viCPCMW Convection-Permitting Climate Modeling Workshop
Buenos Aires city, 2022 Sep. 7-9th

vi Convection-Permitting Climate Modelling Workshop
http://www.cima.fcen.uba.ar/cpcmw2022/index.php
7-9th September 2022
C. A. Buenos Aires

Poster.1: . **Fine-scale climate projections: What additional spatial detail is provided by a convection-permitting model?**

[1]**Dave Rowell** and [1]**Ségolène Berthou**
[1] *Met Office Hadley Centre, Exeter, UK*

contact: dave.rowell@metoffice.gov.uk

Abstract

Convection-permitting models promise much in response to the demand for increased localisation of future climate information: greater resolution of influential land surface characteristics, improved representation of convective storms (including feedbacks onto larger-scales), and unprecedented resolution of user-relevant data. In practice, however, the gap between models' computational and effective resolution must be recognised. Nevertheless, where surface forcing is strongly heterogeneous, one can argue that usable information may persist close to the grid-scale. Here we analyse a 4.5km resolution projection for Africa, asking whether and where fine-scale projection detail is robust at sub-25km scales, focussing on rainfall. Statistically significant detail is most frequent in regions of high topographic variability, for both seasonal means and daily extremes. Lake coastal features have smaller but significant impacts on projection detail, whereas ocean coastlines and urban conurbations have little or no detectable impact. The amplitude of this sub-25km projection detail can be similar to that of the local climatology in mountainous regions, so potentially beneficial for improved localisation of future climate information. In flatter regions distant from coasts, spatial heterogeneity can be explained by sampling variability, and the robustness of climate projection information can be substantially enhanced by spatial aggregation to circa 25km scales.