

Plans for an Overview of Knowledge about Sea-level Change in the Baltic Sea

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The Institute for Coastal Research at GKSS Research Centre Geesthacht plans an overview of the available knowledge about sea-level variability and change in the Baltic Sea Region.

Sea-level change is becoming an issue of increasing importance, especially in the context of anthropogenic global climate change. In addition, it is also closely linked to studies of solid earth processes and geodetic science. The possible impact of sea-level rise on the coast and the associated costs for coastal protection elicits a great interest to governmental bodies and the public. Impacts of sea-level rise can include coastal erosion and inundation, higher waves at the coast as well as salt-water intrusion and stratification with implications for the ecosystem.

The understanding of sea-level rise and variability on a global scale is nowadays the focus of many research studies worldwide and was one of the key topics of the IPCC Fourth Assessment Report (*Bindoff et al., 2007*). A global average of sea-level, however, enconceals considerable regional variations that may be caused by regional and local-scale processes.

In 2008, the first Assessment of Climate Change for the Baltic Sea Basin (*The BACC author team, 2008*) -with an overall project format similar to that of the IPCC- was published as “BACC report” within the BALTEX project, offering an up-to-date overview of the latest scientific findings in regional climate research on the Baltic Sea basin, including climate changes in the recent past, climate projections up until 2100 and an assessment of climate change impacts on terrestrial, freshwater and marine ecosystems.

However, the issue of sea level in the Baltic Sea appears relatively less represented in the report compared to other aspects of climate change, as it is not included in the overall summary. From our recent experience from communicating with regional stakeholders it has become very clear that this issue must be considered a major issue for stakeholders and the public at large.

Many more studies on sea level have been published since the conclusions of the BACC report. For instance, since 1993, high-quality satellite-altimeter observations of sea levels allow for more accurate estimates of globally averaged but also regional sea-level change. Are these satellite-altimeter observations yet useful for the study of Baltic Sea level variability? Another challenge in sea-level research is the separation of the relative contributions of isostatic change, due to postglacial rebound and the eustatic sea-level change. Are there new efforts made in the development of advanced geodetic techniques for measuring vertical land movement at tide gauges? What available input data is up to date for hydrodynamic or sediment transport models used by coastal engineers? Which sea-level data is available for the Baltic Sea Community and which of the data has been quality controlled by peer-reviewed scientific studies? Which climatic data was so far used for studying the climatic influence on sea level in the Baltic Sea? Has full advantage been made of existing data? Is there a need for more cross-national studies? What are the challenges for future Baltic Sea level research? What is known? What is very likely? And what is still uncertain?

We want to collect and assess the published knowledge about sea-level variations and change until the end of 2009. To do so, we kindly ask the BALTEX Community for help. Please inform us about publications in any language, ongoing projects and initiatives dealing with sea-level variations and change in the Baltic Sea, including coastal erosion. Helpful suggestions, comments, details and references concerning planned or ongoing research related to Baltic Sea level studies are most welcome.

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References

Bindoff, N.L., Willebrand, J., Artale, V., Cazenave, A., Gregory, J. and co-authors. 2007. Observations: Oceanic Climate Change and Sea level. In: *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., Qin, D., Manning, M., Chen, Z., Marquis, M., Averyt, K.B., Tignor, M. and Miller, H.L. (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

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