# Creating skilful decadal climate predictions right now

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Decadal climate prediction is a potentially powerful tool for decision makers and society. However, such predictions are notoriously uncertain, because climate models struggle to simulate decadal-scale changes in many climatic indices. Moreover, such predictions are technically complicated and very expensive. Here, we present two approaches to produce skilful decadal climate predictions with currently available means.

The first method relies on predictions from the recently published CMIP6 archive. At face value, these predictions do not show skill for unforced variations of European summer temperature. We show here that skilful unforced European summer temperature predictions can be inferred from skilful predictions of North Atlantic SST, which are connected to European summer temperature variations. This straight-forward statistical trick can be used to produce skilful predictions of unforced European summer temperature variations right now.

Secondly, we elaborate on the so-called analogue method. This method draws on the idea that there is decadal memory in the climatic state at the start of a prediction. The analogue method identifies the observed state of the climate system at the start of a prediction and then screens the full archive of available model simulations for comparable climatic states. It then selects a number of modelled climate states that are similar to the observed situation, and uses the years after the selected simulated climate states as prediction. In this study, we refine the analogue method by using sophisticated algorithms to select the analogues, and choosing decadal prediction of seasonal European climate as our target, thus enabling making predictions of European climate right now.