



HOKKAIDO UNIVERSITY

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MARINE STRATEGY IMPLEMENTATION IN FINLAND

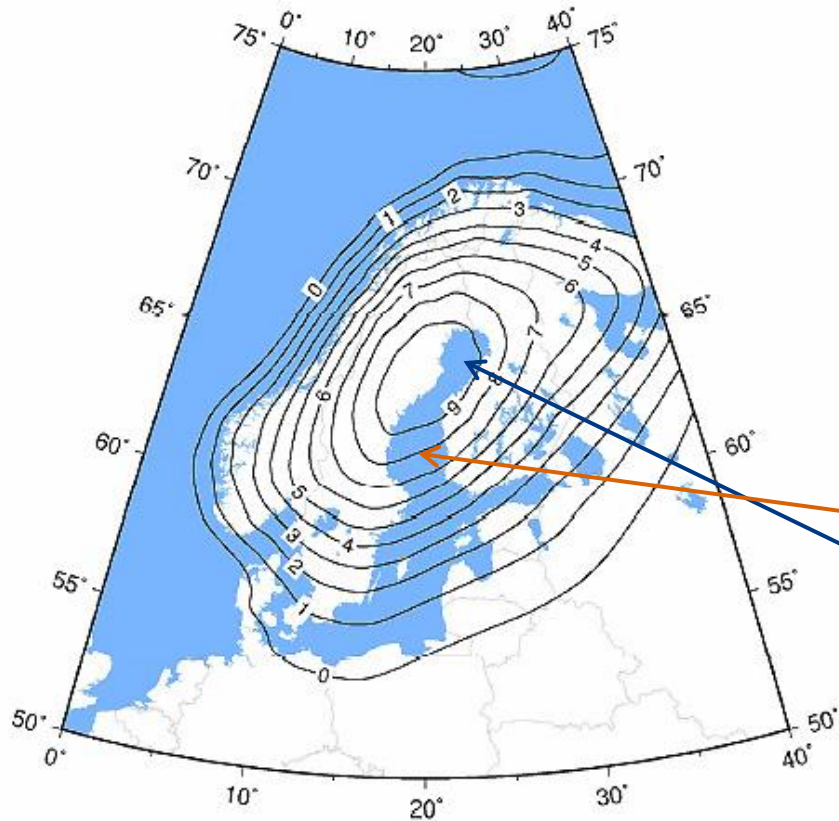
Anne Laine



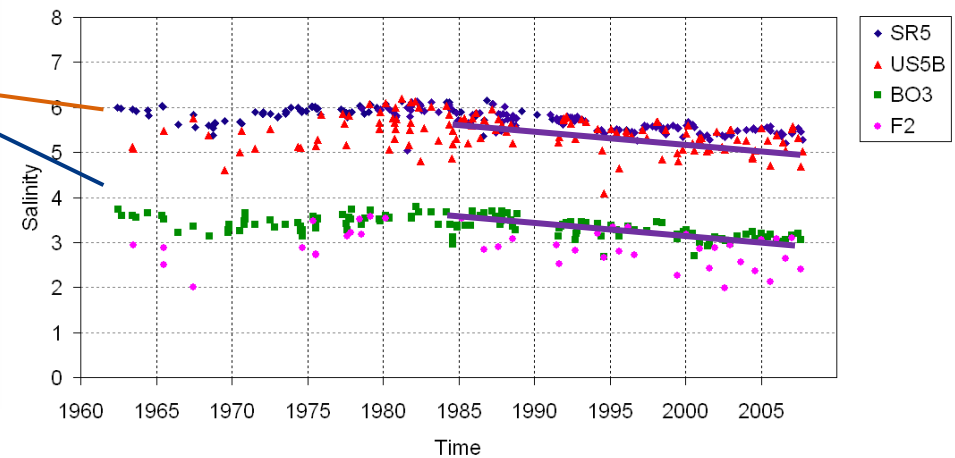
Baltic Sea - facts and features

- Formed by the Ice Age, young sea
- Unique brackish-water ecosystem in the north
- Shallow, average depth ca 54 m
- Hundreds of rivers on the catchment
- Almost closed system
- Retention time 30-50 years (total water mass)
- 85 million inhabitants in the catchment area; *“the most polluted sea in the world”*





Salinity



Land uplift – up to 9 mm per year
In 100 years 90 cm !
Flat profile > **changing shoreline**



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EU Marine Strategy Directive to save Europe's seas and oceans (2008)

- The directive aims to good environmental status of all EU's marine waters **by 2020**



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EU Marine Strategy Directive to save Europe's seas and oceans (2008)

- The directive aims to good environmental status of all EU's marine waters **by 2020**
- All member states have to develop Marine Strategies:
 1. Initial assessment of current environmental status - 2012
 2. Determination of good environmental status - 2012
 3. Defining environmental targets and indicators - 2012
 4. Monitoring programmes for the indicators – 2014
 5. Programs of Measures - 2015



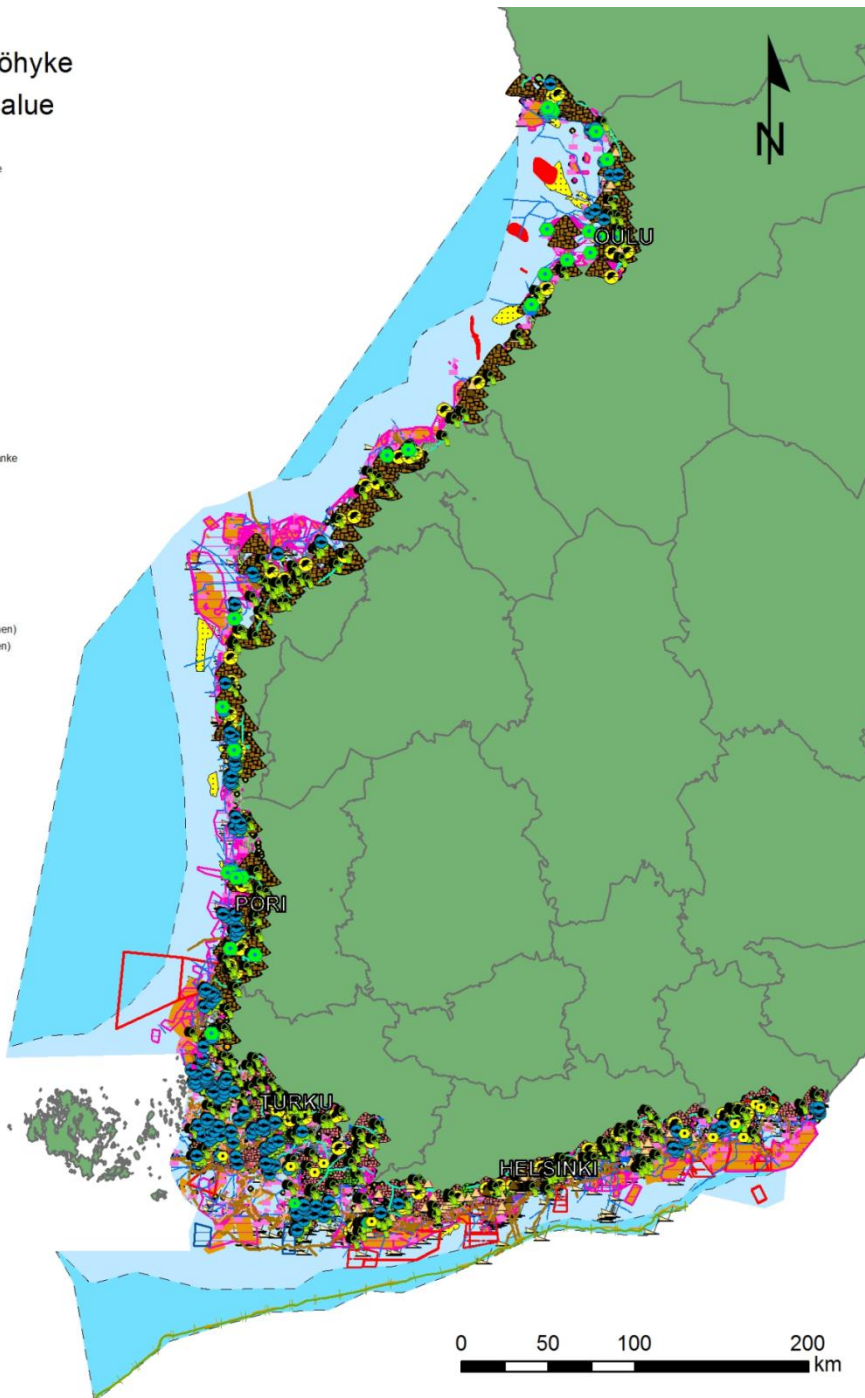
Utilizing existing programs and data

- Conventions and programmes to harmonize policies and actions in the neighbouring countries
- Research programs and monitoring >> data
- Baltic Sea Action Plan
- The main threats are:
 - eutrophication
 - harmful substances
 - chemical /oil spills
 - invasive (i.e. alien) species



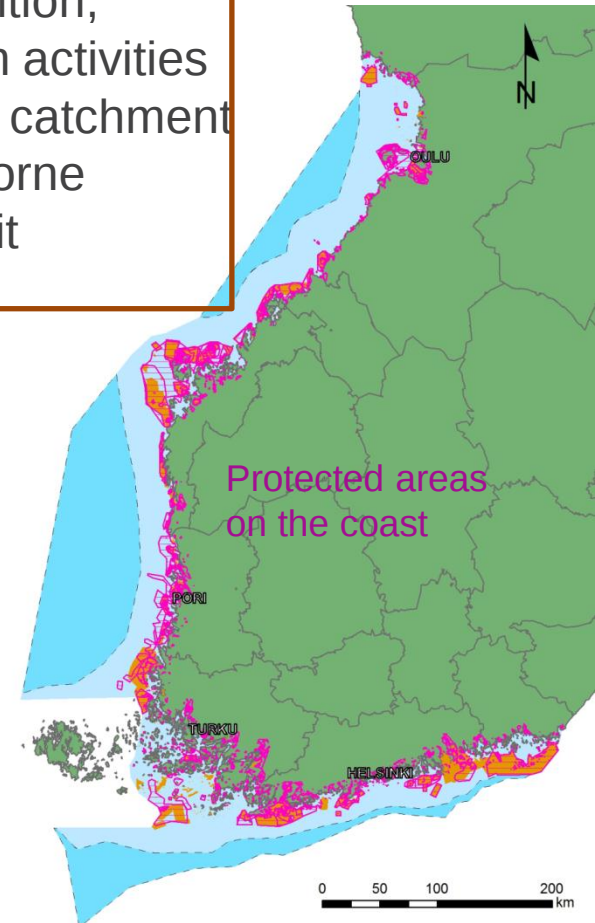
Talousvyöhyke
Tutkimusalue

- Kalankasvatus
- Jäte- tai jäähdytysveden purkupiste
- Ruoppaus (vuodet 2006 - 2008)
- Ruoppaus (vuodet 2009 - 2011)
- ▲ Kaatopaikka
- EU-uimaranta
- Kaasujohto
- Suurjännitelinjät (väh. 110 kV)
- Putkijohto
- Kaapeli
- Ampuma-alue
- ▨ Puolustusvoimien suojaluokka
- Laivaväylä
- Veneväylä
- Lauttaväylä
- z Satama
- z Venesatama
- z Hylky
- Vedenalaisten maavarojen nostohanke
- ▨ Suojeltu alue (muu kuin Natura)
- Natura
- Teollisuus
- Energiantuotanto
- Suunniteltu tuulivoimapaisto
- Olemassa oleva tuulivoimala
- Muinaisjäännös (pisteellinen)
- Muinaisjäännös (alueellinen)
- Peltö
- Nord Stream maakaasuputki (läntinen)
- Nord Stream maakaasuputki (itäinen)



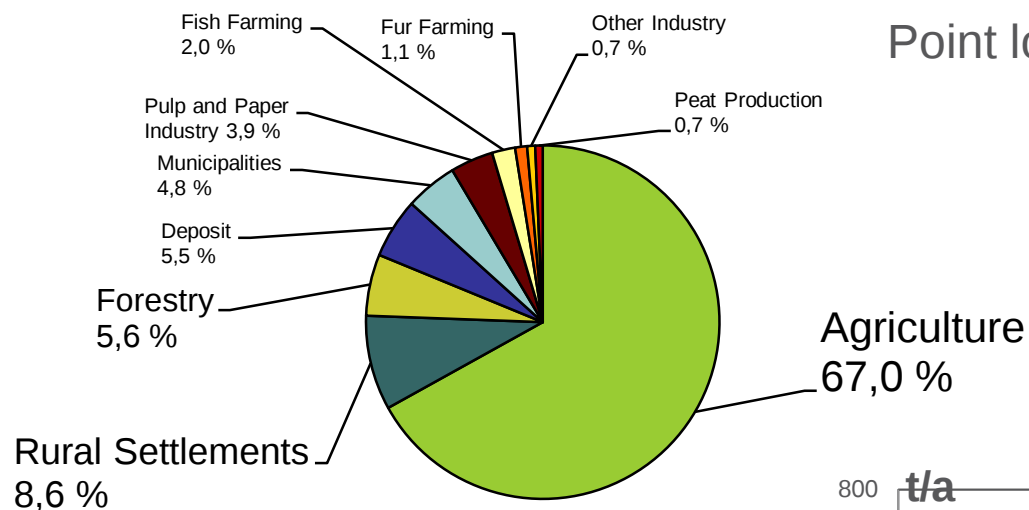
A multitude of existing and predicted human pressures on the Finnish coastal area alone: harbours, pipelines, dredging, windmill parks, industry + waste water, fish farming

In addition, human activities on the catchment & airborne deposit



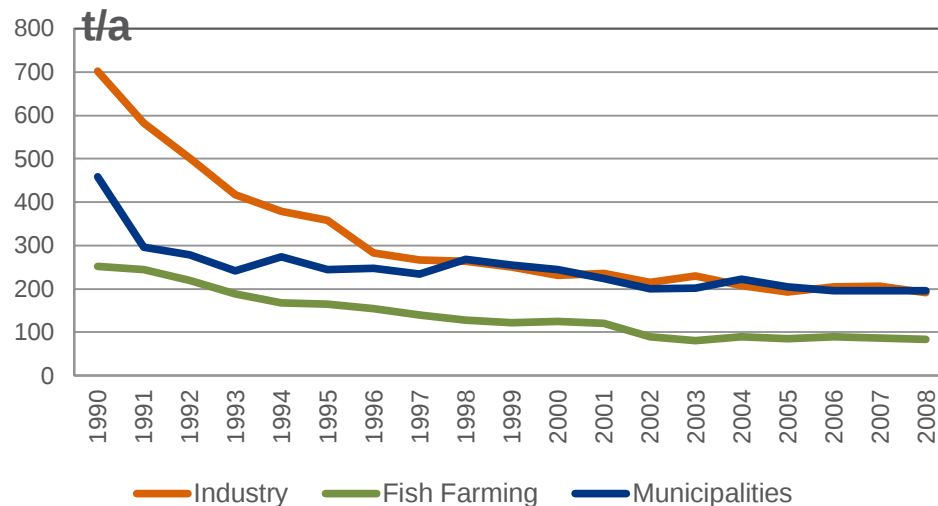


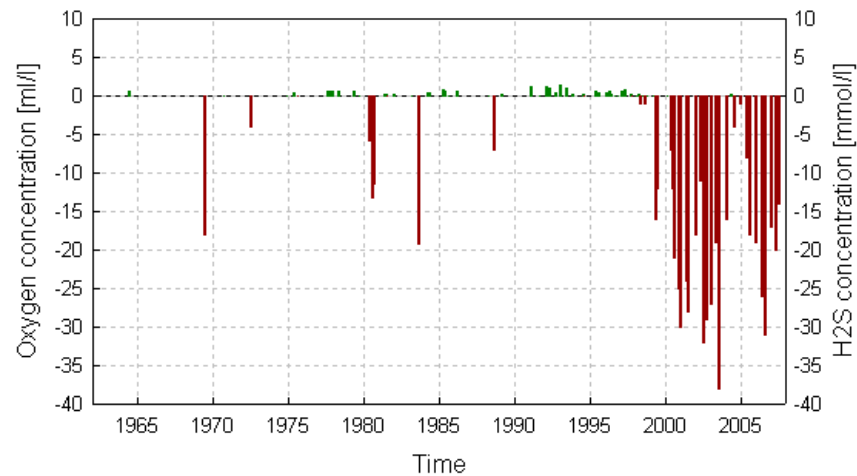
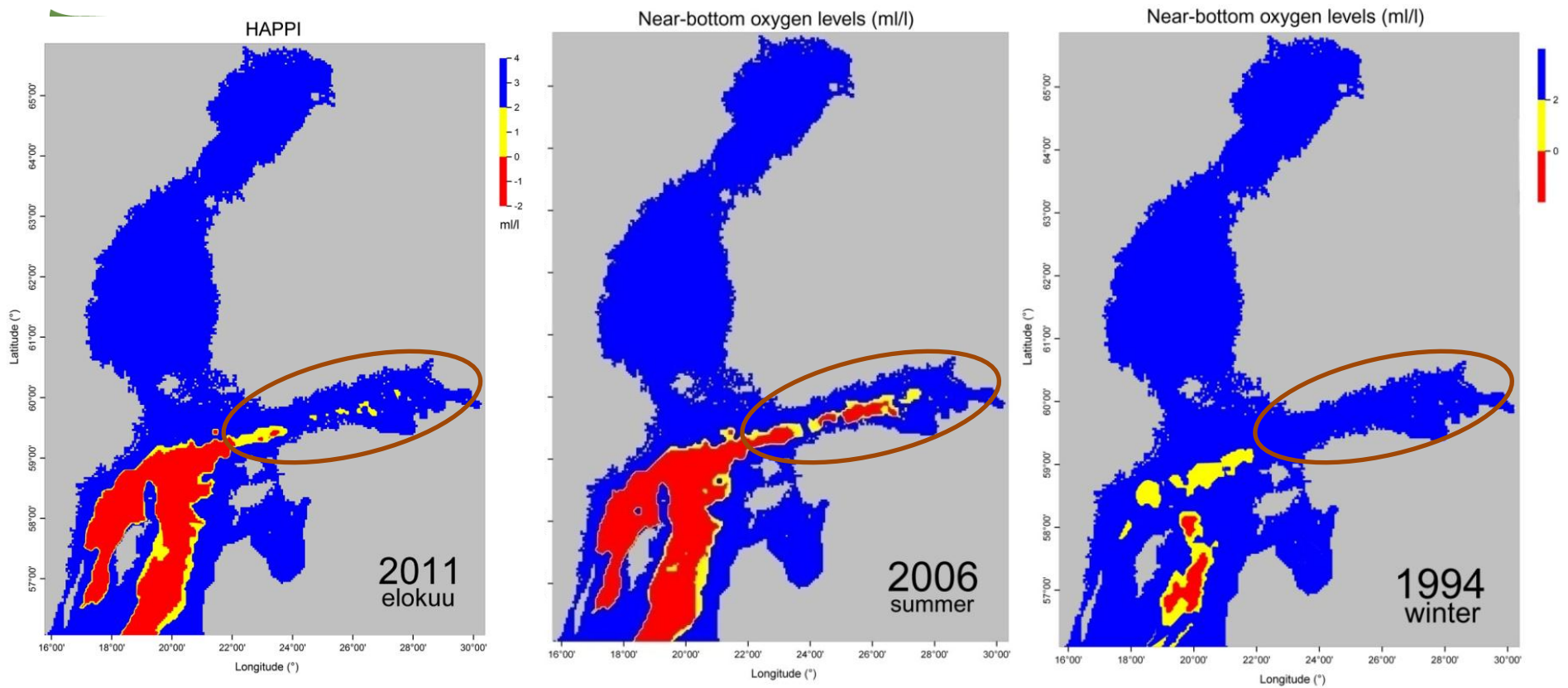
Sources for phosphorus loading (2008)



Point loading: 13.2%

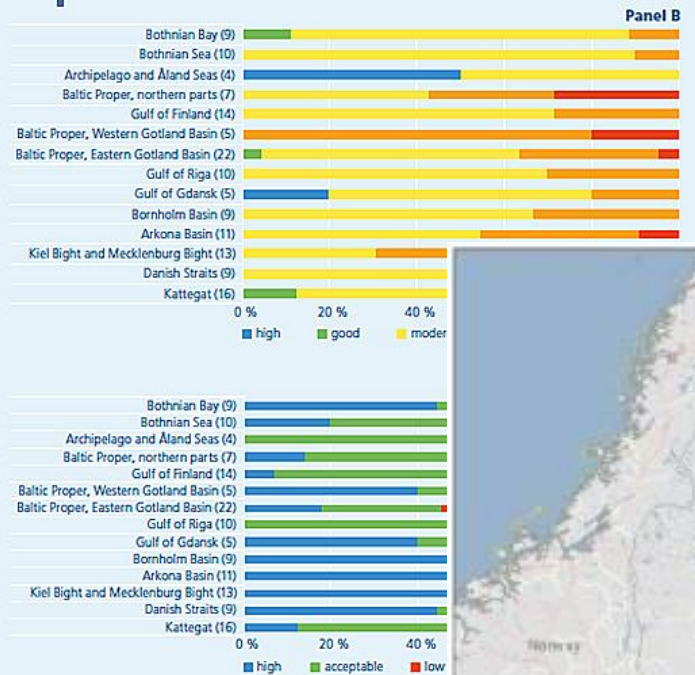
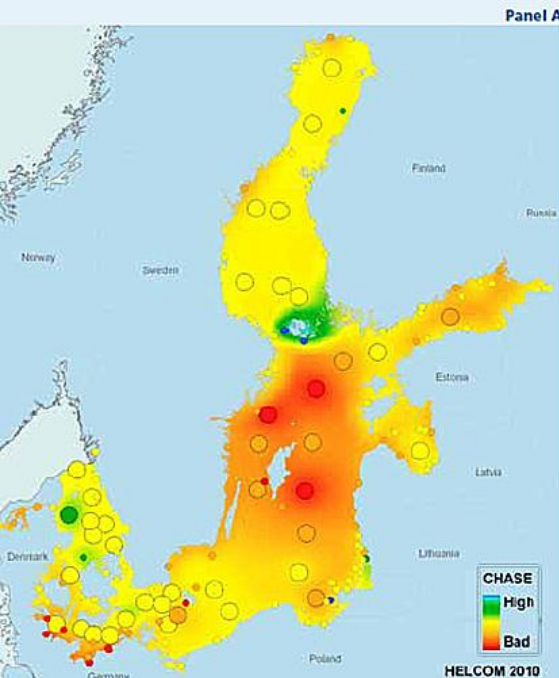
Development of phosphorus discharges from point loading sources



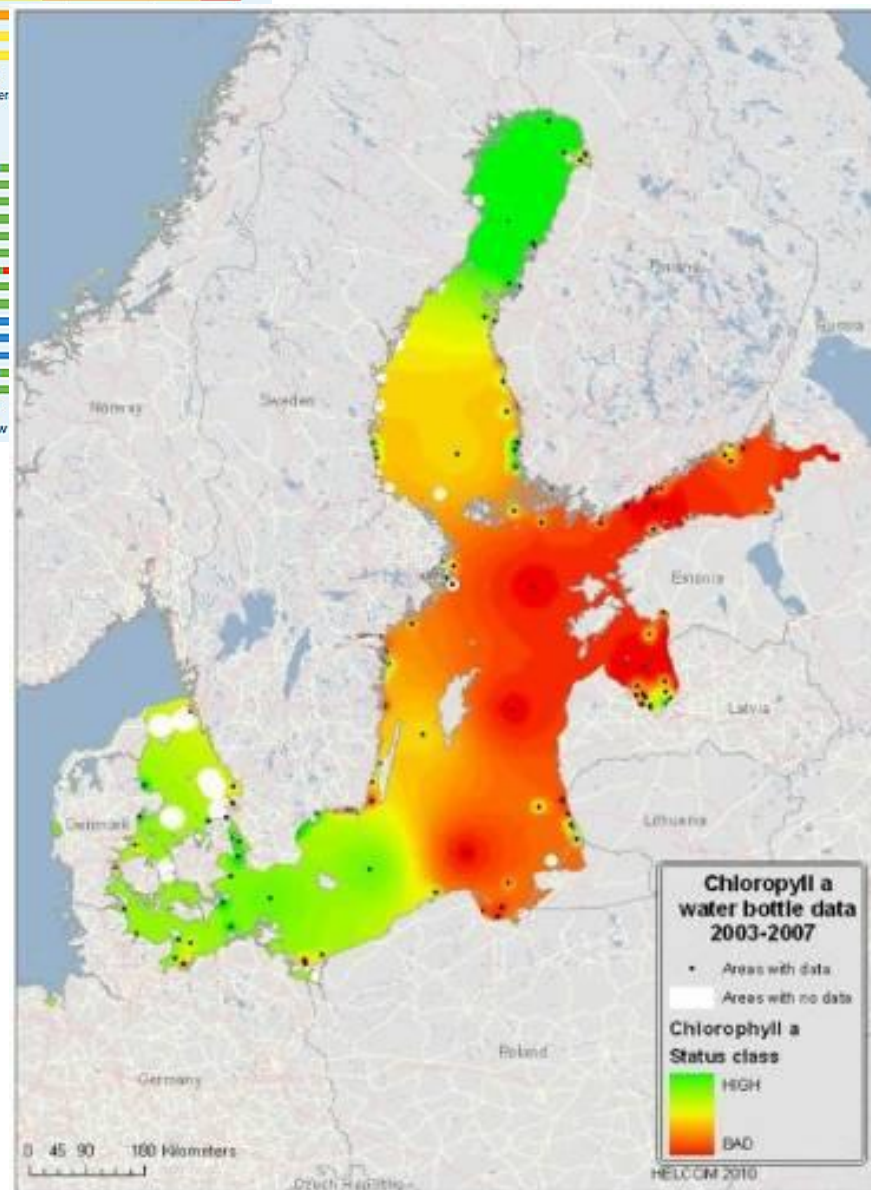


Long term
variation in
oxygen and
hydrogen
sulphide (H₂S)
concentration in
one station

Lack of oxygen
near the bottom



A-chl (eutrophication)



Harmful substances
(HELCOM holistic assessment 2010).

high / good / moderate / poor / bad



EU: Eleven descriptors for good status

- Biodiversity
- Non-indigenous (alien) species
- Commercially exploited fish
- Marine food webs
- Eutrophication
- Hydrographical conditions
- Sea floor integrity
- Contaminant concentrations
- Contaminants in fish
- Marine litter
- Underwater noise

A variety of criteria for each descriptor

>> definition of good status

NOT GOOD

Further process:

>> Monitoring program

>> Program of Measures
by 2015

➔ **2020 ?**





Thank you