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Interactive comment on "An update of IPCC climate reference regions for subcontinental analysis of climate model data: Definition and aggregated datasets" *by* Maialen Iturbide et al.

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The new system of regions has many good features, and improves upon the previous system in many ways, well done. I have a specific comment about the regions for Australia. Currently the scheme includes three regions for Australia: north (NAU), central (CAU) and south (SAU), with each zone covering the breadth of Australia. In my judgment, this doesn't reach a useful classification, since these zones don't form meaningful boundaries in terms of the current climate, or the projected climate change signal in temperature, rainfall and extremes. In particular, the CAU zone includes both the hot, persistently dry desert interior of the continent, and the subtropical east coast

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(see Figure 1 below). These are climatically very different regions in the current climate. For projected climate change, the signal is different in the two regions for some variables (e.g. currently the CMIP6 multi-model mean projected change for winter rainfall is for increase inland and decrease on the east coast). Along with climatic reasons, there are practical reasons for distinguishing these two sub-regions. A large segment of the Australian population lives on the east coast, whereas the interior is very sparsely populated, so it is not useful to provide information that averages the current climate and climate change projections over the east coast and inland. I would like to propose two possible solutions to the current proposed system (Figure 2a) for your consideration. First is the inclusion of a fourth region for Australia, eastern Australia (EAU), resulting in a system similar to the four broad regions used in the Australian national climate projections (Figure 2b). The second solution is to adjust the boundaries of the three regions to include the northern part of the east coast into NAU, and the southern part into SAU. The border between NAU and SAU at the east coast can be the boundary between subtropical and temperate zones (approximately the NSW-Queensland border).

Figure 1. climate subdivisions within Australia based on the Köppen classification (in 1961-1990, source: www.bom.gov.au)

Figure 2. Current Australian regions proposed for IPCC regions, and two suggested alternative versions

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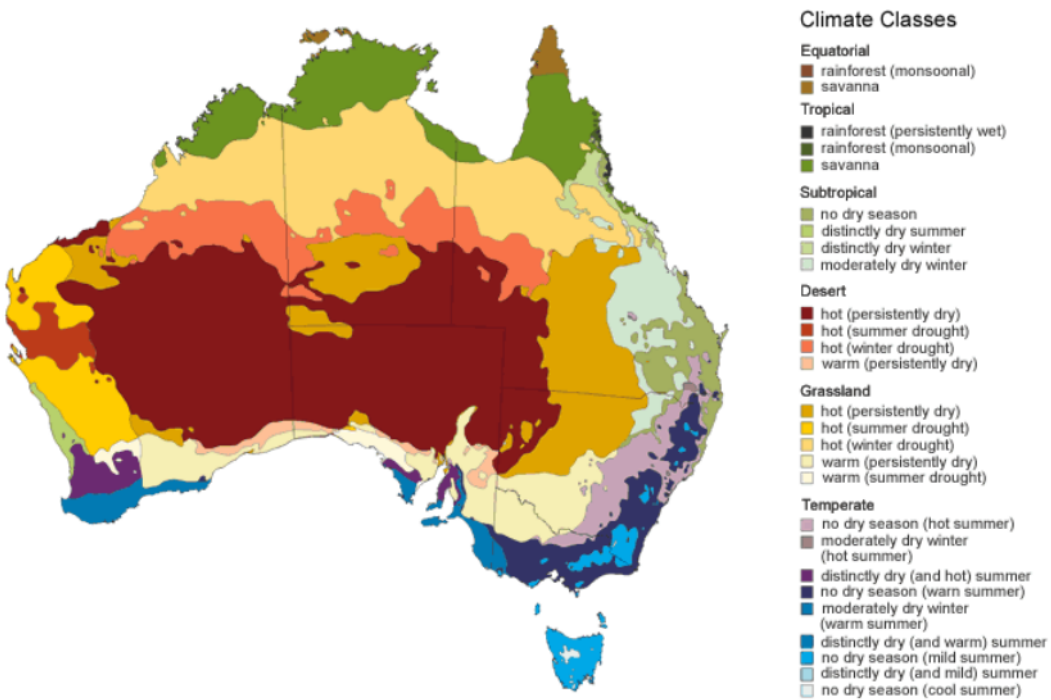
Climate Classes
Equatorial
rainforest (monsoonal)
savanna
Tropical
rainforest (persistently wet)
rainforest (monsoonal)
savanna
Subtropical
no dry season
distinctly dry summer
distinctly dry winter
moderately dry winter
Desert
hot (persistently dry)
hot (summer drought)
hot (winter drought)
warm (persistently dry)
Grassland
hot (persistently dry)
hot (summer drought)
hot (winter drought)
warm (persistently dry)
warm (summer drought)
Temperate
no dry season (hot summer)
moderately dry winter (hot summer)
distinctly dry (and hot) summer
no dry season (warn summer)
moderately dry winter (warm summer)
distinctly dry (and warm) summer
no dry season (mild summer)
distinctly dry (and mild) summer
no dry season (cool summer)

Fig. 1.

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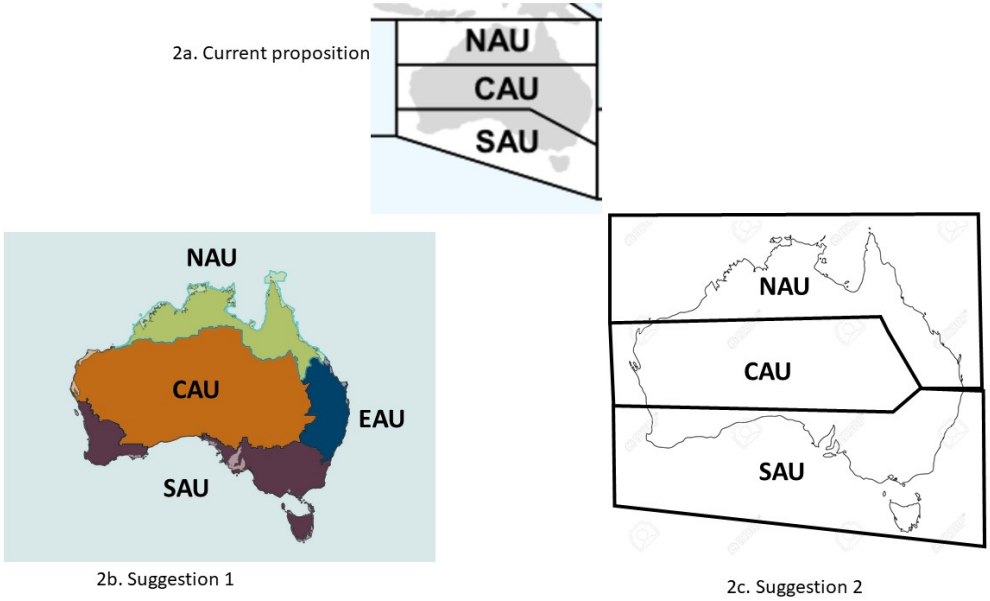

Fig. 2.

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