

## **Summary ICRC-CORDEX 2019 - Plenary 1 FPSs and WCRP CORE PROJECTS**

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The afternoon plenary session 1 of the International Conference on Regional Climate ICRC-CORDEX 2019 focused on the advances and challenges of the different CORDEX Flagship Pilot Studies (FPSs) and presentations of the different WCRP Core Projects targeting the areas for possible collaboration..

Scientists from different countries around the globe presented the methodologies and development in the different FPS which represent the future of CORDEX highlighting on-going research and the associated challenges. Maria Bettolli from the Universidad de Buenos Aires (Argentina) featured progress in understanding extreme precipitation events in their region considering the increased frequency and large socio-economic impacts over recent years. The use of different methodologies and models from different countries has had a high impact on regional networks by means of collaboration and data sharing with other institutions. The main challenges ahead include the lack of local financial support and need for human resources.

Stefan Sobolowski from the Bjerknes Centre for Climate Research (Norway) presented the results and pending work on the Europe-Mediterranean FPS focused on convective-scale events, related processes and changes and which aims to provide a collective multi-model ensemble of convection permitting simulations already available. New process-based metrics have been developed within this FPS and the main challenges remain the time limitations and computational efforts. Peter Hoffmann from the Potsdam Institute for Climate Impact Research (Germany) presented the results of the FPS on the impact of land use changes on climate in Europe to identify robust biophysical impacts of land use changes on climate from regional to local scales and at different temporal scales from extreme events to decadal variability. The projects has different simulation phases varying in spatial resolution from continental scale up to local studies. The results show a qualitative agreement in winter warming dominated by the radiative effect of forests (albedo decrease) and highlight that summer temperature response is driven by land processes.

Gabriel Jordà from IMEDEA, UIB (Spain) featured the latest developments in the air-sea interaction study over the Mediterranean where the main goal is to determine the role of small scale oceanic processes and to provide a consistent and reliable database of different coupled models. The main challenges remain the modeling of small scale ocean processes at very high resolution where ORCMs have a clear added value with respect to OGCM with the growing interest on marine-related climate services and impact studies.

Finally, Silvina Solman from the University of Buenos Aires (Argentina) summarized the main results and work of the remaining FPS of land-atmosphere-ocean interaction in Africa, the study

of climate extremes over Lake Viktoria and the role of natural and anthropogenic aerosols in the Mediterranean region.

One of the goals of the plenary session of the ICRC-CORDEX was to showcase the work being carried out within the different WCRP Core Projects with a special interest in the areas where a CORDEX collaboration could be done from the evaluation of regional and local variables by RCMs to capacity building and training activities. Tianjun Zhou of the Institute of Atmospheric Physics, Chinese Academy of Sciences (China) featured the latest developments in the CMIP initiative highlighting the data availability and the opportunities of CMIP6 to advance the knowledge in internal variability.

Jan Polcher of the CNRS/IPSL (France) presented the GEWEX core project dedicated to the understanding and prediction of coupling energy, water cycle and human interaction which is critical for extremes characterization. This project has different regional activities underway and could benefit from a CORDEX collaboration with the RCM simulations of certain variables which are otherwise difficult to evaluate and by including certain processes e.g. the anthropogenic effect studied by GEWEX into the RCMs of the CORDEX initiative. Seok-Woo Son of the Seoul National University (South Korea) featured the latest work within the SPARC project whose main goal is the study of stratosphere-troposphere processes and their role in climate and known for its role in assessing long-term climate records and simulations which could benefit CORDEX by the use of the reanalysis intercomparison information.

Shichang Kang of the Institute of Tibetan Plateau Research, Chinese Academy of Sciences (China) presented the CliC project with the focus of the global and regional modeling and prediction of the cryosphere. The CliC project has different initiatives such as the ice sheet mass balance and sea level, the Arctic sea ice working group, among others, which are directly related to the CORDEX initiative and can lead to future common research. Simon Marsland from CSIRO Marine and Atmospheric Research (Australia) introduced the work within the CLIVAR project focused on the ocean-atmosphere interactions with different regional panels and leading ocean model intercomparison project directly related to work being done within CORDEX.

Finally, Beatriz Balino from the University of Bergen (Norway) introduced the work of the WCRP Coordination Office for Regional Activities (CORA) focused on the organization of the collaboration between WCRP, CMIP and CORDEX with three main legs of fundamental science of producing regional climate projections, application-inspired climate science and trans-disciplinary engagement.

*Presentations:*

- South America: Extreme precipitation events in Southeastern South America. Maria Bettoli
- Europe+Mediterranean: Convective phenomena at high resolution over Europe and the Mediterranean. Stefan Sobolowski
- Europe: Impact of land use changes on climate in Europe across spatial and temporal scales. Peter Hoffmann
- Mediterranean: Role of the air-sea coupling and small scale ocean processes in regional climate. Gabriel Jordà
- Others: (presented by Silvina Solman)
  - Africa: Coupled regional modelling of land-atmosphere-ocean interactions.
  - Africa: ELVIC – Climate Extremes in the Lake Viktoria Basin.
  - Mediterranean; Role of the natural and anthropogenic aerosols in the Mediterranean region: past climate variability and future climate sensibility.
- CMIP Tianjun Zhou
- GEWEX. Jan Polcher
- SPARC. Seok-Woo Son
- CliC. Shichang Kang
- CLIVAR. Simon Marsland
- CORA. Beatriz Balino