



1



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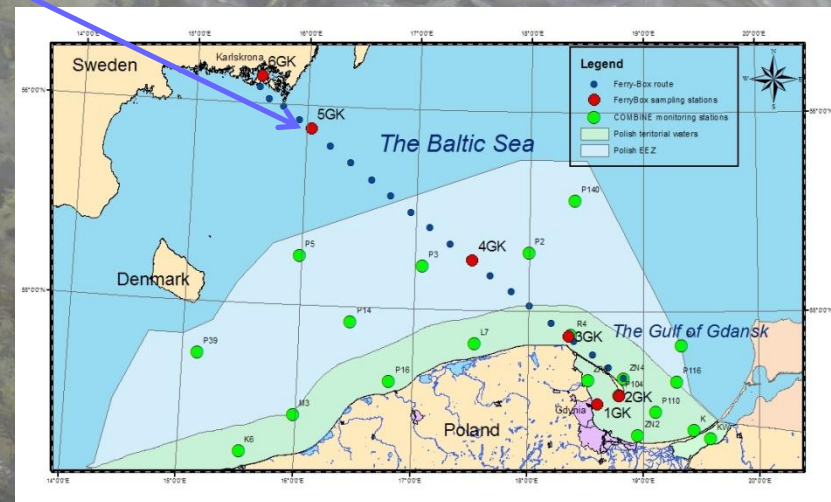
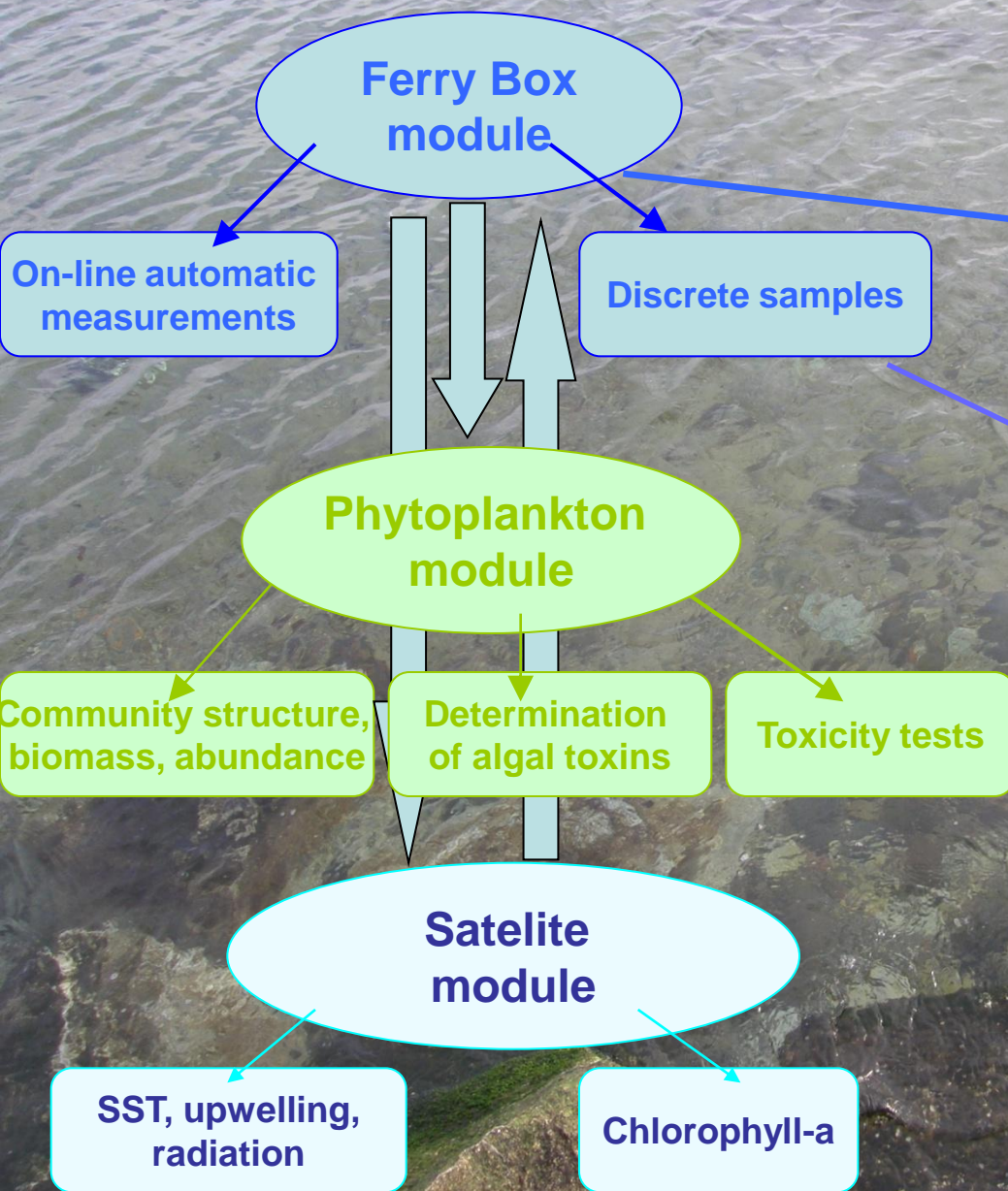


4

Preliminary results of a study of episodic events in the Baltic Sea on the basis of Ferry-Box and satellite information

M. Bartoszewicz⁴, K. Bradtke², M. Darecki³, N. Drgas¹,
P. Kowalczyk³, W. Kraśniewski¹, A. Krężel², W. Krzysiński¹,
Ł. Lewandowski¹, E. Łysiak-Pastuszek¹, H. Mazur-Marzec²,
B. Piliczewski¹, S. Sagan³, K. Sutryk²

Project outline



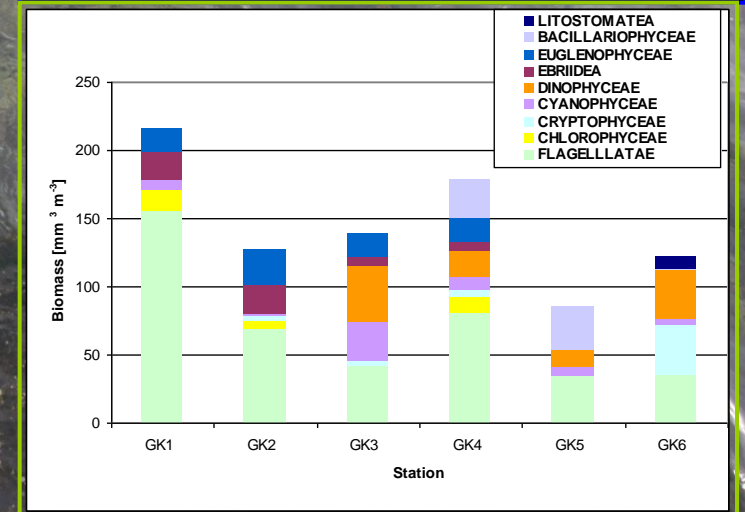
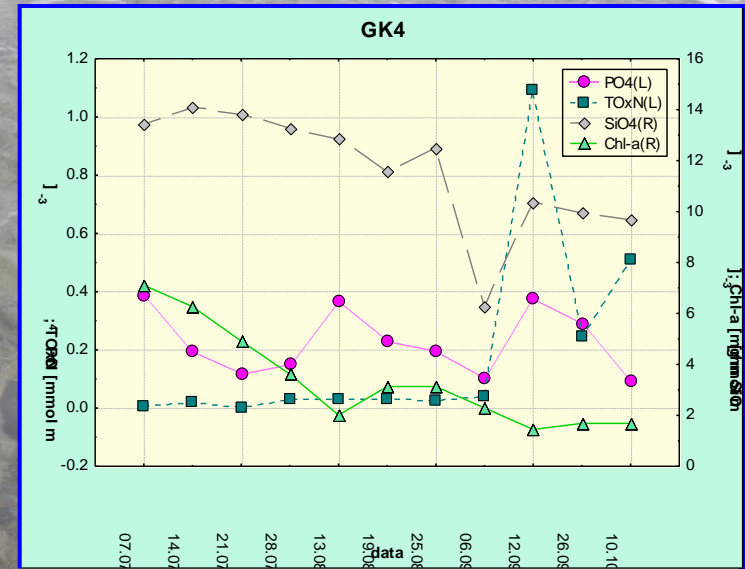
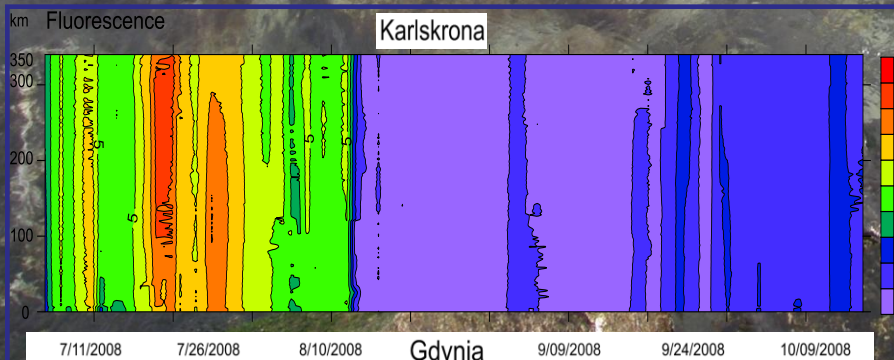
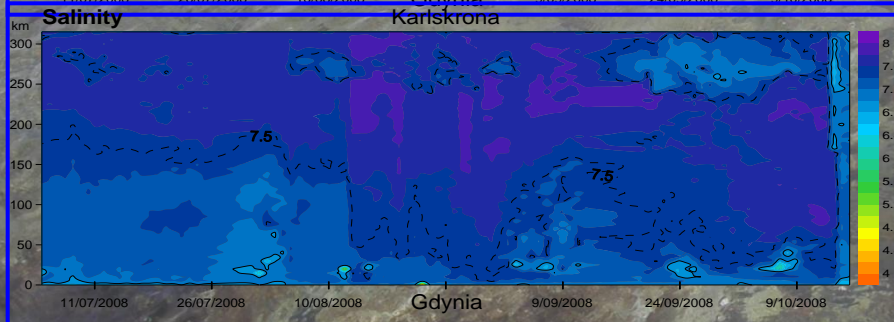
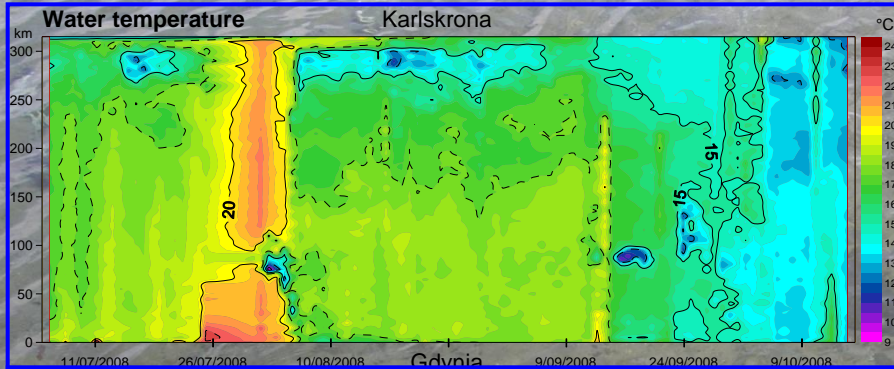


Results - 2008

On-line automatic measurements

Ferry Box module

Discrete samples





Results – 2008



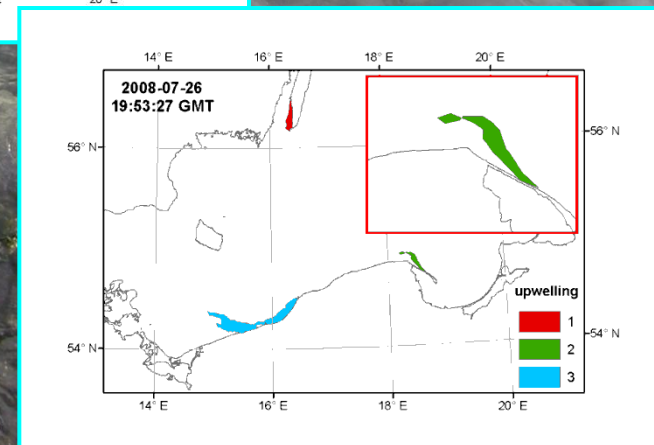
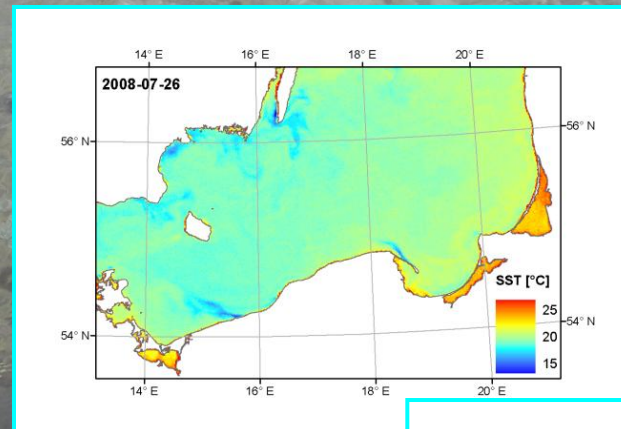
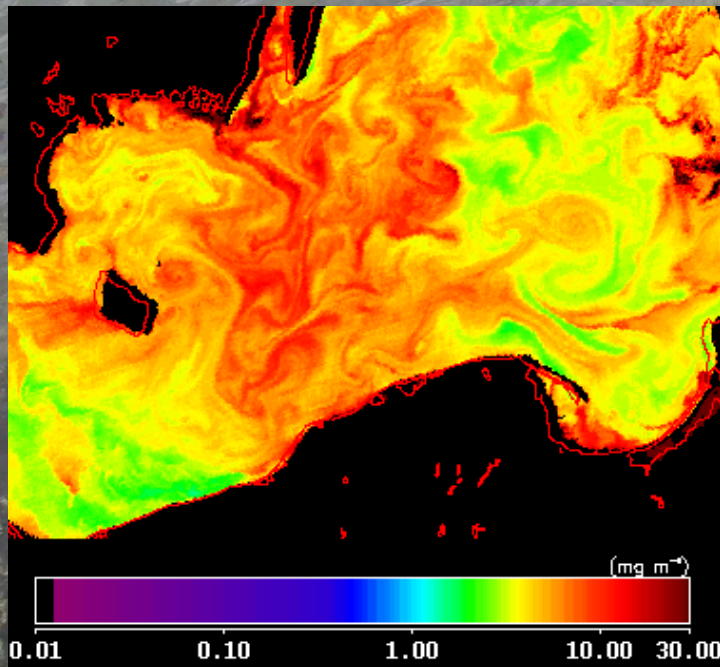
Chlorophyll-a

Satellite
module

SST, upwelling,
radiation

Aim:

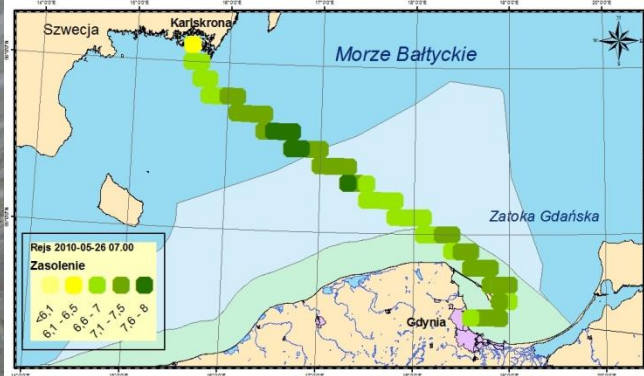
• „extension” of the Ferry-box measurements to other bio-optical parameters



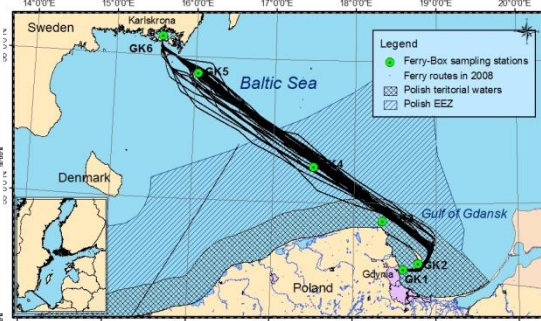


Results – 2010

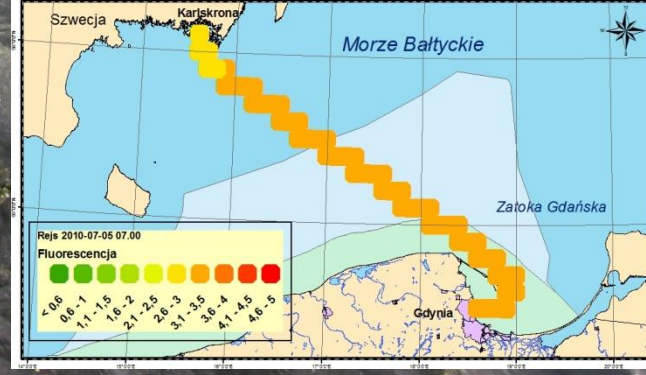
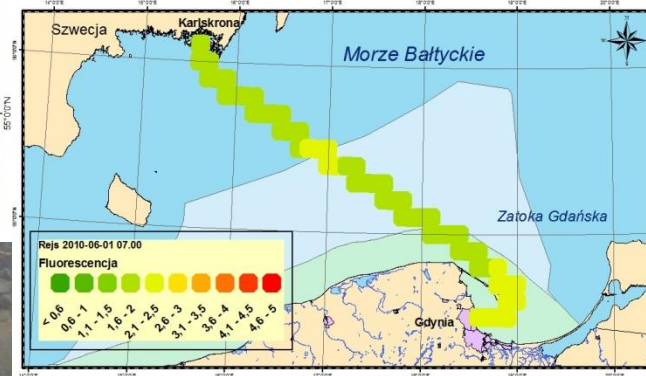
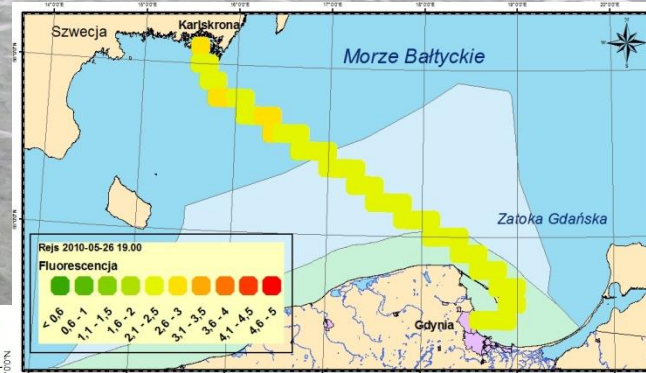
Salinity



Measurement data is presented as average values of aggregated data sets within sub-squares of the Baltic squares 60' x 30'



Fluorescence/chlorophyll-a



Significant salinity decrease in the Gulf of Gdansk due to discharge of flood waters

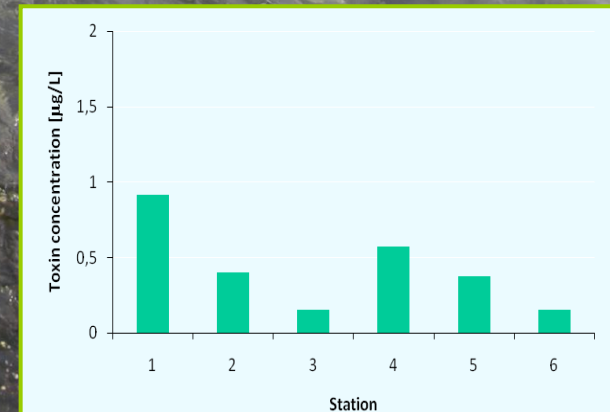
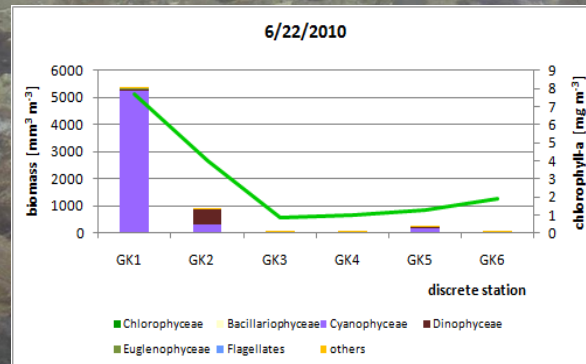
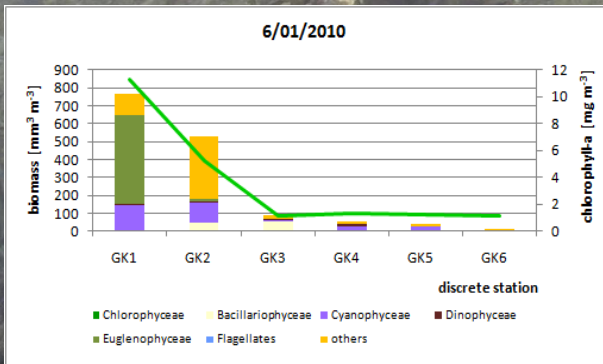
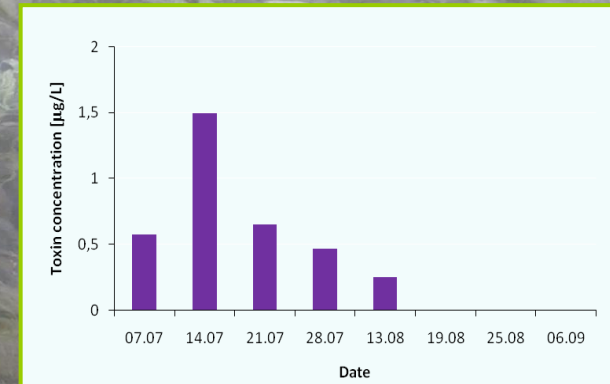
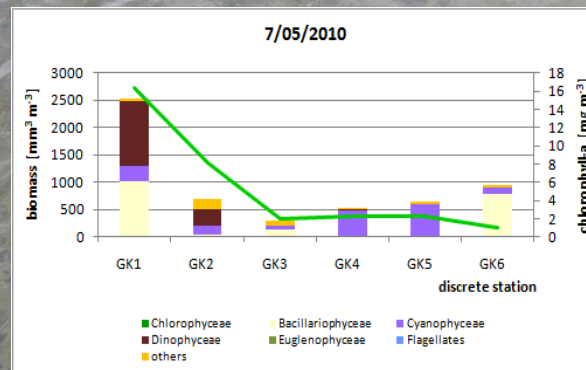
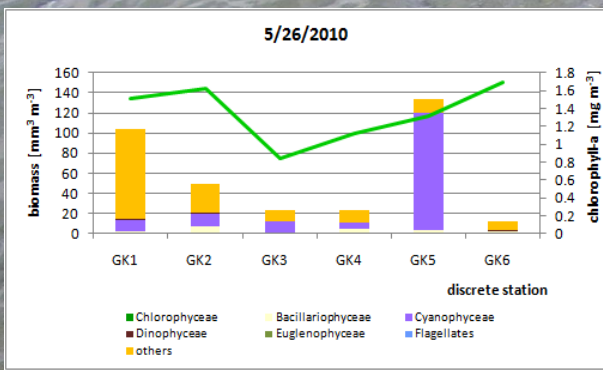
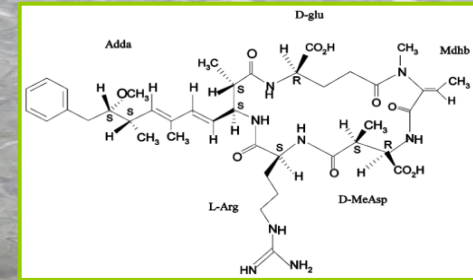


Results – 2010



Phytoplankton module

Determination of algal toxins

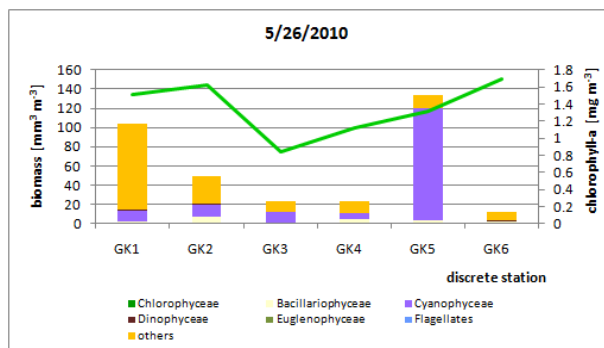


The changes in phytoplankton biomass and structure over the period of flood water discharge into the Gulf of Gdansk (GK1 and GK2) in May/June 2010

26 May 2010

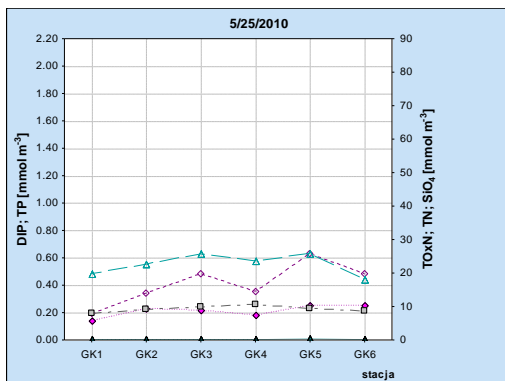
Discrete stations

Phytoplankton



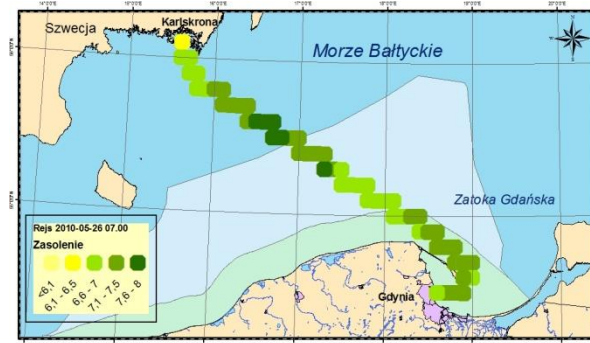
NODULARIN - nd
Toxicity - 0

Nutrients



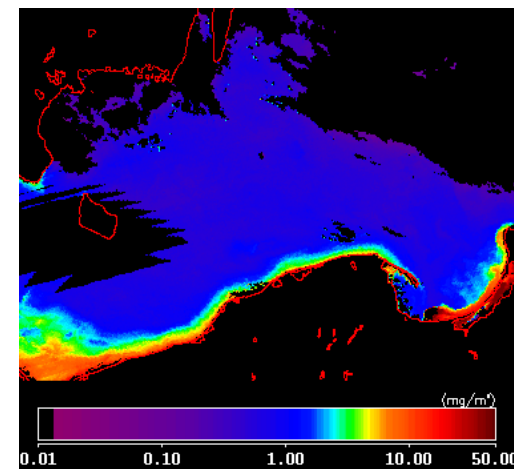
Ferry Box

Salinity

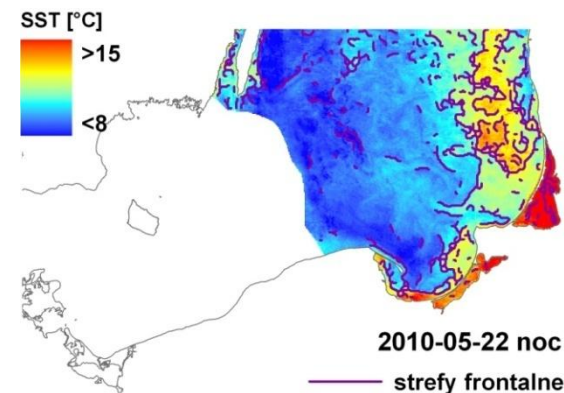


Satellite images

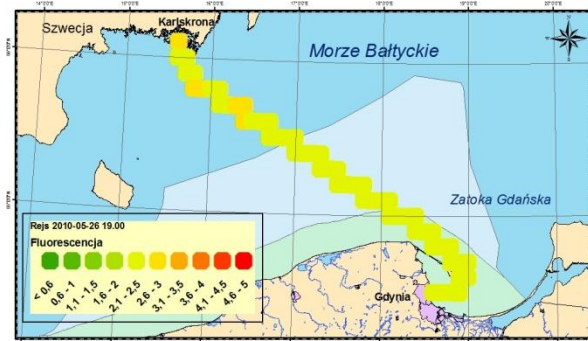
Chlorophyll-a



SST



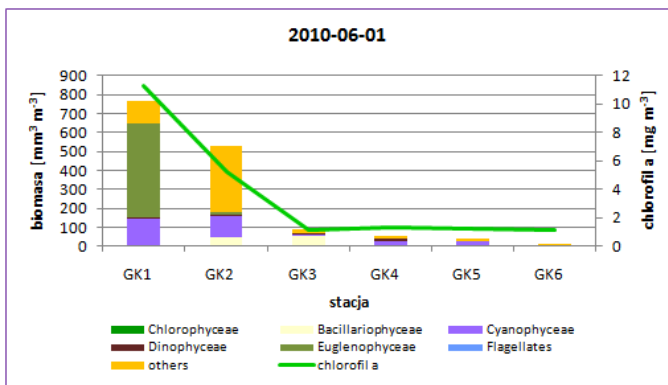
Fluorescence/Chlorophyll-a



1 June 2010

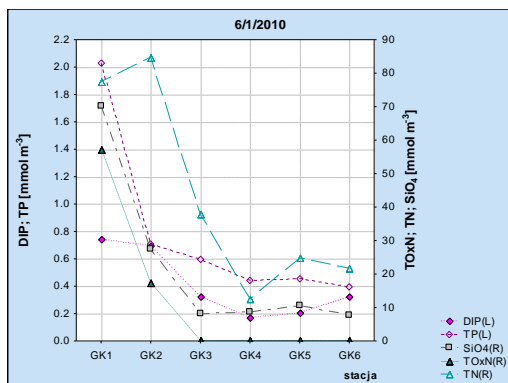
Discrete stations

Phytoplankton



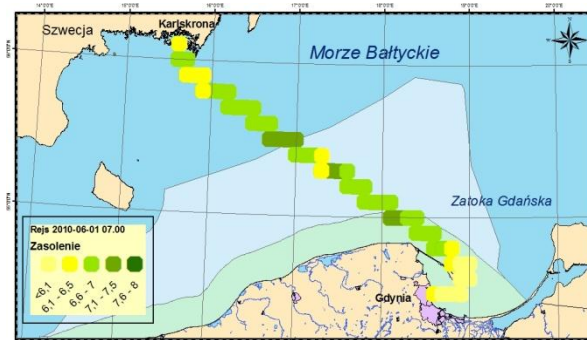
NODULARIN - nd
Toxicity - 0

Nutrients

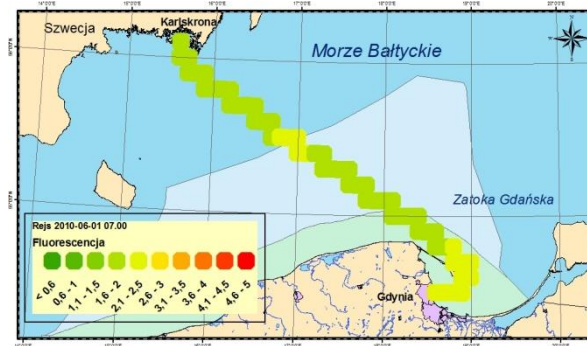


Ferry Box

Salinity

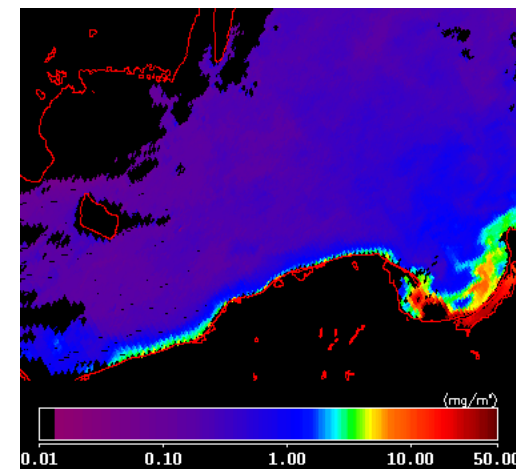


Fluorescence/Chlorophyll-a

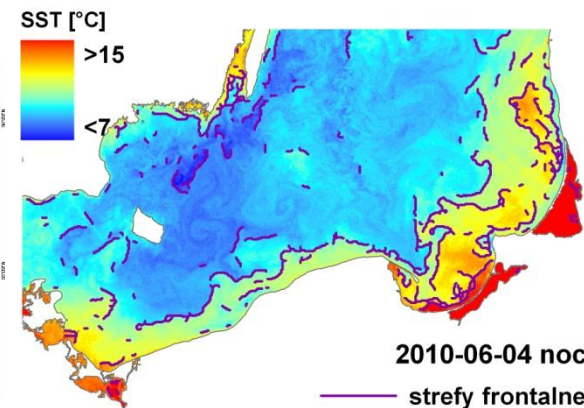


Satellite images

Chlorophyll-a



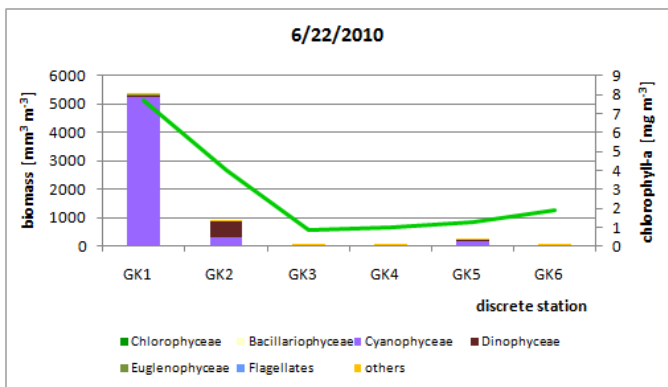
SST



22 June 2010

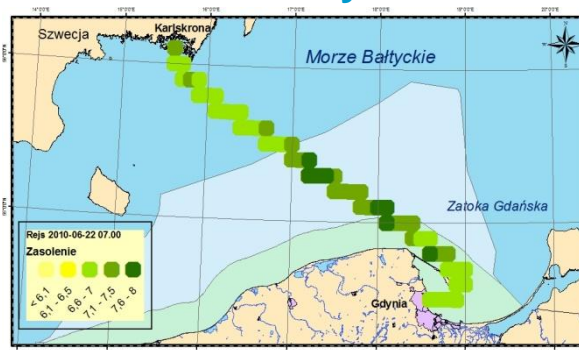
Discrete stations

Phytoplankton



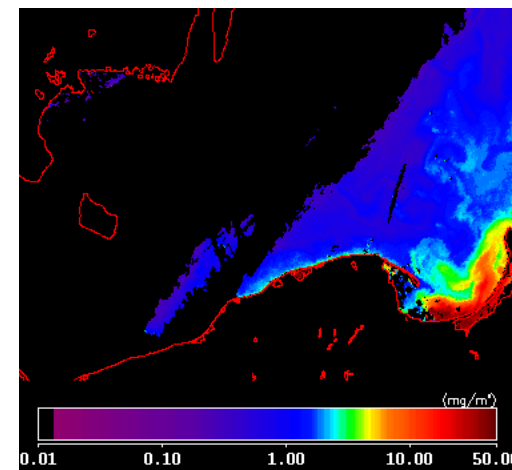
Ferry Box

Salinity



Satellite images

Chlorophyll-a



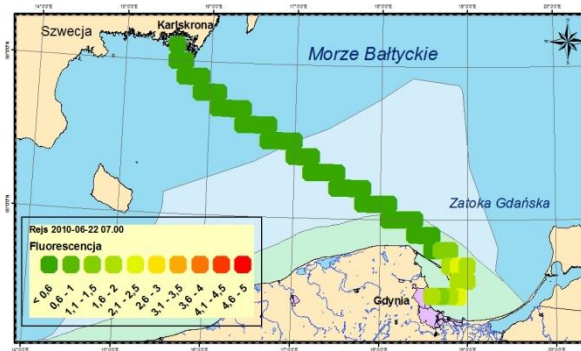
NODULARIN

0,1 µg l⁻¹ GK2
0,2 µg l⁻¹ GK5

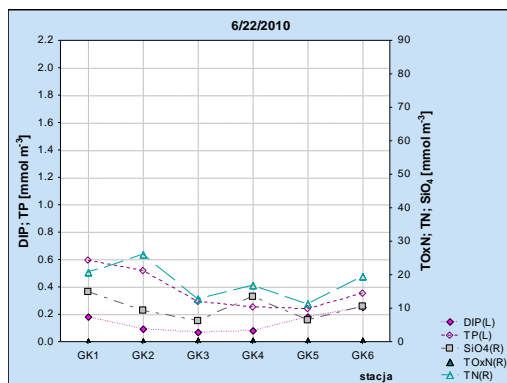
Toxicity

0

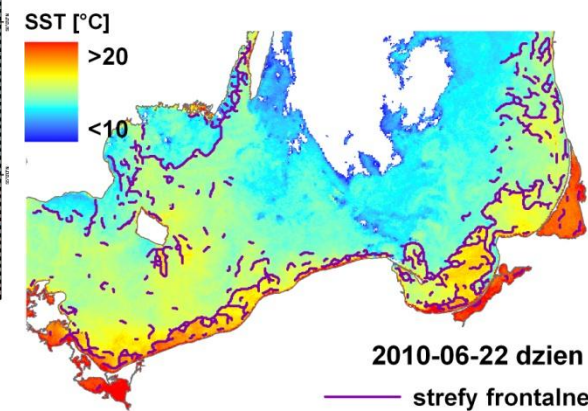
Fluorescence/Chlorophyll-a



Nutrients



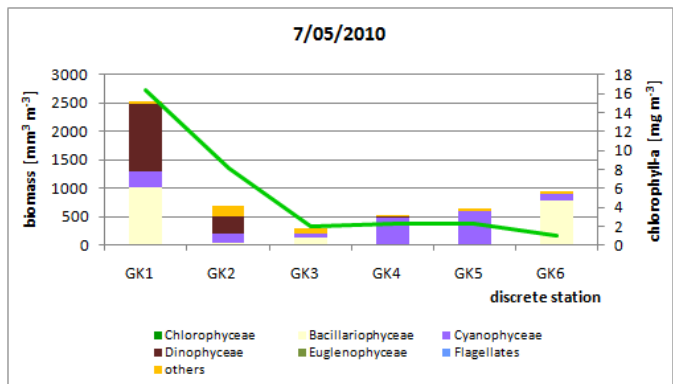
SST



5 July 2010

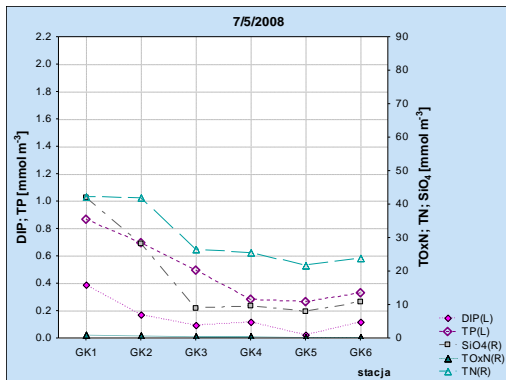
Discrete stations

Phytoplankton



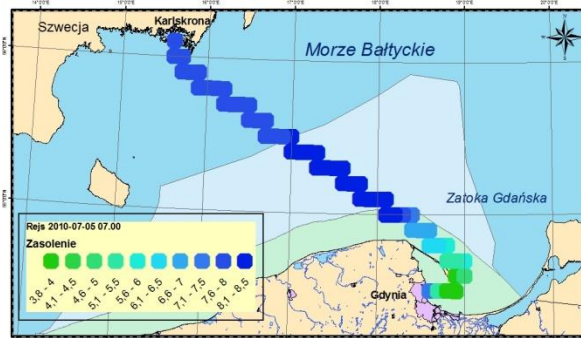
NODULARIN nd
Toxicity 0

Nutrients

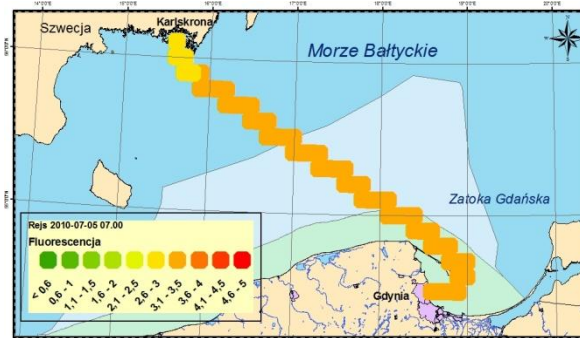


Ferry Box

Salinity

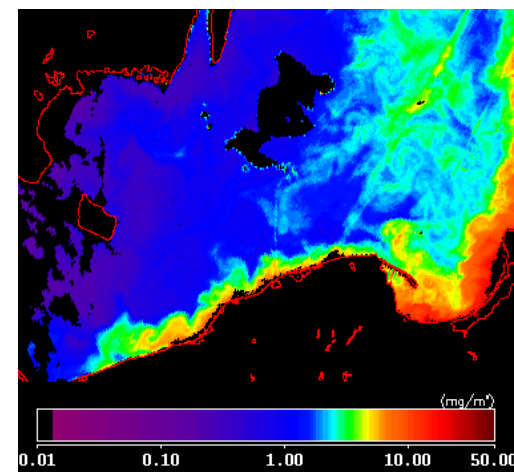


Fluorescence/Chlorophyll-a

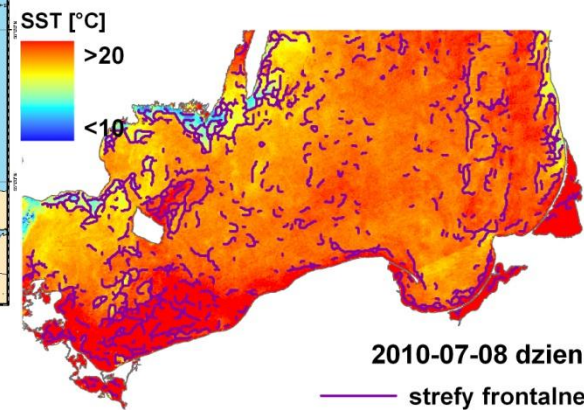


Satellite images

Chlorophyll-a



SST





Conclusions

- The FerryBox system proved an effective instrument to record episodic environmental events in the Polish coastal waters, especially the impact of flood water from the Vistula river in 2010.
- The system showed good agreement between chlorophyll-a fluorescence measured automatically and results obtained from discrete sampling.
- The satellite imagery turned out to be the weak point of the tested observation system due to unpredictable cloud cover.

Thank you for attention