Benchmarking Predictions and Predictability Limits:
Estimating Predictability

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As part of the PPAI panel session on "Benchmarking Predictions and Predictability Limits", I will present several methods that can be used for determining the upper limit of prediction skill (i.e. predictability). These methods include: perfect model predictability, predictability determined from an empirical linear inverse model (LIM), cross-model predictability, and average predictability time. Examples from each of these methods are presented for the subseasonal timescale. The predictability estimates from the different methods lead to different conclusions about whether there is additional skill to be realized.

I define the situations where we are already at the limit of predictability as "noise-limited" and suggest a forecast of opportunity approach to improving forecasts in these situations. For the cases where there is additional potential for skill improvement or we do not know the limit of predictability, I consider these to be "science-limited" situations and advocate a process-based approach to improving our scientific understanding and ability to represent the relevant processes and phenomena in climate models.