

Earth Syst. Dynam. Discuss., author comment AC4  
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## Reply on CC2

Guillaume Evin et al.

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Author comment on "Balanced estimate and uncertainty assessment of European climate change using the large EURO-CORDEX regional climate model ensemble" by Guillaume Evin et al., Earth Syst. Dynam. Discuss., <https://doi.org/10.5194/esd-2021-8-AC4>, 2021

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We partly agree with these comments by Richard Rosen. Indeed model-based articles such as our own study are dedicated to the analysis of model ensemble results and not directly to the real future world. This is the case for all model results in science as models are built to be a simplified version (approximation) of the real world whatever the scientific domain. Therefore simulations of the future made with those models are not deterministic forecasts of the real world but projections or scenarios that can under some conditions inform decisions (but not always). In particular, we agree that the question of model simulations being representative or not or partly representative of the real world or representative at certain spatial and temporal scales is indeed very relevant.

To our knowledge, IPCC report statements (or other expert-judgment based reports) are of a different kind. Indeed, the statements and uncertainty quantification of those reports are based on expert judgments, including model ensemble results as only part of the input information to establish the judgment. So we prefer to clearly distinguish between model-based studies such as our article and climate expert reports.

This said, we agree that, in our study, given uncertainty ranges inform about the model structure and modelling assumption. If the models used are well designed and built (this is what we trust) and if the RCP scenarios are representative of the future GHG trajectory, then we can hope that the derived climate change values and associated uncertainty range are informative about plausible future climates.

*Concerning the last point "However, most readers of these reports and most policy makers do not understand this key point.":* it is difficult to say as we are not specialists of social sciences but we agree that explaining the meaning of model-based climate change scenarios to potential users of the information (incl. policy makers) needs more effort from the whole climate community. Note however that this study, published here in a specialized journal, is mostly at the destination of the climate modellers community and expert climate model users community and not the policy makers.

However, we agree that it should be made clear in the paper that the estimated mean climate change response and associated uncertainties cannot be considered as predictions of the future climate properties (see also our response to comment RC1#4). Modifications will be made to the manuscript in that direction.