



Dirk Fleischer

PhD student at the
Institute for Polar Ecology
at the Christian-Albrechts
University Kiel

What did I do so far?

- Development of an internal macrozoobenthos database of the western Baltic Sea for analysis and working reasons at the IFM-GEOMAR Kiel
- Diploma thesis on carbon mass balance models for the southern Baltic Sea with special emphasis on macrozoobenthos
- PhD studies on ecological quality indices
- I challenge the task for better protection and long term security of biological data and better availability to the public and scientific community

Water Frame Work Directive

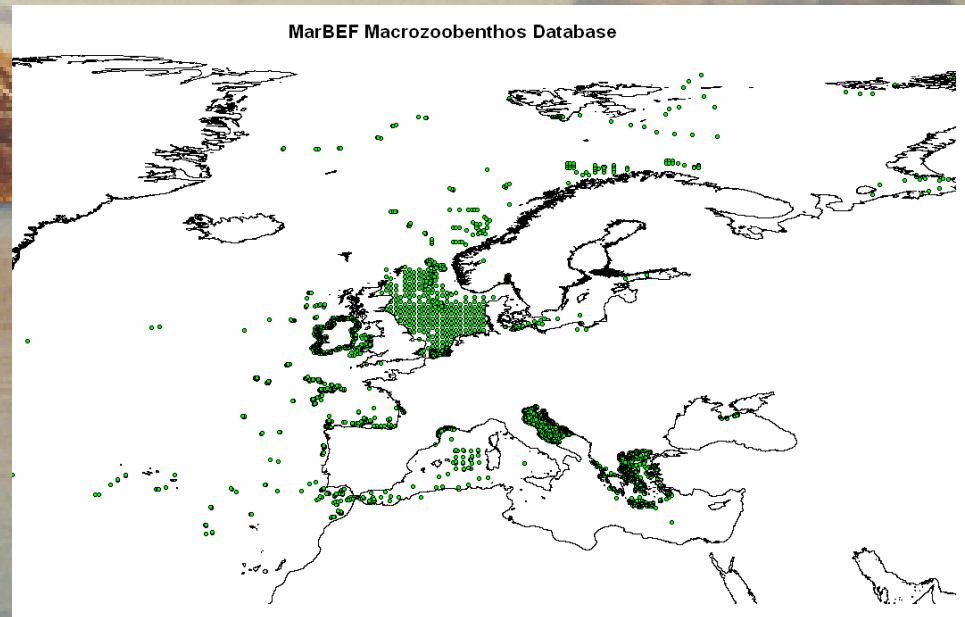
- The European commission declared the water frame work directive (WFD) in 2000
 - This directive is a basis for the protection of ground, continental, transitional and coastal waters across European borders
 - The ecological status of all these water bodies has to be 'good' by 2015 on pan European scale
- What is the definition of a 'good' ecological status and how do you measure it?

Ecological Quality Indices

- ATZI Marine Biotic Index (AMBI)
 - Based on fixed species list with sensitivity classification (Borja et al. 2000)
- Benthic Quality Index (BQI)
 - Based on dynamic, dataset dependent sensitivity classification (Rosenberg et al. 2004)
- Each country has different EcoQ assessment procedures and indices
 - Inter calibration and resolution problems have to be solved

European Network of Excellenz MarBEF

- This European network on **Marine Biodiversity** and **Ecosystem Functioning** combined datasets on a pan European scale
 - Usability studies on quality indices discovered comparability problems which made direct use of this large dataset impossible

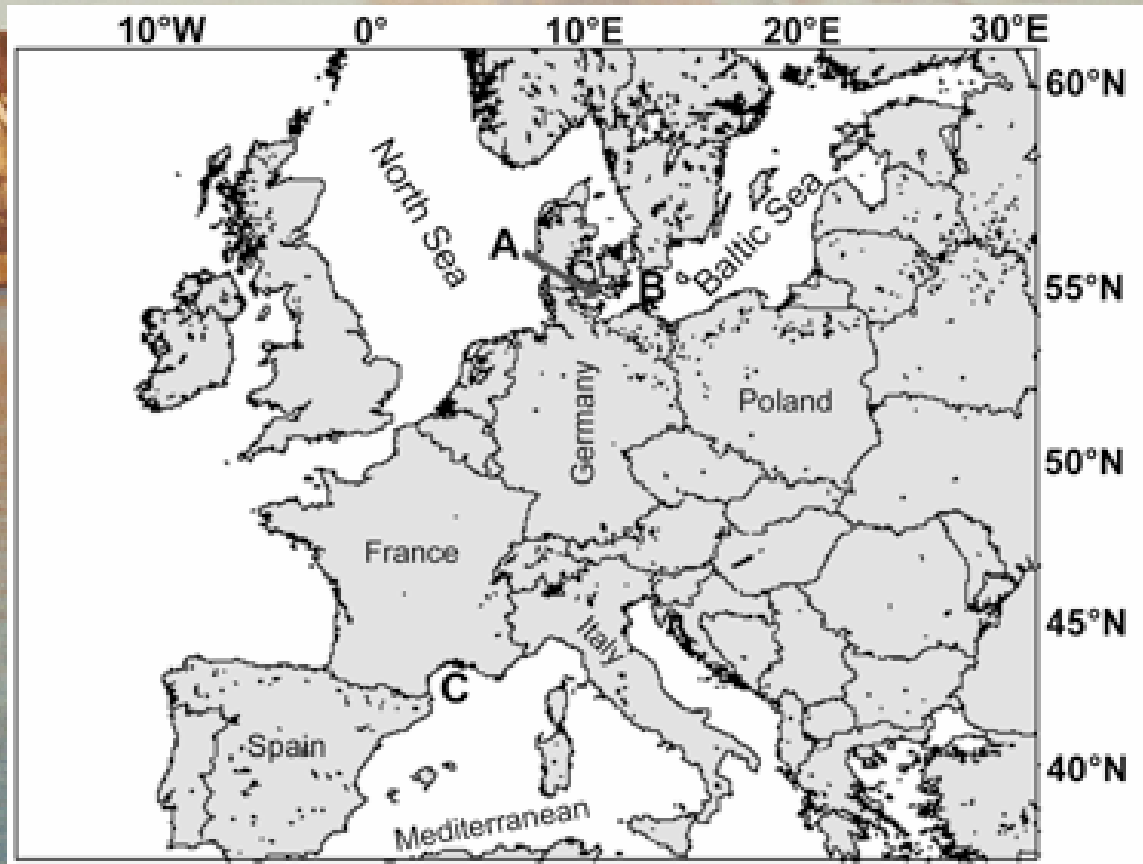


The Problems

- AMBI with its fixed species list is not yet determined to be useful along the European coastline
- BQI has a term in its equation that is sampling effort dependant
 - This is a problem by comparing studies with different sampling effort and anyway not good

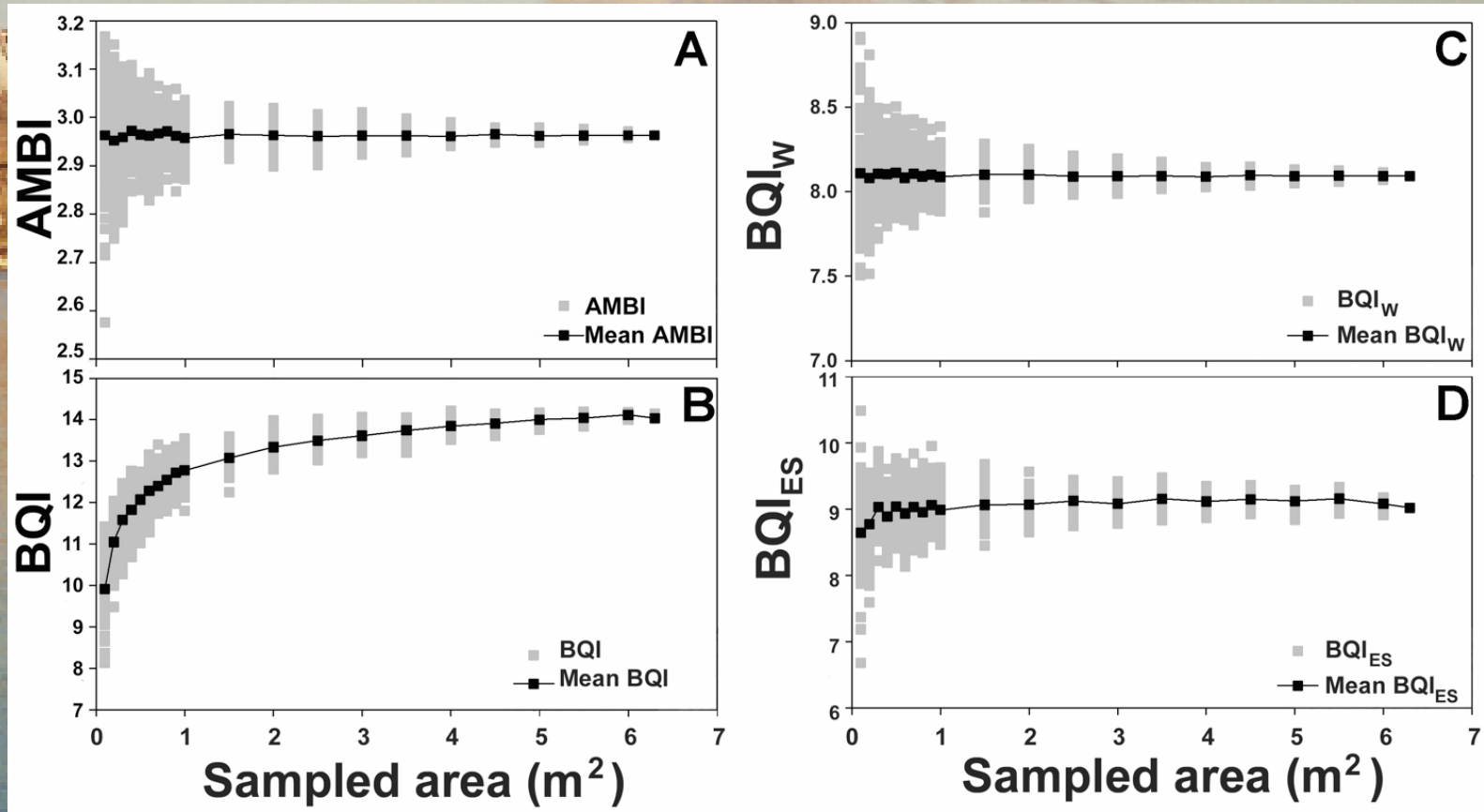
$$BQI = \left(\sum_{i=1}^n \left(\frac{A_i}{A_{total}} \cdot ES_{50_{0.05}} \right) \right) \cdot \log(S + 1)$$

Test datasets



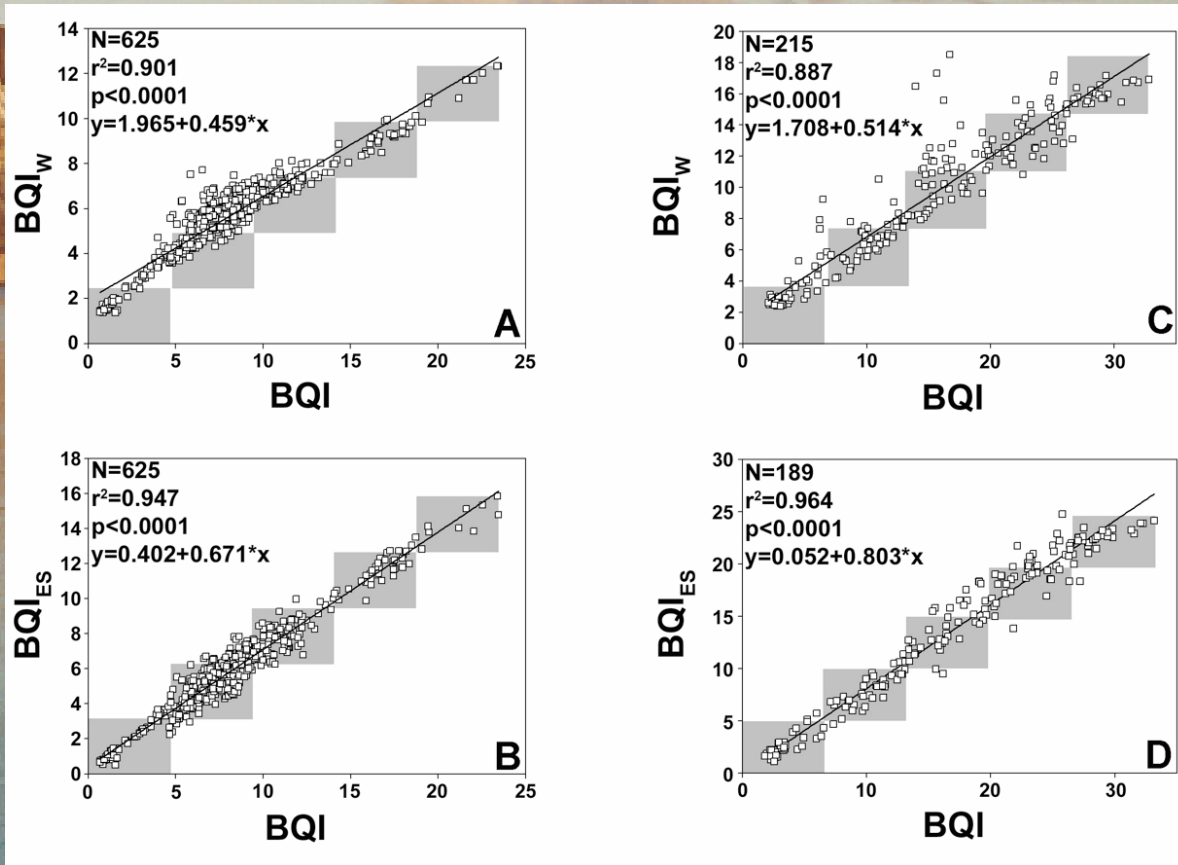
(Fleischer et al. 2007)

Adjustments to BQI



(Fleischer et al. 2007)

Classification results



(Fleischer et al. 2007)

Projects to come

- BQI and AMBI tests on a dataset from the complete southern Baltic Sea covering strong environmental gradients like salinity or oxygen
 - The species sensitivity might be influenced by the ecological conditions and this should be considered by a ecological quality index
- The diver monitoring TaMOs along the German Baltic Sea
 - Cooperation with the German diver federation for education and support of divers for environmental monitoring purposes
- Biological and Ecological Information System for the Baltic Sea in special and in general for all biologists and ecologists

Thank you for your attention
and the happy welcome

