

Oral.3: **14:15-14:30. Towards a convection-permitting global configuration of the Met Office Unified Model**

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**Abstract**

A first exploration of convection-permitting global modelling at the Met Office in the context of the current modelling system, the Met Office Unified Model, is presented. All simulations were performed at global N2560 (nominal 5km) resolution. The model resolution thus resides in the convective grey zone where the grid length approaches the scale of turbulence and convection, and contributions from both resolved and subgrid fluxes are non-negligible.

A case study approach has been taken in which testbed cases have been defined and the model has been evaluated against observations. The main finding is that the configurations which include scale-aware turbulence and a carefully reduced and simplified mass-flux convection scheme overall outperform both the reference model with parameterised convection as well as a configuration in which the subgrid convection parameterisation is switched off completely.

The development of global convection-permitting models is more than just an incremental enhancement in resolution. Such models allow for, at least partly, resolving fundamental new turbulent and convective phenomena in the atmosphere. In the presented work, however, the focus is on developing an appropriate tool for emerging new scientific endeavours, and on better understanding the strengths, limitations, and sensitivities of this tool. An outlook including further model development steps and a road map towards convection-permitting global climate modelling is given.