Regional Climate Services:

A Case Study

Helmholtz-Zentrum Geesthacht
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Regional climate service is a crucial basis for managing climate adaptation strategies. After several years of regional climate service practice, done at the Institute of Coastal Research of the Helmholz-Zentrum Geesthacht (http://coast.hzg.de) three main parts are localized:

Regional climate office

The North German Climate Office at the Institute of Coastal Research, Helmholtz-Zentrum Geesthacht has established a dialogue with stakeholders in the region of Northern Germany including the metropolitan region of Hamburg http://www.norddeutsches-klimabuero.de.

There are two main tasks of the dialogue between science and the public – which is accomplished by the knowledge broker "North German Climate Office".

1) One task is to convey the content of scientific knowledge into the public, to media and to stakeholders. This includes communicating the limitations of such knowledge, the known uncertainties and the unknowable, as well as the limited role of science in complex social decision processes. An important internet tool, which is online since 2009, is the North German climate atlas (see http://www.norddeutscher-klimaatlas.de, after Meinke and Gerstner 2009). It allows users an interactive access to regionalized changes of various climate variables at different seasons and time windows in the future for the North German region. The change is presented as ranges defined by the minimum and maximum possible changes among all incorporated scenarios and the scenario nearest to the ensemble mean. Figure 1 shows an example for the visualization.

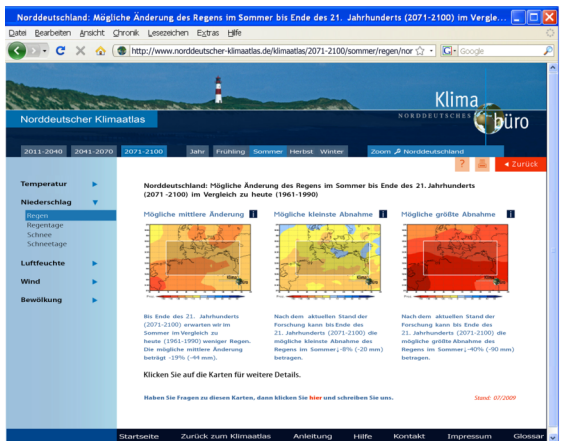

Fig. 1: North German Climate Atlas, www: norddeutscher-klimaatlas.de (after Meinke and Gerstner 2009)

2) The other task is to explore the range of perceptions, views, questions, needs, concerns and knowledge in the public and among stakeholders about climate, climate change and climate risks. surveys conducted among people living at the coast and in Hamburg about their concerns. Both populations share the perception that the major risk of climate and climate change is represented by storm surges (related to increased sea level and intensified storms), but surprisingly people in Hamburg, who are less threatened by storm surges, are more concerned about climate change than those living along the coast (Fig. 2)

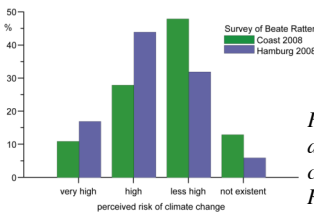

Fig. 2: Perceived risk along the North Sea coast and in the city of Hamburg related to climate change in 2008. (After Ratter et al. (2009), and Ratter and Kruse (2010)

Regional climate assesment reports

While the fourth Assessment Report of the Intergovernmental Panel on Climate Change provided much needed knowledge about climate, climate change and impact, the need for such knowledge about *regional* and *local* conditions are generally missing. Mimicking the IPCC, an outstanding example of a regional assessment is the BALTEX Assessment of Climate Change for the Baltic Sea Basin (BACC; Reckermann et al., 2008). The BACC report was compiled by a consortium of 84 scientists from 13 countries around the Baltic Sea (BACC Author Team, 2008 – see Figure 3) and coordinated by the BALTEX Secretary at the HZG Institute of coastal research. The assessment covers various disciplines related to climate research and related impacts. A second BACC report has just been launched (http://www.baltex-research.eu/BACC2/index.html)

An other regional climate assessment report has been published in November 2010 for the metropolitan region of Hamburg. This report has been coordinated by the North German Climate Office (see Figure 4) (see http://www.klimabericht-hamburg.de)

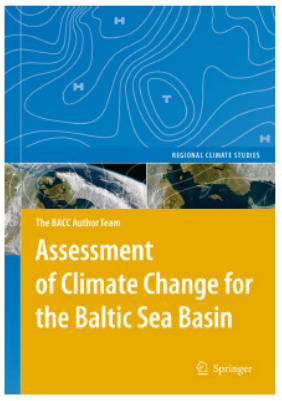

Fig. 3: Cover of the BACC report (BACC Author Team, 2008)

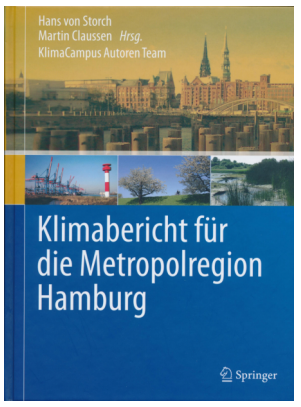

Fig. 4: Cover of the Climate report metropolitan region of Hamburg

Regional climate data base

Various stakeholders, ranging from governmental agencies to companies and representatives of economic sectors, as well as regional scientific institutions are regularly asking not only for perspectives of future development but also about recent and current risks and potentials (e.g., concerning off-shore wind energy or other large-scale constructions). As a response to these inquiries, a data set named **coastDat** with coastal weather analyses and climate change scenarios for the future for Northern Europe has been compiled. These model data provide a unique combination of consistent atmospheric, oceanic, sea state and other parameters at high spatial and temporal detail, even for places and variables for which no measurements have been made. In addition, coastal scenarios for the near-future complement the numerical analyses of past conditions in a consistent way (see Figure 5) .

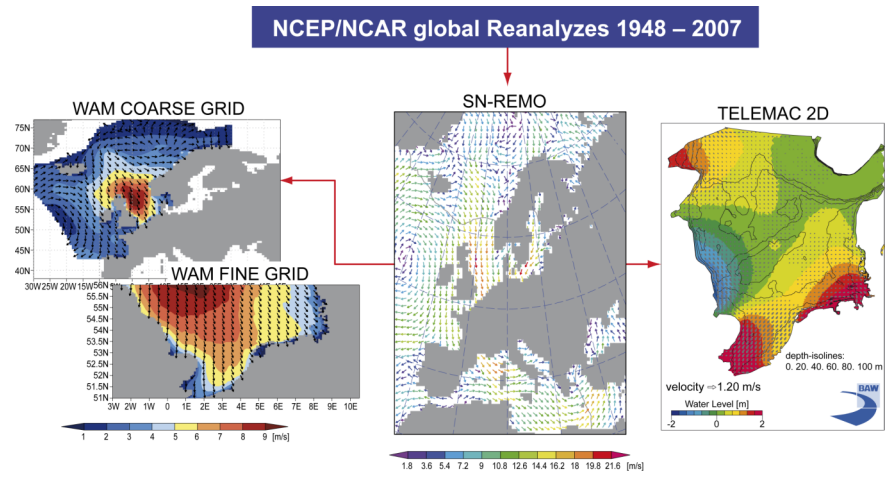

Fig.5 Layout of the consistent metocean hindcast 1948–2007 for the southern North Sea. From the (middle) regional atmosphere hindcast hourly wind fields were used to force a (right) tide surge and a (left) wave model hindcast. The figure shows an example of consistent met-ocean conditions obtained from the hindcast for 1200 UT C 21 Feb 1993. (middle) Near-surface (10-m height) marine wind fields (m s−1), and corresponding wind direction obtained from the regional atmospheric reconstruction. (left) Corresponding significant wave height fields (m) and mean wave direction from the coarse and the fine grid wave model hindcast. (right) Tide surge levels (m) from the corresponding tide surge hindcast (from Weisse et al.,2009)

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