Inorganic Carbon in the Baltic Sea

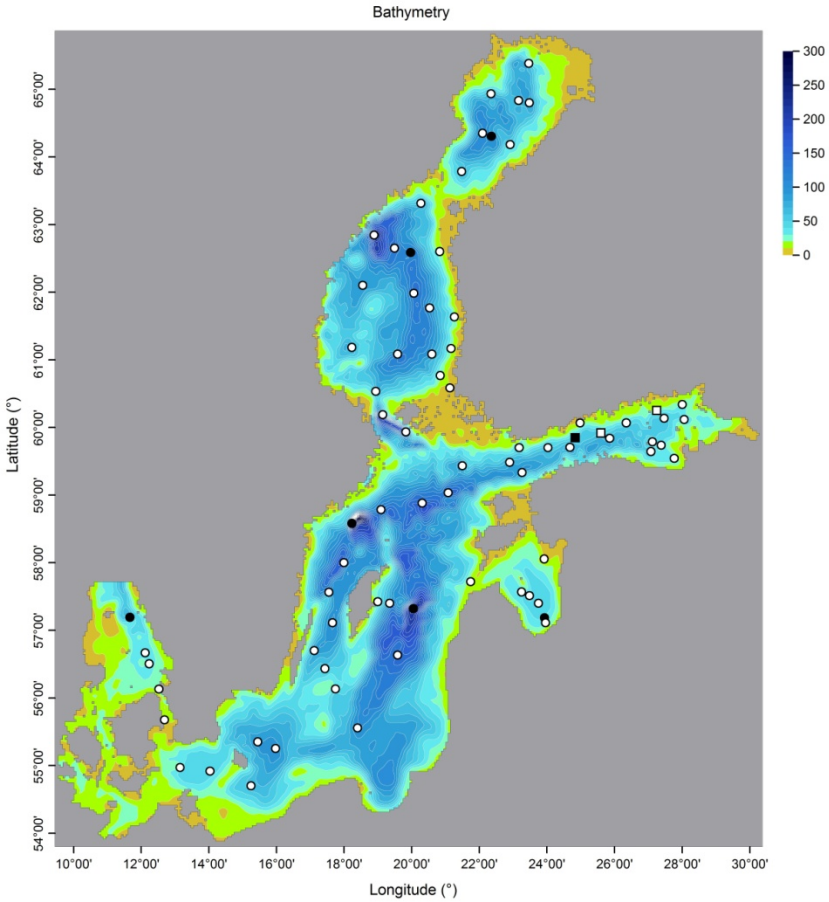
Winter and summer 2009

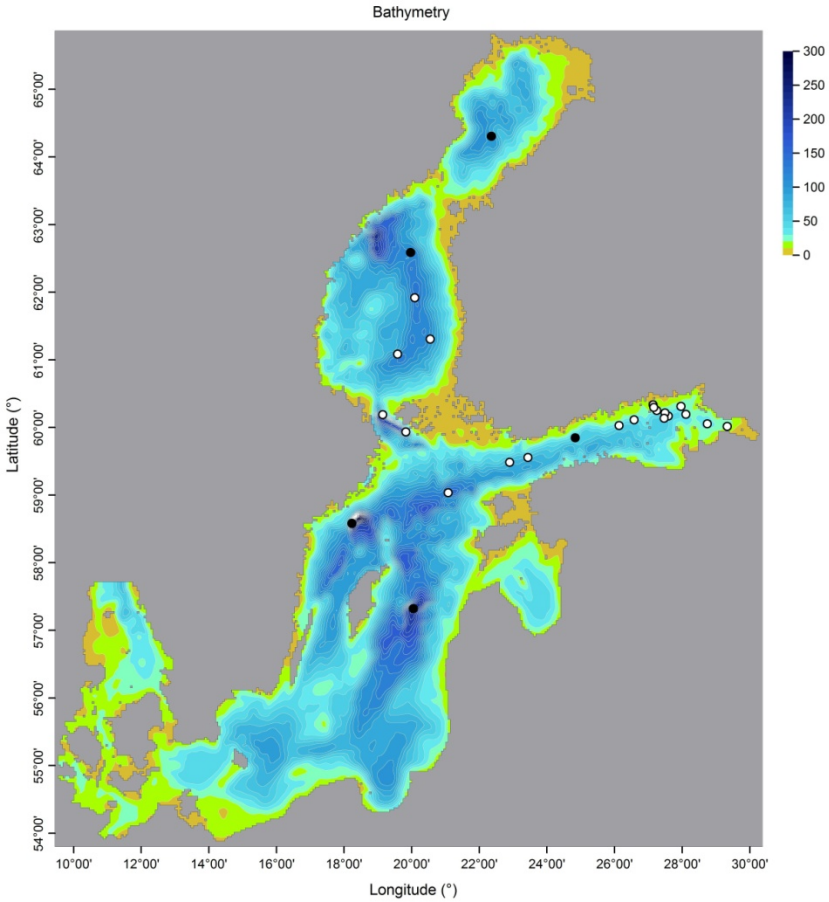
Laura Joensuu
Finnish Meteorological Institute

Marine carbon-related data from FMI

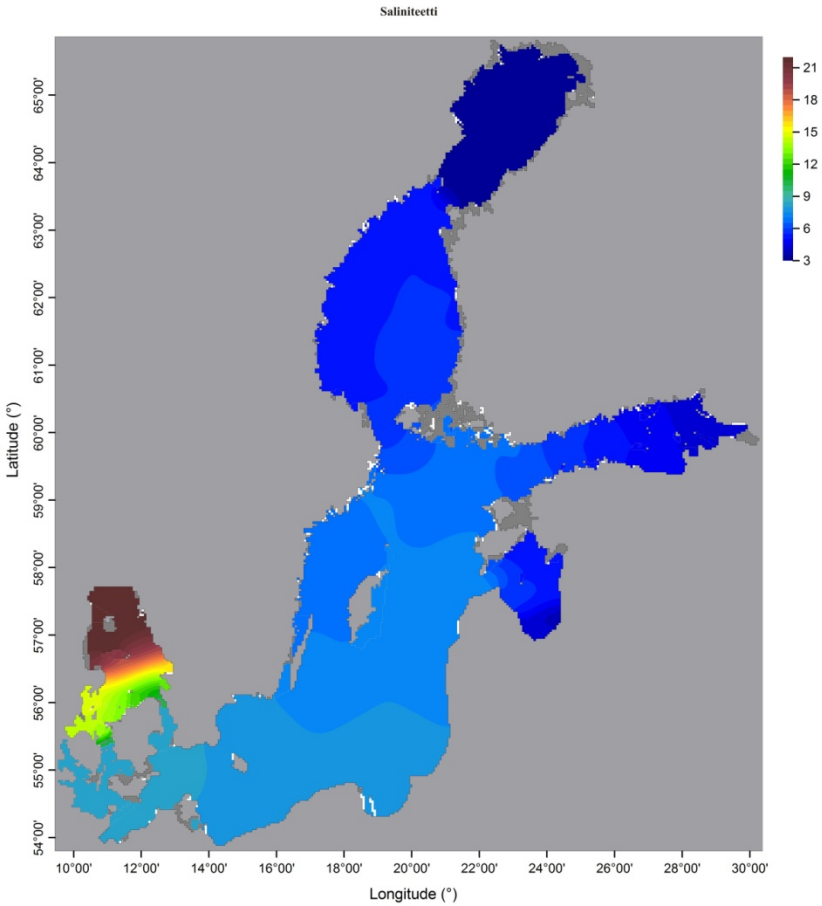
- Winter data 2009 (available)
- Summer data 2009 from the Gulf of Finland (and other areas)(available)
- Winter data 2010 (11.1. – 5.2.2010, Riga Bay 15.2. – 26.2.2010)
- Summer data 2010 (Gulf of Finland + other areas)

Sampling stations





Salinity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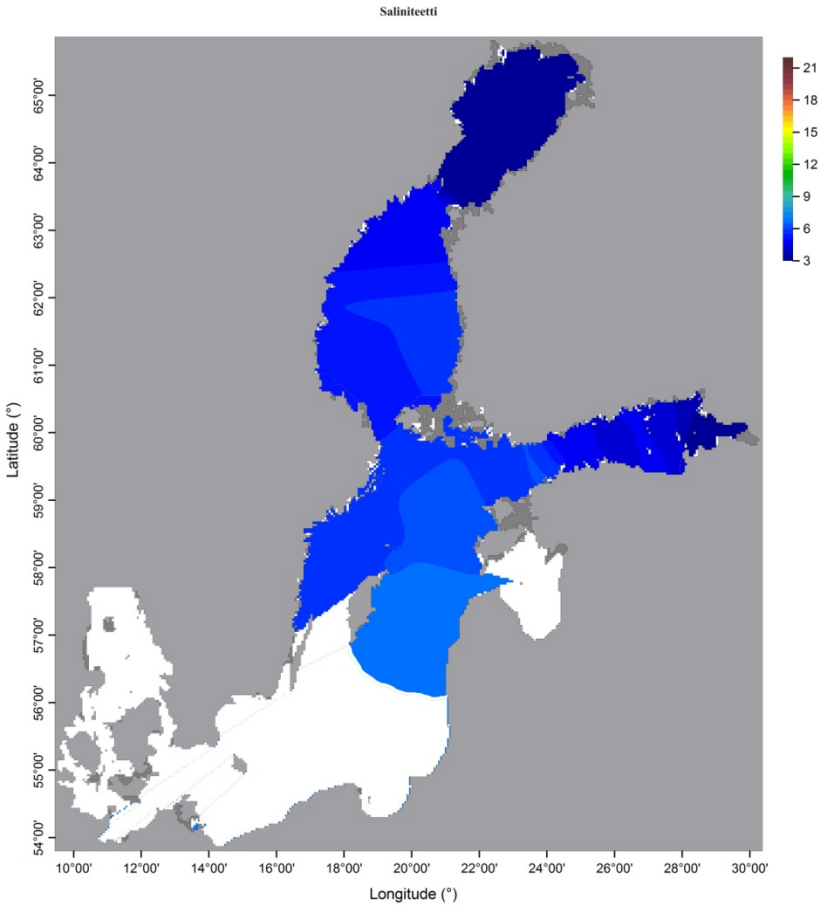
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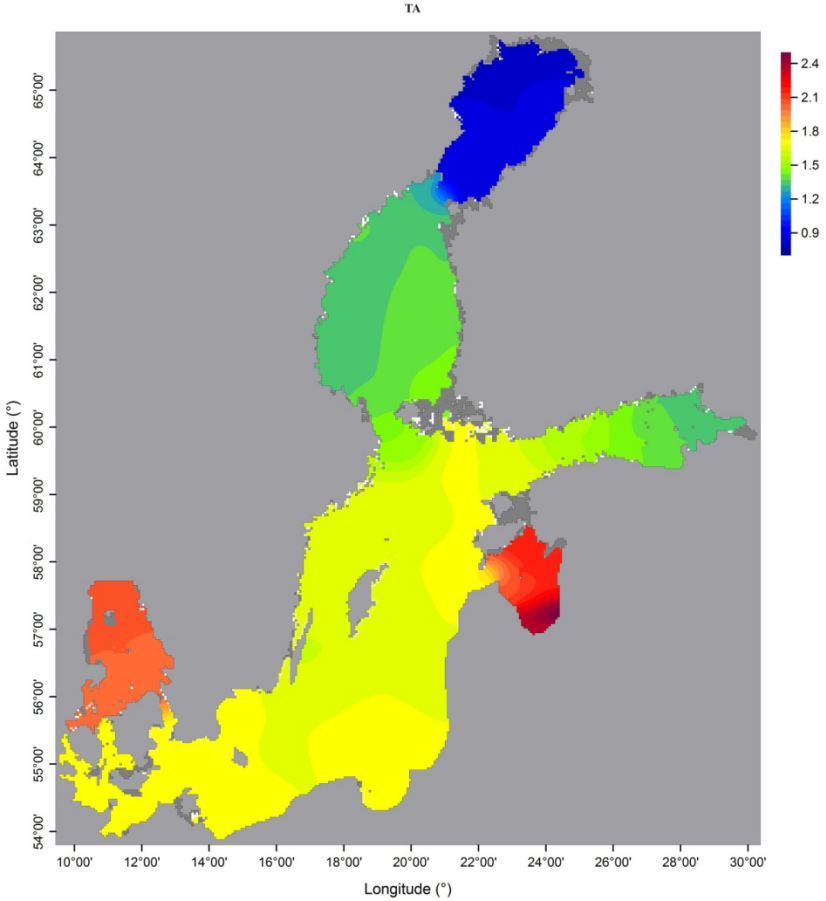
Alkalinity


TA
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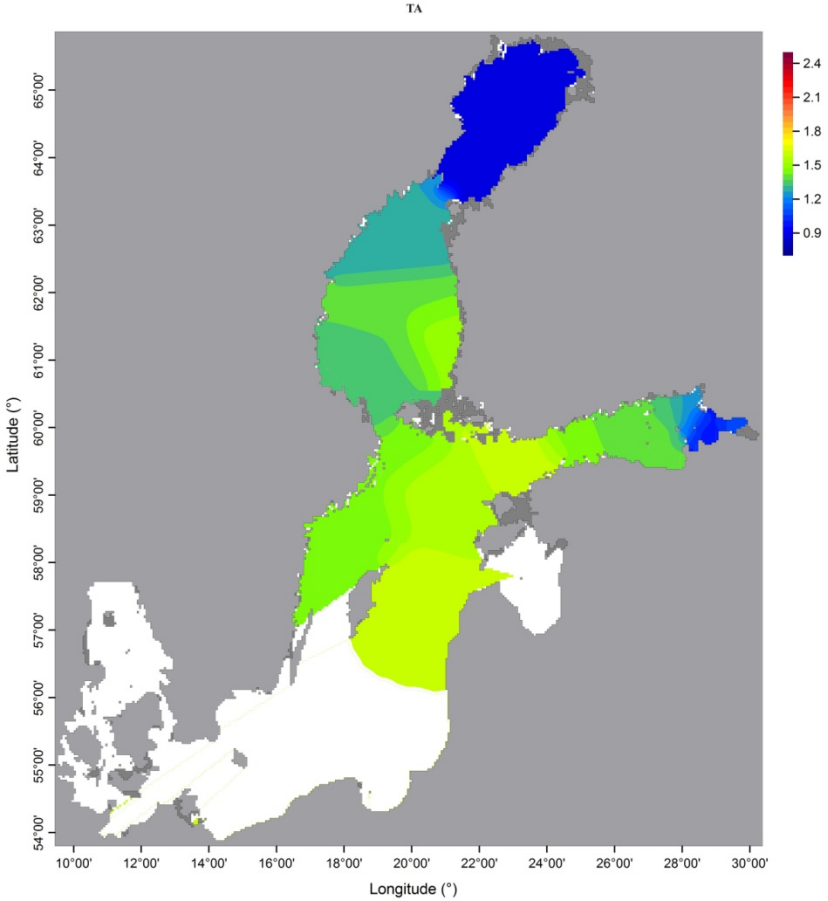
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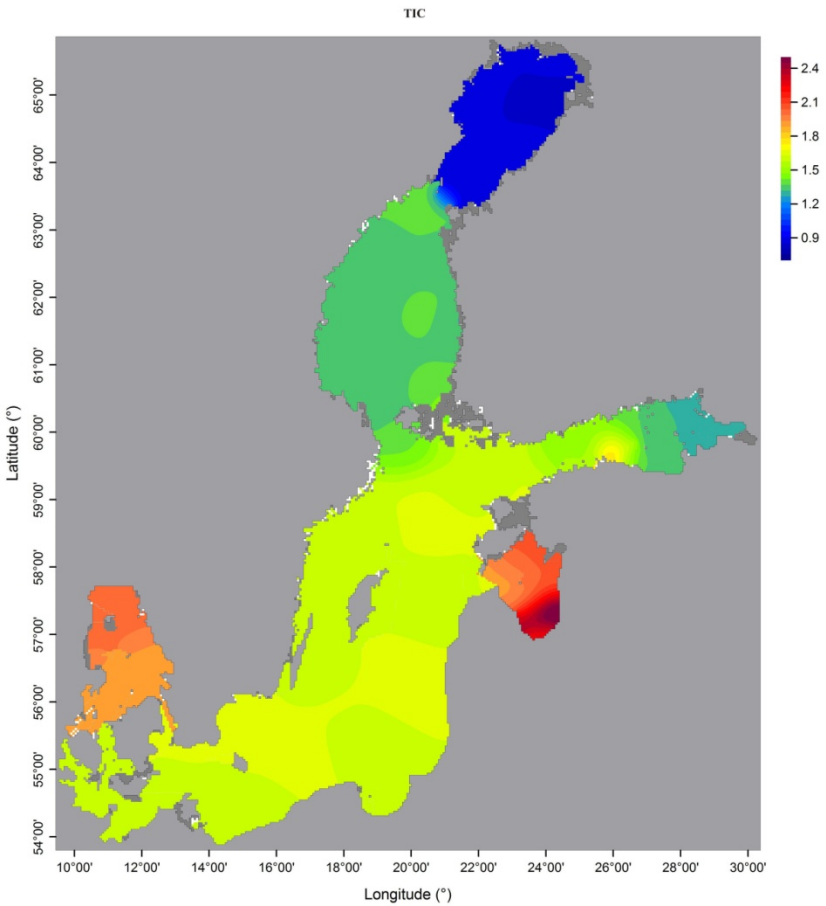
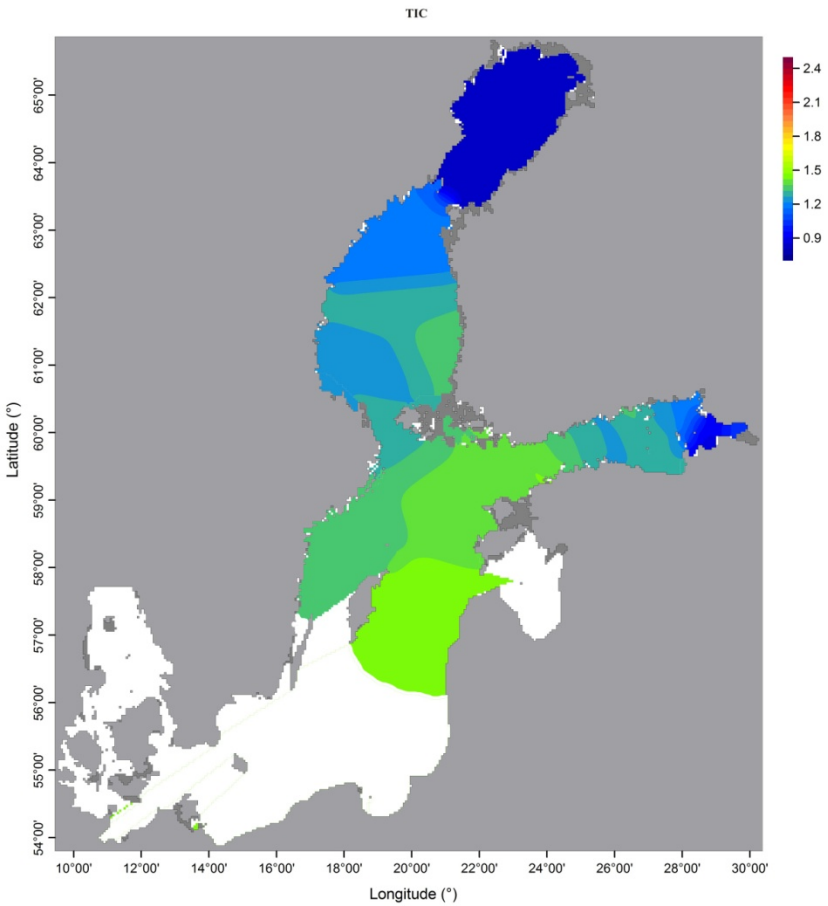
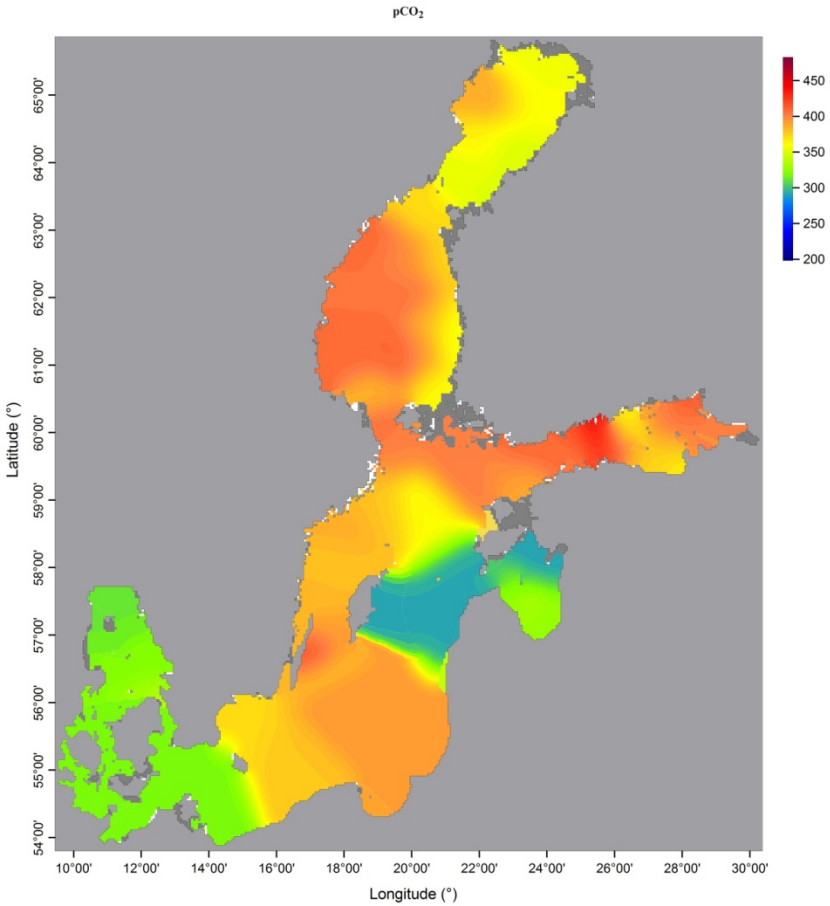
Longitude (°)

Total inorganic carbon





pCO2


pCO2
450
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Latitude (°)
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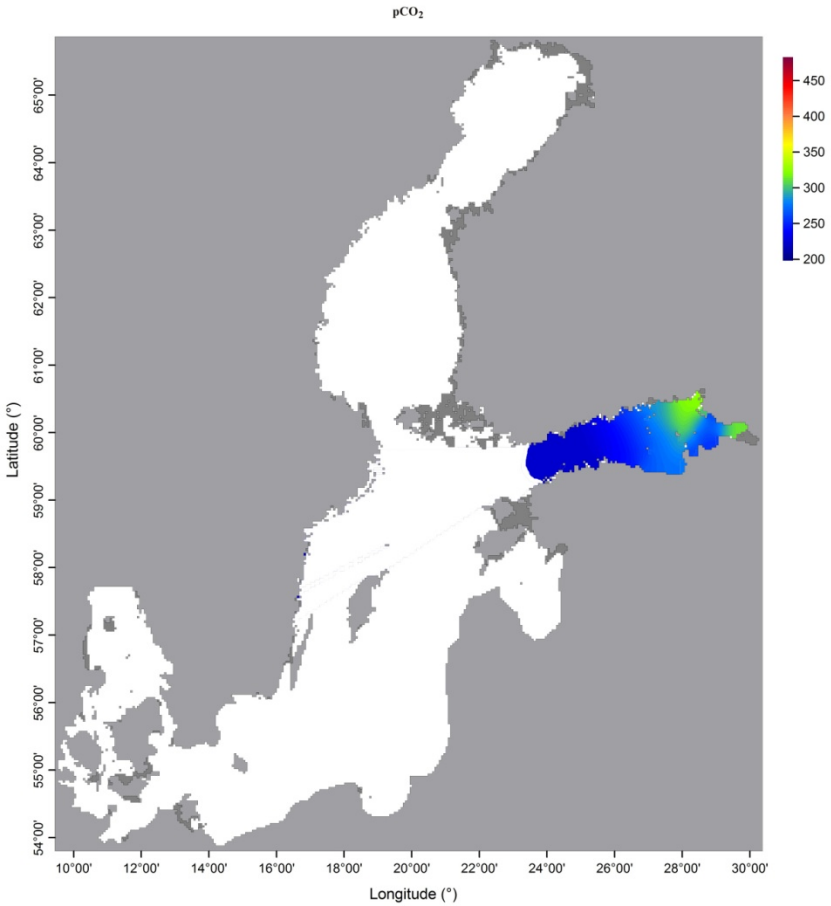
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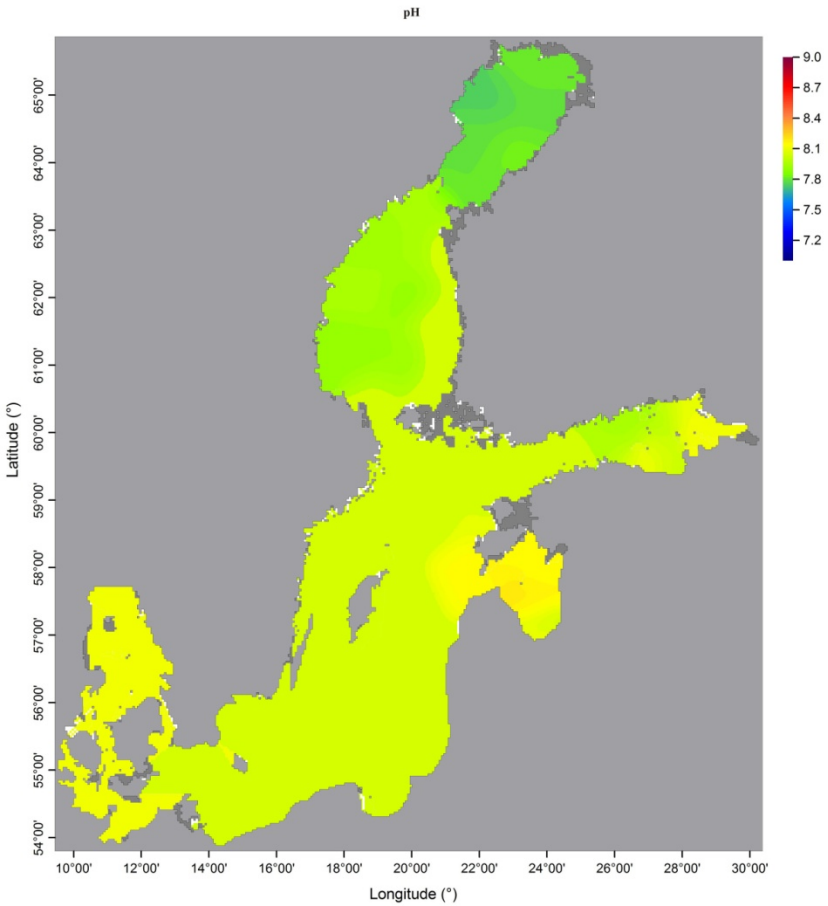
pH


pH
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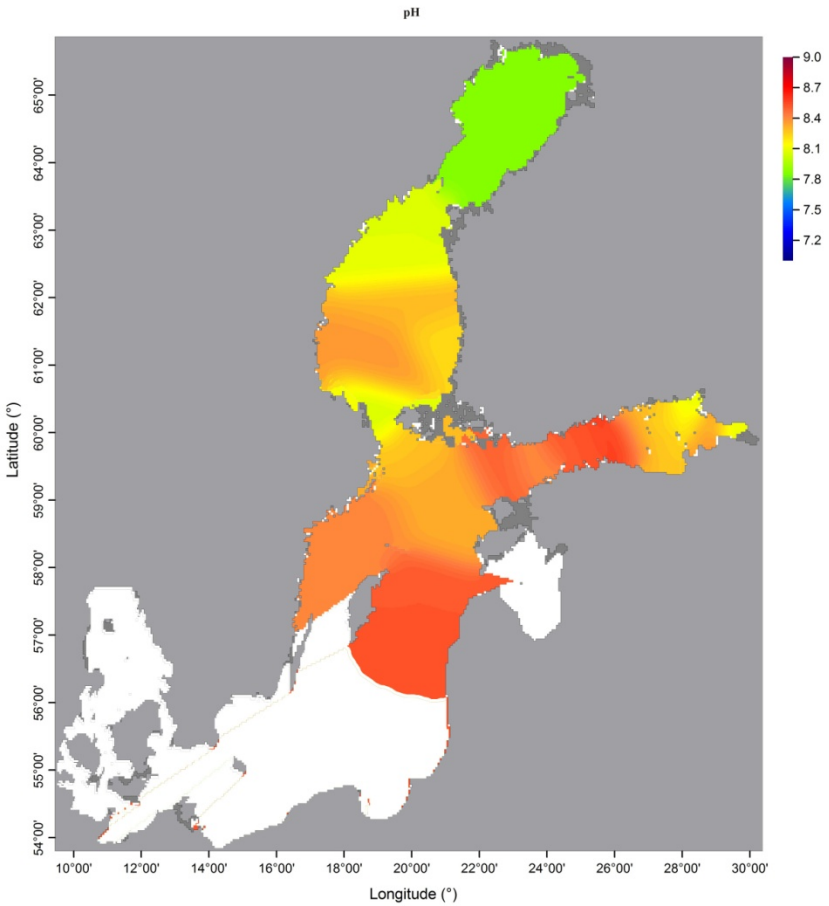
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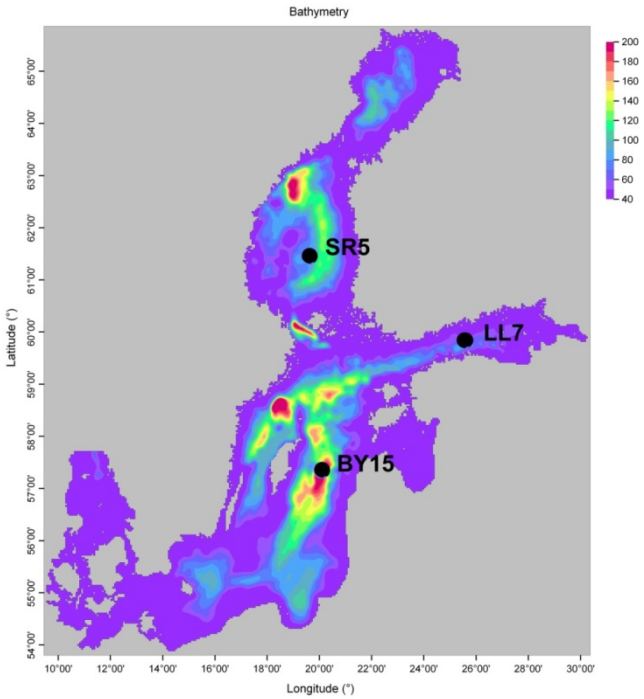
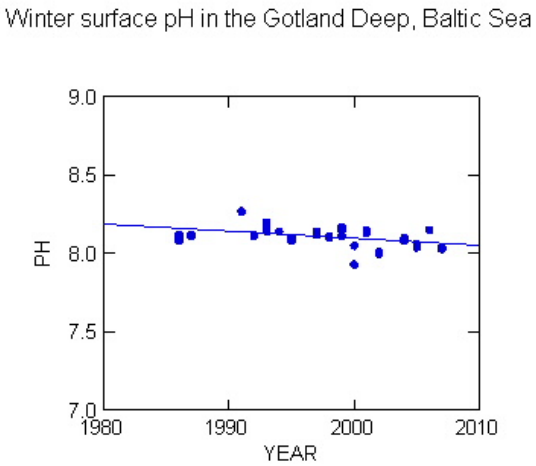
pH changes

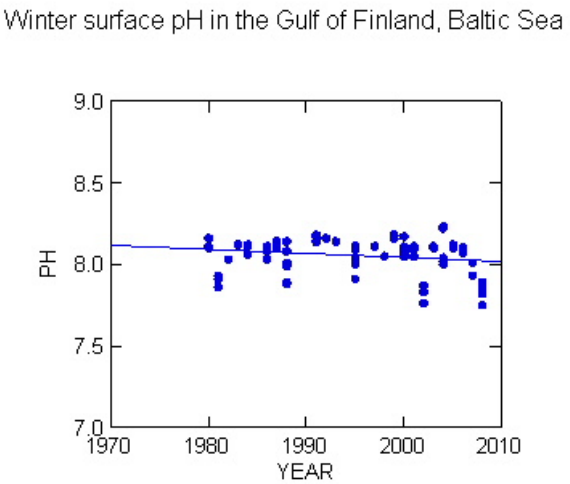
- FIMR and SMHI data will be analyzed together (Anders and Matti)
- IOW data?
- Effects of salinity: working; preliminary results indicate 0.1 – 0.2 units caused by salinity variations

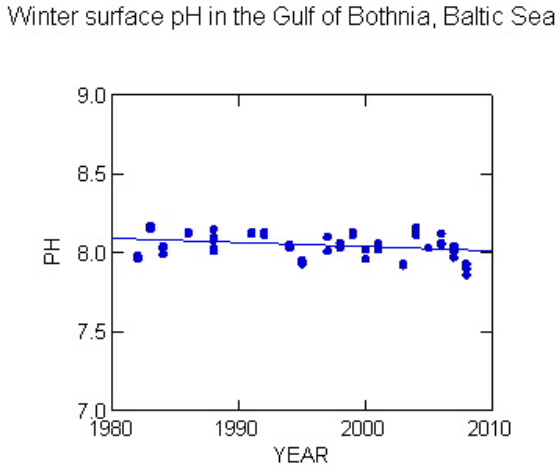
Observed long-term pH changes in the Baltic Sea

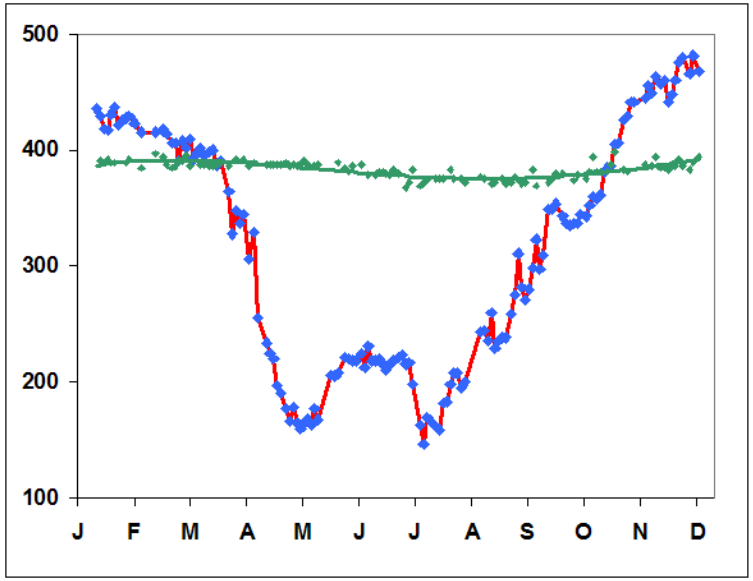
(Winter period February-March)







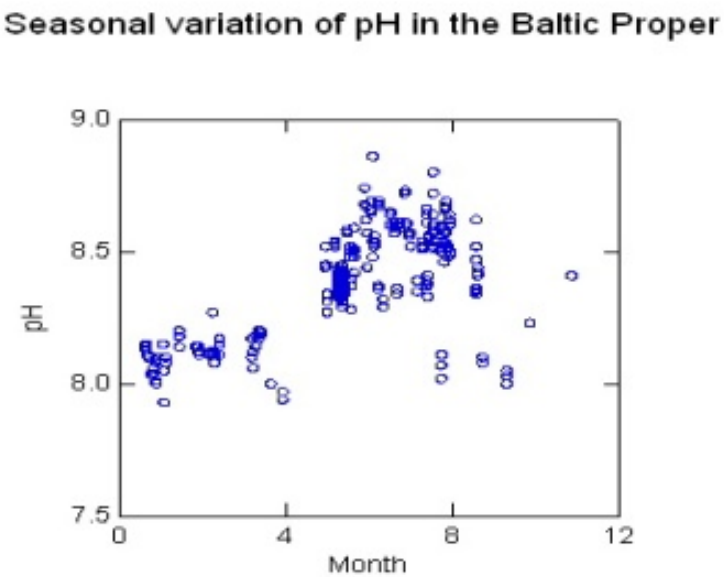




Green: atmospheric pCO2

Red/blue: aquatic pCO2

”Equilibrium” pH (mostly affected by global change) occur only a short while in late winter and late autumn periods



Research is needed to understand the significance of the long-term pH change

River discharge data: summary today

- Aim: 1990 – 2008 monthly resolution
- pH, TA, TIC, TOC, Na^{+},K^{+}, Ca^{++}, Mg^{++}, Cl^{-}, $SO_4^{--}$and flows
- Data from Sweden and Finland in database
- Estonia, Latvia, Lithuania and Poland: part of the data received, the rest has been promised
- Russia (Neva river) is a big question mark
- HELCOM: annual averages only

Initial data base available at ftp://ftp.fmi.fi

User: c-input

Password: Balt;fmi

River	Country	CountryCode	Basin	BasinCode	DateTime	JulianDay	Alk	TIC	TOC	pH	Temp	Na
Botorpström Brunnsö	Sweden	SE			31.1.1987	31808	0,399		0,7916667	7,23		0,
Lögde älv Lögdeå	Sweden	SE			31.1.1987	31808	0,118		0,55	6,31		0,0
Lyckebyån Lyckeby	Sweden	SE			31.1.1987	31808	0,169		0,7083333	6,62		0,3
Lule älv Luleå	Sweden	SE			31.1.1987	31808	0,172		0,1583333	6,83		0,0
Ljusnan Funäsdalen	Sweden	SE			31.1.1987	31808	0,861		0,1083333	7,32		0,0
Ljungbyån Ljungbyholm	Sweden	SE			31.1.1987	31808	0,197		0,4833333	6,39		0,4
Ljungan Skallböleforsen	Sweden	SE			31.1.1987	31808	0,362		0,4833333	7,26		0,0
Kalix älv Karlsborg	Sweden	SE			31.1.1987	31808	0,325		0,2666667	6,81		0,1
Alterälven Norrfjärden	Sweden	SE			31.1.1987	31808	0,238		0,9333333	6,42		0,1
Indalsälven Bergeforsen	Sweden	SE			31.1.1987	31808	0,374		0,35	7,18		0,0
Lagan Laholm	Sweden	SE			31.1.1987	31808	0,134		0,575	6,73		0,2
Helgeån Hammarsjön	Sweden	SE			31.1.1987	31808	0,481		0,825	6,61	0	0,5
Dalälven Älvkarleby	Sweden	SE			31.1.1987	31808	0,189		0,575	6,76		0,0