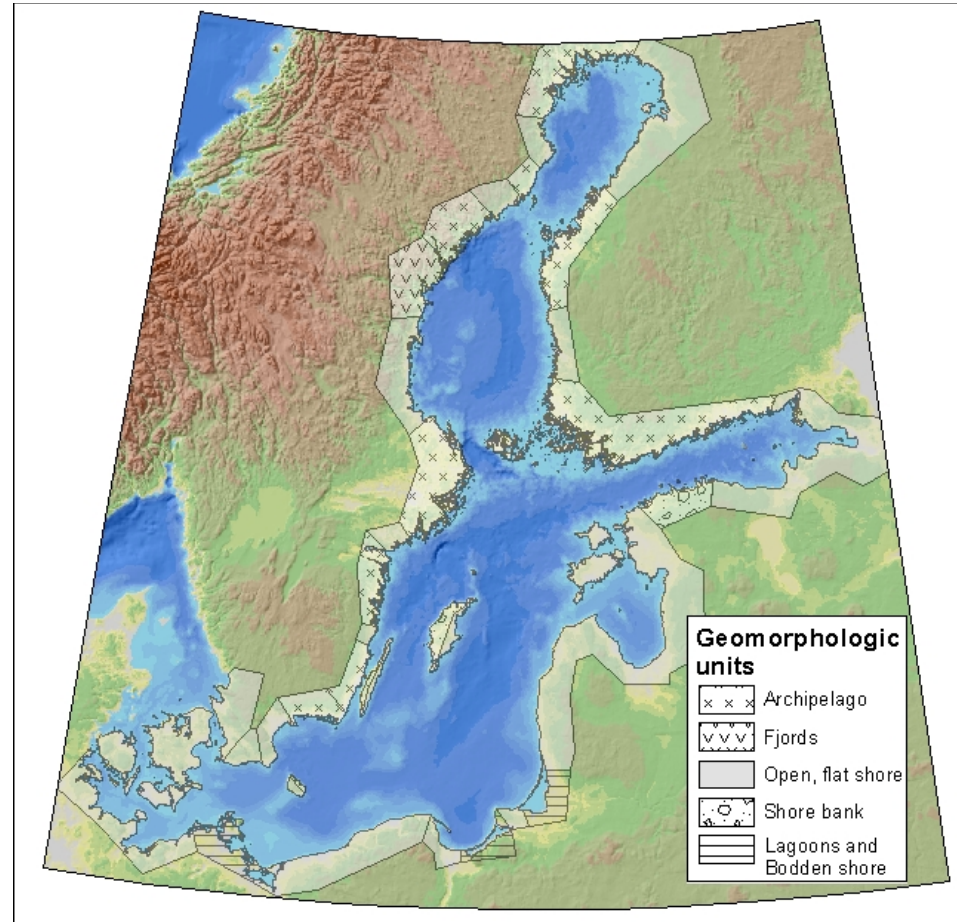
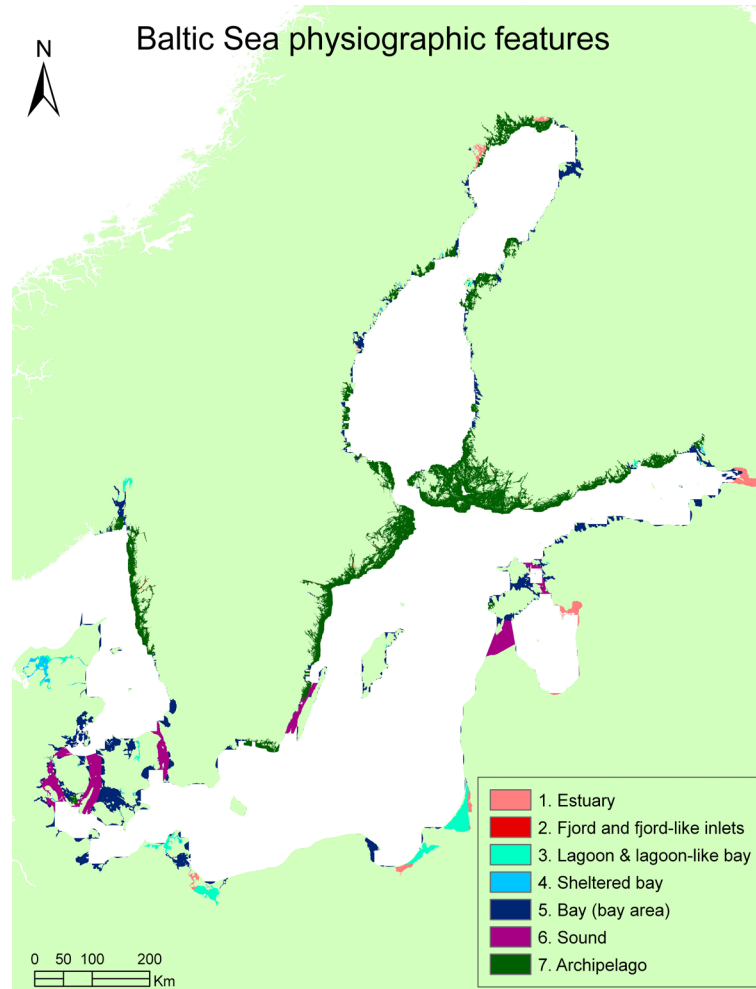
Lagoon

Depth
= $< 5\text{ m}$

5 (7) Coastal Features



Coastal features – Methods



Source: Baltic Sea University 1991, 2000 Baltic Sea Research Institute Warnemunde



Challenges

Aim to identify resembling marine features **objectively & simultaneously for the whole Baltic Sea**



Scale and Data issues

Ontological issues

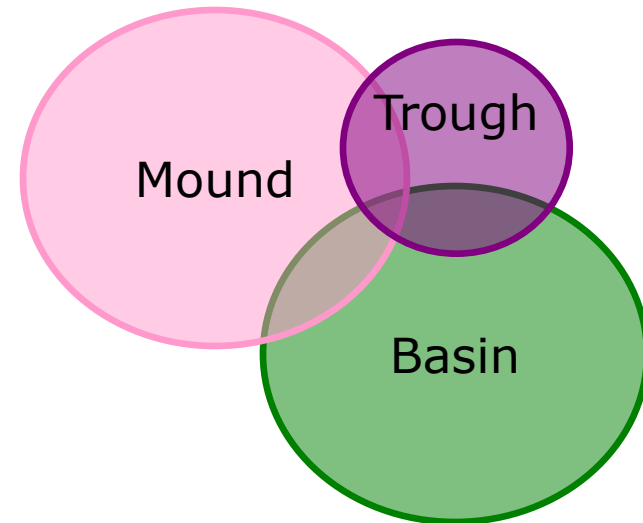
"What is a canyon?"

Expert judgement

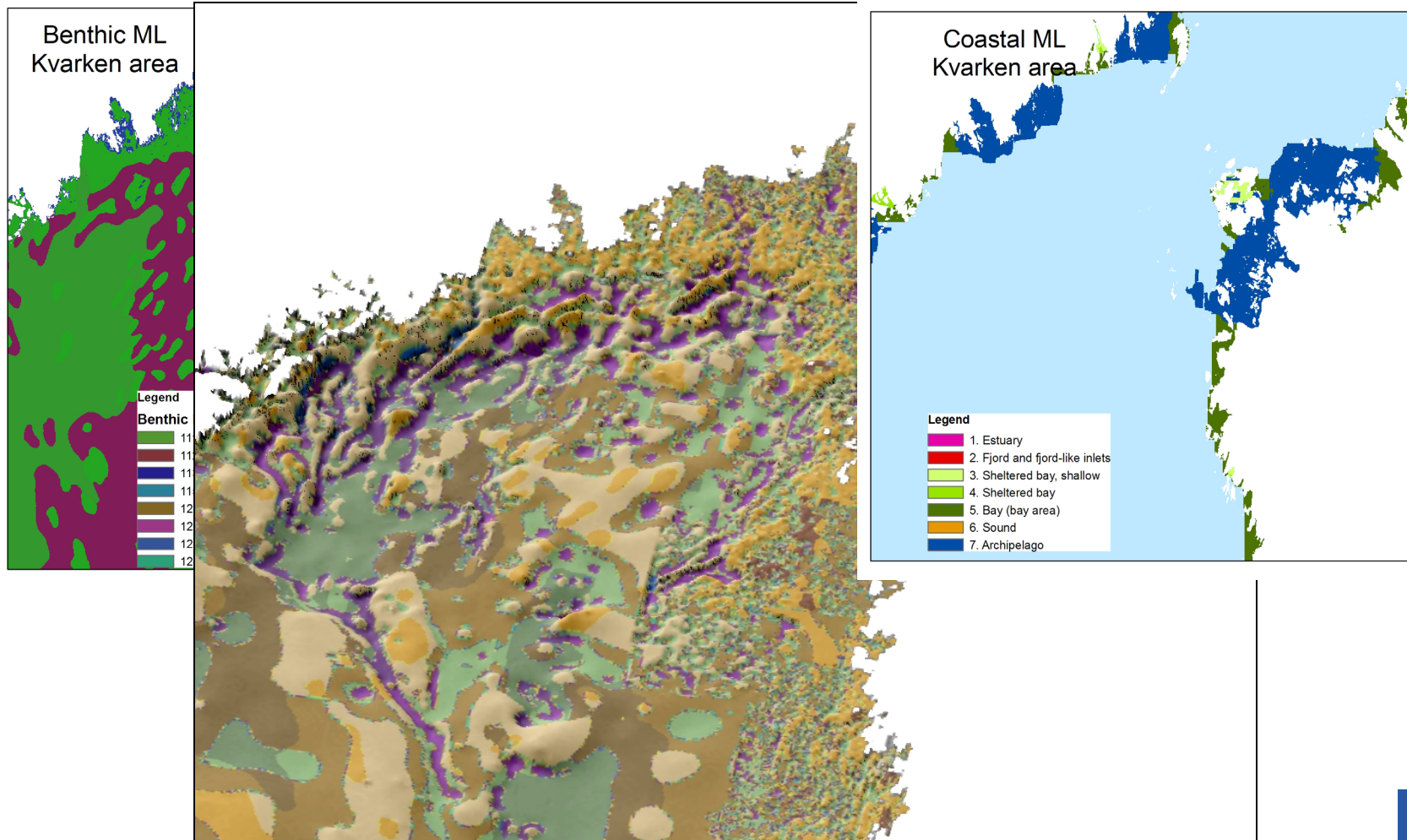


Habitat - Coastal/Topog. landscape

- **Biological validation not accomplished yet**
- Include series of habitats
- Habitat may belong to several landscapes
- Combination of habitats



Different Marine Landscapes



In a nutshell

Focus on geomorphological and physiographic characteristics

- ➔ Conspicuous landscape features, visualize seafloor
- ➔ Need for GIS -identification standards

Series of habitat types

- Habitat can occur in several landscapes

Natura habitats

Broad-scale characterisation of the sea

- Not suitable for fine-scale planning
- Guide further investigations



Thank you for your attention

