Verification of decadal forecasts: Low-frequency variability and forecast skill of observed Atlantic sea surface temperatures

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A statistical model of Atlantic sea surface temperature (SST) anomalies is constructed using an empirical technique, namely linear inverse modeling (LIM), to fit and test a multivariate red noise model to the observed record. LIM is performed on annual averaged SST anomalies from HadSST2 between 1870 and 2009 in the Atlantic basin extending from 20S to 66N. Using the statistical model, different properties of the dynamical system and its forcing component are diagnosed to investigate the forecast skill of different climate indices based on SST anomalies in the Atlantic region, and to explore the error characteristics of the forecasts. Furthermore, a simple dynamical model is introduced to examine the role of the ocean circulation on the variability and forecast skill of SST anomalies in the Atlantic sector, for decadal predictions can serve as a benchmark for current and future decadal climate predictions based on numerical models.