



Future Challenges for WCRP CORDEX: Outcomes of the 2nd International Conference on CORDEX

More than 400 scientists, all working on regional climate, came together in Brussels, Belgium, in early November 2013 for the 2nd International Conference on CORDEX (Coordinated Regional Climate Downscaling Experiment). This conference was embedded in a wider event on Regional Climate Change jointly organized by the World Climate Research Programme (WCRP), the European Commission (EC) and the Intergovernmental Panel on Climate Change (IPCC) (see http://www.wcrp-climate.org/images/documents/news/WCRPnews_08112013.pdf). The first day of this important gathering featured a High Level Session with the participation of the EC Commissioners for Research & Innovation and for Climate Action, where the Intergovernmental Panel on Climate Change (IPCC) presented key findings from the IPCC Working Group I Contribution to the Fifth Assessment Report *Climate Change 2013: The Physical Science Basis*. This was followed by a Stakeholder Dialogue session focusing on how regional climate information can best serve the needs of policy and decision-makers. This segment was intended to provide the socio-economic and policy contexts within which WCRP regional climate research activities and programmes operate.

During the following three days dedicated to CORDEX science the oral and posters presentations highlighted the achievements of the first phase of the project (CORDEX-I). CORDEX-I has been a successful framework in which scientists around the world adopted a common protocol to guide the development of high-resolution Regional Climate Model (RCM) and empirical statistical downscaling (ESD) projections, and the intercomparison of these projections, on each continent. The conference provided evidence that much of the work underway is relevant to the climate change vulnerability, impacts and adaptation (VIA) studies and that CORDEX must address several key challenges in order to better serve these communities. Indeed the scientists recognized:

- 1) the need to establish a two-way dialogue with the end users of regional climate information so as to ensure an appropriate tailoring of the CORDEX output to the decision makers' needs
- 2) the demand for training activities that build capacity for interaction among practitioners, policymakers, scientists and other societal decision making groups
- 3) the importance of high-resolution observational data sets and archiving infrastructures such as the Earth System Grid Federation (ESGF) in support of the evaluation of regional climate projections
- 4) the need to develop mechanisms to communicate the scientific uncertainty generated by a regional climate model and the implications that those uncertainties can have in the application of the resulting regional climate information to VIA studies

In addition the participants discussed the "added value" of the regional downscaling models. The advent of high resolution global models raises the challenge of demonstrating the value of dynamic downscaling to add accurate information beyond what would be achieved by interpolating global model prediction onto a finer scale terrain / landscape map. As a result there was consensus on the need to rigorously demonstrate the reliability and usefulness of the CORDEX outputs as well as to improve the representation of the physical processes in the regional models.

In conclusion, the conference proposed some concrete actions for further advancing the CORDEX science and to better engage the VIA community:

- 1) Revisit the CORDEX domains and develop a clear-science based procedure for their selections
- 2) Develop metrics to assess the added value of the regional downscaling model outputs as compared to global climate simulations (beyond what is already available to the VIA community)
- 3) Support the development of high-resolution observation datasets for assessing the robustness of the models
- 4) Establish end-to-end pilot studies over selected sub-regions together with other WCRP regional initiatives and in partnership with the WCRP Working Group on Regional Climate
- 5) Design and implement capacity building activities that bring together information providers and decision makers towards meeting regional needs

Implementing these actions will lead to the second phase of CORDEX (CORDEX-II) and will certainly represent another milestone in the delivery of climate services.

For more information, see <http://cordex2013.wcrp-climate.org/>.