



Towards ultra-high resolution analyses in complex terrain

Alexander Kann, Benedikt Bica, and Irene Schicker

Central Institute for Meteorology and Geodynamics, Department of Forecasting Models, Vienna, Austria
(alexander.kann@zamg.ac.at)

Precise analyses of the spatial and temporal distribution of temperature and wind are of vital interest in many modern applications, e.g. for nowcasting or model validation purposes. Most commonly, such analyses are generated by merging a background field with observational data. Background fields from numerical weather prediction (NWP) models are continuously increasing skill and are more and more able to provide valuable information on the convection-resolving scale. The analysis and nowcasting system INCA (developed at the Austrian national weather service (ZAMG)), exploits those high resolution NWP models, and provides, among others, deterministic analyses of temperature and wind on very high resolution in time (60 min) and space (1 km x 1 km). The paper presents further refinements, the implementation and validation of the analyses procedure on ultra-high resolution (100m x 100m) over the Eastern Alpine region. The impact of its contributions, i.e. the model background from AROME and the observation data from a dense station network, is investigated and discussed with special emphasize on the topographic downscaling procedure on an ultra-high resolution grid in complex terrain.