

Current Activities Related to Decadal Prediction at COLA

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COLA scientists have been active in seasonal to interannual climate predictability and prediction, and in simulating and analyzing decadal climate variability. This experience will be valuable in COLA's planned activities in decadal predictability and prediction. New statistical techniques have been developed and applied to the comparison of AR4 model simulations (optimally persistent modes) and to decomposition of the observed land surface temperature record (Ensemble Empirical Mode Decomposition). The null hypothesis that all low frequency surface climate variability is forced by unpredictable weather noise has been tested in a CGCM control simulation. It was found that this null hypothesis is well satisfied in middle latitudes, and even in most of the tropics. A result especially relevant to decadal predictability is that decadal variability in the meridional overturning circulation in the North Atlantic was found to be weather noise forced. Preliminary results from a two member ensemble multidecadal hindcast/forecast prediction made using NCEP's CFS (Coupled Forecast System) model from a January 1, 1986 initial state were shown. Oscillations in the global mean temperature of time scale about 5 years were more or less in phase for the first 15 years in the two ensemble members, indicating some predictable internal variability, and produced a reasonable hindcast of the observed global mean temperature in this time period. Future plans include multi-decadal hindcasts and predictions with the current and future versions of the NCEP model, CFS and CFS-next.