

deterministic and probabilistic modeling forecasts were presented, illustrating the challenging aspects of model evaluation. In parallel, data assimilation techniques were shown to have become a fundamental and powerful component of numerical modeling of many geophysical systems.

The conference also hosted a special session in memory of Albert Tarantola, an outstanding mathematical geophysicist and former CMG president. The session was dedicated to the relevance of mathematical models in terms of predictability in real applications; a brief summary is provided

in the online supplement to this *Eos* issue (http://www.agu.org/eos_elec).

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Improving the Accuracy of Estimation of Climate Extremes

Workshop on Metrics and Methodologies of Estimation of Extreme Climate Events; Paris, France, 27–29 September 2010

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Climate projections point toward more frequent and intense weather and climate extremes such as heat waves, droughts, and floods, in a warmer climate. These projections, together with recent extreme climate events, including flooding in Pakistan and the heat wave and wildfires in Russia, highlight the need for improved risk assessments to help decision makers and the public. But accurate analysis and prediction of risk of extreme climate events require new methodologies and information from diverse disciplines. A recent workshop sponsored by the World Climate Research Programme (WCRP) and hosted at United Nations Educational, Scientific and Cultural Organization (UNESCO) headquarters in France brought together, for the first time, a unique mix of climatologists, statisticians, meteorologists, oceanographers, social scientists, and risk managers (such as those from insurance companies) who sought ways to improve scientists' ability to characterize and predict climate extremes in a changing climate.

More than 130 people from 32 countries attended the workshop. Oral sessions were dedicated to hydroclimate extremes, heat waves, extreme extratropical and tropical cyclones including storm surges, methodologies for estimation of extremes, and risk assessment. More than 75 posters were on display. The workshop concept, program, and presentations are available at <http://www.extremeworkshop.org>. Breakout groups were held to develop recommendations concerning (1) data requirements and availability, (2) representation of extremes in models, and (3) methodologies for estimating extremes. The workshop identified critical problems for accurate estimation of climate extremes and effective management of their risks. In particular, these critical problems include limited availability of high-resolution data in both space and time, insufficient capability of climate models to simulate phenomena leading to extreme events, and still undeveloped statistical methodologies. To overcome these problems, workshop participants prioritized activities to improve estimation of climate extremes; the most important activities focused on the following:

- Improved high-temporal-resolution (subdaily) data sets that can be used to assess changes in extreme rainfall, drought, heat waves, floods, and storms
- Model evaluation with the focus on the model's ability to replicate extremes and to better compare model output with observations
- Determination of the main phenomena responsible for extremes and improved understanding of the relevant physical processes
- Development of robust statistical methods for assessing extremes and their uncertainties and making these tools available for widespread use
- Development of an activity on analysis of extremes utilizing data archived by the WCRP Coupled Model Intercomparison Project.

A white paper is being prepared to develop more detailed recommendations for action based on the workshop discussions. The outcomes of this workshop are expected to feed into a larger WCRP cross-cutting effort targeted at climate extremes that also includes, among other things, a focus on drought (see <http://drought.wcrp-climate.org/workshop/index.html>).

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ABOUT AGU

Schlitzer Receives Ocean Sciences Award

Reiner Schlitzer received the 2010 Ocean Sciences Section Award at the 2010 Ocean Sciences Meeting, held 22–26 February 2010 in Portland, Oreg. The award is given in recognition of outstanding and long-standing service to the ocean sciences.

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Citation

It is my privilege to nominate Reiner Schlitzer (Alfred Wegener Institute for Polar and Marine Research, Germany) for the AGU Ocean Sciences Section Award. His contributions in data management for large international research projects (World Ocean Circulation Experiment (WOCE), Integrated

Marine Biogeochemistry and Ecosystem Research (IMBER), and GEOTRACES) and his development of the impressive data manipulation and visualization tool Ocean Data View (ODV) are meritorious contributions.

The massive data sets collected in the past few decades by international projects are only as valuable as they are accessible for easy manipulation and investigation by the broader ocean sciences community.

Reiner created, disseminated, and continues to support the powerful yet facile ODV (<http://odv.awi.de>), which allows quick manipulation of very large data sets, giving unprecedented and rapid access to the science. ODV was developed such that thousands of oceanographers and students can learn it quickly and almost immediately make headway with their own data sets. Putting many more minds onto the questions that can be answered using global data sets is of incalculable value, and that is what ODV has done.

It is impossible to attend ocean sciences meetings where ODV is not most often the software of choice to present findings. At present, there are 2100 different visitors to the ODV Web site each month, downloading 60 gigabytes of software and data. The number of registered users is now at 16,500 and rising by 300 per month. There are Japanese and Russian translations of the ODV manual, again demonstrating Reiner's