Adapting the CoMorph convection scheme for high resolution modelling

Sally Lavender, University of Southern Queensland

As computing systems and resources continue to advance, models are being run at higher resolution where some of the processes are partially, but not fully, represented by the resolved dynamics. This requires the development of “scale-aware” parameterizations which bridge the gap between resolutions where processes are fully resolved (sub-km models) and fully parameterized (>10km). To provide added benefit to UM/Momentum® users and allow the inclusion of additional physics, particularly with a focus on scale-aware physics, the “Trailblazer” has been proposed. This is a global coupled 5 km—10 km (N2560-ORCA12) which can be used as a testbed for physics developments that form part of the scale-aware strategy being developed by the Unified Physics project.

CoMorph is a new mass-flux convective parameterization scheme designed for use within the Unified Model and Momentum® which will ultimately be scale-aware. This talk will show results from the initial testing of a high-resolution version of the CoMorph-A package for consideration in the Trailblazer. An overview of other relevant work being carried out to guide the future development of scale-aware CoMorph will also be given, along with a brief update on recent CoMorph developments.