



The role of imperfect models in climate change research

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It is well known that climate models are imperfect tools. Models suffer from certain inconsistencies and biases which typically result in inadequacies to reproduce certain observed quantities of the climate system. However, many of these errors are considered reducible when better description and formulation of processes in the models are adopted. Recently, it has been demonstrated (Boberg and Christensen 2012) by using regional models how such model shortcomings can be interpreted in a manner that it becomes possible to correct at least partially for some of these errors. In this study, we show that global models as used in the coordinated CMIP5 efforts also suffer from model inconsistencies, that influence their ability to depict future regional climate change. When analysing the full ensemble of models, however, it becomes possible to address these errors and partially correct for them. Overall we find that models with an identified tendency to become excessively too warm in the warmest months at a regional scale also clearly tend to be the most sensitive models to increasing levels of greenhouse gases. We find this to be documented for in many land regions across the globe and here we address the possible impact on simulated future global, large scale and regional climates.

Refs.:

Boberg, F. and J.H. Christensen, 2012: Overestimation of Mediterranean Summer Temperature Projections due to Model Deficiencies, *Nature Climate Change*, doi: 10.1038/NCLIMATE1454 [Available on-line]