Project: 1111 Title: KIT-ELVIC – Climate Extremes in the Lake Victoria Basin Report for period 01.07.2019 - 30.06.2020

During the application period 2019 - 2020, the validation run within the KIT-ELVIC project has been completed thanks to the allocated computing time in the project. KIT contributes with a dynamical downscaling approach using the regional climate model WRF to achieve the overall project aims; the generation of a high-resolution multi-model ensemble over the Eastern African Lake Region with a specific focus on the Lake Victoria to analyze the regional climate over this vulnerable region.

A continuous 10-year run with the WRF model at high resolution (2.8 km grid spacing) has been completed by using a two-step downscaling approach. ERA-Interim data was used as initial and boundary conditions to run the WRF model in a first nesting step with 12 km horizontal grid spacing. This data in turn was used to achieve a final, high resolution of 2.8 km grid spacing over the target region. The post-processing and archiving of the model output have also been finished Currently, a comparison with the results of the other modelling groups as well as a validation of the high-resolution model ensemble with observational datasets is in progress. A publication of the results, with a specific focus on the added value of the high-resolution runs, is planned to be ready for submission by June/July. The conducted validation runs based on reanalysis data provide the basis for the planned climate change scenario runs for the end of this century (see application for computing time within the project 1111 for 2020 - 2021). The following Figures give a first impression about the outcome of the modelling activities within this project.

Model	Institute	Timing	Driver	Coarse resol	Fine resol	Lake model
CCLM	KUL	2005-2015	ERA-Int	12 km	2.8 km	Flake
CCLMe5	KUL	2005-2015	ERA 5		2.8 km	Flake
ALADIN- AROME	SMHI	2005-2015	ERA-Int	12 km	2.8 km	Flake
RegCM	ICTP	2005-2015	ERA-Int	25 km	3.0 km	Hostetler
WRF	KIT	2005-2015	ERA-Int	12 km	2.8 km	Flake
MO-UKV	MO	1997-2007	HadGEM	25 km	4.0 km	



Topography map of the Lake Victoria region, indicating the agreed coarse (12 km) and high (2.8 km) resolution domains.





Figure 2: Comparison of observational precipitation data sets and annual mean precipitation based on different regional climate model output for coarse and high resolution.