Neumann, T., Friedland, R. (2011): Climate Change Impacts on the Baltic Sea. In: Schernewski, G., Hofstede, J., Neumann, T. (eds): Global Change and Baltic Coastal Zones, Coastal Research Library-Series, Springer, Dordrecht, Vol. 1, pp 23-32

Global Change and Baltic Coastal Zones

Chapter 2: Climate Change Impacts on the Baltic Sea

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Abstract

Climate impact research is of increasing importance because politicians, local decision makers, and the society require guidance regarding the environmental effects of global warming. This information is needed on a regional scale which cannot be provided by global climate models. Therefore, tools are needed to translate global climate trends into a regional scale. Regional climate models are used to scale global climate simulations with coarser resolution to a finer grid. Beside the knowledge about atmospheric variables further information of the marine environment, especially for coastal regions, is important. Regional ocean models driven by regional climate models can provide scenarios for the future development of the marine environment. A Baltic Sea ecosystem model is used for scenario simulations to assess the potential development of the Baltic Sea within the next 100 years. The simulations show an increasing water temperature in the range of 2–3.5 K and a decrease in salinity by 1.5–2 g kg^{-1}. Events with large suboxic areas are likely to increase in the western Baltic Sea. However, the uncertainties in the climate projections are high and for robust results more scenario simulations are needed.