BARRA2 Convective Scale Reanalysis over Australia

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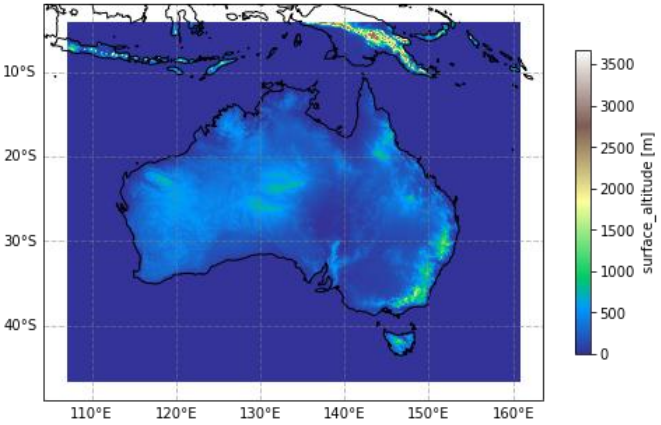
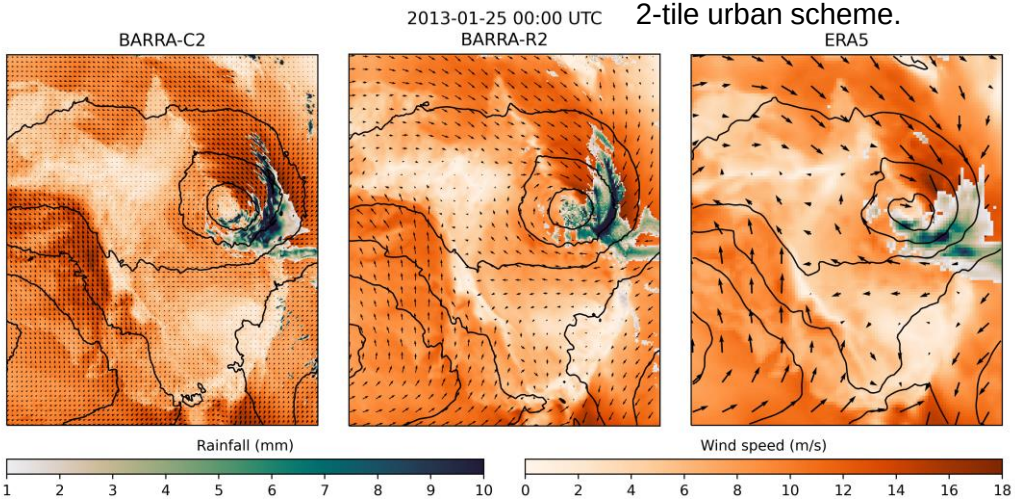
Introduction

BARRA2 provides a national reanalysis for the modern satellite era, from 1979 to the present day. The Regional (12km) reanalysis (BARRA-R2) was recently completed. Now a downscaled 4km reanalysis (BARRA-C2) covering Australia will be nested in BARRA-R2.

Configuration

BARRA-C2 will use the latest model physics with the Regional Atmosphere and Land (RAL) version 3.1, plus additional fixes. A forecast is initialised from BARRA-R2 every 6 hours, and run for 12 hours, with the latter 6 hours forming the BARRA-C2 product. Ancillaries use new ESA Climate Change Initiative (CCI) land cover and 2-tile urban scheme.



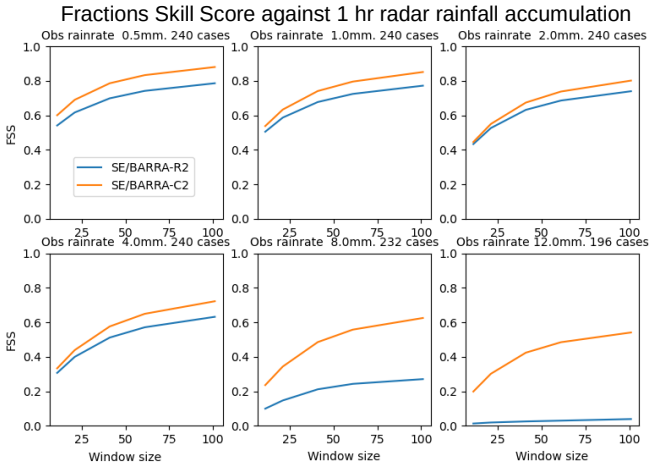


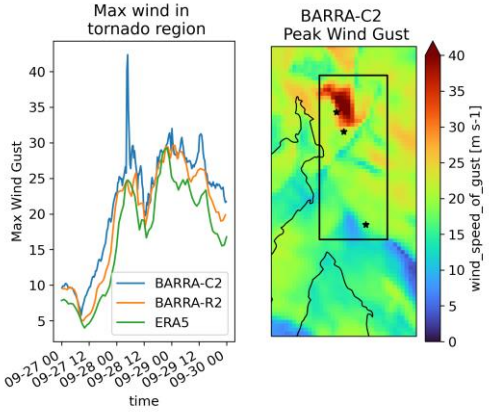
Km-scale reanalysis

Higher resolution simulation of weather compared to BARRA-R2 and ERA5. Improved representation of storms and orographic effects.

Verification

Improved representation of rainfall at near-storm-scale shows improved verification skill against radar rainfall observations.





Severe Weather

Better representation of storm-scale weather events, such as extreme wind gusts during the Adelaide Blackout Storm of September 2016.

Production

BARRA-C2 will commence production runs shortly, once its configuration is finalised and tested. We target completing first 10 years of runs by end of 2023.

Research to Impacts

BARRA2 supports Australian Climate Service (ACS) and Bureau's Climate Service Group (CSG) by improving individual hazard intelligence across all scales (national, regional and local), and complementing the new regional climate projections. *This work is funded by ACS.*