



An Empirical Model for Decadal Climate Prediction

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Decadal climate prediction is the most challenging aspect of climate research. It is and will be tackled by various modelling groups.

This study proposes a simple empirical forecasting system for the near-surface temperature that can be used as a benchmark for climate predictions obtained from coupled ocean-atmosphere general circulation models.

It is assumed that the temperature time series can be decomposed into components related to external forcing and internal variability.

The considered external forcing consists of the atmospheric CO₂ concentration and the sulfate loading. The separation of the two components is achieved by making use of the IPCC AR4 twentieth century integrations.

The prediction of the external component is based on a linear interpolation of the external forcing at the initial state, whereas the prediction of the internal variability relies on an autoregressive model.

The skill of the empirical forecasting system is examined using hindcast experiments.