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Title: Jules and Australia – what lies ahead?

Abstract:

The land surface scheme used within the modelling suites for the operational numerical weather and climate prediction activities of the Bureau of Meteorology is the Joint UK Land Environment Simulator (JULES). Those suites are currently used to provide seamless predictions at the global, regional, and urban scale resolutions. As such, JULES' initial raison d'être was to provide a platform for water and energy exchange between the land-surface and the atmosphere. Hence, in order to meet the Bureau's mandate to provide improved hydrological predictions and the ability to account for water across the continent, the model requires a comprehensive uplift and adaptation to Australian land surface conditions within the operational modelling framework. Over the past 10 years, this was achieved through the development of the Australian Water Resources Assessment Landscape (AWRA-L) model, which has been run outside of the operational models as a standalone model.

As JULES is already run operationally, the aim is to review and improve the representation of several land surface states within JULES, particularly, the subsurface hydrology, surface water routing, vegetation, and all of those also within the urban context.

In this presentation, the challenges for a land surface model will be discussed, particularly given Australia's very distinct and diverse land surface regimes. Furthermore, the re-parameterisation and validation strategies for JULES will be outlined, as well as the aim to transfer existing knowledge and experience from other Australian models such as AWRA-L and CABLE. The presentation will conclude with presenting the plans for future data assimilation strategies and recent work already undertaken utilising existing operational runs of JULES.