EGU2020-20479, updated on 24 Oct 2020
https://doi.org/10.5194/egusphere-egu2020-20479
EGU General Assembly 2020

Assessing mean climate change signals in the global CORDEX-CORE ensemble

Claas Teichmann[1], Daniela Jacob[1], Armelle Reca Remedio[1], Erika Coppola[2], and the CORDEX-CORE team[*]

[1]Climate Service Center Germany (GERICS), Helmholtz-Zentrum Geesthacht, Hamburg, Germany
[2]The Abdus Salam International Center for Theoretical Physics (ICTP), strada costiera 11, 34135 Trieste, Italy
[*]A full list of authors appears at the end of the abstract

The Coordinated Output for Regional Evaluations (CORE) simulation ensemble is an effort of the WCRP CORDEX community to provide high-resolution regional climate change information for the major inhabited areas of the world and thus generate a solid scientific basis for further research related vulnerability, impact, adaptation and climate services. This is especially important in those areas in which only a few high-resolution simulations or only comparatively coarse simulations from global models were available. The driving global climate model (GCM) simulations were selected to cover the spread of high, medium, and low equilibrium climate sensitivity at a global scale. Initially, two regional climate models (RCMs) REMO and RegCM4 were used to downscale GCM output to a spatial resolution of 0.22°. It is intended that the CORDEX-CORE ensemble can then be extended by additional regional simulations to further increase the ensemble size and thus the representation of possible future climate change pathways.

The aim of this study is to investigate and document the climate change information provided by the current CORDEX-CORE ensemble with respect to the mean climate change in different regions of the world and in comparison to previously existing global climate information, especially those global climate simulations used as boundary forcing for CORDEX-CORE RCMs. First, the regional biases of the RCMs simulations and its driving GCMs simulations were quantified compared to the CRU TS 4.02 observational dataset during the reference period from 1971 to 2000. Second, the near future (2036 to 2065) and far future (2071 to 2099) climate change signals were quantified from the new CORDEX-CORE ensemble. The analysis focuses on the mean temperature and precipitation changes based on the new IPCC physical climate reference regions. For selected regions, the differences of the climate change information at different resolutions are documented. Using this selected regions, the climate change signals from the CORDEX-CORE ensemble were compared to other existing CORDEX simulations and the CMIP5 GCM ensemble. First results of this comparison will be presented.

CORDEX-CORE team: Thomas Remke, Lars Buntemeyer, Peter Hoffmann, Arne Kriegsmann, Ludwig Lierhammer, Katharina Bu□low, Torsten Weber, Kevin Sieck, Diana Rechid, Gaby S.

Langendijk, Erika Coppola, James Ciarlo, Francesca Raffaele, Graziano Giuliani, Gao Xuejie, Taleena Rae Sines, Jose Abraham Torres Alavez, Sushant Das, Fabio di Sante, Emanuela Pichelli, Russel Glazer, Moetasim Ashfaq, Eun-Soon Im