P79 Improvement of climate projections and reduction of their uncertainties using a sequential learning algorithm

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Ensembles of climate dynamics models may improve future climate predictions. We adopt a Sequential Learning Algorithm (SLA) in order to establish a weighted ensemble of climate models. In this method, the ensemble members are weighted according to their past performances. Using this method, we aim to achieve two main goals - provide better future climate predictions and reduce their uncertainties.

Here, one hindcast is presented to demonstrate the ability of the SLA to fulfill the two goals for global climate prediction using an ensemble of different climate models. This hindcast consists of a learning period which is used to weight the ensemble members based on past performance, and a verification period where the SLA predictions are tested against measurements. The weights of the models are spatially distributed; this distribution can be used to locate regions of common features in order to understand the main physical processes determining the weights.

The output of this research may be used as a framework for many other climatological and ecological studies by providing performance-based spatially distributed weights of climate models; quantifying the uncertainties in the ensemble predictions of global future climate; and providing a tool for testing new numerical methods and parameterization schemes.