



Ferrybox systems in Operational Phytoplankton Monitoring Project Alg@line

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Alg@line Highlights



1991: the first recordings on-route
Helsinki-Tallinn with Georg Ots

1992: the system installed on-board
Finnjet

1993: the "official" launch of Alg@line

1997: Finnish-Estonian operative
monitoring system of the state of the
Gulf of Finland

- Finnish Institute of Marine Research
- Estonian Marine Institute
- Uusimaa Regional Environment Centre
- City of Helsinki Environment Centre

2003-2005 : Ferrybox EU project

2005- 2008: ESA/MarCoast baseline service

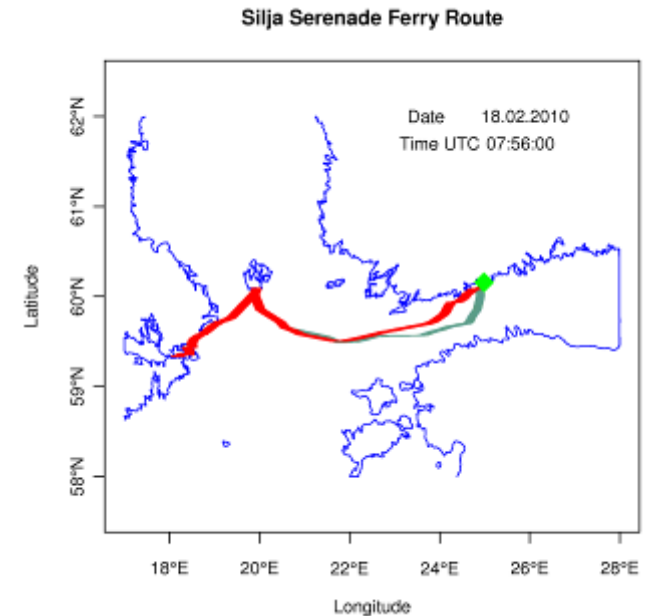
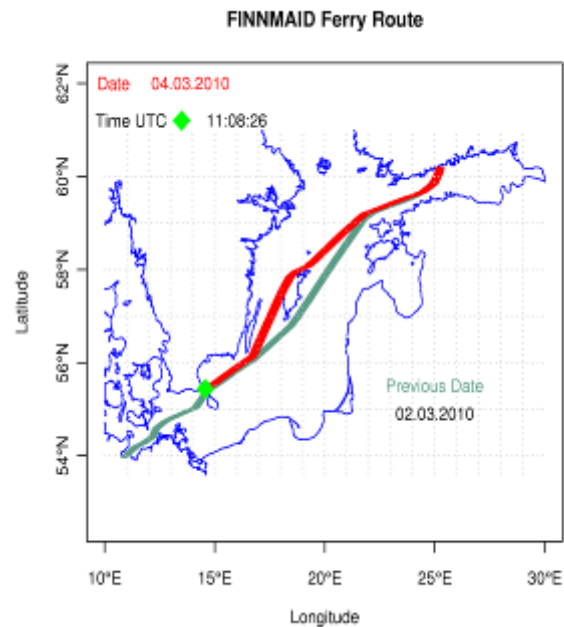
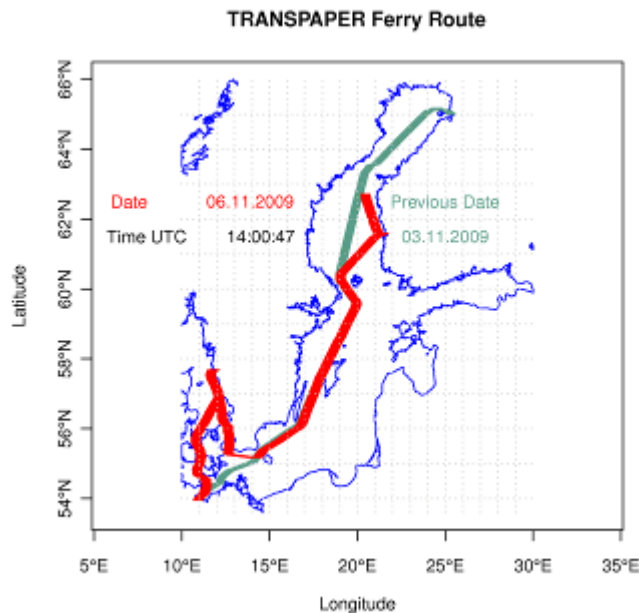
2008: Cooperation with SMHI for Oulu-
Göteborg route



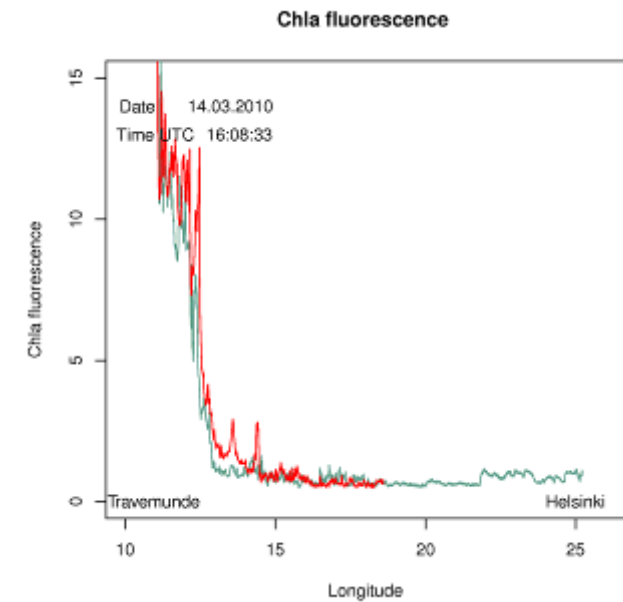
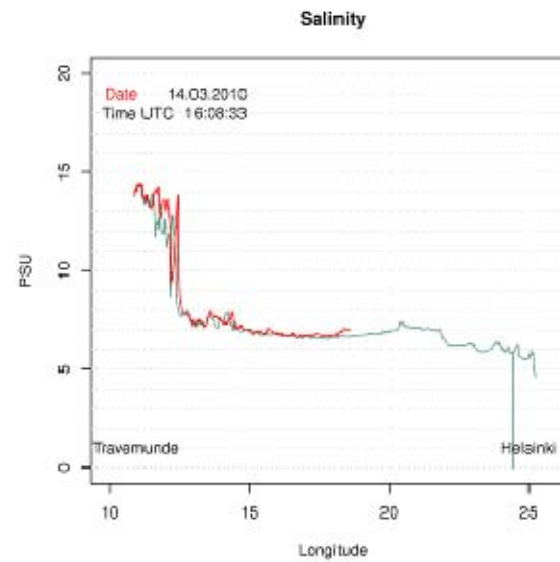
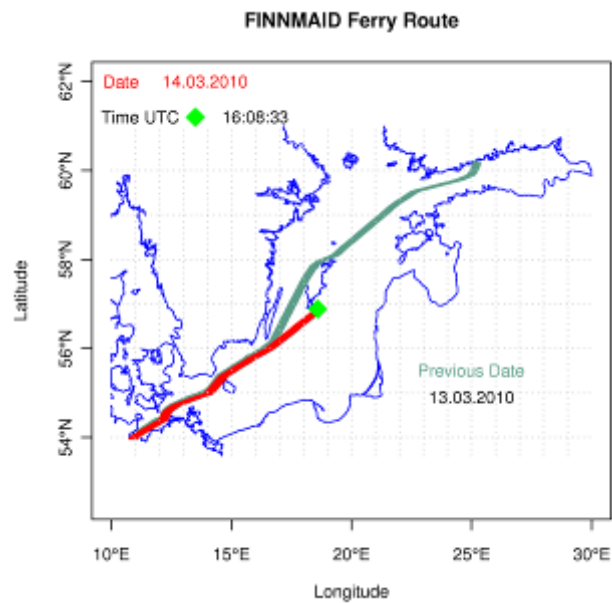
Near real time observations on commercial ferries

Time, location, from GPS
Salinity
Temperature
Chlorophyll
Phycocyanin
Turbidity
Water samples

Traspaper in cooperation with SMHI
Finnmaid in cooperation with IOW
Silja Serenade in cooperation with Uusimaan
ELY center and Helsinki Environment Center



Recent records from FINNMAID



Detectors and the water sampler



Debubler

Fluorometr

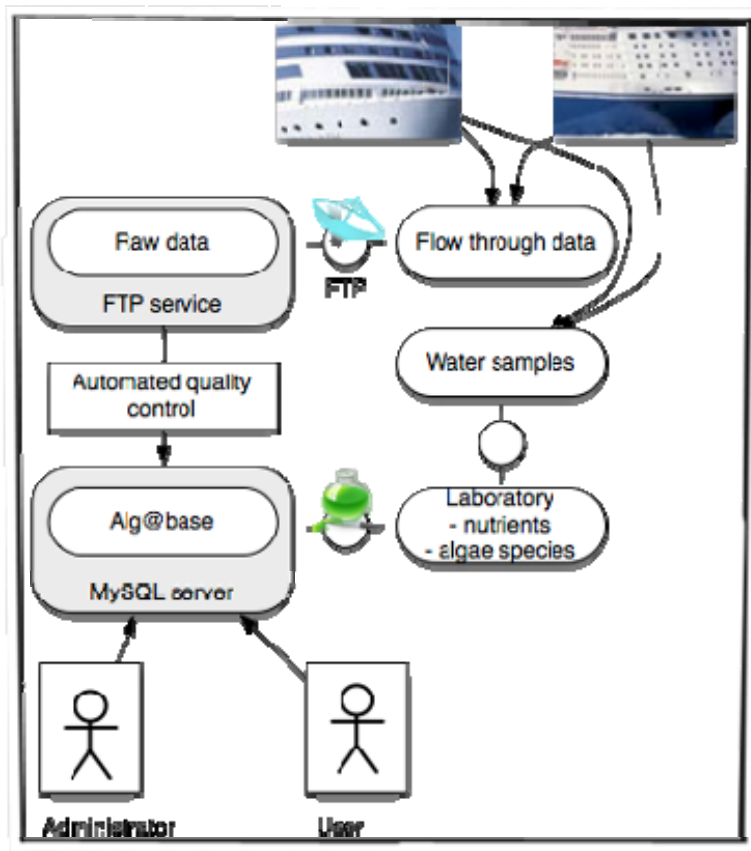
Termo-
salinograph

Automatic
Washing

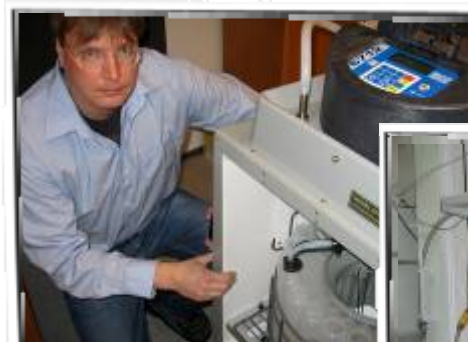


Water Sampler

Management



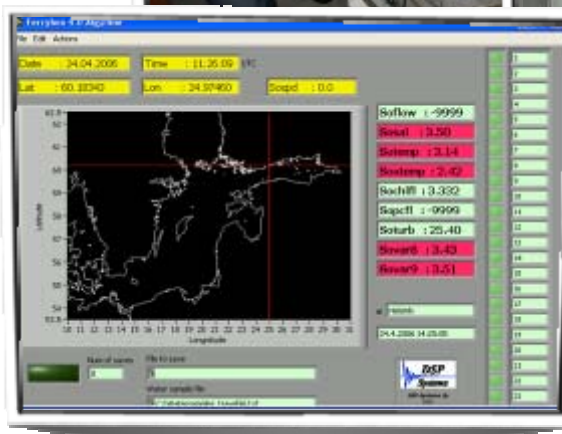
Alg@line dataflow



Automatic watersampler



Flow-through equipment

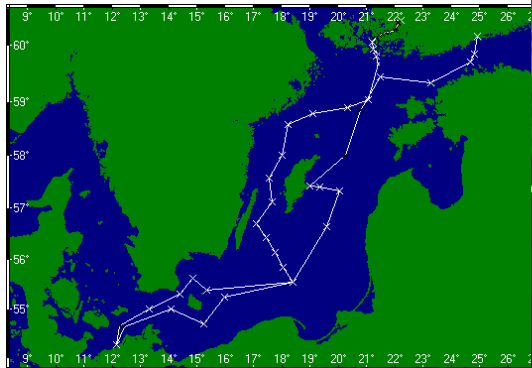
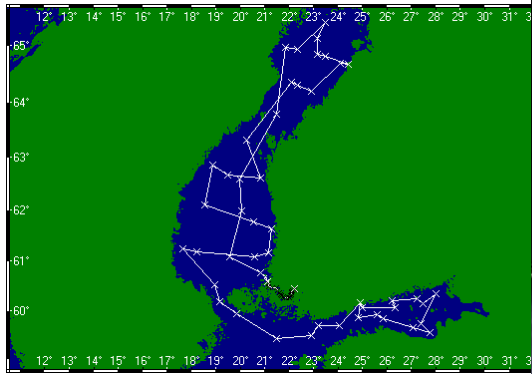


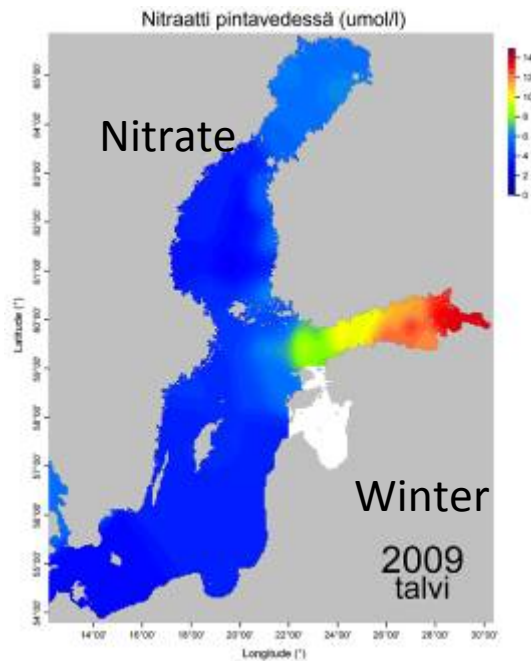
Ferrybox-software

Ferrybox-software controls operations of automatic flow-through and watersampling equipment onboard

Winter 2009-2010: What is up now; need for monitoring

Juha Flinkman – Aranda/SYKE , Marine Research Centre

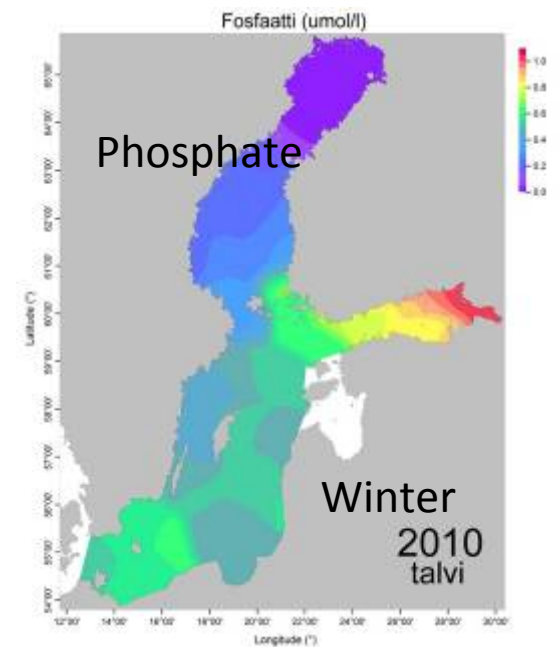
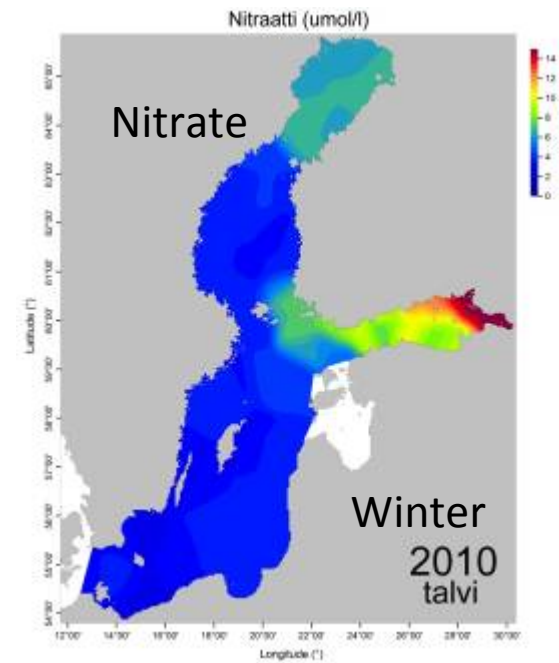
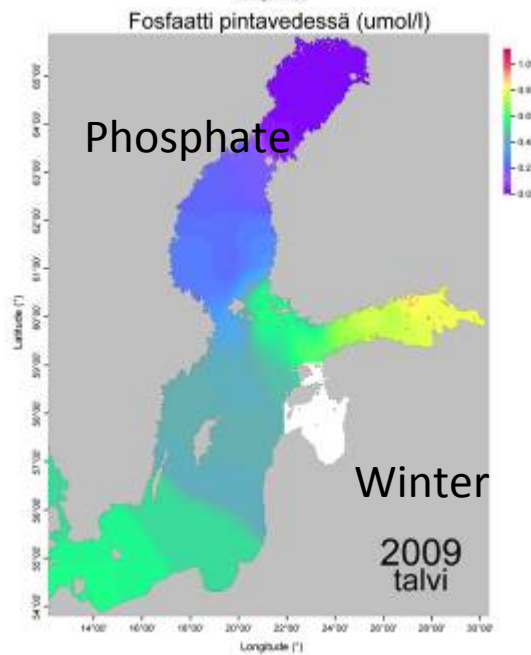




Nutrients in the surface waters

Less Nitrate in the Bothnian Bay and in the Arhipelago Sea than in the previous winter

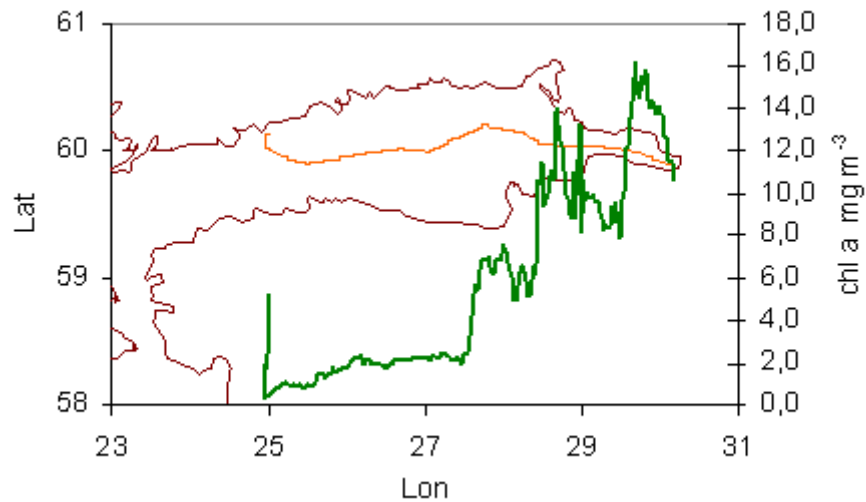
More Phosphate in the eastern Gulf of Finland than in the previous winter



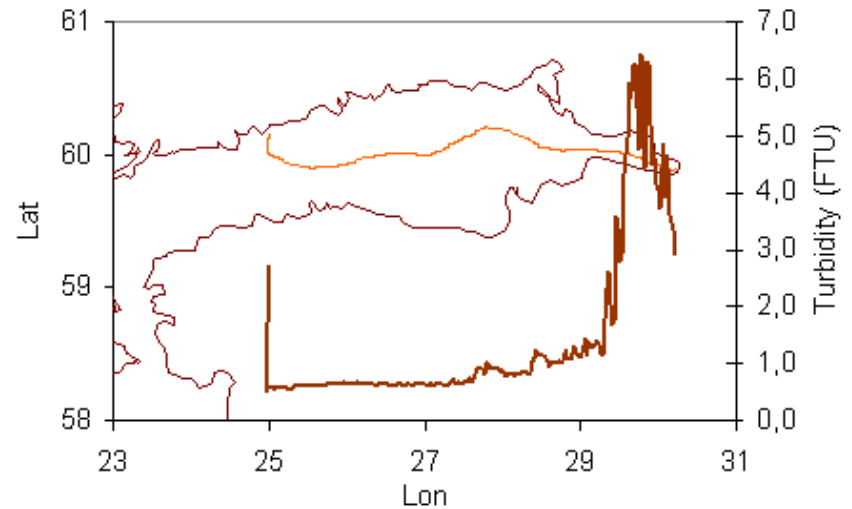
Silja Opera 2005

Helsinki-St. Petersburg, not active currently

Chlorophyll 7.6.2005



Turbidity 14.6.2005

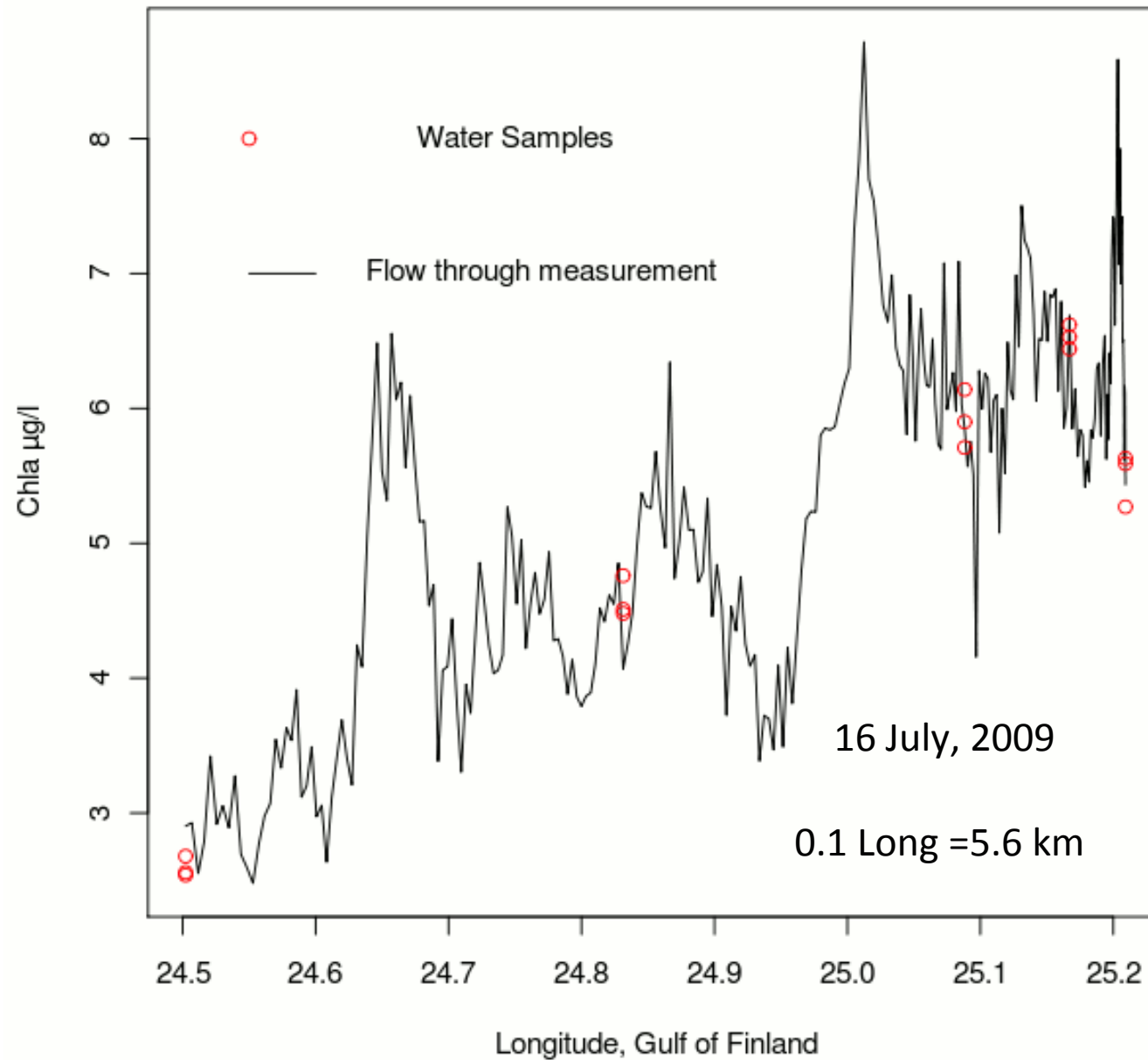


Contribution to WISER

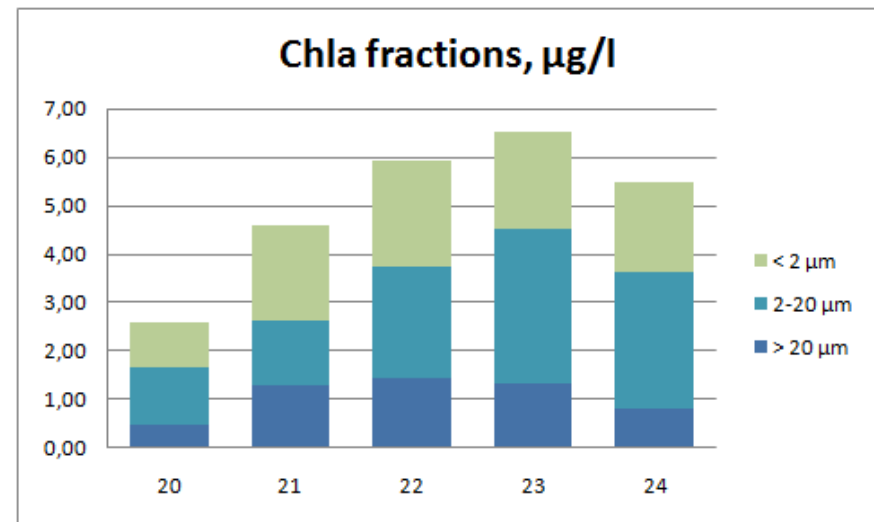
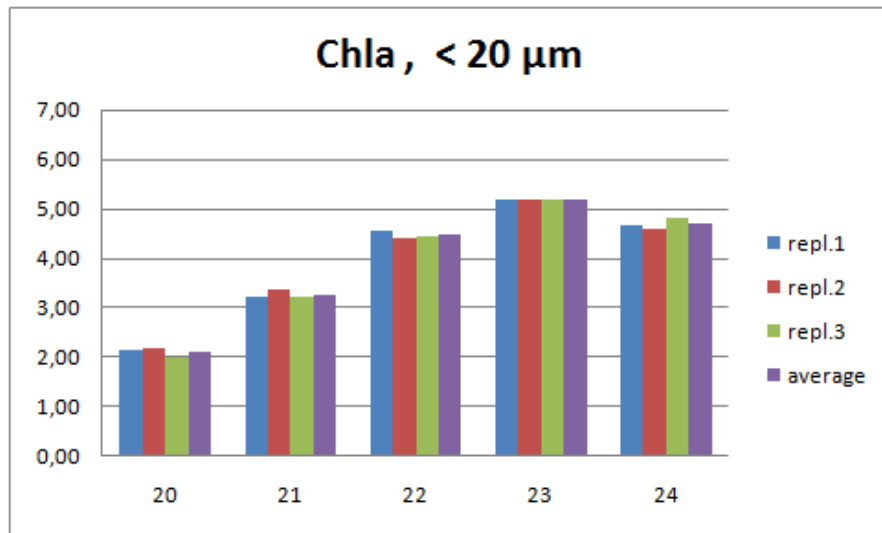
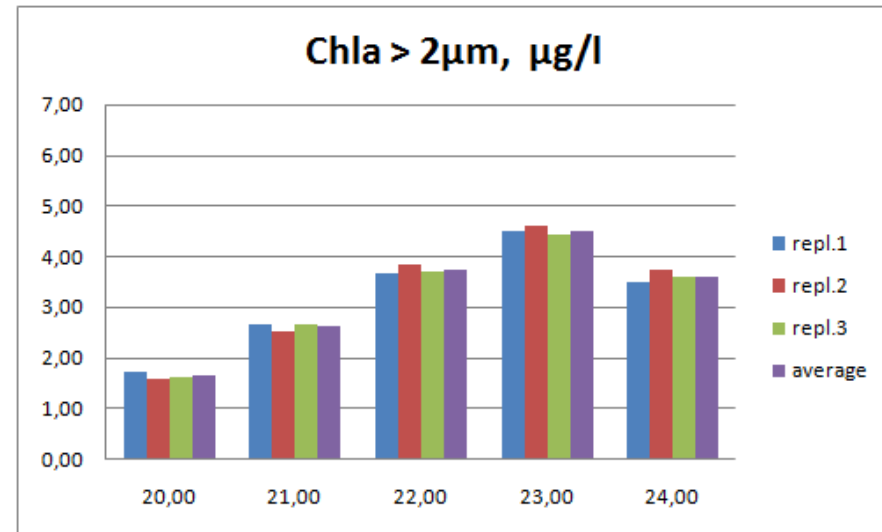
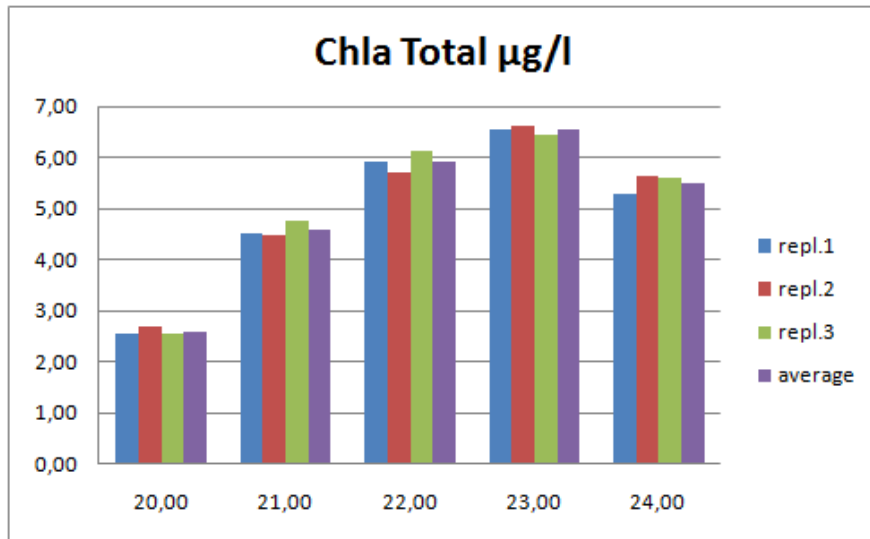
Ferrybox sampling and recording

- 5 water sampling stations in the Gulf of Finland on the 16th July, 2009
- From 1 liter water sample 3 parallel chlorophyll-a analysis, fractions $< 2\mu\text{m}$, $2-20\mu\text{m}$ and total
- Flow through chlorophyll-a and phycocyanin fluorescence measurements with 250 m spatial resolution

Spatial variation of Chlorophyll-a along Longitude



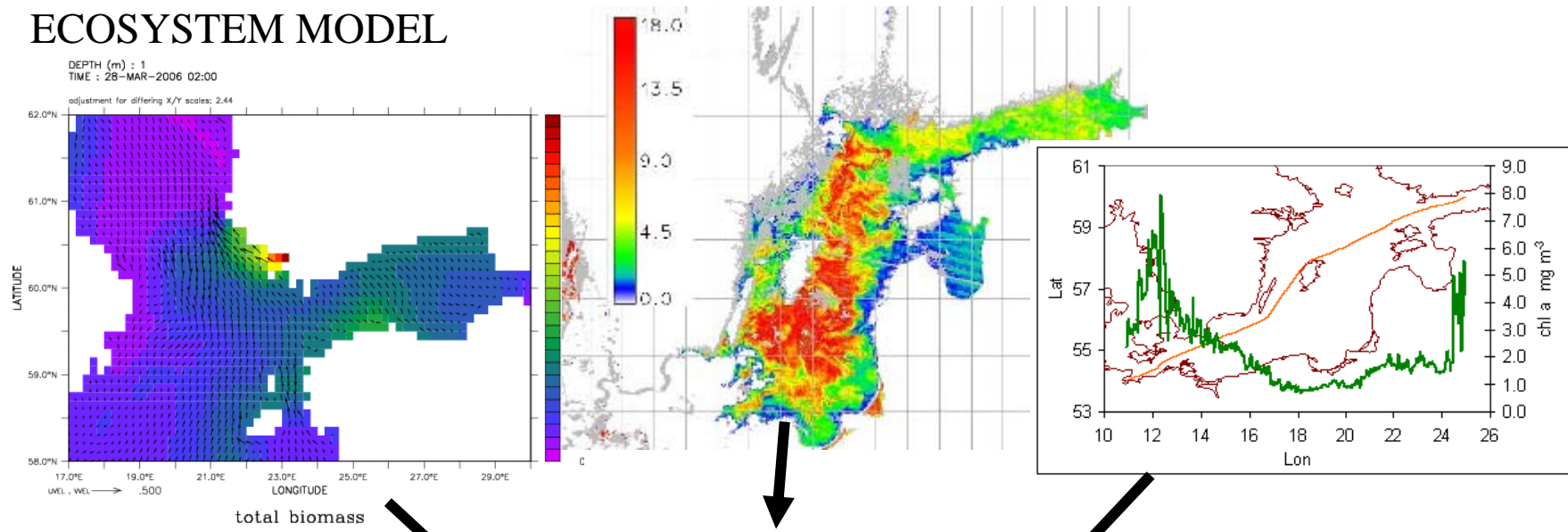
Chlorophyll fractions at 5 ferrybox stations



Participation in ESA MARCOAST 2, with FMI

EXTENSION OF BALTIC WQ AND AB SERVICE

ECOSYSTEM MODEL



NEW COMBINED WQ PRODUCT

- optimal use of satellite images
- Continuous data coverage
- WQ and AB forecasts
- Input to assessments

Thank You