

**Abstract:** The adage "the past is the key to the future" is often cited in support of the notion that information from paleo-archives is directly applicable to predicting the future course of climate. However, this is much more rarely demonstrated. Given the many uncertainties in climate projections that are key for determining regional aspects of future climate change the need to show a connection has never been more relevant. Much of this uncertainty arises from a large divergence in model predictions given the same future scenario i.e. the 'structural' uncertainty. Unfortunately, the majority of skill metrics defined from historical (20th Century) simulations do not correlate to differences in future projections. Models that are either good or bad at simulating some aspect of modern climate – the climatology, seasonal cycle, or interannual variability – give essentially the same spread of future projections. However, the larger climate change signals available from the paleo-climate record may be more useful for assessing model skill in climate change prediction. With the latest round of model simulations, there is (for the first time) a substantial component of coordinated paleo-climate modeling (for the last millennium, the mid-Holocene and the last glacial maximum) being performed with the same models and with the same protocols as for the projections of future climate change. I will discuss the uses of these new 'out-of- sample' results to provide quantitative constraints on future projections.