ACCESS High-resolution Regional Atmospheric Modelling Project (AUS2200): A Community-based Platform for Weather and Climate Research

Yi Huang, Todd Lane, Hooman Ayat, Chun-Hsu Su, Scott Wales, Dale Roberts , Holger Wolff, Claire Vincent, Charmaine Franklin, Martin Dix, Christian Jakob, University of Melbourne

Advances in High Performance Computing (HPC) in the past decades have been vital to improve our ability to predict high-impact weather events and the effects of climate change. High-resolution atmospheric modelling, which is enabled through increased computational efficiency, has led to significantly improved representation of topographic complexity and small-scale processes, many of which are associated with extreme weather. AUS2200 is a community-based, pioneering project that aims to develop large-domain regional modelling capacity at kilometre grid-scale using the state-of-the-art ACCESS model. The project is designed to provide the Australian regional modelling community with a common platform that helps facilitate collaborations to advance scientific understanding of atmospheric processes across a wide range of scales, from continent-wide to kilometre. This project represents a flagship collaboration between the ARC Centre of Excellence for Climate Extremes (CLEX), Australian Bureau of Meteorology, National Computational Infrastructure and Australian Earth-System Simulator National Research Infrastructure (ACCESS-NRI). The presentation will provide an overview of the AUS2200 project, including its overarching goals, recent achievements and longer-term plans. We will also showcase research undertaken under several pilot science projects, where a range of high-impact weather events across Australia, including the extreme fire weather events, record-breaking flooding events, and local precipitation response to the Madden Julian Oscillation, is investigated.