

42nd Session of the WCRP Joint Scientific Committee

28th June – 2nd July

CORDEX Report

1. Highlights for JSC

- The future Scientific Challenges for CORDEX, a community effort, were outlined and published in the [CORDEX White Paper](#)
- The CORDEX Science Plan was started, as a community effort, building on the White Paper scientific challenges
- CORDEX co-chairs have been part of the development and lead of the WCRP new Core Project “Regional Information for Society” (RIfS). The positioning of CORDEX in RIfS has been a large part of CORDEX SAT-discussions and CORDEX community discussion and there has been open meetings concerning the overall RIfS group and Open SAT-meetings regarding how the community sees RIfS and the CORDEX contribution to RIfS. There is consensus that CORDEX should stay an independent entity with its own governance (SAT) and IPO, being a prominent contributor to RIfS.
- CORDEX representatives were involved in Lighthouse Activities
- The IPOC supports the planning of the regional Forum in South America
- [The CORDEX experiment design for dynamical downscaling of CMIP6](#), also a community effort, was published
- The CORDEX experimental design for coordinated statistical downscaling approaches based on CMIP6 models has been drafted.
- Many new simulations and set of experiments were finalized by the larger contributors and [updated overview of the GCM/RCM simulations](#) has been published at www.cordex.org.
- Seven new [Flagship Pilot Studies \(FPSs\)](#) Proposals were filed and four were endorsed: ‘Rainfall responses to climate change in a convective-permitting model over Western Cape (HighResWC)’, ‘URBan environments and Regional Climate Change (URB-RCC), Dynamical downscaling experiments and hydrological modelling for Canada and Mexico and North America: Assessing the Use of Regional Models in a Storyline Framework for Understanding Climate Hazards’. Several new web pages and peer reviewed papers as well as reports for the FPSs have been launched/published.
- CORDEX restarted Newsletters which will be published a few times a year. The [CORDEX report 2020](#) was an extended newsletter highlighting many CORDEX activities during 2020.

As the covid situation prohibited physical meetings a lot of activities were cancelled. Despite this the CORDEX community succeeded in adjusting to the situation and carrying out a number of meetings, trainings and workshops online, where the larger ones are listed below:

- The first meeting for new the URB-RCC FPS was held online in May
- The second EURO-CORDEX workshop, which took place April 29, 2021 the prioritization of SSPs for downscaling CMIP6 simulations was discussed. About 50 regional climate modellers gathered online.

- CORDEX Central America and South America organized a follow-up Online Paper-Writing Workshop on Regional Climate Modeling on May 3 and 5, building on the [workshop held in November and December 2020](#).
- CORDEX Southeast Asia and IPOC organized an outreach and [capacity building workshop online 17 – 19 November 2020](#). Almost 200 participants attended the sessions. Most participants came from the Southeast Asian countries although some participants outside the region also participated.
- There was [an online workshop organized by CORDEX and MAIRS-FE](#) on 9-10 November 2020 aimed to seek better collaboration between the organizers and also other relevant actors.
- The International Centre for Integrated Mountain Development (ICIMOD), Met Office, IPOC and CORDEX South Asia organized the [training workshop Regional climate change projections](#): Climate change analysis using CORDEX regional climate models over South Asia, online during 12-14 October 2020 and 19-21 October 2020
- The Polar CORDEX meeting was held online 5-7 October 2020 with the aim to present updates by the Arctic and Antarctic CORDEX community and discuss future projects/collaborations
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Other activities include:

- North America (NA) are deploying variable resolution Earth System Models (ESMs) over specific regions. NA also works with methods for developing storylines for stakeholder engagement and for experiments.
- EURO-CORDEX FPSs held several meetings during the year and published a joint EURO-CORDEX paper.
- South Asia performed fresh water availability scenarios for agricultural planning in India.
- Central Asia organized a webinar on Capacity Building for Sustainable Fisheries and Aquaculture Management in Central Asia, Azerbaijan and Turkey in June.
- Australasia published new datasets on historical heatwaves and future climate data. AUS also hosted a session on regional climate projections and CORDEX at the AMOS conference.
- In November Central American (CAM) CORDEX organized a session on Regional Climate Modelling and CORDEX at the Annual meeting of the Mexican Geophysical Union.
- MED FPSs had several meetings and a Mediterranean assessment report was published in November.
- MENAs first common publication effort was released in March.

- The FPS on Extreme events in Southeastern America published 3 collaborative papers on the benefits of convection-permitting (CP) modeling over the region and the intercomparison between ESD and CP efforts to reproduce extreme events.

2. Primary science issues (looking ahead, 3 to 5 years)

CORDEX Science Plan building on the White Paper developed by the SAT and the CORDEX community, including Smaller domains with finer resolution; a common setup for convection permitting resolution domains will be proposed by the CORDEX-SAT, within the established CORDEX domains.

- Increasing complexity; as RCMs move towards Earth System Models (ESM) a compromise must be made between resolution and domain size.
- Increasing resolution; as GCMs/HighResMIP are moving towards RCM resolutions. In this context, CORDEX is focusing on specific regional/local climate change challenges and proposes to add value in providing a wider matrix for exploring uncertainty
- Exascale computing; RCMs have to be adapted to the new generation of high-performance computers.

Evolving the CORDEX-RifS interaction/structure and respective responsibilities
 White paper on Empirical Statistical Downscaling
 White paper on bridging climate science with society needs

3. Issues and challenges

- The cooperation with other WCRP CORE Projects, and CORA has been increased – IPOs are meeting regularly and there has been extended interaction at CORE projects SSGs etc.
- The CORDEX community is continuously growing and the demand on CORDEX products/information is steadily increasing which is both encouraging and challenging as it puts pressure on performance/delivery.
- The CORDEX community are working with impact-, risk-, adaptation scientists as well as with decision makers and other users such as energy industry or agriculture, through projects, workshops, paper writing etc.
- It is increasingly difficult and that is a big concern but none the less it is essential to attract both internal and external funding for fundamental science and the maintenance and growth of the data storage capacity (due to the increase of new simulations and higher resolutions). Thus the need for enhanced communication with funders and society increases with accelerating global focus on climate and climate change and with tougher competition for funding.

4. Early success and/or planned activities in 2021, mostly online but some might be IRL if possible due to COVID-19

(this bullet point has been added but can be removed if not needed)

- Capacity building across regions through the following planned activities, whenever they are possible in the current context:
- We have worked with statistics for the use of CORDEX products and this will be published online.

- CORDEX CAM/SAM organize a session on Regional climate modelling and CORDEX at the RAUGM 2021 (Annual Meeting of the Mexican Geophysical Union) to be held in Guadalajara, Jalisco, Mexico from October 31st to 5 November 2021. Both online and in person if possible.
- A number of online workshops are planned for the second half of 2021 and possibly a few physical meetings/workshops.

