

NETWORKING ON SCIENCE AND TECHNOLOGY IN THE BLACK SEA REGION

Black Sea

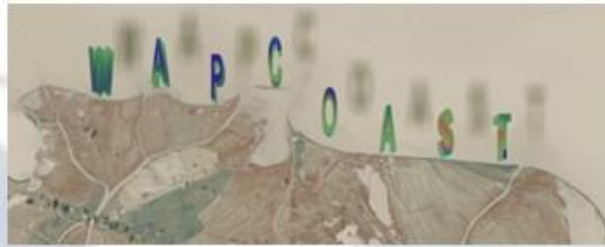
Conference

11-12 December, 2012

WAPCOAST PROJECT

<https://sites.google.com/site/wapcoast>

Gabriel Ion



**Water pollution prevention options for coastal zones and tourist areas:
Application to Danube Delta front area**

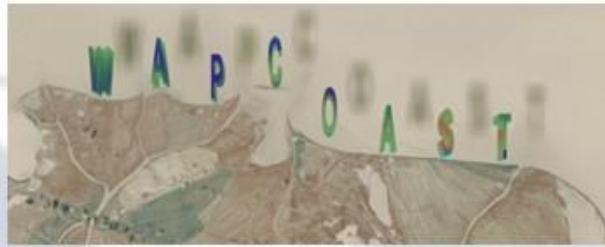
WAPCOAST

PARTNERS

- GeoEcoMar, Bucharest - ROMANIA
- University of Hamburg, Hamburg - GERMANY
- Odessa National Mechnickov University, Odessa - UKRAINE
- EMMA Technologies GmbH, Kiel – GERMANY

Project duration: 24 months

Project Start: 17th October 2011



Co-ordinator: National Institute for Research and Development for Marine Geology and GeoEcology - GeoEcoMar <http://www.geoecomar.ro>

Gabriel Ion: gion@geoecomar.ro

Partner 1: University of Hamburg, Institute for Biogeochemistry and Marine Chemistry, Germany <http://www.zmaw.de>

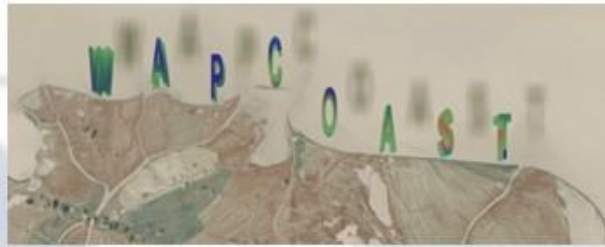
Kay-Christian Emeis: kay.emeis@zmaw.de

Partner 2: Odessa National Mechnickov University (ONU), Division: Scientific and Educational Center of Geoarchaeology, Marine and Environmental Geology (SECGMEG), Ukraine

Valentina Yanko-Hombach: valyan@onu.edu.ua

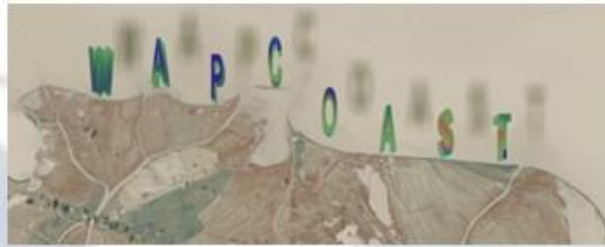
Partner 3: emma technologies GmbH, Germany: www.emma-technologies.com

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The objectives of the projects are:

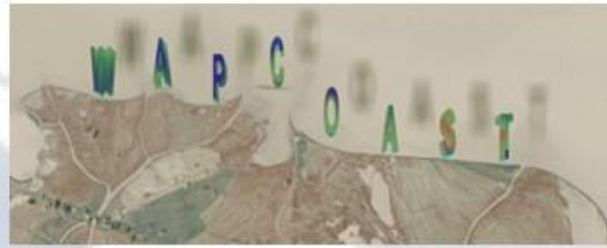
- I. Building of a GIS data management system that will be used as a support tool to accomplish the main goals but also for decision making processes of the main active stakeholders in the area of study. The GIS will provide support for the numerical model and also to represent the results of modeling;
- II. Mapping of the Danube River plumes extent (sediment charge and thermal imprints) and Razelm-Sinoie plume into coastal waters; the plume dynamics is variable and we aim to have statistical view on plumes variability, based on satellite images;
- III. Quantification of nutrient contents, as well as plankton and benthic organisms of superficial and shallow sediments and the exchange of sediment linked nutrients with plankton and benthic organisms in the water column;
- IV. Assessment of governing empirical equations that link the nutrients load, physical and chemical parameters of the coastal waters and eutrophication
- V. Building of a numerical model for water, sediment, plankton and benthos, as well as pollutants dynamics and validate it for the investigated area; a standard software for modeling will be used; this type of model is suitable to assess river plume mixing and the preferential distribution on beaches of algal bloom products;
- VI. Technical workshops and summer schools for representative organizations from Romania and Ukraine (governmental, local, NGOs, etc.) in order to determine the necessary research infrastructure, suitable research methods and hot topics related to water pollution of coastal waters in front of the Danube Delta – Razelm – Sinoie complex, for the future Black Sea Research Programme. During the final workshop the overall results of the project will be presented, together with the prevention options against the pollution of coastal waters from the study area, as they resulted from runs of the WAPCOAST numerical model.
The results of this project will provide local stakeholders the necessary scientific tools for the proper choosing of prevention options regarding the pollution of coastal waters in the front of Danube Delta and Razelm-Sinoie lagoon complex.



In the first year of the project we accomplished:

- 1st workshop of the project organized in Constanta, Romania (5 December 2011)
- Two research cruises on the Black Sea (onboard of R/V Mare Nigrum, 3-5 March and 3-7 May, 2012)
- A short research campaign in the Danube Delta 8-10 May 2012
- 2nd workshop and seminar organized in Bucharest, Romania (14 November, 2012)

Analysis of sea samples (water, biota and sediments), data processing, GIS partial building, satellite image gathering, processing and interpretation, numerical simulations of water and sediment dynamics in front of the Danube Delta

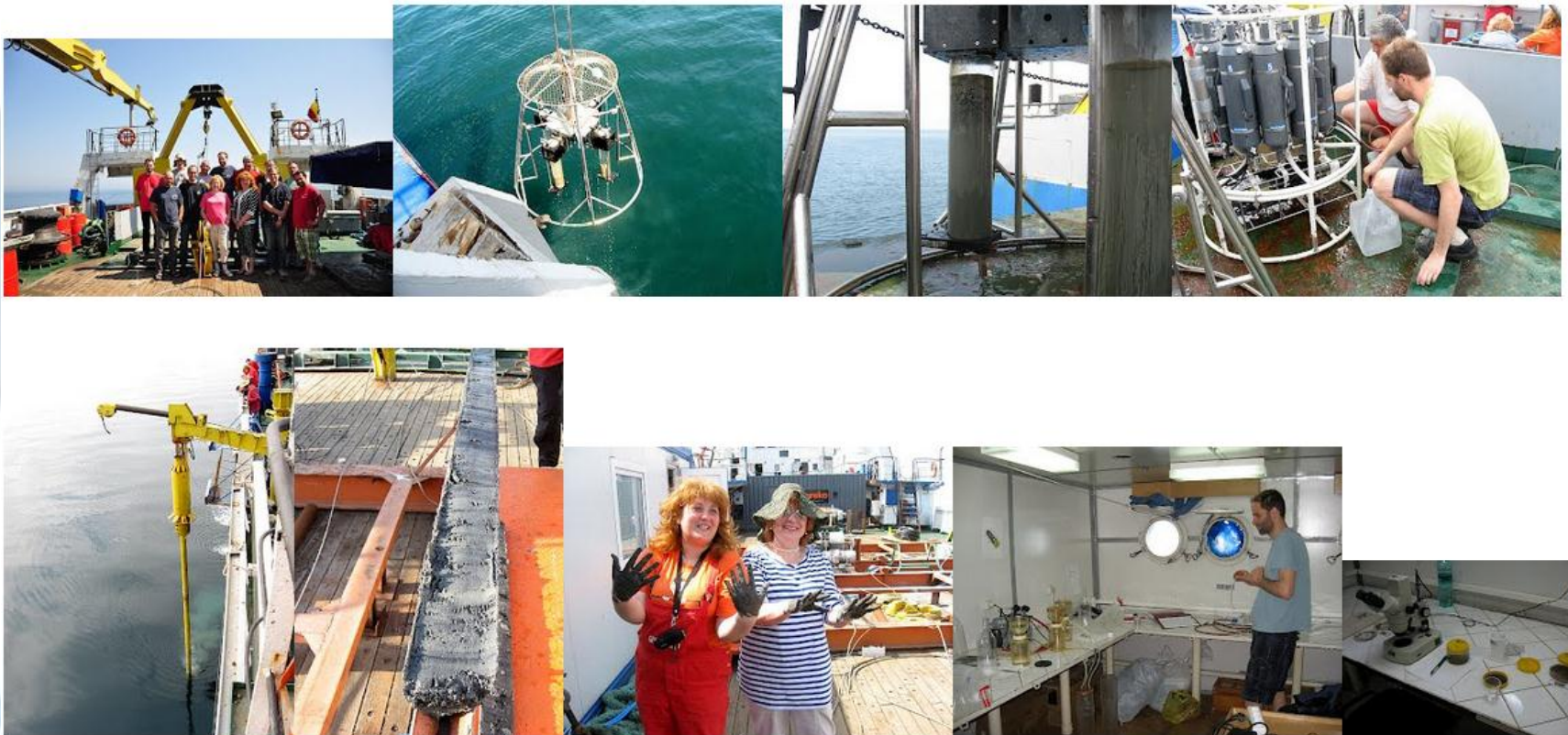


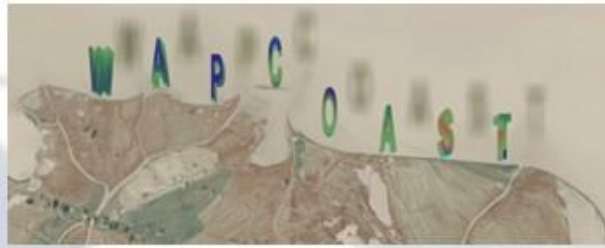
1st workshop



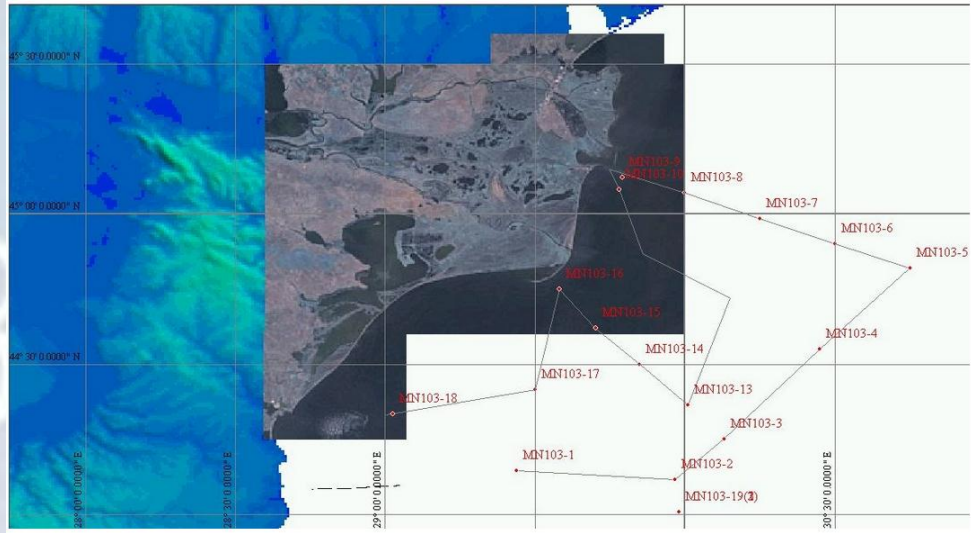
2012 – Research campaigns

Sea cruise 3-7 May, 2012



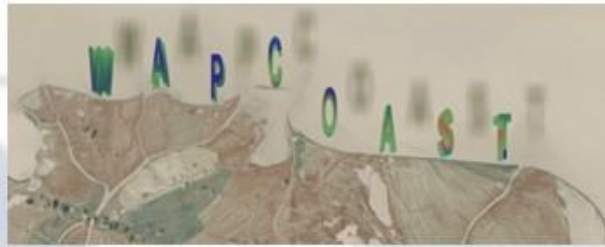


cruise map 2012

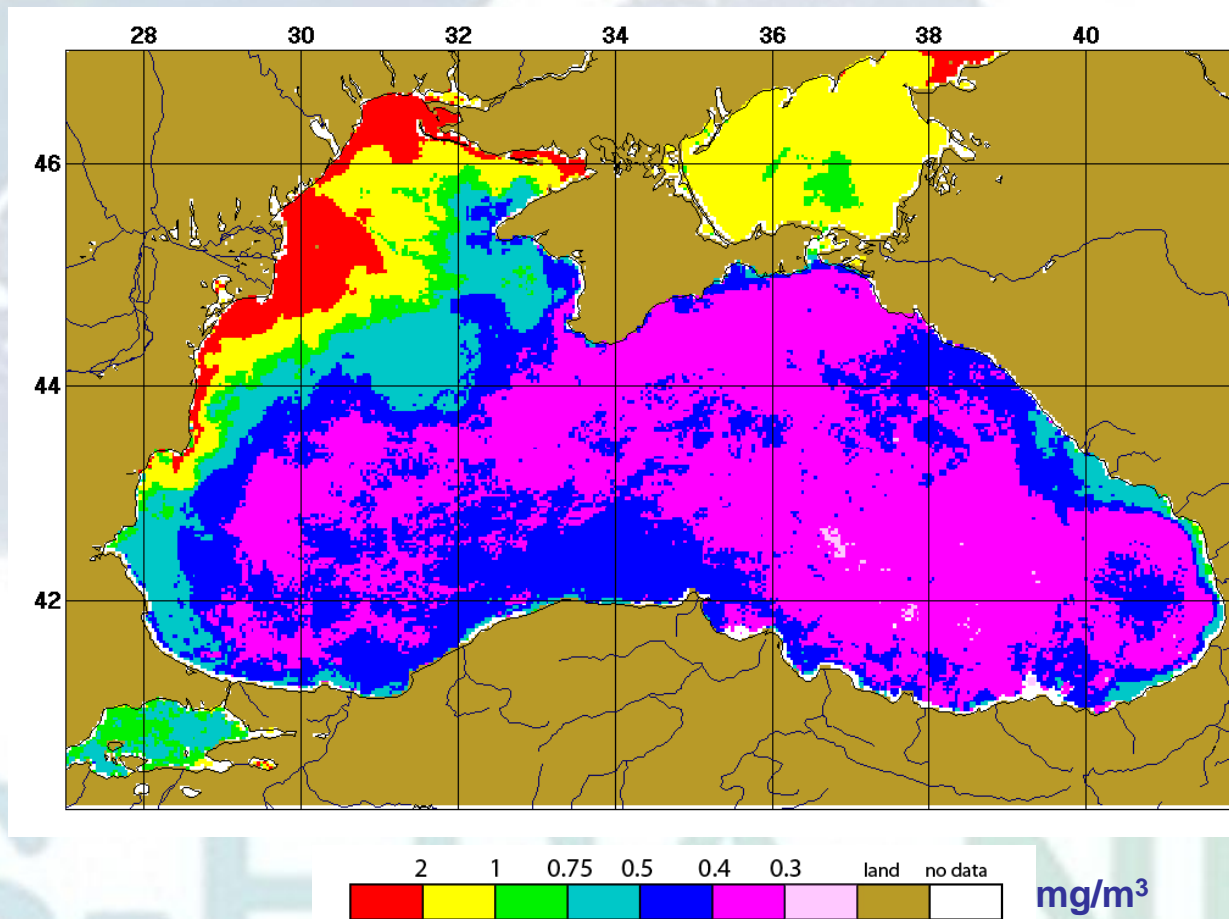


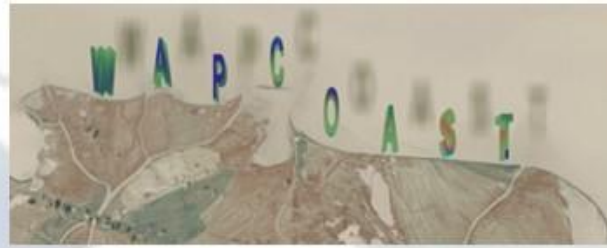
Danube Delta campaign 8-10 May, 2012





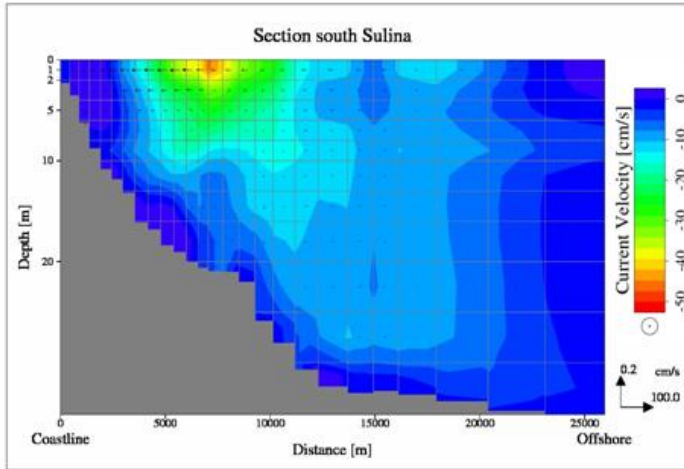
Chlorophyll content based on satellite data



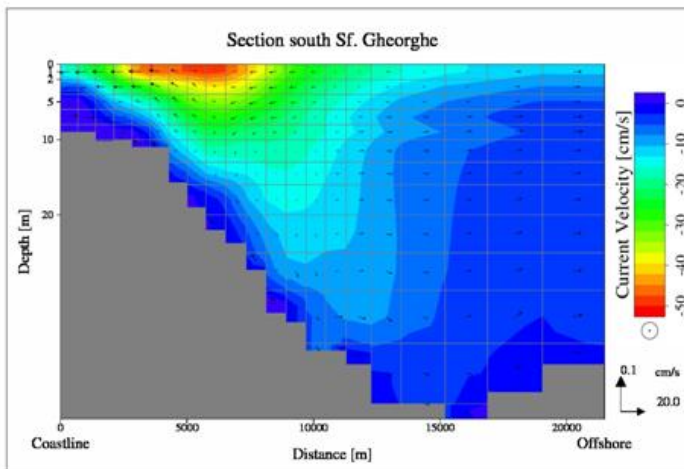


Simulation results

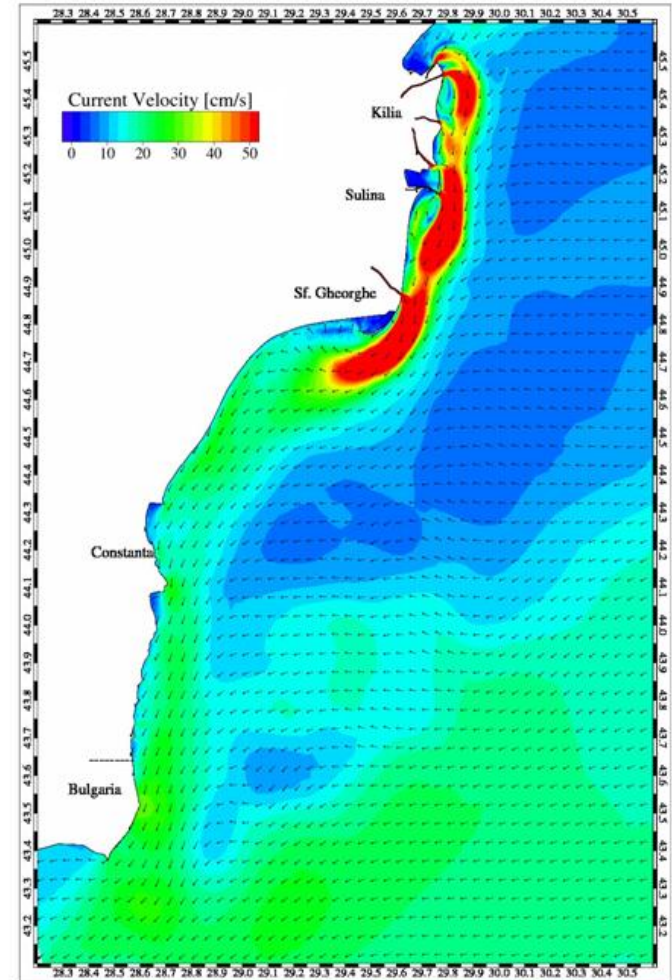
Simulation results – wind from NE with 5 m/s, high Danube discharge (15000 m³/s), cold season



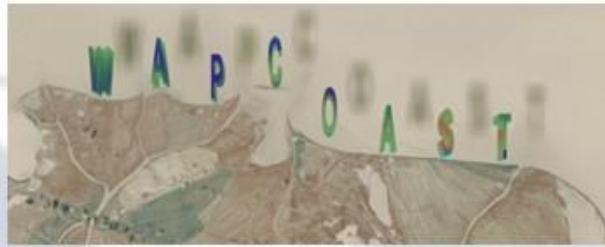
Current cross-section south of the Sulina mouth



Current cross-section south of the Sf. Gheorghe mouth



Surface current



Black Sea

**THANK YOU
FOR ATTENDANCE**