

## **CORDEX Empirical Statistical Downscaling - Background**

The CORDEX program runs under the mandate of the WCRP Working Group on Regional Climate (WGRC) and complements the WCRP Working Group on Coupled Modelling (WGCM), which oversees the CMIP data development. CORDEX is steered by a Science Advisory Team reporting to the WGRC, and seeks to develop regional climate projections for all terrestrial regions through Regional Climate Models (RCMs) and Empirical-Statistical Downscaling (ESD).

CORDEX has generated substantial interest and raised expectations worldwide. To date, this is largely on the basis of downscaling with MultiGCM/MultiRCM pairings. In contrast, ESD methods are recognized as of equivalent skill with different advantages (some of special relevance to adaptation issues) and also different shortcomings compared to using RCMs. However, ESD's potential has not been explored as substantially or as systematically as that of RCMs, creating a gap in overall assessment for the application of downscaling by the impacts and adaptation communities.

A sequence of three ESD workshops, supported in part by the U.S. National Science Foundation, the Norwegian Met Service and the University of Buenos Aires, seeks to close the gap with RCM products and leverage the benefits of ESD to complement the RCM-based work. The first workshop was at ICTP/Trieste (26-27 September 2013), the second was at the University of Buenos Aires (30 July – 1 August 2014; <http://www-atmo.at.fcen.uba.ar/cordex/>), and the third is planned for June 2015 at the University of Cape Town. The by-invitation workshops have been bring together scientists active in ESD in order to establish a standard framework of ESD activities that contribute to CORDEX and complement the equivalent RCM product suite, and to build on existing climate activities.

The workshop series are progressively developing the core ESD comparison framework and evaluating and refining the methodologies. Ultimately, they will engage stakeholders directly in co-exploration and utilization of combined ESD/RCM data archives. A draft experiment framework has been developed, and this will form a starting point of discussion. Through this effort, the workshop series will build a more cohesive community among the wide diversity of ESD practitioners, and establish a more rigorous foundation for the evaluation and uptake of ESD outputs by the scientific community and by stakeholders.

The workshops ultimately will develop a multimodel, multimethod downscaling product complementary to the established CORDEX RCM design, and include additional diagnostics pertinent to ESD evaluation and tailored outputs targeted at needs of the adaptation and impacts communities. In addition, the ESD outputs will contribute directly to the broad range of other ongoing and proposed stakeholder relevant adaptation and policy activities in developing nations, including those of various country aid agencies (e.g., UK DFID) and development agencies (e.g., World Bank).