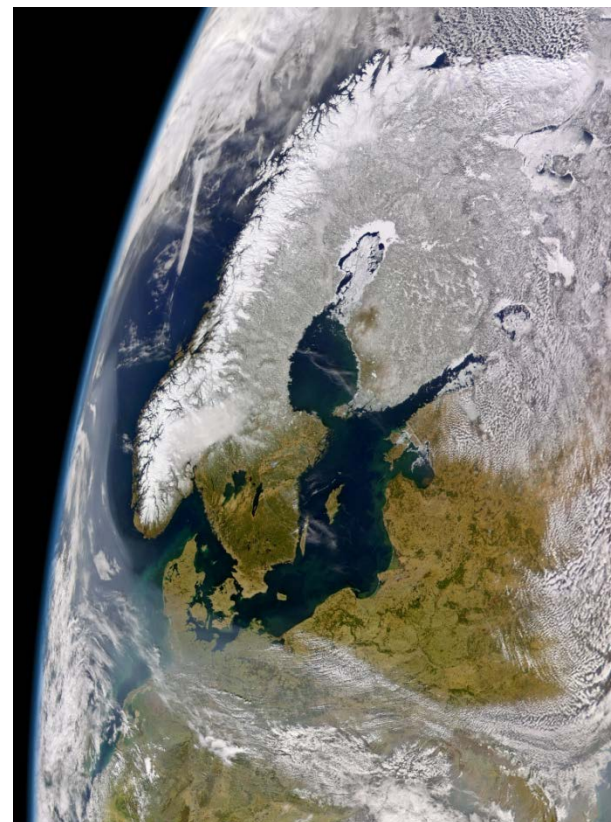




BALTEX: 20 years of international and interdisciplinary research in the Baltic Sea region

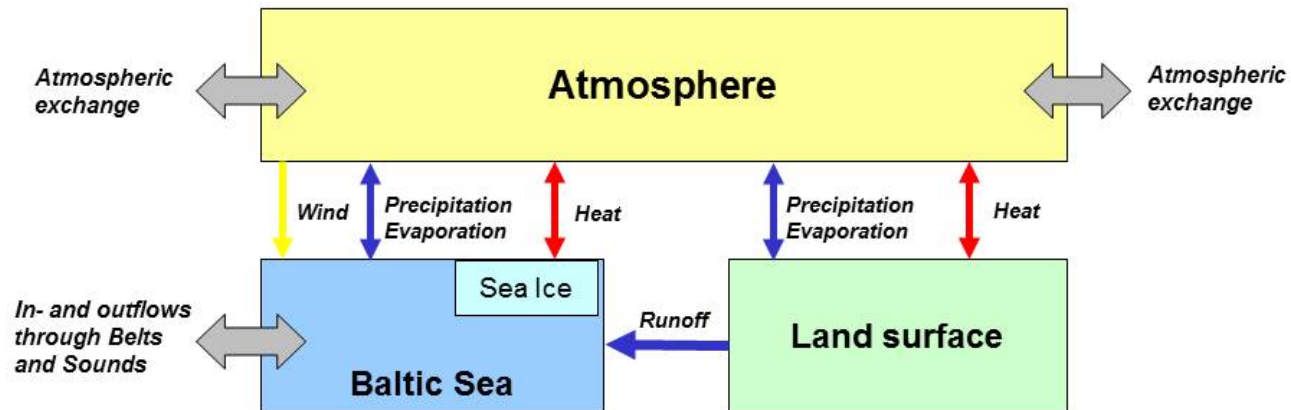
Anders Omstedt

A unique, beautiful, and advanced region with severe problems



Basis of knowledge:

Temperature,
precipitation,
river runoff,
salinity, and ice

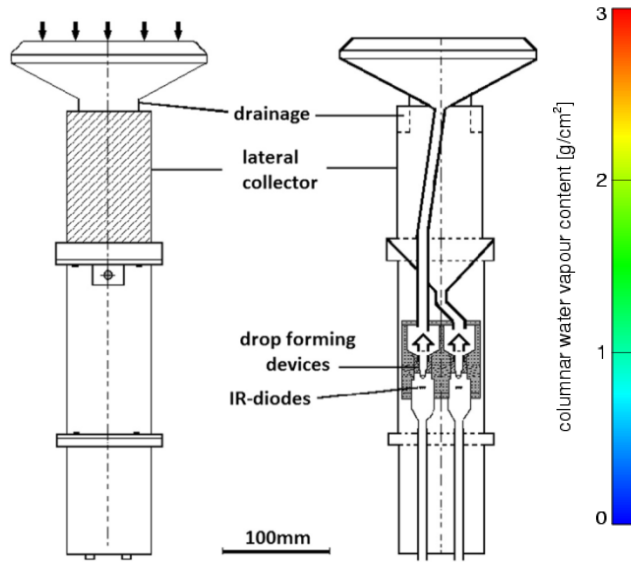


The first BALTEX box



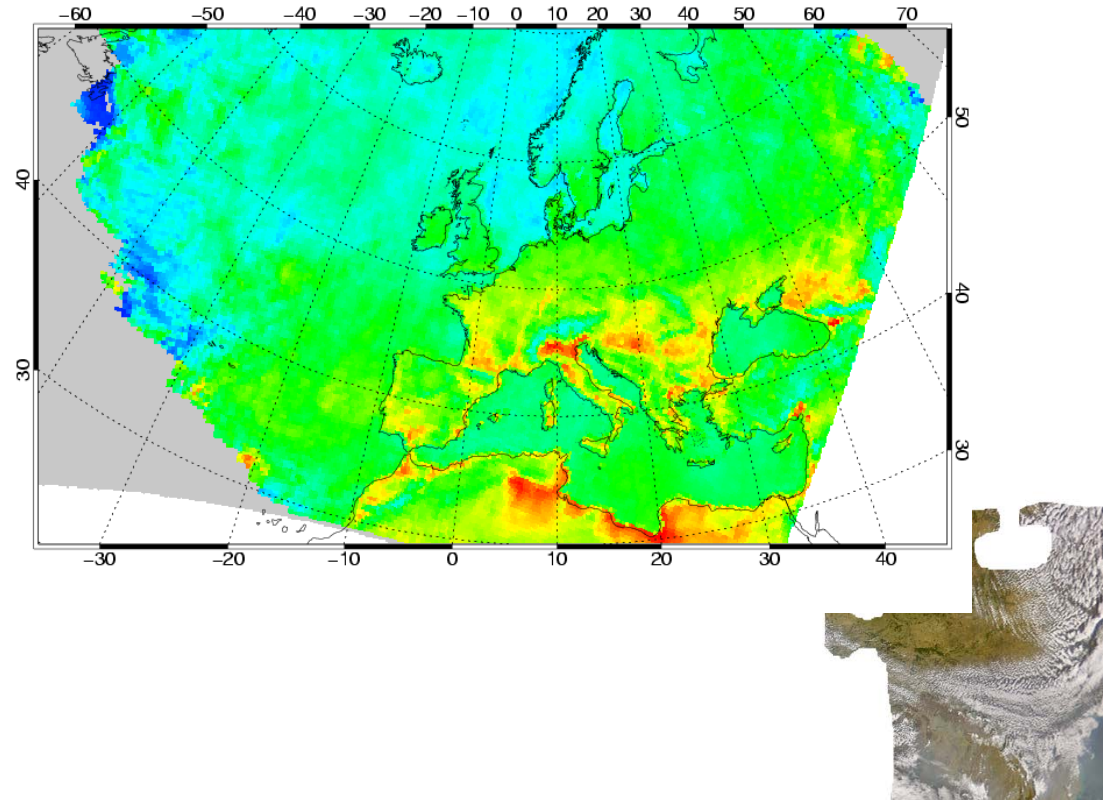
New technological improvements

Satellite products from the moderate-resolution imaging spectroradiometer (MODIS)

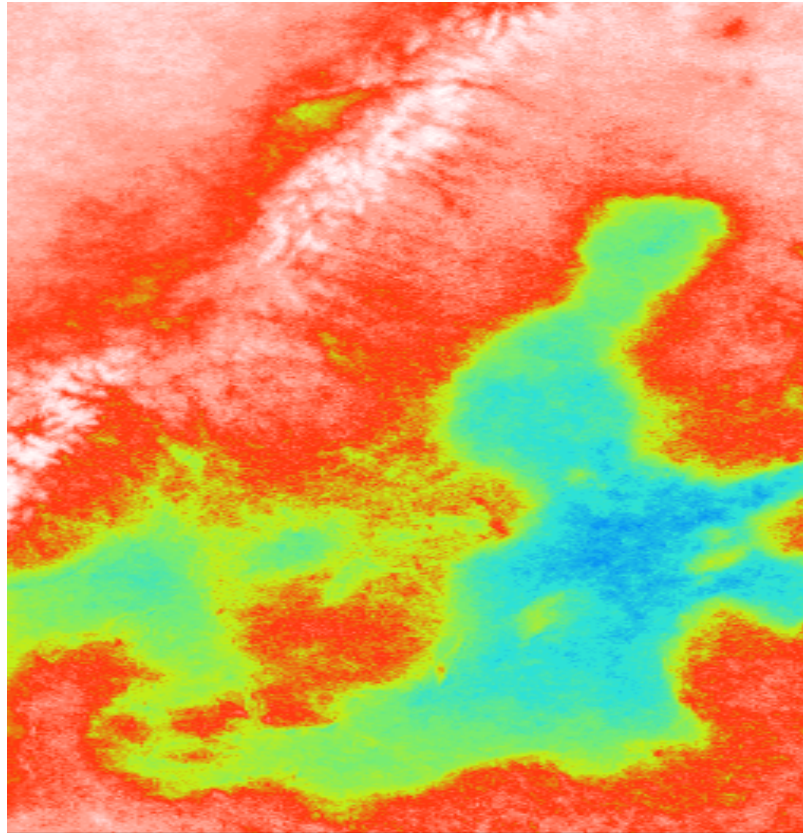
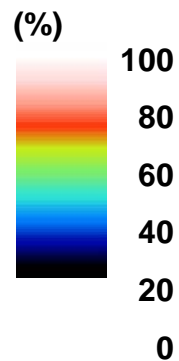


Sketch of the ship rain meter

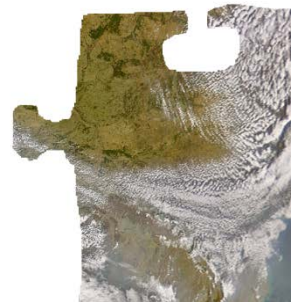
Water Vapour Monthly Mean August 2003



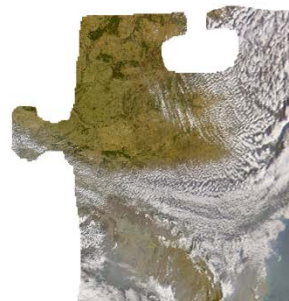
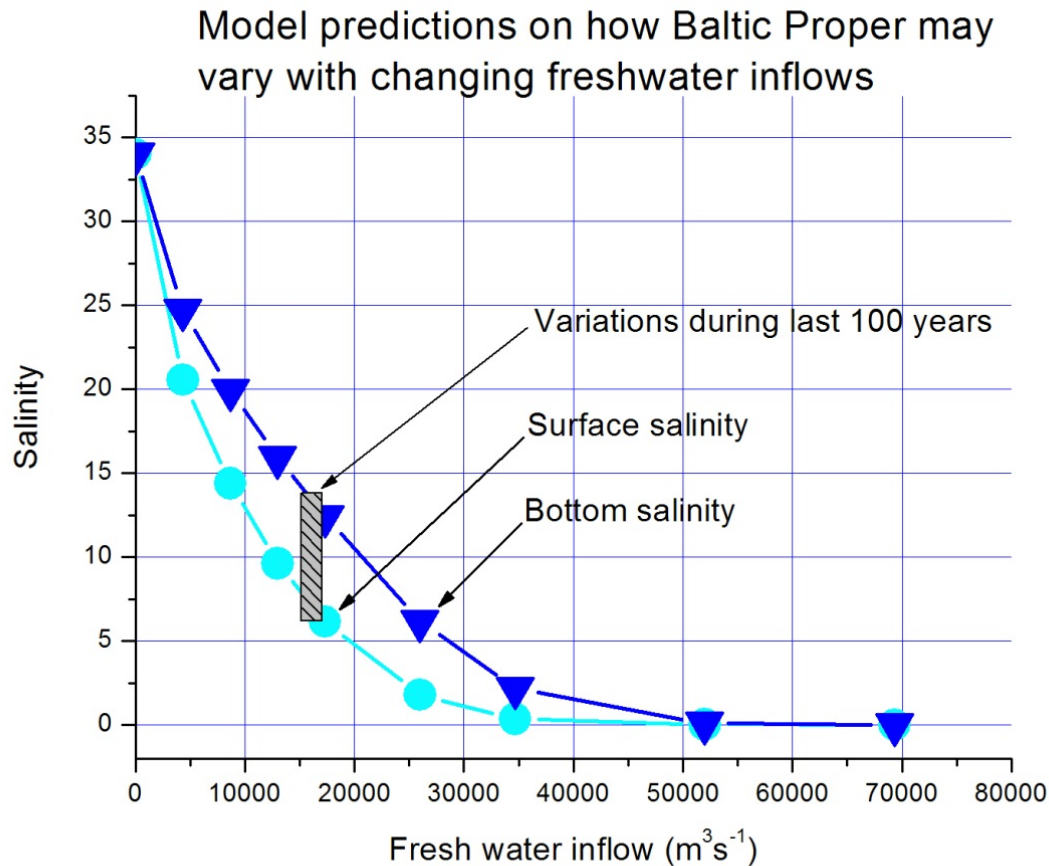
New satellite products



Afternoon cloud frequencies in July from satellite observations (NOAA-AVHRR SCANDIA cloud climatology, 1991-2000)



Models are the basis of system understanding:



Test of knowledge:

Can we model past climate conditions?



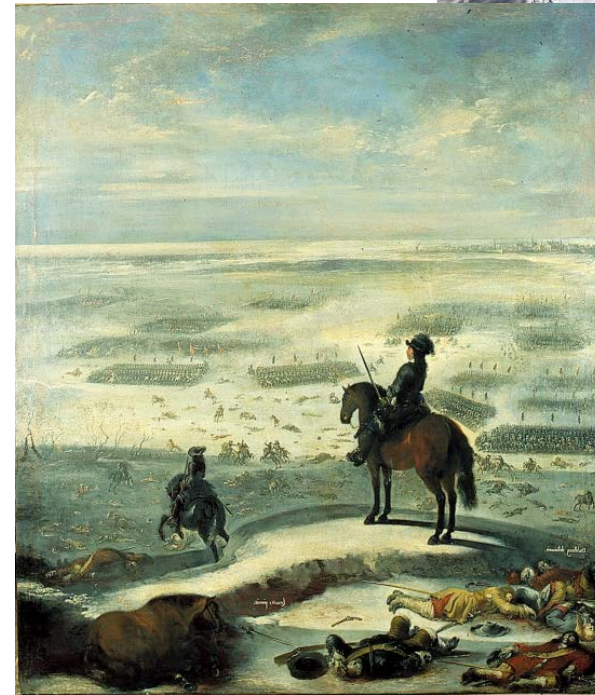
An example:

Karl X on the ice march over the Little and Great Belts, 1658

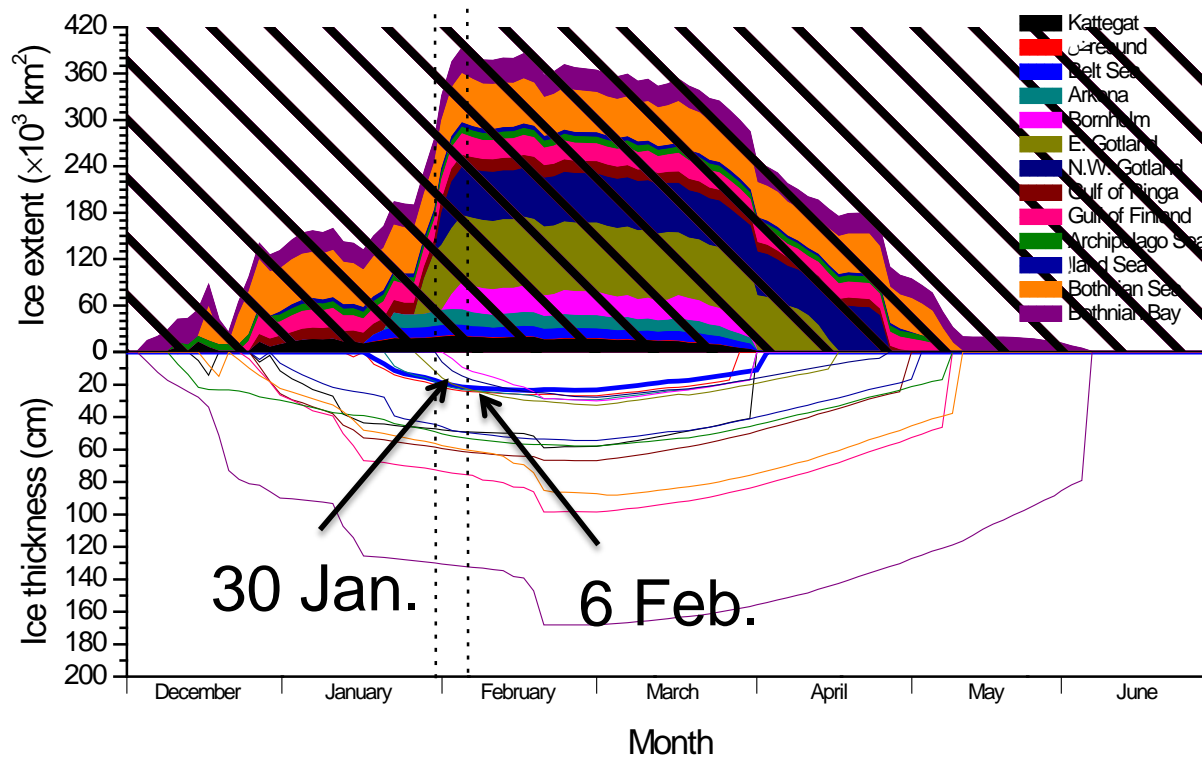
30 Jan. Swedish army crosses the Little Belt; partly broken and thin ice with snow, several drowned due to weak ice

6 Feb. Swedish army (2000-3000 men) crosses the Great Belt; cold temperatures, no losses

19 Feb. Preliminary peace treaty between Sweden and Denmark



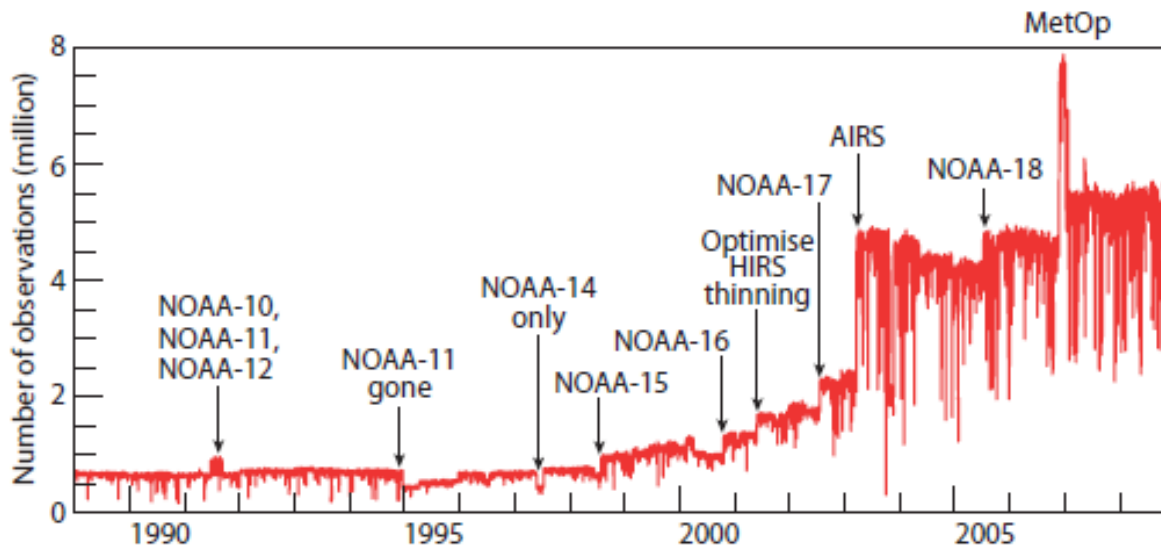
Modelled ice extend and thickness 1958



Calculated ice extent and thickness, 1658

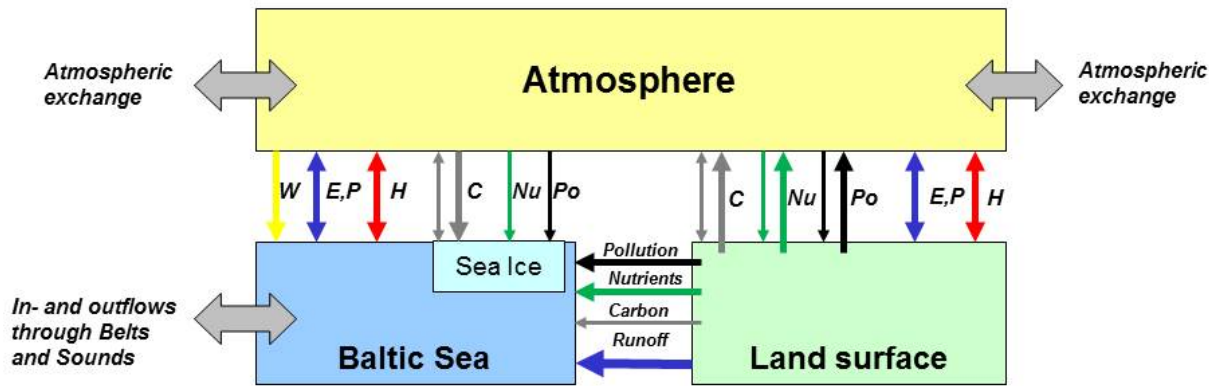
Connecting data and models:

New reanalysis data products freely available



The total number of observations (satellite and conventional) used in the ERA-Interim 12-hourly variational analysis for the period 1989–2008 exceeds 29×10^9 . This is mainly due to a large increase in the availability of satellite observations in the 20-year period.

Connecting climate and environmental changes: Carbon and nutrient cycles

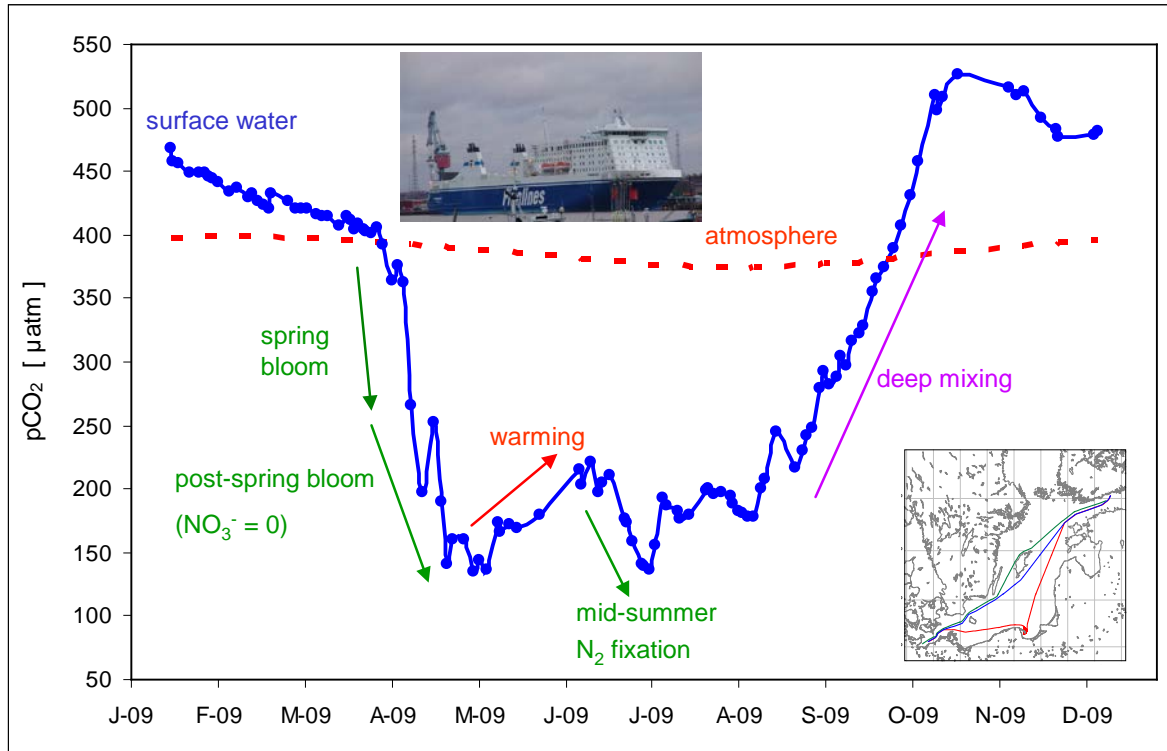


The second BALTEX box



Connecting climate and environmental changes:

New measurements teach us about Baltic Sea biogeochemistry

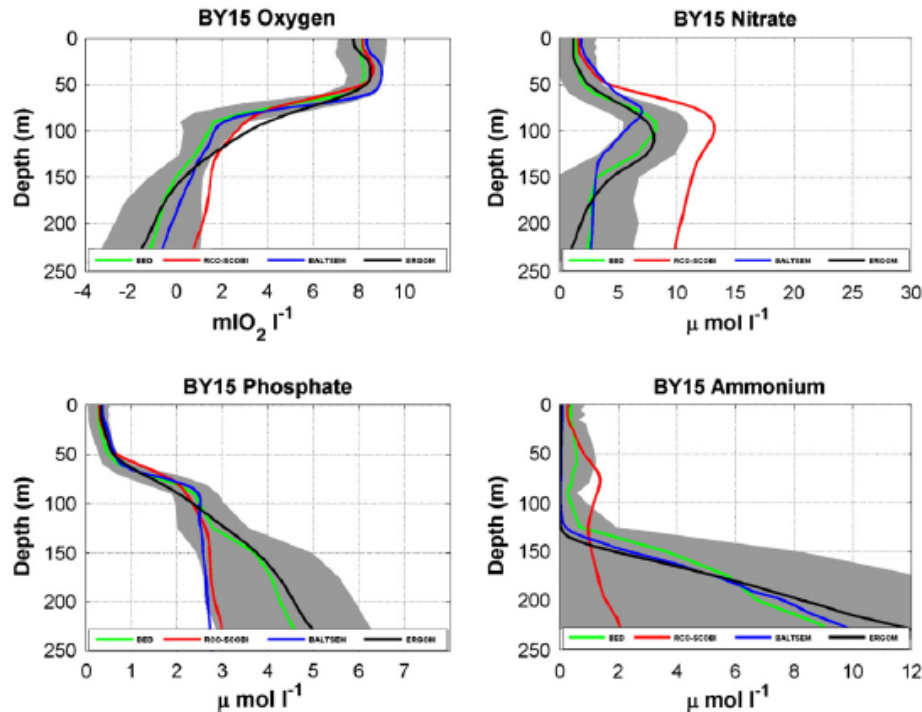
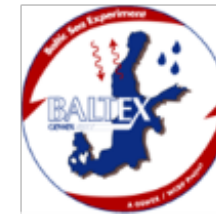


The CO_2 partial pressure (red line)
and pH (black line)



Connecting climate and environmental changes:

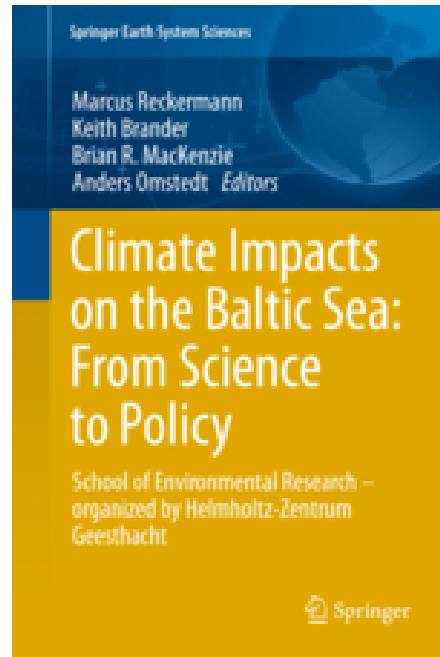
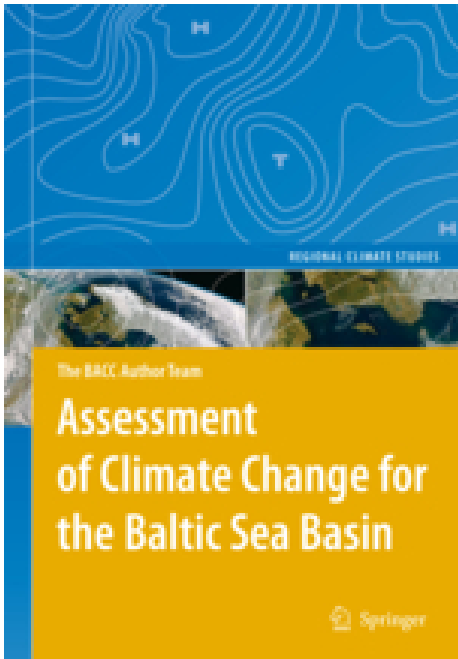
New models addressing biogeochemical changes



Three ecosystem models and observations tested in four regions

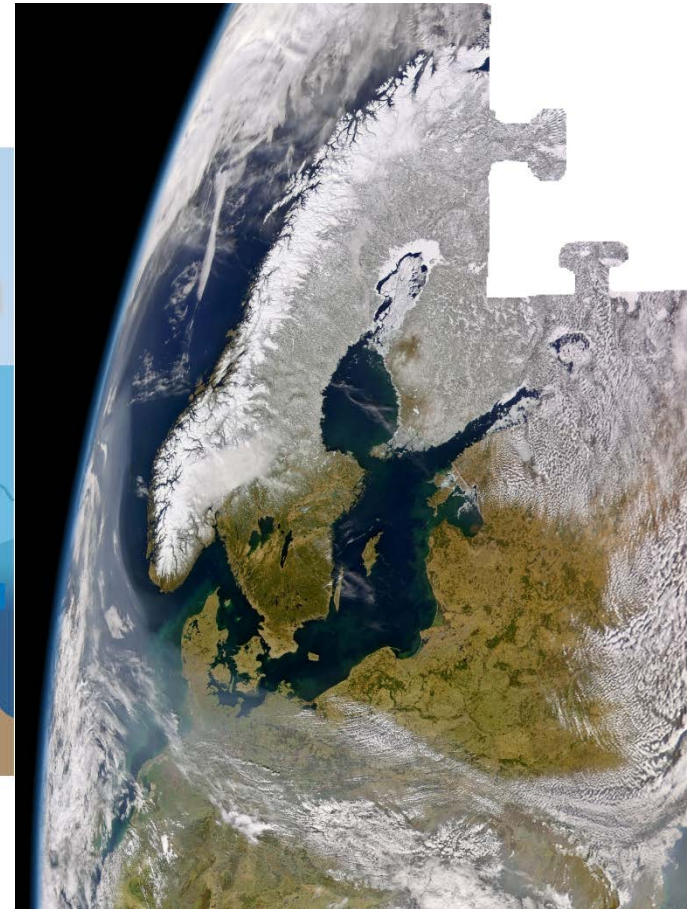
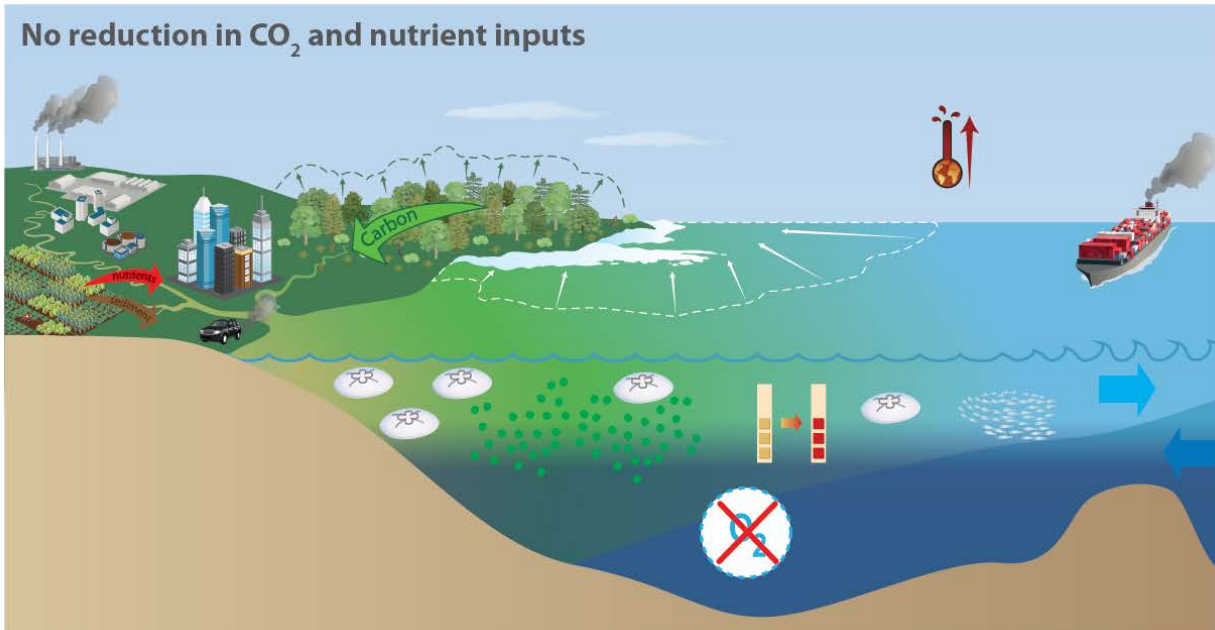


Increased complexity and improved communication: BACC, HELCOM ...

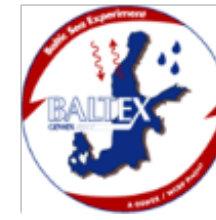


Future possible changes?

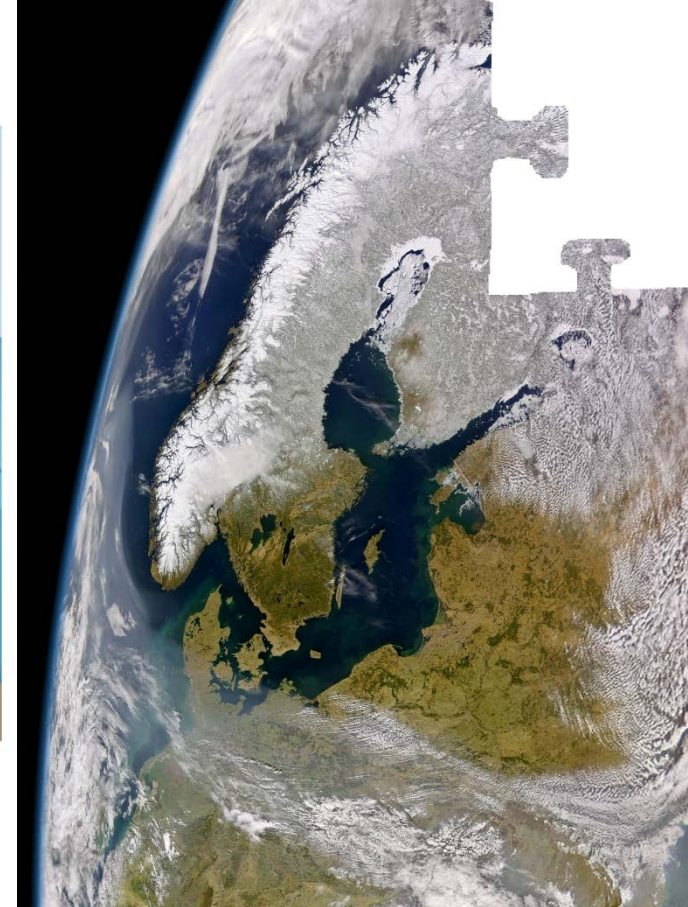
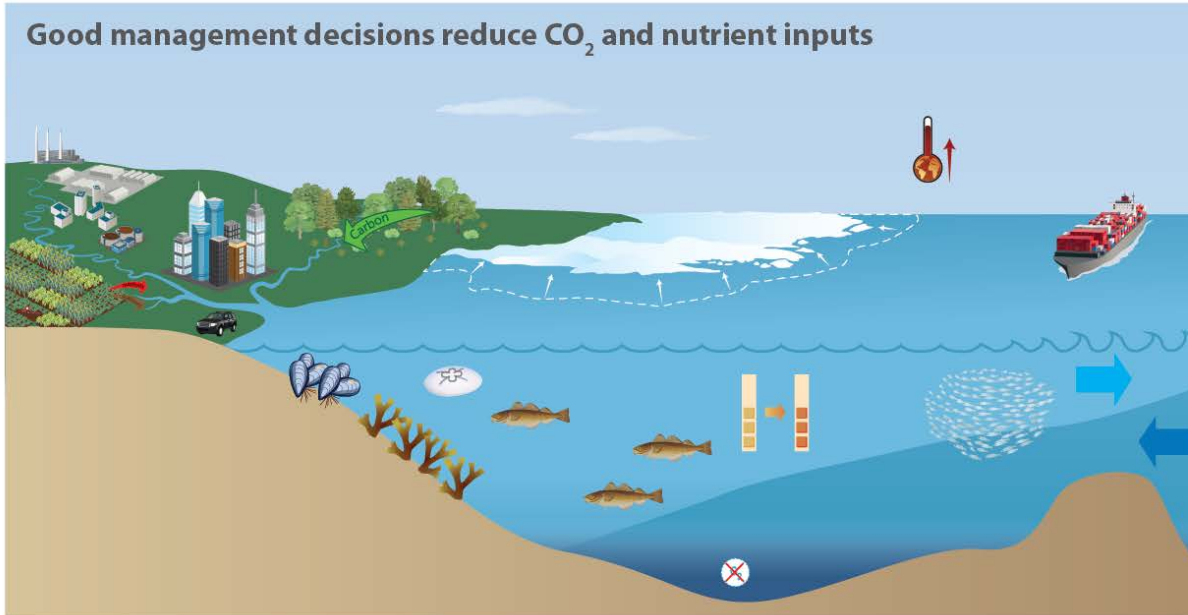
Much is up to what we are doing



Good managements decisions can change the Baltic Sea into a healthy sea



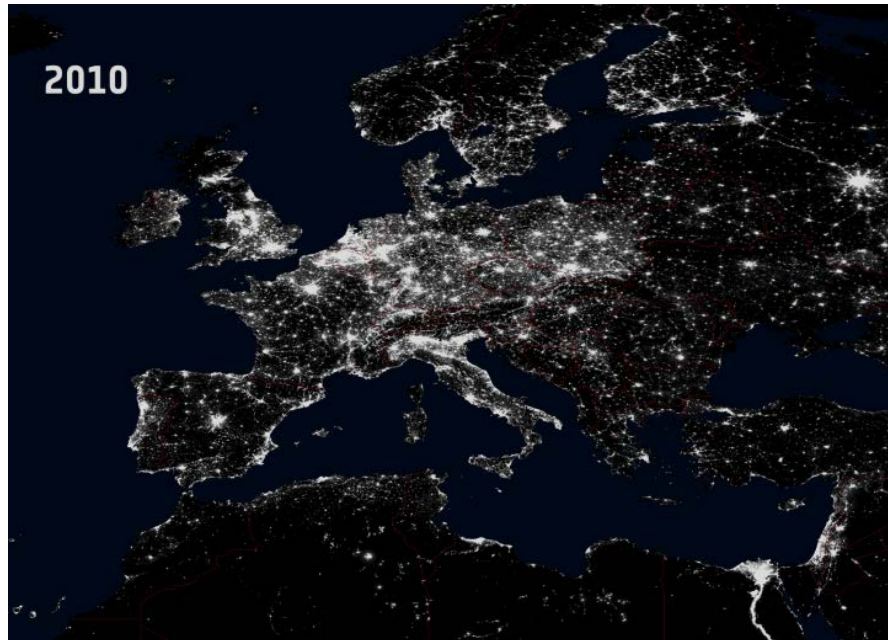
Good management decisions reduce CO₂ and nutrient inputs





Future challenges

A Baltic Sea with caring humans?



Thanks to all who have contributed to
BALTEX and for your attention

