

Scientific Proposal

Impact of the [redacted] selection as forcing for the [redacted]-CORDEX Models (ABC).

Motivation

This proposal gathers the objectives of a projects currently being developed by the [redacted] research group of the University of [redacted] within the [redacted]-CORDEX initiative ([https://www.\[redacted\].eu/](https://www.[redacted].eu/)) is a platform that at coordinates multi – model and multi – scenario climate projection studies of the [redacted] CORDEX. The modeling experiments that comprise the [redacted]-CORDEX ensemble are forced by Global Circulation Models (GCM) simulations conducted in the frame of the CMIP5 and CMIP6 projects. Considering the potential impact that the GCM selection has on the results and that there is a limitation in the number of GCM that can be used as forcing, it is necessary to develop a method to select which GCMs should be used to force [redacted]. The PI of the ABC project is a workplace leader of the [redacted]-CORDEX project and has several years of experience in downscaling and forcing selection ([redacted], 2018) and ([redacted], 2019)

Project Objectives

The goal of the work is to propose a methodology to select the most suitable GCMs to force a ensemble of [redacted]. First, we will analyze the GCMs performance simulating present-day variability. Then, we will evaluate the [redacted] signal in the projection in order to select a small subset of GCM, covering the whole range of uncertainty, to force the [redacted].

Work Plan

- Task 1. Selection of simulations in [redacted] domains and CMIP6 to be analyzed.
- Task 2. Analysis of the [redacted] in the present climate by comparing with observational datasets. Selection of the subset of better performing simulations.
- Task 3. Analysis of the climate change signal in the subset of models previously selected.
- Task 4. Preparation of 2 peer-review articles.

Timeline

Task	Month
Task 1. GCM simulation selection	1-2
Task 2. Analysis of the historical runs	3-4
Task 3. Analysis of the projections	5-6
Task 4. Reporting	7

Required resources

The development of the previous tasks will require the following data:

- Daily precipitation, [redacted] and [redacted] data from a large number of CORDEX and CMIP historical and scenario run (likely [redacted] scenario). [redacted] wind speed data for the same runs.
- Monthly 3D temperature and [redacted] and daily [redacted] of the CMIP5 and CMIP6 models selected in the [redacted]

and 1500 CPU hours and storage capacity of 5TB at DKRZ. These are upper-limits and likely the storage capacity used will be smaller. We ask for log-in account for two participants, the PI and a supporting college, both working in Europe.

Impact

The results of both projects are of interest for the climatic scientific community and will be

presented in international conferences (i. ex., EGU general assembly) and in 2 articles in peer-review journals.

In addition, the results of the hazard analysis will be incorporated on the economic models developed in the [REDACTED]-CORDEX project. These models will be used by the policy makers of the [REDACTED] in the regions of interest to support the adaptation to the impacts of the climate change.

References

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