ACCESS-AE: testing updates to the Random Parameter scheme over Australia

Belinda Roux, Shaun Cooper, Charmaine Franklin, Bureau of Meteorology

The Bureau of Meteorology has embarked on the development of ACCESS-AE, a km-scale ensemble prediction system to provide high-resolution short-range numerical forecasts for a domain covering the entire Australian continent. ACCESS-AE is a 12-member ensemble with a horizontal grid spacing of 2.2 km and 90 vertical levels, using the UK Met Office Unified Model (UM) Regional Atmosphere and Land science configuration RAL3.2.

An advantage of an ensemble prediction system is that it captures the effects of uncertainties in initial and boundary conditions as well as uncertainties in the representation of model physics. These effects significantly impact numerical weather forecasts. The Random Parameter (RP) scheme is used to perturb some of the physics parameters stochastically, which helps to increase ensemble spread and capture a wider range of possible scenarios. A number of parameters used in the original RP scheme are no longer available with RAL3 due to the use of a new cloud microphysics scheme and this, along with other physics developments, has caused the ensemble characteristic to change. The Met Office are working on developing a new set of perturbed parameters more appropriate for the RAL3 configuration.

A week-long ACCESS-AE trial has been run to test the impact of these new parameter perturbations over Australia. Initial results from these trials investigating the impact on the ensemble performance will be presented.