



The future development of Baltic Sea cyanobacteria blooms: A scenario

Inga Hense (1), Sebastian Sonntag (1), and H. E. Markus Meier (2)

(1) Institute for Hydrobiology and Fisheries Science, KlimaCampus, University of Hamburg, Germany

(inga.hense@uni-hamburg.de), (2) Swedish Meteorological and Hydrological Institute, Oceanography, Norrköping, Sweden

In recent years, large and widespread cyanobacteria blooms in summer are a typical and prominent feature of the Baltic Sea ecosystem. Hindcasts (for the years 1970-2010) and projections (for the years 2011-2100) are carried out with a coupled physical-ecosystem water column model which includes an advanced treatment of the cyanobacteria life cycle. The model system is forced by data derived from an IPCC model run of a regional Baltic Sea climate model (RCAO). The results show large interannual variability with alternating periods of high cyanobacteria concentrations and almost absence of this species. This is in agreement with observations from past few decades. Extremely large peaks of cyanobacteria are projected for the next decades which are a result of feedbacks between the species' life cycle and the occurrence of consecutive extreme warm and calm years. The duration of blooms, however, is only slightly affected. In addition, the simulation suggests that years with low biomass of cyanobacteria will likely occur also in the future.