Use of a dynamic-thermodynamic sea ice model in the ECMWF seasonal forecast system and the impact of different initialisation methods.

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Recent modelling and observational studies have suggested that sea ice cover and thickness in the Arctic are potentially predictable on seasonal to interannual timescales. It has also been shown that sea ice cover can have some influence on the atmospheric circulation in the Northern Hemisphere. Sea ice is therefore a potentially important component of the earth system to capture to improve forecasts on the seasonal timescale.

In this study we use a dynamic-thermodynamic sea ice model in the ECMWF seasonal forecast system, to test its ability to predict the evolution of sea ice cover. As much of the predictive skill is likely to come from the initial state of the sea ice we also assess the impact of different techniques for initialising the forecasts. Finally, we determine the impact of dynamically modelling the sea ice cover rather than using observations of sea ice cover from recent years, as used in our current seasonal forecast system.