

Abstract

Submarine groundwater discharge (SGD) is a significant hydrological process that strongly influences both environment and water budget. The objective of this doctoral dissertation was to identify the occurrence and significance of SGD in the deep-water part of the outer Puck Bay. An interdisciplinary research approach was applied, combining the analysis of bathymetric data with hydrochemical and geophysical measurements. Particular emphasis was placed on the identification and characterization of pockmarks, which in the study area are associated with SGD.

The results demonstrate that Puck Bay represents an important region of SGD, and that this process plays a key role in shaping the thermohaline structure. Furthermore, the analysis of chloride ion concentrations in sediment porewater allowed differentiation of areas characterized by varying drainage intensity, ranging from stable diffusion to active outflows.

The findings of this research provide new insights into the functioning of SGD in the southern Baltic and form a basis for further investigations into the mechanisms of pockmark formation, the temporal and spatial variability of SGD intensity, and the role of this process in shaping the ecological conditions of the outer Puck Bay.

Key words: submarine groundwater discharge, pockmarks, thermohaline structure, porewater chloride, Puck Bay

