



## **Experimental reconstructions of tropical Pacific sea-surface temperature over the past millennium**

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Since surface conditions over the tropical Pacific can organize climate variability at near-global scales, and since there is wide disagreement over their projected course under greenhouse forcing, it is of considerable interest to reconstruct their evolution over the past 1000 years. To this end, we make use of the RegEM climate field reconstruction technique [*Schneider, 2001, Mann and Rutherford, 2002*], which allow the skillful statistical estimation of pre-instrumental sea-surface temperature (SST) from an array of climate proxies [e.g. *Rutherford et al, 2003, Mann et al, 2007*]. Using published proxy data from ENSO-sensitive regions, as well as new coral measurements from the central equatorial Pacific, we extend the decadal-scale history of tropical Pacific SSTs over the past millennium, and analyze the sensitivity of such reconstruction to the inclusion of various key proxy timeseries, target SST datasets, and details of the statistical analysis. Under a canonical choice of parameters, the reconstruction suggests the tropical Pacific of the XVIIth and XVIIIth centuries to be more El Niño-like than the twentieth century average, in accordance with coral evidence from *Cobb et al. [2003]* and the model-based predictions of *Mann et al. [2005]*. Due to the paucity of data, however, less confidence can be placed in the reconstruction for the earlier part of the millennium. We interpret these results in the light of sensitivity studies carried out with a hierarchy of climate models.