



A multi-system view of wintertime NAO seasonal predictions

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Significant predictive skill for the mean winter North Atlantic Oscillation (NAO) and Arctic Oscillation (AO) has been recently reported for a number of different seasonal forecasting systems. These findings are important in exploring the predictability of the natural system but they are also important from a socio-economic point of view, since the ability to predict the wintertime atmospheric circulation anomalies over the North Atlantic well ahead in time will have significant benefits for N. American and European countries.

In contrast to the tropics, for the middle-latitudes the predictive skill of many forecasting systems at the seasonal time scale has been shown to be low to moderate. The recent findings are promising in this regard, suggesting that better forecasts are possible, provided that key components of the climate system are initialized realistically and the coupled models are able to simulate adequately well the dominant processes and teleconnections associated with low-frequency variability. Large ensemble sizes (> 50) are also needed. Yet, such ensembles are now available via a multi-system approach, which we show is capable of unprecedented high predictive skill for the NAO/AO.

Predicting successfully the winter mean NAO does not ensure that the respective climate anomalies are also well-predicted. The NAO has a strong impact on Europe and N. America, yet, it only explains part of the interannual and low-frequency variability over these areas. Here we show with a number of different diagnostics that the high predictive skill for the NAO/AO indeed translates to more accurate predictions of temperature, surface pressure and precipitation in the area of influence of this teleconnection.