

FerryBox system on board RV Salme a.k.a. SalmeBox

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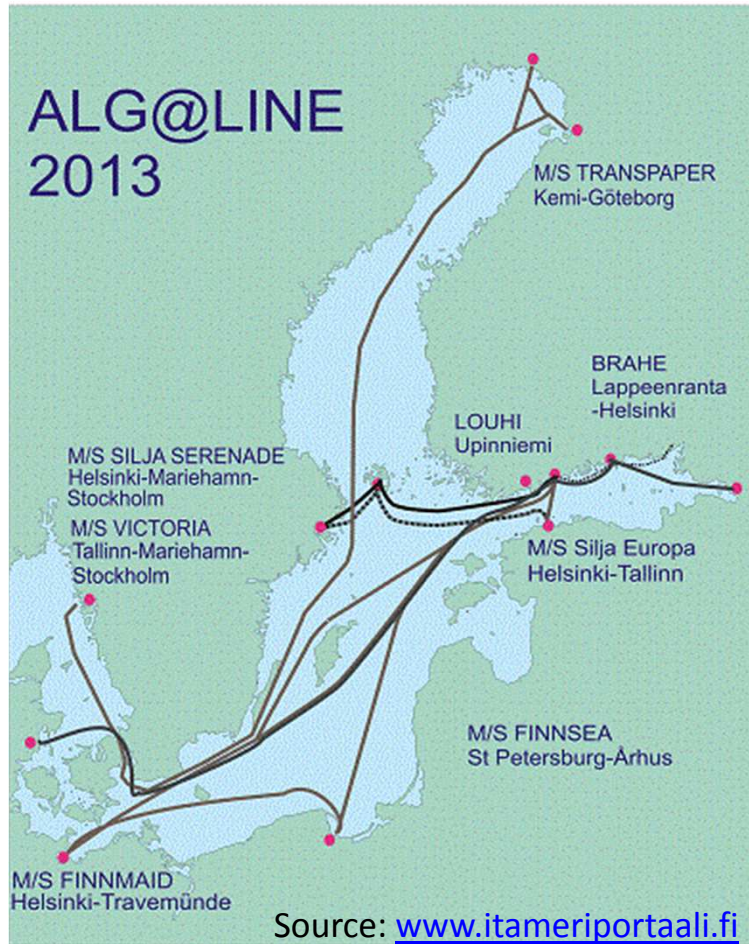
FerryBox system

- Autonomous flow-through measurement system records various environmental parameters from 2 meters depth
- Data retrieved via GSM connection or by LAN connection
- Transect yield much more information than point measurements

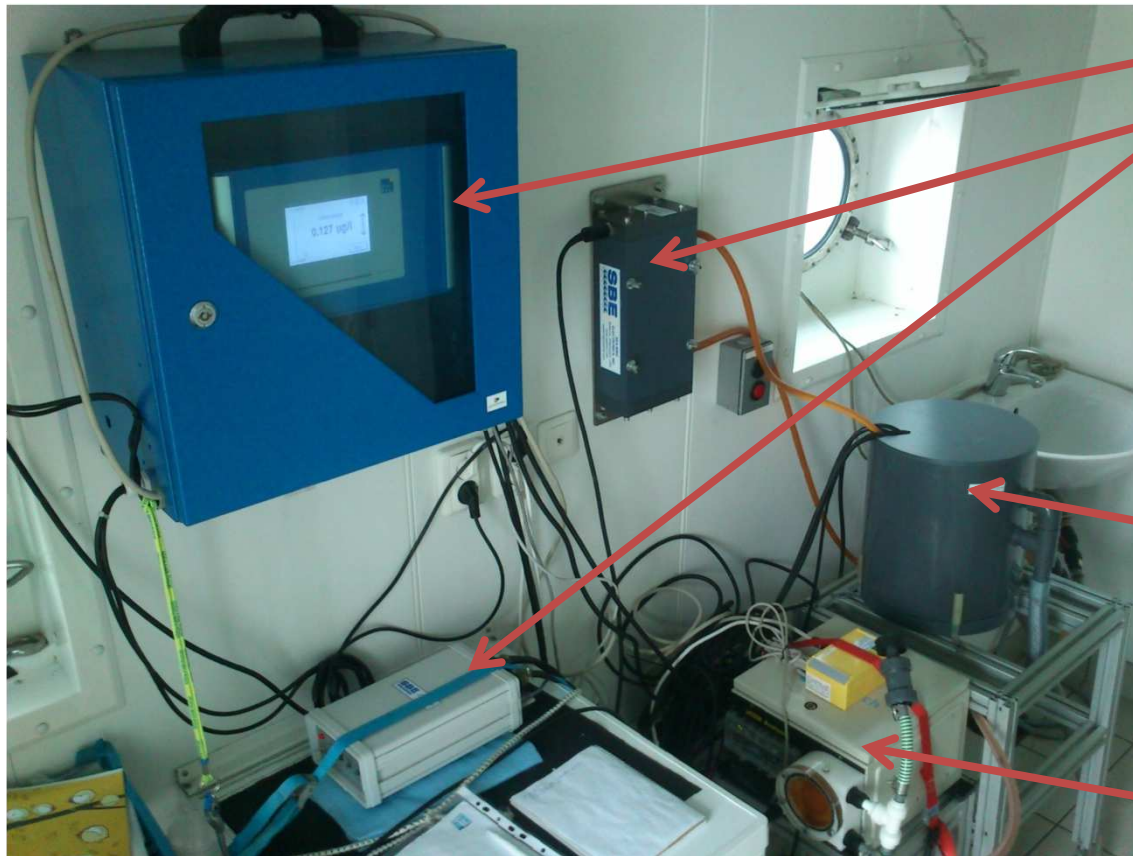


Ship-of-opportunity routes in the Baltic Sea

RV Salme routes from 1.09.2013 to 05.09.2014



RV Salme FerryBox system



- Bluebox
- MicroTSG (Thermosalinograph) *SBE 45* with power, navigation, and remote temperature interface box
- Digital Oceanographic Thermometer *SBE 38 (at water intake)*
- Sensors:
 - Chlorophyll *a*
 - Turbidity
 - Phycocyanin
 - Oxygen
- pCO₂ analyzer



Bluebox



Sensors for Chl α ,
phycocyanin,
turbidity and oxygen



Thermometer
SBE38, at
water intake



pCO₂ analyzer



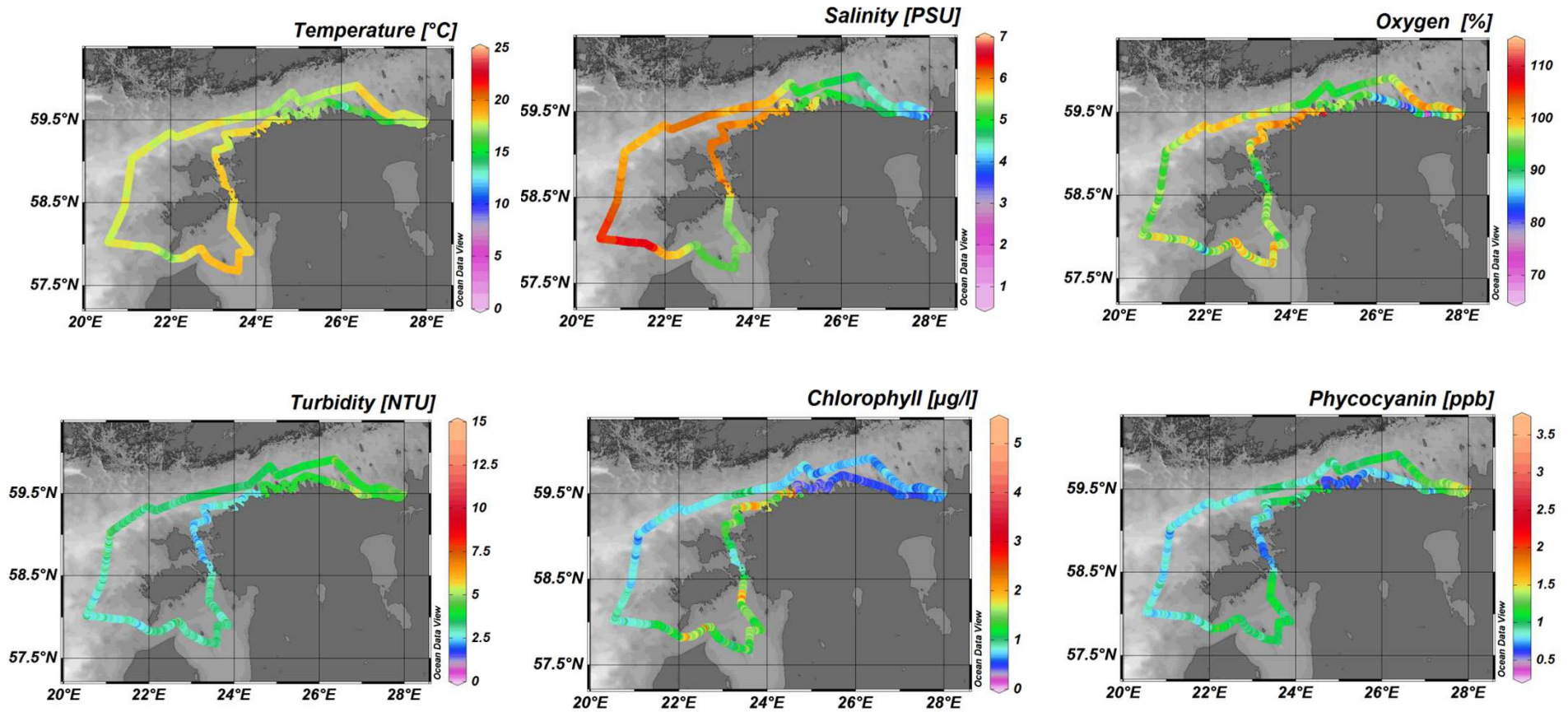
Thermosalinograph *SBE45*

Currently Ferrybox measures following parameters:

Parameter	Measurement principle	Sensor
Water temperature (hull mounted)		SBE38
Water temperature (flow-through)		SBE45 MicroTSG
Conductivity (flow-through)	Inductivity	SBE45 MicroTSG
Chlorophyll <i>a</i>	Fluorescence (wavelength ex/em 470/695 nm)	FLRT
Phycocyanin	Fluorescence (wavelength ex/em at 630/680 nm)	FLPCRT
Turbidity	Light scattering (blue)	FLNTURT
Oxygen		
pCO ₂	Membrane system	OceanPack MK2 Stand-Alone pCO ₂ Analyzer



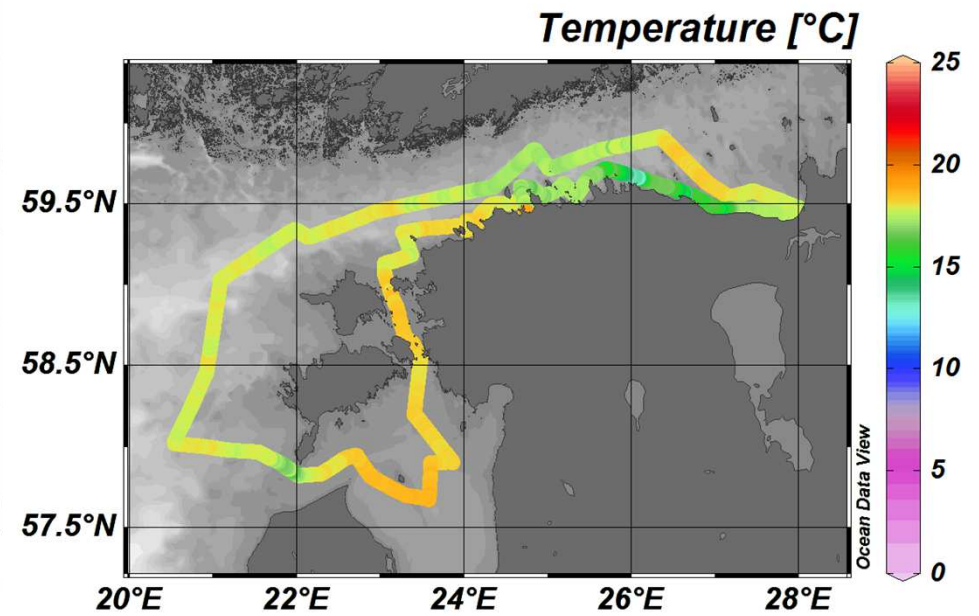
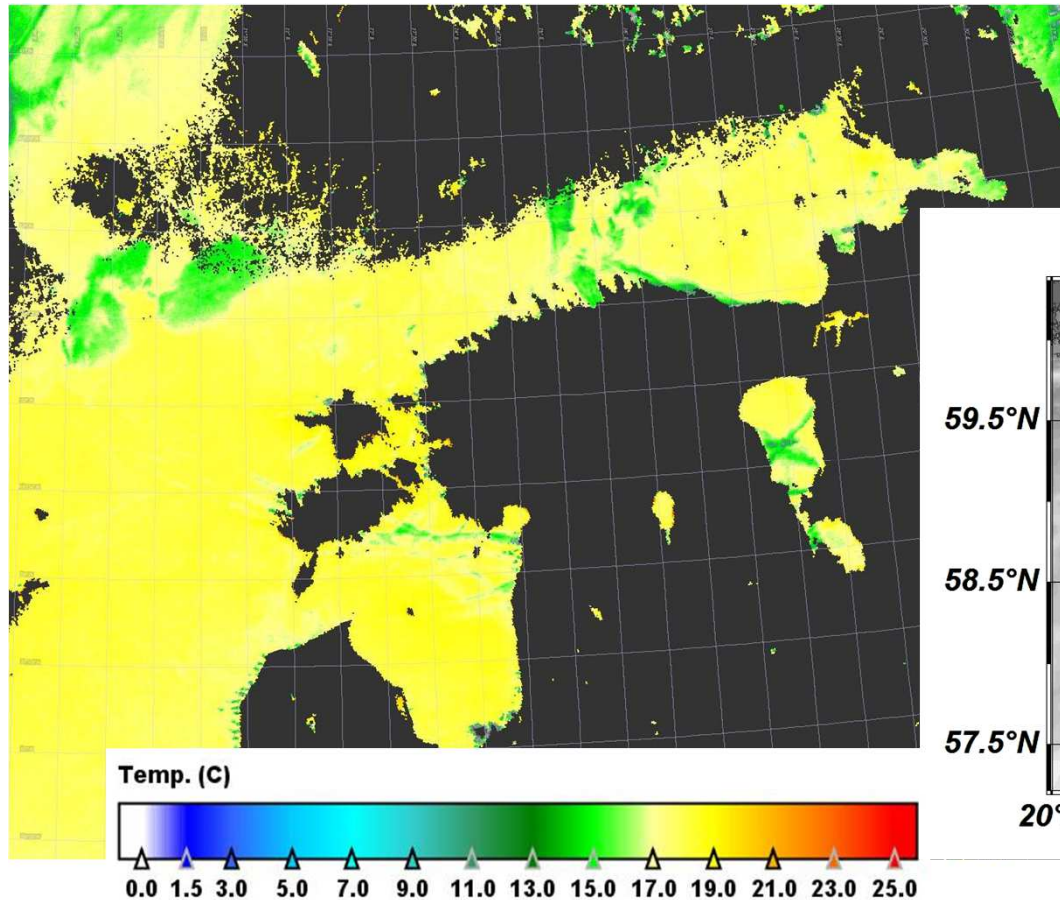
Ferrybox data 9-13 September 2013



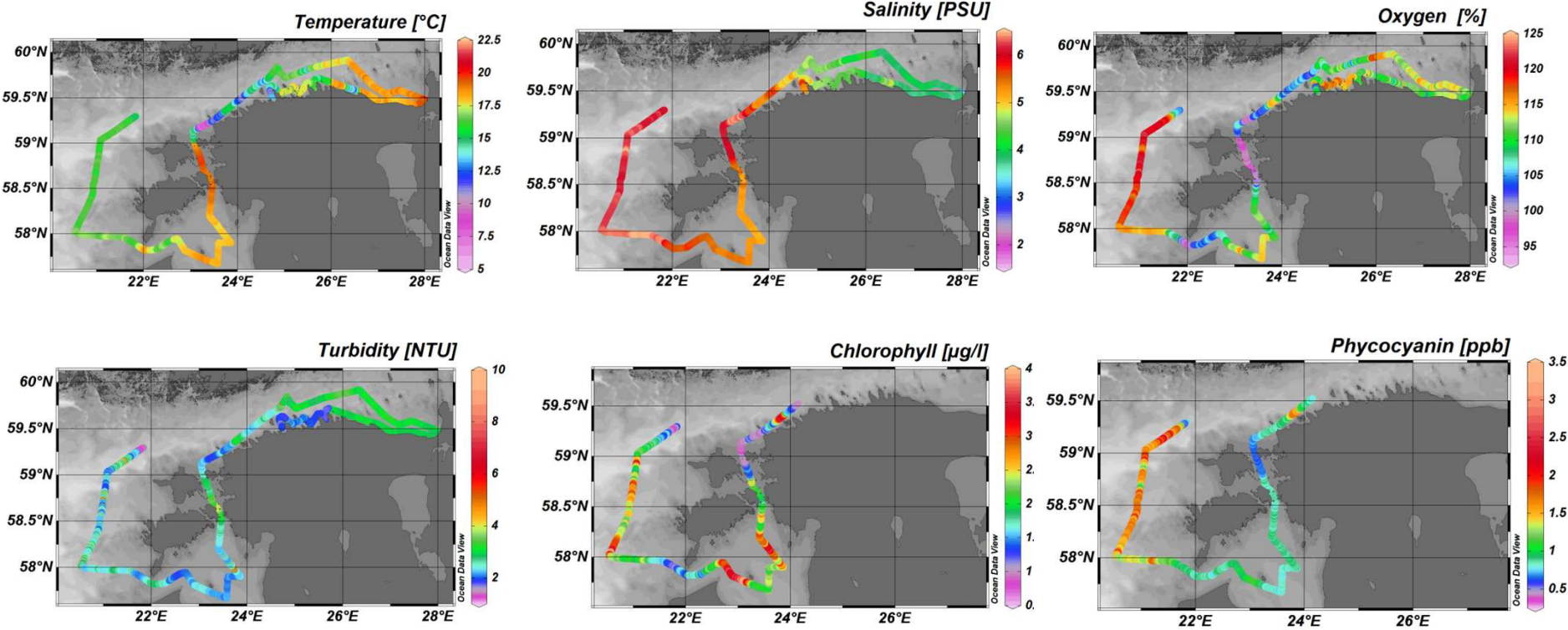
SST on 13.09.2013

Remote sensing

Ferrybox



Ferrybox data 14-17 July 2014



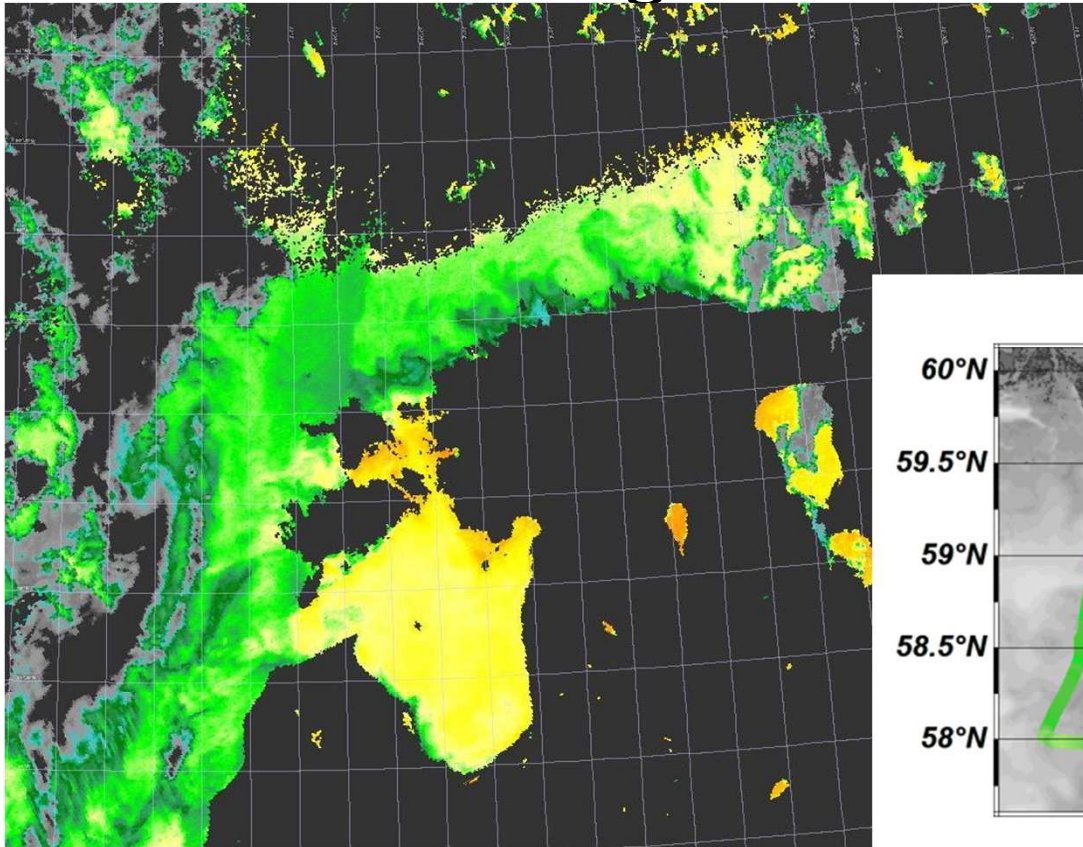
Source: Ocean Data View



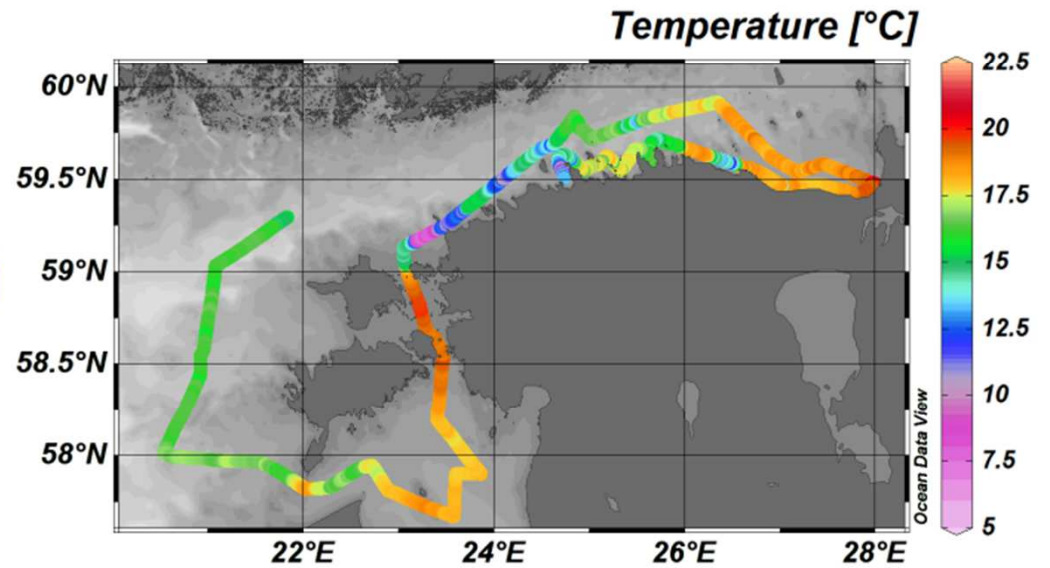
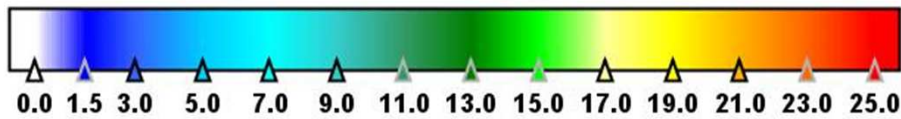
SST on 15 July 2014

Remote sensing

Ferrybox



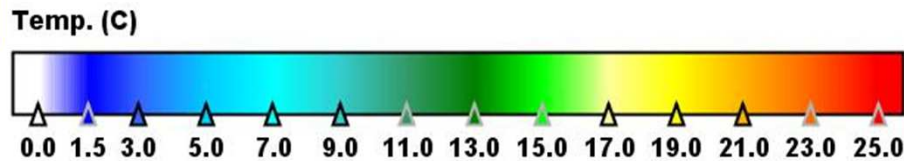
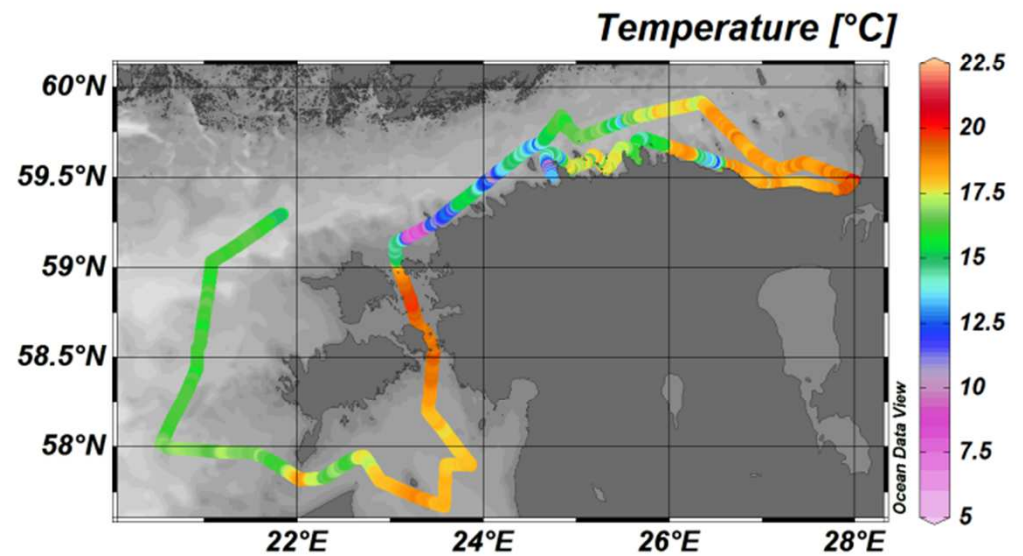
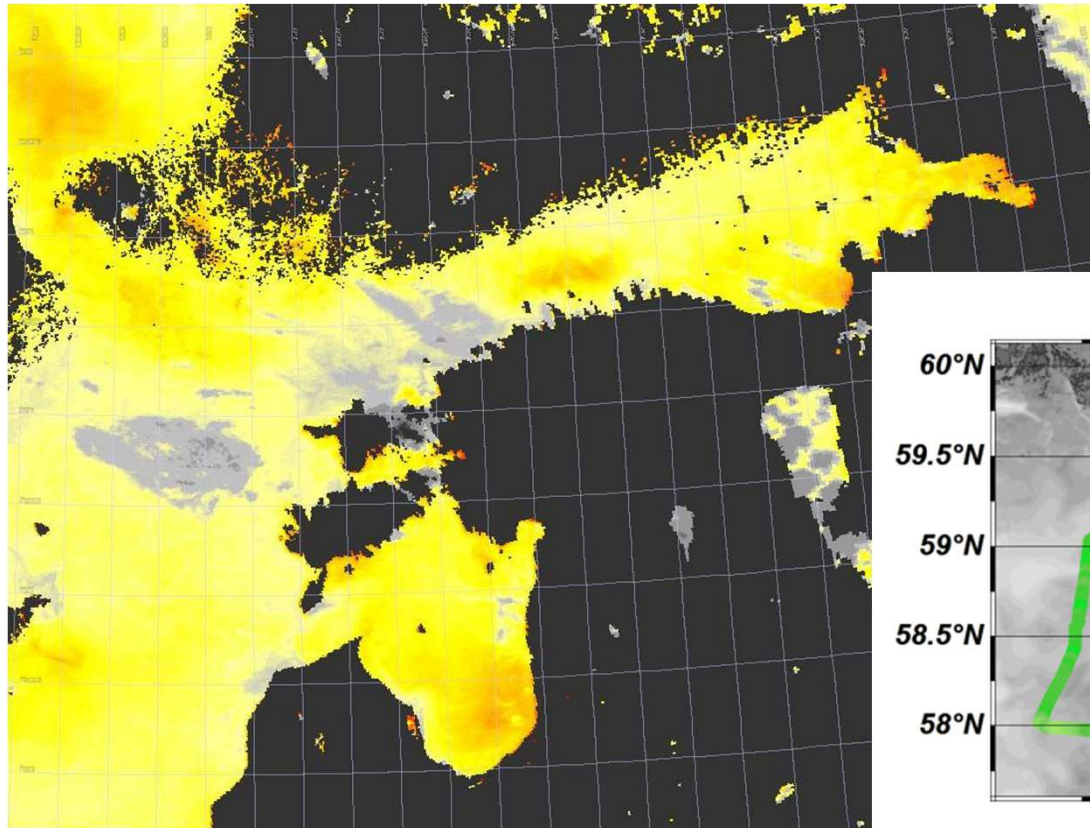
Temp. (C)



SST on 17 July 2014

Remote sensing

Ferrybox



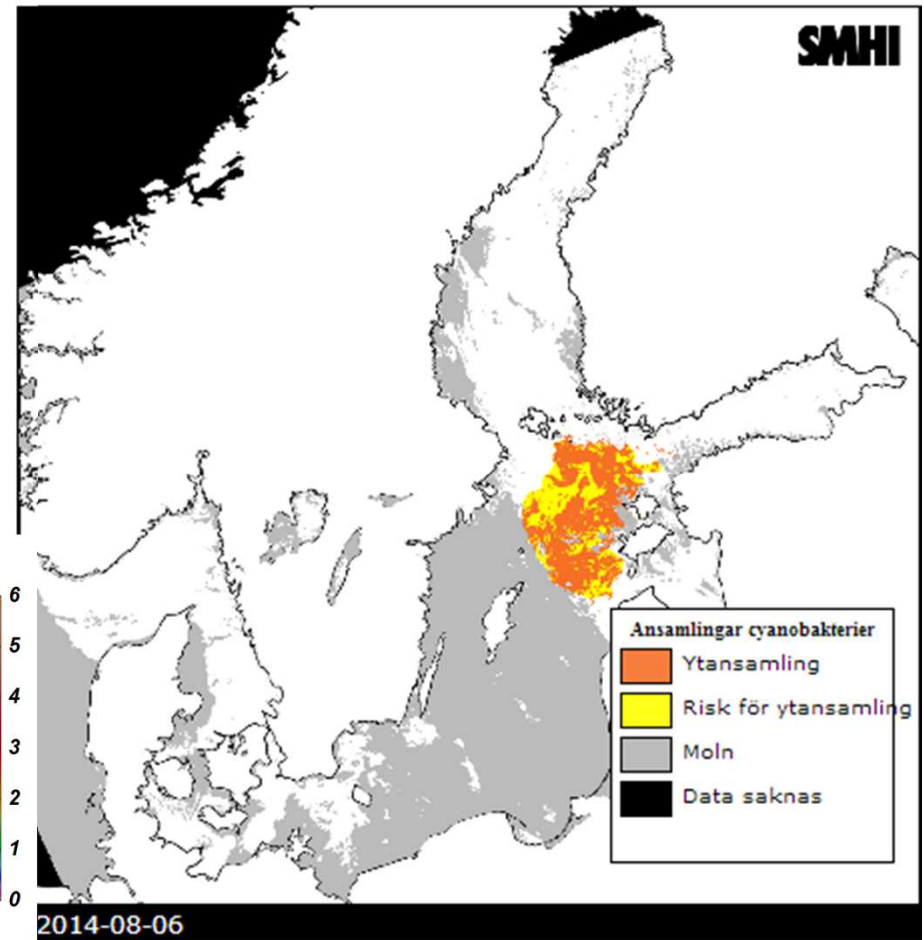
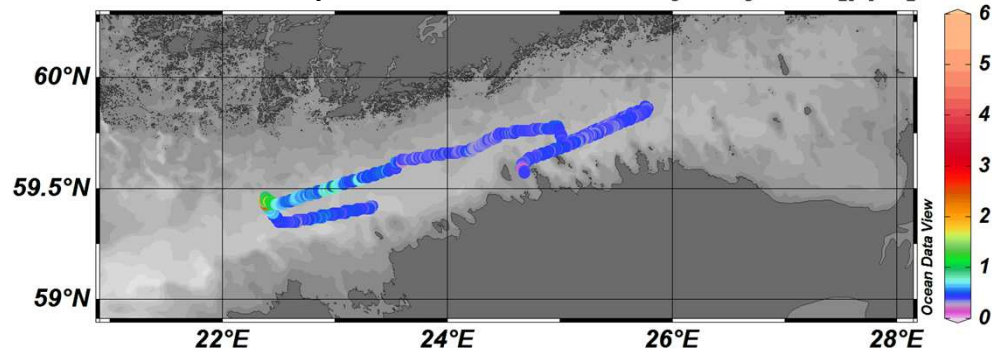
Cyanobacterial bloom

Remote sensing on 26.07.2014

6.08.2014



Ferrybox 28.07.14 *Phycocyanin* [ppb]



Source: www.smhi.se



Marine Systems Institute
Tallinn University of Technology

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Ferrybox maintenance

- Due to iron in the water the fluorometers need to be cleaned every time before, during and after the voyage.
- Sensors need to be sent back to the factory annually to be cleaned, calibrated and for standard maintenance.



Conclusion

Pros:

- Compared to SOOP ferrybox systems SalmeBox gives us much more information over a broader area of sea surface

Cons

- Iron in the water causes Chl *a* fluor. sensor “to lie”

Hope to solve this problem asap



Thank you for your attention!

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Andres Trei

Rivo Uiboupin

