



Climate hazard indices projections based on CORDEX-CORE, CMIP5 and CMIP6 ensemble.

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Under the CORDEX umbrella the CORDEX-CORE initiative has been developed that was able to produce an ensemble of two RCMs at 0.22° resolution downscaling 3 GCMs for each of the 9 CORDEX domains for two climate scenarios the RCP2.6 and the RCP8.5. The CORDEX-CORE and the CMIP5 driving ensemble together with the most recently produced CMIP6 ensemble has been analyzed and several temperature, heat, wet and dry hazard indicators have been computed for the present day and mid and far future time slices.

As a results CORDEX-CORE shows a better validation for several hazard indices due to the higher spatial resolution. For the far future time slice the 3 ensembles project an increase for all the temperature and heat indices under the RCP8.5 scenario. The highest values are always shown by the CMIP6 ensemble except that for $T_x > 35$ °C for which CORDEX-CORE projects higher warming. Extreme wet and flood prone maxima are projected by the regional ensemble over la Plata basin in South America , over the Congo basin in Africa, in east North America, north east Europe , India and Indochina, notably the regions where a better validation is obtained, whereas the global ensembles show quite small or not existent signal. Compound hazard hotspots based on heat and drought indicators have been identified in Central America, in the Amazon region, in the Mediterranean, South Africa, India and Australia since in all these regions a linear relation is shown by the heatwave and drought change signal. Although still limited the CORDEX-CORE initiative was able to produce high resolution climate projections with a quasi global coverage. This can be seen as a first step to foster collaboration among the global and regional climate community. The existence of the first of this kind ensemble together with the previous CORDEX 0.44 ensembles and the global ensemble is very valuable for climate impact assessment studies since can provide information on the mean and extreme regional climate projections but also more robust quantification on the model spread. All being an added value for the impact and climate services communities.

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