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# Bias adjustment for climate predictions: an overview

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While general circulation models are designed to be able to reproduce observed climatologies, deviations are found in various aspects of statistics, both of individual parameters and of their relationships. A first order approach to describe the model-observation discrepancies is the difference in mean states (or expectations) for individual parameters: the bias $B$. Quantification and adjustment of bias is important if model output is compared to observations or is used for further processing, e.g. to drive impact models.

Whenever a climate model is initialized with a climate state distant from its preferred one (e.g. from observations), the model tends to drift towards its own climatology during the numerical integration. Thus, the model bias depends on i) forecast lead time $\tau$ (model drift: $B(\tau)$) and ii) the distance between initialization and model preferred states. In the context of climate predictions, these effects have different importance and need to be taken care of.

In this contribution, an overview of different methods for bias and drift adjustment for climate prediction is given, with a focus on decadal time scales. Starting from the recommendation of the Decadal Climate Prediction Project (DCPP), approaches are discussed for a bias adjustment depending on the distance between the state for initialization and the model's climatology. One popular way in decadal predictions is to consider initialization time as a proxy for this distance. Advantages and disadvantages of approaches with different complexity are discussed.