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Climate Extremes in the Lake Victoria Basin: The ELVIC CORDEX Flagship Pilot Study

Nicole van Lipzig[1], Jonas Van de Walle[1], Wim Thiery[2], Grigory Nikulin[3], Minchao Wu[4], Russell Glazer[5], Erika Coppola[5], Joaquim Pinto[6], Andreas Fink[6], Patrick Ludwig[6], Dave Rowell[7], Ségolène Berthou[7], Declan Finney[8], and John Marsham[8]

[1]KU Leuven, Heverlee, Belgium (nicole.vanlipzig@kuleuven.be)
[2]VUB, Brussels, Belgium
[3]SMHI, Norrköping, Sweden
[4]Uppsala University, Uppsala, Sweden
[5]ICTP, Trieste, Italy
[6]KIT, Karlsruhe, Germany
[7]Met Office Hadley Centre, Exeter, UK
[8]University of Leeds, Leeds, UK

Extreme weather events, like heavy precipitation, heat waves, droughts and wind storms have a detrimental impact on East African societies. The Lake Victoria Basin (LVB) is especially vulnerable, since nightly storms on the lake catch fishermen by surprise. As the frequency and intensity of climate extremes is projected to further increase substantially with climate change, so do the risks, with potentially major consequences for livelihoods and policy in the LVB.

The ultimate aim of the ELVIC CORDEX-FPS is to investigate how extreme weather events evolve in the future in the LVB and to provide improved probabilistic information to the impact community. ELVIC (Climate Extremes in the Lake Victoria Basin) brings together different research groups that perform simulations with multiple high-resolution regional climate models operating at the convection-permitting scale (CPS) (https://ees.kuleuven.be/elvic).

As a first step towards this overall goal, the added value of the CPS on the representation of deep convective systems in Equatorial Africa was assessed. For this purpose, 10-year present-day model simulations were carried out with five regional climate models both at the CPS and at the scale where convection was parameterized, namely COSMO-CLM, RegCM, HCLIM-AROME, WRF and the Met Office Unified Model. From a comparison of model output with different observational products, no robust improvement was found for seasonal average meteorological variables. Moreover, the change in the seasonal precipitation when going to CPS differs between the models. A robust improved performance was found for deep convection, reflected in an improved representation of the daily precipitation cycle. Preliminary results also point towards an improvement in the representation of extreme precipitation. This suggests that regional climate model simulations at the convection-permitting scale are indeed relevant to assess the climate sensitivity of extreme precipitation in the Lake Victoria Basin.