

The Arctic Predictability and Prediction on Seasonal-to-Interannual TimEscales (APPOSITE) project: a summary

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Recent years have seen significant developments in seasonal-to-interannual timescale climate prediction capabilities. However, until recently the potential of such systems to predict Arctic climate had not been assessed. We describe a multi-model predictability experiment which was run as part of the Arctic Predictability and Prediction On Seasonal to Inter-annual TimEscales (APPOSITE) project. The main goal of APPOSITE was to quantify the timescales on which Arctic climate is predictable. In order to achieve this, a coordinated set of idealised initial-value predictability experiments, with seven general circulation models, was conducted. This was the first model intercomparison project designed to quantify the predictability of Arctic climate on seasonal to inter-annual timescales. Here we provide a summary and update of the project's results which include: (1) quantifying the predictability of Arctic climate, especially sea ice; (2) the state-dependence of this predictability, finding that extreme years are potentially more predictable than neutral years; (3) analysing a spring 'predictability barrier' to skillful forecasts; (4) initial sea ice thickness information provides much of the skill for summer forecasts; (5) quantifying the sources of error growth and uncertainty in Arctic predictions. The dataset is now publicly available.