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# Decadal Prediction using MIROC Global Climate Model

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We build on our decadal hindcasts officially performed for Coupled Model Intercomparison Project Phase 5 (CMIP5), by employing sets of 10-year-long ensemble hindcasts with initialization every year rather than every five years after 1961. We use version 5 of the Model for Interdisciplinary Research On Climate (MIROC5) with medium resolution; T85L40 atmospheric model and 0.56-1.4 deg. 50 level ocean model. These sets of ensemble hindcasts enable us to validate our predictive skills of decadal hindcasts with higher statistical reliability. Our initialization based on anomaly data assimilation approach reduces the hindcasted errors in the upper ocean temperature and enhances the skills in predicting climate indices for the Pacific Decadal Oscillation (PDO) as well as the Atlantic Multidecadal Oscillation (AMO). Multidecadal change in the meridional heat transport along 40N plays an important role in realizing the AMO predictability. When closely examining the central North Pacific where the PDO signals are observed strongest, on the other hand, the initialization over the upstream area in the ocean gyre circulation largely contributes to the decadal predictability particularly in the subtropical oceanic front. The upper-ocean temperature in the Kuroshio-Oyashio extension region exhibits relatively shorter predictability and the Aleutian Low fluctuation associated with the tropical sea surface temperature variations works as a major source of noise in the MIROC5 decadal prediction.