

Presentations Hans von Storch

SA visit, 26-28 August, Cape Town / Stellenbosch

1. Seminar at Institute of Oceanography, UCT, 26. August

“Assessing risk in regional coastal weather”

Using a regional climate model (REMO) to dynamically downscale homogeneous global re-analyses (by NCEP), we have constructed a detailed description, on a 50 km grid and once an hour, of wind, currents, water levels and wave statistics for Northern Europe for 1948-2005. This data set, which is found to reliably describe the changing statistics of coastal weather, is now used for a large group of users in science, economic stakeholders and public decision makers for assessing risks related to coastal weather. The methodology is presented applied to other regions of the world.

The talk presents the methodology and describes some examples of the utility of this CoastDat data set. An overview on CoastDat came out earlier this year in the Bulletin of the American Meteorological Society:

Weisse, R., H. von Storch, U. Callies, A. Chrastansky, F. Feser, I. Grabemann, H. Günther, A. Plüss, T. Stoye, J. Tellkamp, J. Winterfeldt and K. Woth, 2009: Regional meteo-marine reanalyses and climate change projections: Results for Northern Europe and potentials for coastal and offshore applications, *Bull. Amer. Meteor. Soc.*, doi: 10.1175/2008BAMS2713.1

and a comprehensive description of the issues is given by this book

Weisse, R., and H. von Storch, 2009: *Marine Climate & Climate Change. Storms, Wind Waves and Storm Surges*. Praxis Publishing Ltd

2. Panel discussion „Science and Ethics of Climate Change“, UCT, 27. August

“Science and Ethics of Climate scientists”

Climate is changing, and there is hardly any doubt that the major part of this change in the recent past is related to the anthropogenic emission of gases into the atmosphere. Since climate, i.e., the statistics of weather, is affecting all humans and all ecosystems, the immediate question following this scientific finding is, what to do about it? Obviously, while the first question – is there climate change and what is its cause? – is a scientific question, the “second” question – what do we do about it? – is not a scientific question but a political questions, whose answers depend on values and thus culture.

This situation is difficult for scientists, who driven by their scientific knowledge favor certain policies, find themselves constrained to the narrow view of lay-people, when dealing with issues related to the social and cultural dimension – a phenomenon known from post-normal science. In this introductory remark, the options of policies related to climate change are outlined, and the “Honest Broker”-concept of Roger Pielke jr. sketched.

The issue is discussed in the recent paper

von Storch, H., 2009: Climate Research and Policy Advice: Scientific and Cultural Constructions of Knowledge. *Env. Science Pol.* <http://dx.doi.org/10.1016/j.envsci.2009.04.008>

and in a book, the publication of which is expected in these days:

Stehr, N. and H. von Storch, 2009: *Climate and Society. Climate as a Resource, Climate as a Risk World Scientific*

3. Seminar, Stellenbosch, 28. August

“Ongoing and expected regional climate change: wind, surge and wave conditions in the North Sea”

Using dynamical models of the regional atmosphere, of the hydrodynamics of the North Sea and of the sea state regime in the North Sea, changing statistics of strong winds, high water levels, currents and ocean waves have been reconstructed for the time 1948-2005; similarly scenarios of possible futures for the end of this century have been derived for the North Sea.

The methodology is presented applied to other regions of the world.

For the past, some variability has been detected but no systematic changes, apart of ocean wave heights in the southern part of the North Sea. For the future, the situation along the German North Sea coasts is expected to become more dangerous, mostly because of increased mean water levels, but also because of an intensification of strong westerly wind regimes and their associated surges. Not only middle-of-the-road scenarios have been constructed but also extreme scenarios, which may be considered as upper end of what seems possible under worst negative assumptions.

The issue of changing mean sea level is very contentious, and it may take another few years before the scientific questions surrounding this issues will be (more or less) settled.

Literature:

Grabemann, I. and R. Weisse, 2007: Climate change impact on extreme wave conditions in the North Sea: An ensemble study, *Ocean Dynamics*.

Woth K., 2005: Projections of North Sea storm surge extremes in a warmer climate: How important are the RCM driving GCM and the chosen scenario? *Geophys Res Lett*: 32, L22708, doi: 10.1029/2005GL023762