



Climate changes in the North Sea region – a review of recent assessments

Wilhelm May (1,2), Anette Ganske (3), Gregor Leckebusch (4), Burhardt Rockel (5), Birger Tinz (6), and Uwe Ulbrich (7)

(1) Research and Development, Danish Meteorological Institute, Copenhagen, Denmark, (2) Centre for Environmental and Climate Research, Lund University, Lund, Sweden, (3) Federal Maritime and Hydrographic Agency, Hamburg, Germany, (4) School of Geography, University of Birmingham, Birmingham, UK, (5) Institute for Coastal Research, Helmholtz-Centre Geesthacht, Geesthacht, Germany, (6) German Weather Service, Hamburg, Germany, (7) Institute of Meteorology, Free University of Berlin, Berlin, Germany

As a contribution to the North Sea Region Climate Change Assessment (NOSCCA), the potential future changes in various aspects of the atmospheric state in the North Sea region are reviewed. These are aspects of the large-scale circulation, the mean and extremes, primarily at daily time scales, in temperature and precipitation, winds and cyclones as well as clouds and radiation. Typically, these changes have been projected for the end of the 21st century as compared to the end of the 20th century, but in the last years several projections have also become available for the middle of the 21st century.

The review is primarily based on some of the recently published assessment reports, i.e., the Fifth Assessment Report (AR5) of the Intergovernmental Panel on Climate Change (IPCC), the IPCC Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX) and the Fourth Assessment Report (AR4) of the IPCC. These assessment reports are complemented by recent results from the scientific literature, which have not been included in the assessment reports. Since there have only been undertaken a very limited number of studies focussing on the North Sea region, the majority of the results reviewed here have been extracted from future climate projections for Europe (based on RCM scenario simulations from ENSEMBLES or CORDEX) or even from projections covering the whole globe (based on GCM scenario simulations from CMIP3 or CMIP5).