



Variability of saline water inflow into the Gotland Basin (Central Baltic Sea) based on benthic foraminifera record

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The present Baltic Sea is a brackish landlocked water body, with a stratified water column. The hydrological regime of isolated deep waters is strongly dependent on the frequency of irregular inflows of dense, saline and oxygenated North Sea water through the narrow Danish Straits. The morphology of the sea includes several sub-basins connected by channels and sills. The sediment core ABP 44035 was recovered in the Western Gotland Basin during 44th cruise of the R/V Akademik Boris Petrov (October 2018) to reconstruct paleoenvironment including the changes in frequency of saline water inflows based on micropaleontological and geochemical data (total organic carbon content). The core was taken by means of a gravity corer from the water depth of 171 m. The core is 396 cm long, upper 4 cm of the core was lost. Additional short sediment core (45 cm) was taken at the same station with Niemistö Corer to obtain undisturbed top sediment sequence. Aboard the ship the lithological description of the cores was made and the cores were sampled each centimeter. The cores are mainly composed of olive gray and dark gray silt and silty clay. The sediment cores consist mostly of fine sediment fraction ($<63 \mu\text{m}$) with less than 5% of sand. Based on lithological description, the long core represent Littorina stage of the Baltic Sea. However, to construct a more precise age model sediments were sent for radiocarbon dating. Benthic foraminifera were counted and identified in the $>63 \mu\text{m}$ size fraction and shells concentration was counted as number per gram of wet sediments. Foraminifera assemblages had low diversity. Agglutinated foraminifera were represented by two species, *Reophax nana* and *Reophax dentaliniformis* and were present only in the upper 50 cm of the core. Two species, *Elphidium excavatum* and *Elphidium incertum* were dominant among calcareous species. Calcareous tests were extremely rare in the studied cores and showed two distinct peaks in the record: 4-5 cm and 390-391 cm intervals. Single tests of planktonic foraminifera *Neogloboquadrina pachyderma* sin. were also found at 225-226 cm interval. The presence of benthic foraminifera in the core indicates inflows of saline oxygenated water into the Western Gotland Basin during corresponding time intervals. Based on the correlation of obtained data with published results on Baltic Sea salinity reconstruction, the mentioned intervals of frequent inflows are probably Littorina stage 2 and 4.

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