Reliable forecasts about the potential for warmer, colder, wetter, or drier conditions a few weeks into the future are valuable for routine planning and resource management. Many sectors would benefit from these predictions, including emergency management, public health, energy, water management, agriculture, and marine resources.

Predictions on subseasonal (2-4 week) timescales are particularly challenging because this lead-time is beyond the limit of mid-latitude atmospheric predictability. The ability to make skillful subseasonal forecasts depends on understanding and harnessing the predictive capabilities of sources of predictability. In this talk I will present results from the Subseasonal Experiment (SubX), a multi-model, research-to-operations project designed to understand and advance our predictive capabilities on these timescales. Specifically, I will address three questions:

- How good are our predictions now?
- What are the sources and limits of predictability?
- How can we make better predictions?

The key to making better predictions comes through understanding and improving model biases which are evident as quickly as 1-week into the forecast and through identifying forecasts of opportunity associated with sources of predictability. The skill and errors in predicting the Madden-Julian Oscillation and the stratosphere are investigated using the SubX re-forecast database. I will conclude with a brief overview of the societal applications of this research.

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