



Modelling the grey zone using a global variable resolution mesh and a scale-aware convection parameterization

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Regional models like the Weather Research and Forecasting (WRF) model use nested domains to save computational effort. However, studies have shown that sudden resolution changes between the nests can cause artefacts. The novel global Model for Prediction Across Scales (MPAS) runs on Voronoi meshes that allow for a smooth resolution transition towards the desired high resolution in the region of interest, hereby minimizing the aforementioned artefacts. To our knowledge, this is the first study where MPAS is assessed over Europe focussing on mesoscale weather events. Three events have been assessed: a synoptic gale over the North Sea, a föhn wind in Switzerland, and a case of organised convection with hail over the Netherlands. We used three different Voronoi meshes, and compared the MPAS simulations to MeteoGroup's WRF output and observations. We also discuss and compare the computational requirements between MPAS and WRF.