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Adding value by regional models revisited: Systematic errors do make sense!

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How anthropogenic climate change will affect climate in arid and semi-arid regions has important implications for the allocation of water resources and the course of regional development. Likewise, the strong amplification of warming in cold regions has important bearings on the regional development and possibly for the global climate system. Here we show that due to a broad agreement among climate models to exhibit systematic warm biases in cold climates as well as in warm but dry climates, it is likely that present estimates of regional amplification of global warming are exaggerated by models. We have developed and apply a simple bias correction method to correct for individual model deficiencies and find that regions projected to experience intense warming are partly doing so as a consequence of these deficiencies. Further, we underline the importance of being able to utilise RCMs by combining 'perfect' boundary experiments with GCM nesting when dealing with projections of extreme events.