



**Inspire**  
coastal challenges



**Jacob Tornfeldt SØRENSEN**

DHI Water & Environment

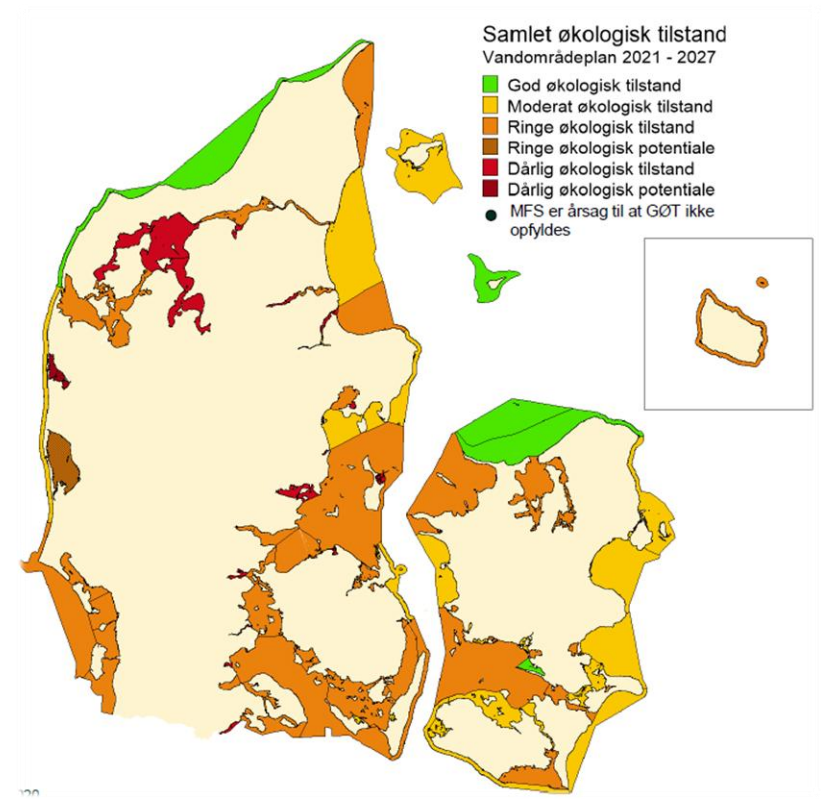
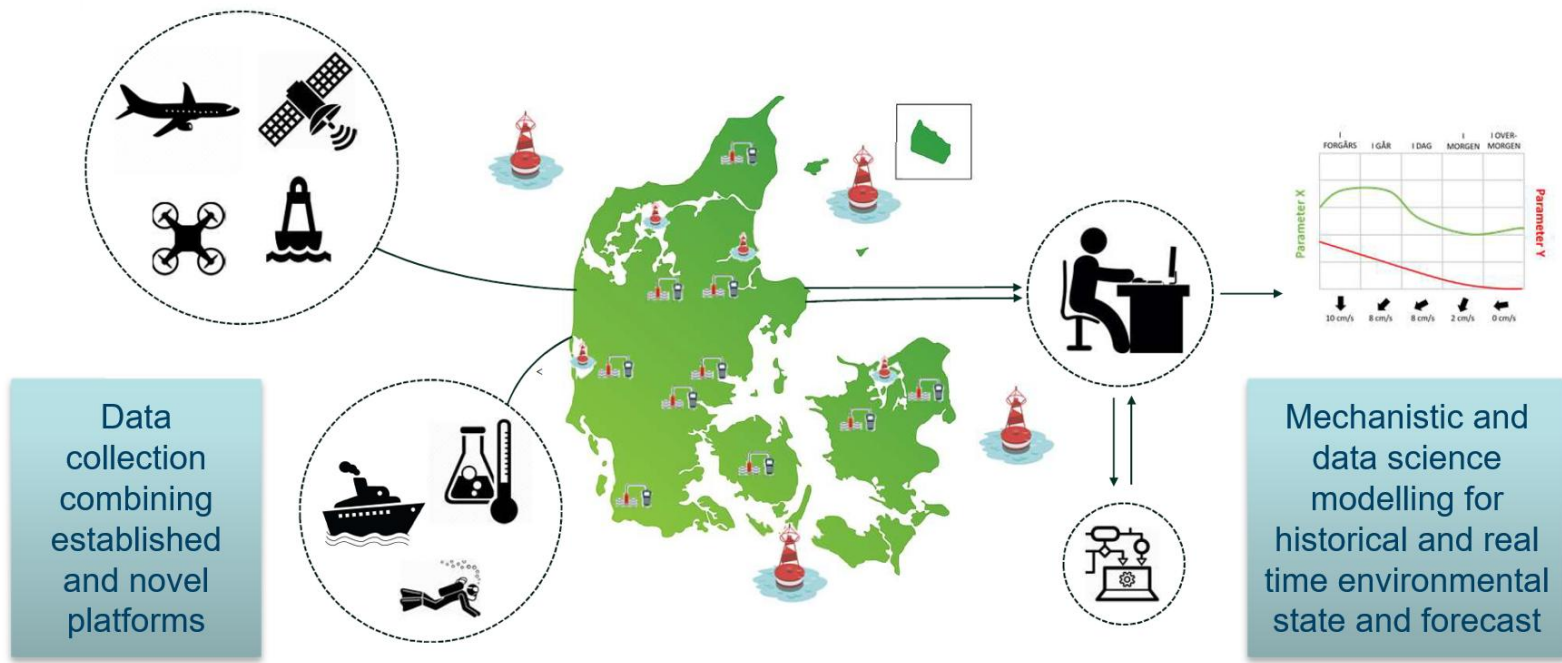


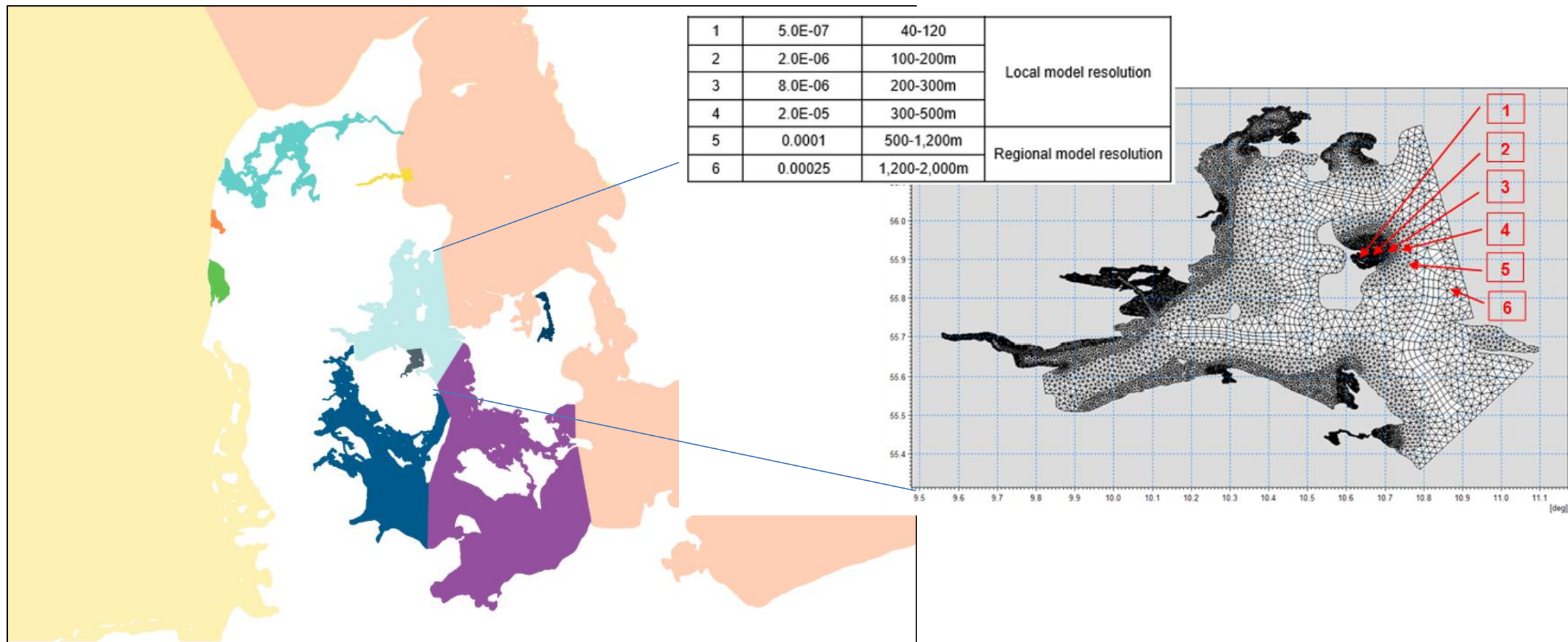
# Next generation coastal environmental monitoring

United Nations Ocean Conference 2025 – 13 June 2025

Jacob Tornfeldt Sørensen (presenter),  
Mai-Britt Kronborg, Xin Huei Wong og Anders Erichsen

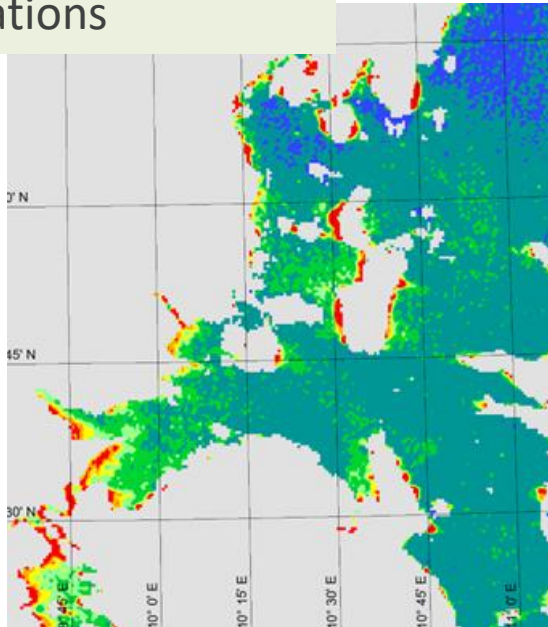




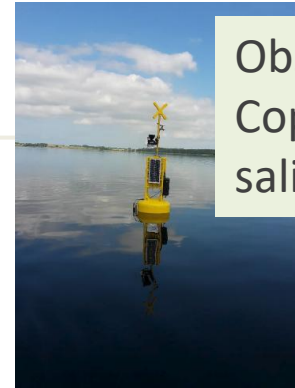




Satellite based  
chlorophyll data based  
on Sentinel 3  
observations



Observations from *small* Havsans buoys –  
bottom measurements of temperature, salinity  
and oxygen



Observations from buoys in national and  
Copernicus programs - temperature and  
salinity, chlorophyll and oxygen

more .... ?

Ship borne observations from national  
and Copernicus programs chlorophyll,  
nutrients, oxygen

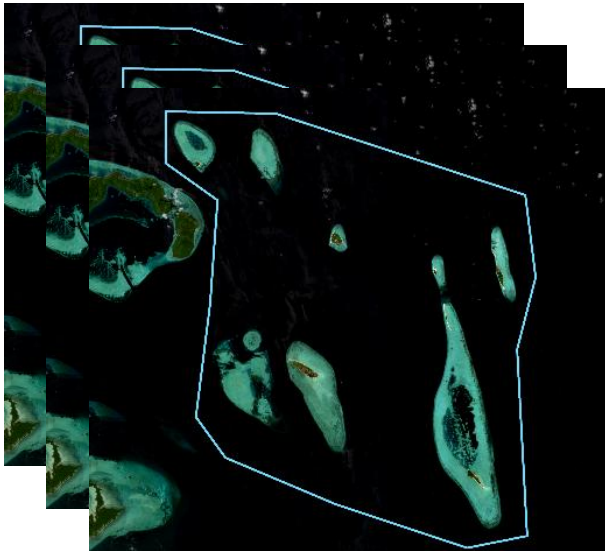


# Habitat mapping - from pixels to benthic habitat maps



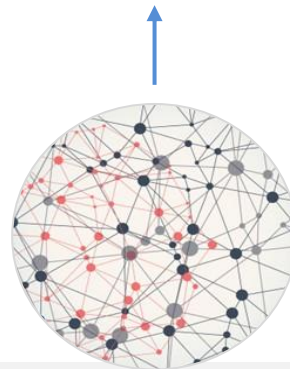
## Data collection

Remote sensing imagery  
Aux. layers



## Model development

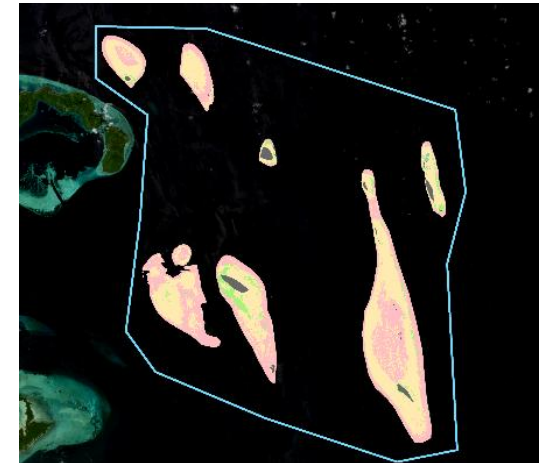
Annotations for model training (manual extraction)



Pre-trained Base Model (Conv.  
Neural Network) trained on a large  
set of annotated images

## Result

Benthic habitat map



# Integrated Marine Monitoring

The marine resources are under pressure!

This effort aims at:

- Creating a near-real time digital integrated marine monitoring system
- Combines measurements and mechanistic hydrodynamic and biogeochemical modelling
- Includes new techniques and methods combining machine learning, artificial intelligence and data assimilation etc.
- Delivers daily information on the marine environmental state of the Inner Danish Seas on a broad spatial coverage
- Support authorities reporting in relation to Water Framework Directive, Marine Strategy Framework Directive, Habitat Directive etc.

