

# Climate Change and Mapping of the Future Nature

The XXIV FIG International Congress 2010  
TS 4E – Coasts and Natural Resources  
Tuesday 13 April  
Mr. Jesper Rye Rasmussen

## Denmark on the map



## Climate changes and the future nature



- 'Copenhagen weather forecast year 2100'
  - More rain. Increase of 8-9 percent
  - Mild winters. Temperature will increase 2-3 degrees Celsius
  - Sea level rise of 0.6 – 1.3 meters
  - More wind. More hurricanes and higher average wind speed
  - Increase of extreme events like more heat waves and flooding
  - In general more unpredictable...

## What will happen to areas like this?



## The Danish Coast line



- Denmark has a land area of app. 42,500 km<sup>2</sup>
- The coast line is app. 7,500 km long
- Denmark is in Top 20 at global level for countries with the longest coast line (No. 17)
- Denmark is No. 5 in Europe, but when looking at the coast line/land area ratio Denmark is number 1
- 80 % of the population is living in areas associated with the coastal zones

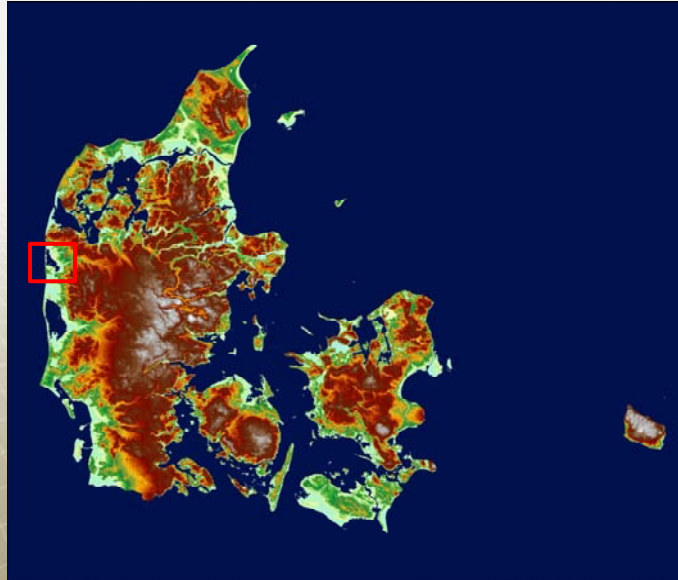


## The Project 'Climate and Nature Maps'



- Aim of the project
  - How will climate changes affect the future nature?
  - It is important to protect vulnerable nature, bio-diversity and the landscape
  - Building a GIS based modeling tool for analyzing of sea level rise
  - Contribute to facilitate decisions in the planning strategies
- Project partners
  - The Danish Society for Nature Conservation
  - Municipalities
  - BLOM, specialized in the collection and processing of geographic information
- Geo-data
  - Public Sector; Land use maps, surface geological maps, registration of nature types, field blocks, subsoil water, etc. etc.
  - BLOM; countrywide orthophotos (20 cm GSD), countrywide DEM from LiDAR (vertical accuracy 10 cm)

## An example from the West Coast

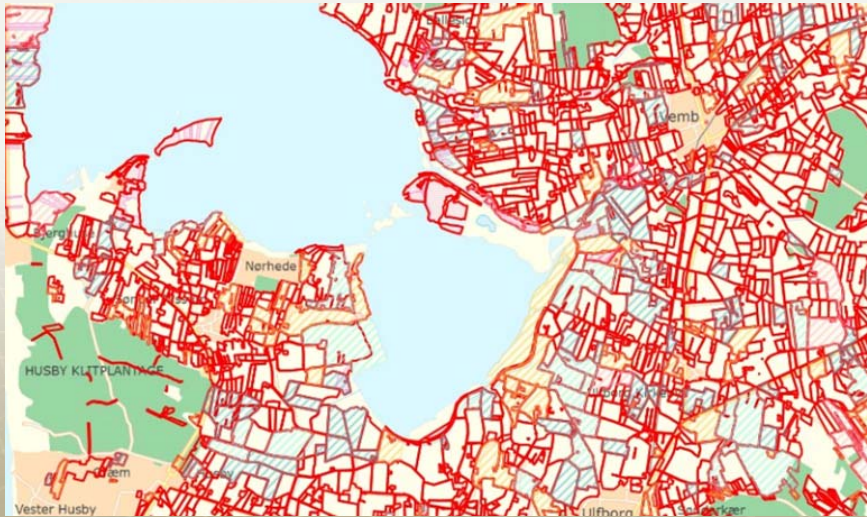


## Coastal area vulnerable to the risks

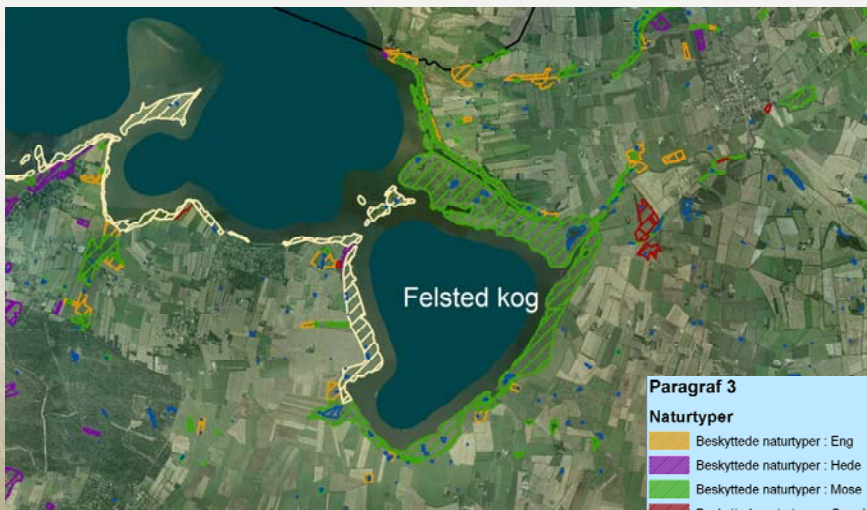




## Agriculture – Field Block Registration



## Nature type registration



Sea level rise of 0.6 meter



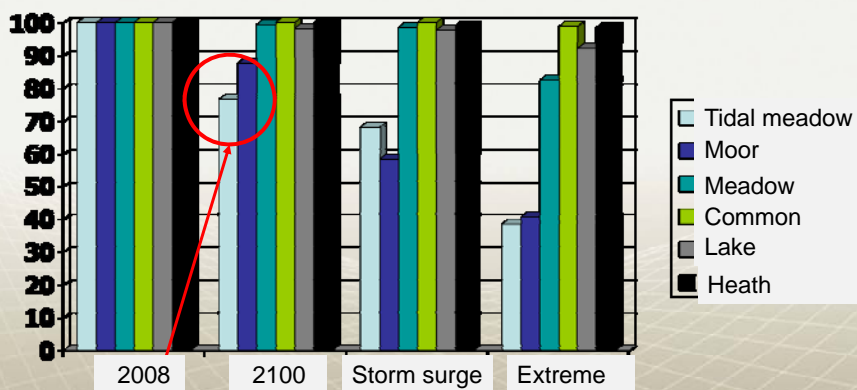
10 year event flooding (+1.9 - 2.25 m)



### Storm surge +3 meter



### Impact on the nature types



25-30 % of the tidal meadows in this municipality will disappear within 90 years



## What to do?...Building dikes?



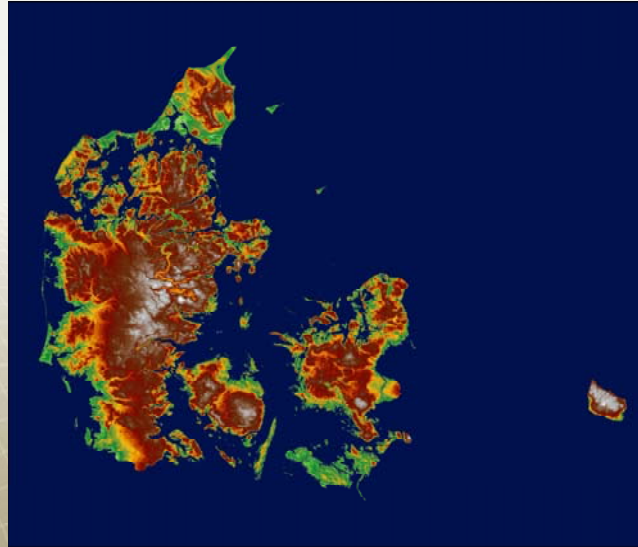
## Focus on the nature, bio-diversity and the landscape



- Reconsider the concept of administration and planning
- Allow new areas for the nature to expand – e.g. develop new areas for wetlands able to absorb increased masses of water
- Lowlands can be converted to 'un-cultured' nature or extensive growing of crops without the use of fertilizers
- Avoid urban growth or construction in flood risk areas
- Also to acknowledge that important socio-economic interests may cause that nature will not be preserved as it is today



Denmark and sea level rise 0 – 5 meters



It's our decision...





Jesper Rye Rasmussen  
BLOM  
Copenhagen, Denmark  
Tel.: (+45) 70 200 226

[jesper.rye.rasmussen@blomasa.com](mailto:jesper.rye.rasmussen@blomasa.com)