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NOAA has generated a 30-year coupled ‘replay’ reanalysis which nudges the atmosphere and ocean models to existing reanalysis of the atmosphere and ocean. Replay is a methodology where the full data assimilation system is simplified by using an existing analysis instead of ingesting in observations and blending it with the model’s forecast. The model still runs a first-guess forecast which is then used to compute the error in the forecast, and the model is backed up and the difference between the forecast and existing analysis, known as the analysis increment, is applied to the re-run of the forecast over a period of 6-hours.
Even in this 6-hour forecast, many of the systematic errors in the forecast model are apparent. With a 30-year catalog of forecast errors every 6-hours, there is the ability to identify errors beyond the time-mean model climatology bias and diagnose regime
dependent errors.
Recent studies have shown that systematic forecast errors related to the El Niño/Southern Oscillation (ENSO) develop very rapidly in numerous S2S models, notably including the common climate model error of a too-westward expansion of the ENSO spatial pattern. Here we investigate similar systematic ENSO-related errors in the analysis increments. We will show that replay can be a tool to help model developers improve the forecast model to these long-lead errors.
Presentation file
Pegion-Philip.pdf
Meeting homepage
S2S Community Workshop
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