

STATISTICAL ANALYSIS OF THE RELATIONSHIP BETWEEN BALTIC SEA-LEVEL AND METEOROLOGICAL FORCING IN THE PRESENT CLIMATE AND PALEOCLIMATE PROXY DATA

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The aim is to identify the climate influence on past and future sea-level changes in the Baltic Sea by using statistical methods and global climate models. For this purpose the relevant atmospheric forcings, such as those represented by the NAO, had to be reconstructed by statistical means and the analysis of long dendrochronological time series.

Therefore we analysed the relationship between Baltic sea-level and meteorological forcing within the instrumental period; taking into account that the evolution of sea-level is composed of a secular trend of geological origin and the influence of atmospheric forcing. It is shown that an empirical regression model between sea-level and sea-level pressure can explain most of the deviations from a linear long-term trend through the influence of climate factors.

A similar statistical analysis between available dendrochronological data and the sea-level gauges is now being carried out for the period when both datasets overlap (last 100-150 years). Since the relationship between proxy data and sea-level data is obviously indirect, the interpretation of the results will have to be more elaborated. The results will yield an estimation of the amount of covariability present in sea-level and proxy data and therefore of the amount of sea-level variability that could be potentially reconstructed with the longer time series of paleoclimatic data sets. For the physical interpretation, secondary analysis between the proxy data and the climate forcing will be performed.