Session: B1 Oral presentation

Seamless diagnosis of predictability on mulitple timescales

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We present a comprehensive diagnosis of multi-year predictability in climate models using a relatively new technique called Average Predictability Time (APT) analysis. This technique finds the most predictable components of the system, as measured by APT, and has been shown to provide a powerful way to investigate predictability on multiple time scales in a seamless manner. An initial assessment of decadal hindcasts from NCEP's Climate Forecast System based on this technique will be discussed. The most predictable components in the models are identified, and then a statistical prediction model for these components is estimated from models and applied to observations. We show that the resulting predictions have statistically significant skill on multi-year time scales. These predictions provide a "baseline" for comparison with dynamical model predictions. We argue that current climate models probably cannot outperform these empirical predictions owing to lack of subsurface ocean observations and difficulties with initializing coupled atmosphere-ocean models, both of which are avoided in the empirical model approach.