



**22nd International Symposium on Environmental
Biogeochemistry**

Piran- Slovenia, September 28 -October 2, 2015

CONFERENCE PROGRAM AND ABSTRACTS

**Dynamics of Biogeochemical Systems:
Processes and Modeling**

The 22nd International Symposium
on Environmental Biogeochemistry

**Organized by National Institute of Biology
and Jožef Stefan Institute**

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WELCOME

Welcome to Piran and the 22nd International Symposium on Environmental Biogeochemistry (ISEB)!

With its natural beauty, points of historical and cultural interest and its advantageous geographical location in the Gulf of Trieste, Piran is an ideal location for this symposium. The Gulf of Trieste in the northern Adriatic Sea in general have been the subject of intensive marine biogeochemical investigations over the last fifty years making it a scientifically relevant site for an ISEB meeting. For more than thirty years the ISEB has been devoted to the development of scientific knowledge, application and training in the broader field of environmental biogeochemistry. The ISEB has always strived to bring together scientists from a range of disciplines with interests and this Symposium "Dynamics of Biogeochemical System: Processes and Modeling" will explore issues relating to biogeochemistry in various fields including soil science, microbial ecology and marine, lacustrine and atmospheric research. The sessions have been organized around ten themes which integrate the following topics:

1. **The marine and coastal environment**
2. **Surface and groundwater systems**
3. **Soils**
4. **Climate change**
5. **Microbial biogeochemistry**
6. **Nanoparticles and colloids**
7. **Isotopes in biogeochemical processes**
8. **Biogeochemistry of pollutants**
9. **Archeological biogeochemistry.**

The program includes two Special sessions GMOS and GEOTRACES (The marine and coastal environments) and GLOBAQUA (Surface and groundwater systems). In addition, the SOIL session will be devoted to the International Year of Soils (IYS), the main purpose of which is to raise global awareness of the importance of soils for food security, agriculture as well as in mitigating climate change, alleviating poverty, and sustainable development. We are looking forward to the varied program with six invited speakers and 52 oral and 54 poster presentations to be delivered over the next few days. The symposium also continues its tradition of strong international representation, with authors of accepted abstracts from 23 countries from around the world. Besides an intensive scientific program, the Organizing Committee has planned a packed five day schedule with social activities for participants and accompanying guests.

With so many interesting papers, activities and networking opportunities, we hope that you find the Symposium exciting, informative and relevant to your field of research.

Jadran Faganeli and Nives Ogrinc

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Screening of trace elements in riparian soil along the Sava River

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Due to diverse natural characteristics and miscellaneous anthropogenic pressures, the Sava River is a suitable model system for investigation both natural and anthropogenic inputs influencing the chemical dynamics of a riverine ecosystem including riparian zone. The aim of this screening was to assess the spatial distribution of arsenic and heavy metals (Cd, Cr, Cu, Hg, Ni, Pb and Zn) in a riparian soil influenced by periodical flooding along a considerable stretch of the Sava River. Soil samples (depth of 0-10, 10-20 and 20-30cm) were collected during the GLOBAQUA expedition in September 2014 at 10 sites, extending over 945 km of the upper, middle and lower stretch of this mighty river. Our preliminary results revealed significant differences (Man-Whitney-U test, for $p < 0.05$) between the examined sites for all the trace elements except for Cu and Zn. Distribution of trace elements in relation to the different soil depths showed no significant differences. The concentration of As, Cd, Cr and Ni exceeds both background concentrations of trace metals in common soil types worldwide [1], and background values for European soils [2] in the lower stretch of the river (Županja in Croatia, and Sremska Mitrovica and Belgrade in Serbia). The concentration of Pb was found to be higher at two sites in the upper stretch (Radovljica and Litija, Slovenia), Fig. 1, in compare to all other sites.

Our results indicated higher anthropogenic pressure in the lower stretch of the Sava River, which is in accordance with the previous studies [3]. More efforts should be focused on the study of riparian area of large rivers in order to better understand transport of pollutants and influence of the rivers to surrounding area, and vice versa. It is particularly important since extreme hydrological events (flooding and very low water levels) frequently occur within the study area that may considerably influence pollutants transport and their remobilization.

[1] A. Kabata-Pendias, B. Mukherjee, Trace Elements from Soil to Human. Springer-Verlag Berlin Heidelberg, 2007.

[2] B.W. Gawlik, G. Bidoglio Eds., Background values in European soils and sewage sludges PART III, Conclusions, comments and recommendations. European Commission, Directorate-General Joint Research Centre, Institute for Environment and Sustainability, 2006.

[3] R. Marković, T. Kanduč, K. Szramek, D. Globočanin, R. Milačić, I. Ogrinc, Chemical dynamics of the Sava riverine system. J Environ Monit 12, 2010, 2165–2176.