



Met Office variable resolution NWP model

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Forecasting severe convection and quantitative precipitation in numerical weather prediction is a major challenge. The current conventional approach of parameterizing convection has had only limited success. The alternative approach using higher resolution models which allow convection to be explicitly resolved is costly. Further, such high resolution models are usually used only over small areas, nested inside coarser resolution models which do not explicitly resolve convection. The mismatch of the grids and the model physics at the boundary of the limited-area fine resolution model can be a major source of model error.

Hence, to overcome this difficulty, we have developed a variable grid, fine resolution, limited area numerical model, based on the Met Office's Unified Model (UM) code. The grid size varies smoothly from a coarse resolution at the outer boundaries to a uniform grid with fine resolution in the interior of the domain. The variable resolution model has been tested for a number of events with inner area resolution 1.5km. These cases include severe events over the UK, including the major flood on 20 July 2007 which caused widespread disruption both due to flash flooding and subsequent pluvial flooding from major rivers. Result will be presented comparing the variable resolution model with conventionally one-way nested configurations.