

ACCESS-AE: a national, km-scale numerical weather prediction ensemble

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The Bureau of Meteorology is developing a km-scale numerical weather prediction system for a domain that encompasses the entire nation. The system consists of a deterministic model ACCESS-A, and an ensemble system ACCESS-AE.

ACCESS-A is a 90 vertical level, 1.5 km horizontally grid spaced model that will provide rapid update, short-range forecasts. ACCESS-AE is a 12-member ensemble system with 90 vertical levels and a horizontal grid spacing of 2.2 km. The ACCESS-AE storm-scale ensemble system quantifies uncertainties in the forecast and enables the probabilistic prediction of high impact weather events across the entire country.

ACCESS-A and ACCESS-AE use the Regional Atmosphere and Land configuration of the UK Met Office Unified Model (UM) called RAL3.2. This regional model configuration unifies the previously separate mid-latitude and tropical RAL configurations. RAL3.2 has been shown to have more realistic precipitation distributions compared to previous configurations, an improved representation of convection and a reduction in 10m windspeeds that results in improved nocturnal winds. The surface characteristics of these models have higher resolution datasets than the Bureau's previous km-scale models to define properties such as the land-sea mask and urban fractions. As part of the ACCESS-AE development several high impact weather case studies have been run and assessed, along with some weeklong trials. The evaluation and verification of these model forecasts will be presented.