

First sampling report of AMBER sub-projects B 4-6

Groundwater seepage at Hel peninsula (Gdansk Bay)

Within the scope of the AMBER sub-projects B 4-6 a first sampling campaign was carried out at Hel peninsula (Poland) from March 23th to 27th 2009 (Fig. 1).



Fig. 1: Map of the study site in the Gdansk Bay.

The major goal of our sub-projects is to identify, characterize, and quantify the influence of groundwater seepage on the coastal ecosystem of the Gdansk Bay. Besides geochemical analyses of groundwater (e.g. nutrients and trace metals) we further investigate its impact on biota (Fig. 2).

The study area is characterized by fine to coarse beach sands, thus representing permeable sediments and favourable conditions for groundwater seepage, respectively.



Fig. 2: Short cores for biological analyses.

Groundwater samples were obtained by using simple Lee-type seepage meters on a transect consisting of six sites along the beach at about 1 m water depth (Fig. 3). Additionally, short sediment cores were taken for geochemical investigation of pore waters.



Fig. 3: Groundwater sampling in spring.

First geochemical analyses revealed promising results as groundwater seepage could be identified at some sites along the transect. Thus, the salinity of discharge water was distinctly reduced when compared with the surrounding surface waters. Furthermore, the groundwater was highly enriched in nutrients like phosphate and silica but also in manganese and iron, which implies the importance of groundwater impact on coastal ecosystems.



Fig. 4: End of sampling.