# Interdecadal Variation of ENSO Predictability in Multiple Models

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In this study, we performed ENSO (El Nino and the Southern Oscillation) retrospective forecasts for the 120 years from 1881-2000 using three realistic models that assimilate historic dataset of sea surface temperature (SST). By examining these retrospective forecasts and corresponding observations, as well as the oceanic analyses from which forecasts were initialized, we have explored several important issues related to ENSO predictability including its interdecadal variability and the dominant factors that control the interdecadal variability.

The prediction skill of the three models showed a very consistent interdecadal variation, with high skill in the late 19th century and in the middle-late 20th century, and low skill during the period from 1900-1960. The interdecadal variation in ENSO predictability is in good agreement with that in the signal of interannual variability and in the degree of asymmetry, a basic nature of nonlinearity, of ENSO system. A good relationship was also identified between the degree of asymmetry and the signal of interannual variability, and the former is highly related to the latter. Generally the high predictability is attained when ENSO signal strength and the degree of asymmetry are enhanced, and vice versa. The atmospheric noise generally degrades overall prediction skill, especially for the skill of mean square error, but is able to favor some individual prediction cases. The possible reasons why these factors control ENSO predictability were also discussed.