

## Croatia

The Croatian GEOTRACES activities are mainly related to: 1) improvement of electrochemical methods which, in combination with ICPMS, are used for trace metals speciation (including interaction with organic matter), determination and quantification (mostly Zn, Cd, Pb, Cu, Fe, Ni, Co); 2) development of an automated system for determination of trace metals in natural waters (Voltammetric AutoAnalyser - Volt-AA) and solid (gold wire) micro sensors for on-site and in-situ metal analysis in seawater, 3) assessment of metal bioavailability in aquatic environment using passive samplers for metals (DGT) and cytosolic metal levels in tissues of aquatic organisms. Research on development of electroanalytical methods for chalcogenide nanoparticles determination in natural waters is in progress.

The Croatian GEOTRACES activities of the past year were mainly characterized by preparations and organization for marine voltammetry themed workshop: “Voltammetry and GEOTRACES“, which was held in Šibenik, Croatia, at the Rudjer Boskovic Institute marine station Martinska, from October 6th to October 9th 2012.

In June 2013, we participated in organization of MERMEX International workshop. The workshop was related to French project MERMEX (*Marine Ecosystems Responses to climatic and anthropogenic forcings in the Mediterranean*, <http://mermex.pytheas.univ-amu.fr>) and was held at Rudjer Boskovic Institute, Zagreb.

One PhD student completed (24.09.-02.11.2012) Short Term Scientific Missions (STSM) in the frame of COST action ES0801 (The Ocean Chemistry of Bioactive Trace Metals and Paleoclimate Proxies) with the subject:

- Determination of trace metal concentrations by ICP-MS in seawater and biological matrices (Host: Prof. Dr. Andreas Prange, Helmholtz-Zentrum Geesthacht, Department for Marine Bioanalytical Chemistry, Geesthacht, Germany).

### **Meetings**

Dr. Ivanka Pižeta participated at a second meeting of the SCOR working group 139 on ‘Organic Ligands – A Key Control on Trace Metal Biogeochemistry in the Ocean’ in New Orleans, SAD on the 16<sup>th</sup> February 2013 as a full member.

### **Field works**

- Participation in the field work at Kinnerat Lake in Israel where we used electrochemical methods for sulfur and trace metals speciation in anoxic water layers. (October 2013).
- Participation in the 2013 EuroBASIN cruise to Atlantic PAP 2 station, Research Cruise No. JC87), where we work on organic matter speciation.

### **Participation at international conferences**

- Helmholtz, H., Strižak, Ž., Ruhnau, C., Erk, M., Prange, A., Utilization of Proteomic Techniques for the Identification of Potential Contaminant-related Biomarker - Environmental Proteomics, Proteomic Forum 2013, Berlin, Germany 17.-21.03.2013.
- M. Furdek, J Cavalheiro, M Monperrus, M Bueno, E Tessier, N Mikac. Investigation on organotin compounds reactivity using enriched isotopic traces in polluted coastal sediments from the Eastern Adriatic, Croatia. European Winter Conference on Plasma Spectrochemistry, Krakow, Poland, 10-15 February 2013.

- M. Furdek, M Ivanić, M Monperrus, M Bueno, E Tessier, N Mikac , Persistence of butyltin (BuT) compounds in the contaminated sediments from the Croatian Adriatic coast, 14th EuCheMS International Conference on Chemistry and the Environment; ICCE 2013, Barcelona, June 25 - 28, 2013.
- M. Marguš, E. Bura-Nakić, D. Jurašin, I. Milanović, I. Ciglencečki, Chronoamperometry as a tool for detecting nano- and microparticles: Example of Chalcogenide nanoparticles, 9th ECHEMS Meeting Electrochemistry in Particles, Droplets, and Bubbles; Lochow, Poland, June 23-26, 2013.
- Strmečki Kos, Slađana; Plavšić, Marta. Electrochemical analysis of polysaccharides on static mercury drop electrode, Fourth Regional Symposium on Electrochemistry South-East Europe, Ljubljana, Slovenia, May 24-27th 2013.

### ***Publications***

- M. Furdek, M. Vahčić, J. Ščančar, R. Milačić, G. Kniewald, N. Mikac, Organotin compounds in seawater and *Mytilus galloprovincialis* mussels along the Croatian Adriatic Coast, *Marine Pollution Bulletin*, 64 (2012) 189-199.
- Bura-Nakić, E. Viollier, Ciglencečki, I., Electrochemical and colorimetric measurements show the dominant role of FeS in a permanently anoxic lake, *Environ.Sci.Technol.* 47 (2013) 741–749.
- Dautović, J; Strmečki, S; Pestorić, B; Vojvodić, V; Plavšić, M; Krivokapić, S; Čosović, B, Organic matter in the karstic enclosed bay (Boka Kotorska Bay, south Adriatic Sea). Influence of freshwater input. *Fresenius env. bull.* 21 (2012); 995-1006.
- Gašparović, B, Decreased production of surface-active organic substances as a consequence of the oligotrophication in the northern Adriatic Sea. *Estuar. Coast. Shelf Sci.* 115, (2012) 33-39.
- Plavšić, M; Strmečki, S, Dautović, J, Vojvodić, V, Olujić, G. Čosović, B, Characterization and distribution of organic matter using specific physico-chemical methods: a case study of the southeast Adriatic continental and shelf slope (Albania). // *Continental shelf res.* 39/40 (2012); 41-48 .
- Frka, S; Pogorzelski, S, Kozarac, Z, Čosović, B, Physicochemical Signatures of Natural Sea Films from Middle Adriatic Stations. // *J. Phy.Chem. A.* 116 (2012), 25; 6552-6559.
- Strmečki, S; Plavšić, M, Adsorptive transfer chronopotentiometric stripping of sulphated polysaccharides. *Electrochem.Comm.* 18 (2012); 100-103.
- Frka, S; Dautović, J, Kozarac, Z, Čosović, B, Hoffer, A, Kiss, G, Surface active substances in atmospheric aerosol: an electrochemical approach. *Tellus. Series B, Chemical and physical meteorology.* 64 (2012), 18490; 1-12.

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