

ANNUAL REPORT ON GEOTRACES ACTIVITIES IN POLAND
MAY 2014 – JUNE 2015

Metals (Co, Cd, Ni, Mn, Pb, Zn, Cr) in the groundwater impacted areas in the Baltic Sea

New results

The groundwater discharge is a source of Cd, Co, Cr Mn and Zn for the southern Baltic Sea. Locally, as in the Bay of Puck, groundwater discharge can be a significant source of metals in comparison with rivers. The trace elements concentrations in the groundwater are one (Pb, Cd, Co, Zn, Ag,) to two (Mn) orders of magnitude higher than in seawater. Ni and Cu concentrations similarly to Hg concentrations (Szymczycha et al., 2013) were smaller in groundwater. Dissolved Co and Zn both exhibited conservative distribution relative to salinity and showed depletion in seawater and enrichment in groundwater. Dissolved Cu, Ni and Cr show non-conservative mixing between the two end-members. Dissolved Ni and Cu both showed depletion in groundwater and enrichment in seawater while the trend for Cr is reverse. Dissolved Pb, Cd and Mn concentrations did not show clear trends to salinity. Dissolved Pb, Cd, Mn, and Cr change its phase to solid while the ORP increase and as a result increasing their concentrations in the sediment.

New publications

- Szymczycha B, Submarine Groundwater Discharge to the Bay of Puck, Southern Baltic Sea and Its Possible Changes with Regard to the Predicted Climate Changes, 2015, 61-75, in Impact of Climate Changes on Marine Environments, Edited by Zieliński T, Węśławski M, Kuliński K, Springer, London, 2015.

Cruises

June, 2014 Sampling Campaign

Other activities (e.g., acquisition of new sampling systems)

- Acquisition of groundwater lance in order to collect pore water samples

Sources of mercury in the Southern Baltic Sea

New publications

- Saniewska, D., Beldowska, M., Beldowski J., Jędruch A., Saniewski, M., Falkowska L. (2014a). Mercury loads into the sea associated with extreme flood. Environmental pollution, 191, 93-100.
- Saniewska, D., Beldowska, M., Beldowski, J., Saniewski, M., Szubska M., Romanowski A., Falkowska L. 2014. The impact of land use and season on the riverine transport of mercury into the marine coastal zone. Environ Monit. Assess 186:7593–7604.

Submitted by Jacek Beldowski (hyron@iopan.gda.pl).