



Role of Arctic sea ice in skilful predictions of the North Atlantic Oscillation

James Warner (1), James Screen (1), and Adam Scaife (2)

(1) College of Engineering, Mathematics and Physical Sciences, University of Exeter, Exeter, UK, (2) Met Office, Exeter, UK

Skillful forecasting of seasonal weather allows preparedness and can lead to a more resilient society, better able to deal with prolonged bouts of extreme weather. The latest version of the UK Met Office seasonal and decadal prediction system is capable of skilful predictions of the winter North Atlantic Oscillation (NAO) up to a year in advance. However, the physical processes that enable such skilful predictions remain only partly understood. One possible source of predictive skill is Arctic sea ice. Here we examine how NAO forecast skill is related to the depiction of Arctic sea ice. When initialised in November, highly skilful predictions of the first winter sea ice cover result. This skill reduces at longer lead times and by the second winter there is no skill for Arctic sea ice. The ensemble mean first winter NAO index is well correlated with the preceding November sea ice. We also examine the across-member correlation between Arctic sea ice and the NAO. Initial results suggest that the ensemble members that better predict Arctic sea ice in November, especially in the Barents-Kara Sea, also better predict the following winter NAO. We further explore the linearity of this relationship by contrasting positive and negative NAO winters.