Geophysical Research Abstracts
Vol. 19, EGU2017-18674, 2017
EGU General Assembly 2017

Comparison of the new intermediate complex atmospheric research (ICAR) model with the WRF model in a mesoscale catchment in Central Europe

Stefan Härer (1), Matthias Bernhardt (1), Ethan Gutmann (2), Hans-Stefan Bauer (3), and Karsten Schulz (1)
(1) BOKU Vienna, Austria (stefan.haerer@boku.ac.at), (2) NCAR Boulder, USA, (3) University of Hohenheim, Germany

Until recently, a large gap existed in the atmospheric downscaling strategies. On the one hand, computationally efficient statistical approaches are widely used, on the other hand, dynamic but CPU-intensive numeric atmospheric models like the weather research and forecast (WRF) model exist. The intermediate complex atmospheric research (ICAR) model developed at NCAR (Boulder, Colorado, USA) addresses this gap by combining the strengths of both approaches: the process-based structure of a dynamic model and its applicability in a changing climate as well as the speed of a parsimonious modelling approach which facilitates the modelling of ensembles and a straightforward way to test new parametrization schemes as well as various input data sources. However, the ICAR model has not been tested in Europe and on slightly undulated terrain yet. This study now evaluates for the first time the ICAR model to WRF model runs in Central Europe comparing a complete year of model results in the mesoscale Attert catchment (Luxembourg). In addition to these modelling results, we also describe the first implementation of ICAR on an Intel Phi architecture and consequently perform speed tests between the Vienna cluster, a standard workstation and the use of an Intel Phi coprocessor. Finally, the study gives an outlook on sensitivity studies using slightly different input data sources.