

# ***Interactive comment on “WCRP COordinated Regional Downscaling EXperiment (CORDEX): A diagnostic MIP for CMIP6” by William J. Gutowski Jr. et al.***

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This paper provides a concise review of the development of the CORDEX programme, leading into plans for the second phase of CORDEX as a Diagnostic MIP for CMIP6. In reviewing CORDEX1, the focus is on outlining the issues and research challenges that arose rather than the practical aspects of number of model simulations, volumes of data produced etc. This highlights that there are strong scientific principles and questions at the heart of CORDEX – it is not just about ‘turning the handle’ and producing large volumes of data. Indeed the paper also highlights that data is not information, particularly in terms of the information for regions required by the Vulnerability, Impacts and Adaptation (VIA) community. The second part of the paper outlines the framework

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for CORDEX2 which has two main components – one core component focused on producing consistent information for all regions, and a more novel component of Flagship Pilot Studies. Since the latter are intended to be developed in a bottom-up process, rather fewer details are currently available than for the core component.

While the paper provides a useful summary of both the scientific and user-led motivations for CORDEX2, there are three issues that could be discussed a little more. First, although ESD is mentioned a few times, particularly in the context of CORDEX1, it is not clear how ESD activities will fit into the two components of CORDEX2. Second, the need for observations is mentioned in a few places – but the related challenges, particularly in terms of availability of very high resolution observations (e.g., at convection resolving resolutions, relating to the evaluation of feedback processes) are not stressed as much as they might be. Third, there is not really any discussion of how outputs from CORDEX2 will be disseminated (i.e., via the ESGF) – or how this might differ from what happened in CORDEX1.

Overall, however, this paper provides very good background for all potential contributors to and users of CORDEX. A few minor comments and suggested edits are provided below.

Abstract. It would be good to mention Flagship Pilot Studies here.

Line 39. Reference should be to Curry and Lynch, 2002 not 'et al'.

Line 87. Perhaps say how many domains there are.

Line 112. Is the value of information for VIA applications the same as it's 'scientific' value?

Line 117. Can you give some examples of how added value can be 'carefully considered'? Perhaps insert 'full' before downscaling – some downscaling has to be done in order to evaluate it's value.

Line 120. Pattern scaling and bias correction are two very different things – it would be

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useful to include some references on both approaches.

Line 143. 'are large' rather than 'is large'

Lines 153/154. Perhaps comment on the lack of and limited open access to appropriate observed wind data

Line 165. Should be Giorgi, 2001

Lines 160-170. Observations could also be mentioned as a source of uncertainty.

Lines 156-170. Can you comment on the extent to which all these 'distillation' issues fall within the CORDEX remit?

Line 171. Insert 'which' before 'emerged'

Line 175 'heterogenieity has'

Lines 176/177. I'm not sure I fully understand what you mean by 'transfer know-how across the domains'.

Lines 180/181. To what extent is the provision of actionable information within the CMIP6 remit? (also see earlier comment about the CORDEX remit).

Line 193. Here and elsewhere I would specifically refer to RCPs (or emission scenarios) rather than just scenarios.

Lines 225-227. It is rather confusing to have a core set within CORE. Can another terminology be used for the former? You also refer to a 'base ensemble' but I'm not sure this terminology is appropriate either.

Line 227. 'high and low'

Line 233. I would change 'shows' to 'indicates'.

Line 253/254. The WCRP regional climate information grand challenge is no longer formally a WCRP grand challenge.

Line 309. The climate service community also has great expectations of CORDEX2. Either here or elsewhere it would be good to refer to linkages between CORDEX and the CMIP6 VIACS Advisory Board.

Line 328. The third author should be 'Goodess' not 'Godess'

Line 372. Should be EURO-CORDEX

Line 405. Please indicate the source of observations in the Figure 1 caption.

Line 411. Change to: Change in average precipitation for 2071-2100 minus 1980-2005 projected by the. . . . .

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