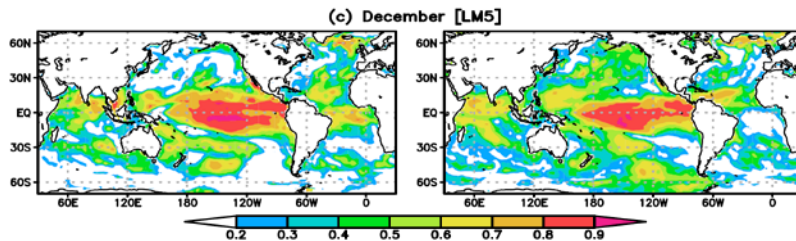
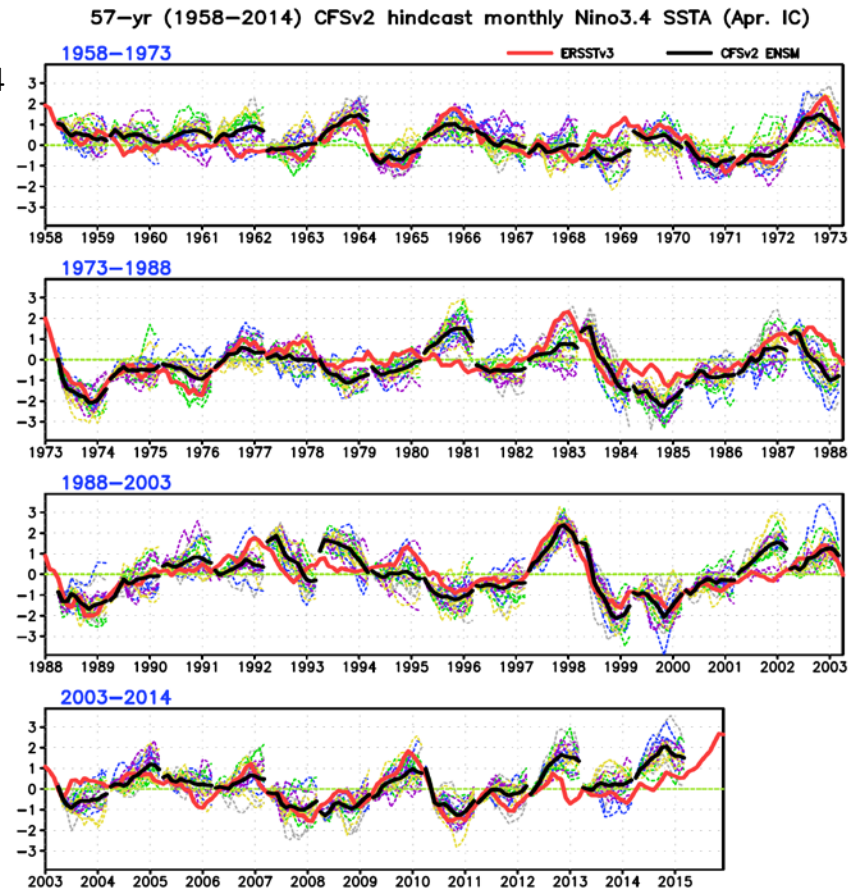


B. Huang, C.-S. Shin, J. Shukla, L. Marx, P.A. Dirmeyer, J.L. Kinter (GMU/COLA)

- Huang et al. (2017) completed a set of 20-member ensemble seasonal reforecasts for 1958–2014 using CFSv2 and ECMWF ORA-S4 ocean initialization in January, April, July and October. Prior to 1979, the land initial states are from **NASA GLDAS-2**.
- This long dataset of reforecasts predicts more and diverse historical ENSO events and allows us to examine the effects of multidecadal variability and climate change – *see figure at right*.



- The ENSO prediction skills before and after 1979 are overall comparable, demonstrating feasibility of extending seasonal reforecast to the 1960-70s – *see figure above*.
- Lack of significant improvement in the skill of ENSO forecast for the recent period (1979-2014), which had far more ocean observations than the earlier period (1958-1978), indicates possible deficiencies of the model and the data assimilation systems which were unable to harvest the benefits of additional ocean observations.



Time series of the Niño-3.4 index from observations (red) and 20-member ensemble mean reforecast initialized in April (black), as well as each of the 20 ensemble members (colored dashed lines). The ensemble members having the same ocean initial state are plotted in the same color.

Reference: Huang, B., C.-S. Shin, J. Shukla, L. Marx, M.A. Balmaseda, S. Halder, P.A. Dirmeyer, J.L. Kinter III, 2017: Reforecasting the ENSO events in the past fifty-seven years (1958-2014). *J. Climate*, **30**, 7669-7693.