

Semi-empirical improvement of seasonal forecasts of European winter temperatures

Torben Schmith, Jens Hesselbjerg Christensen, Steffen Olsen, Shuting Yang

Danish Meteorological Institute

Seasonal prediction of winter NAO

- Dynamical: Increase ensemble size
- Statistical (autumn SST, SI, snow, stratosphere)
- Sub-selection of ensemble members with a 'correct' statistical link with autumn predictors

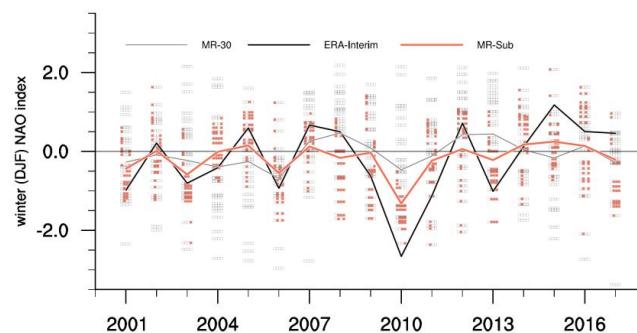
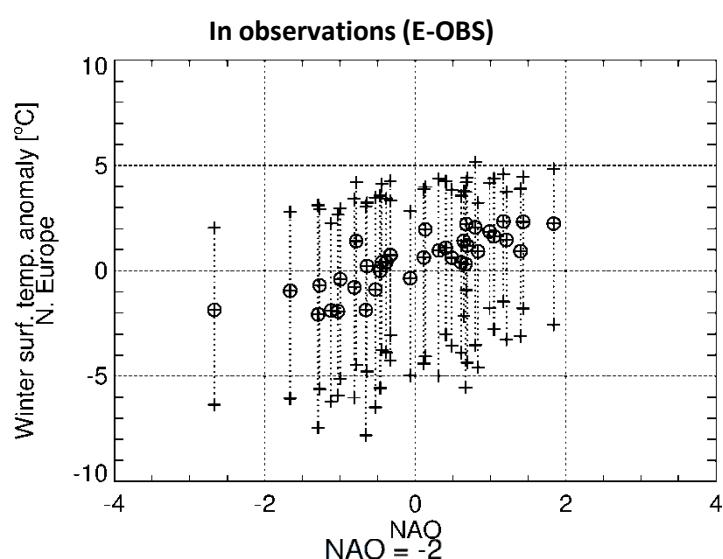


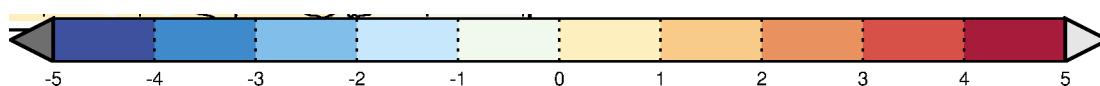
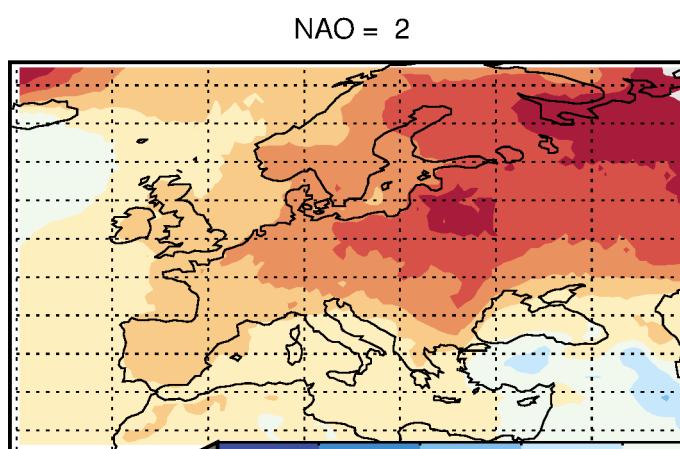
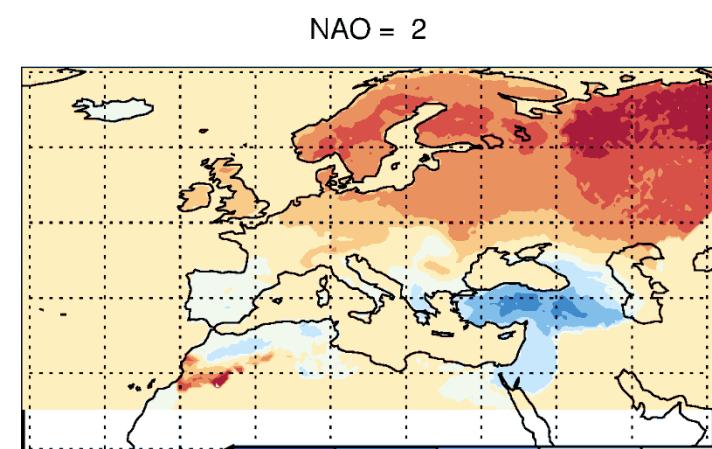
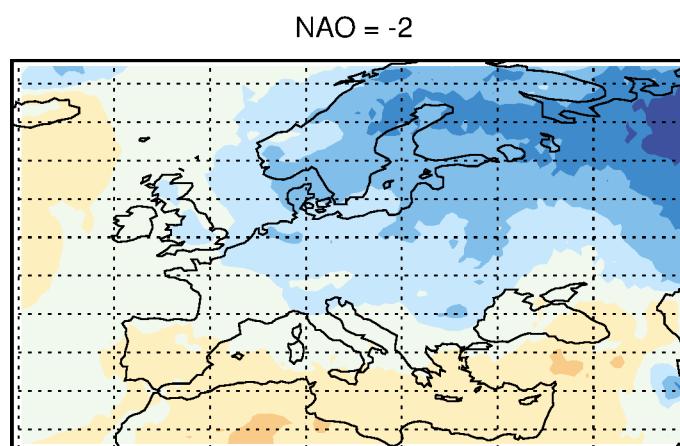
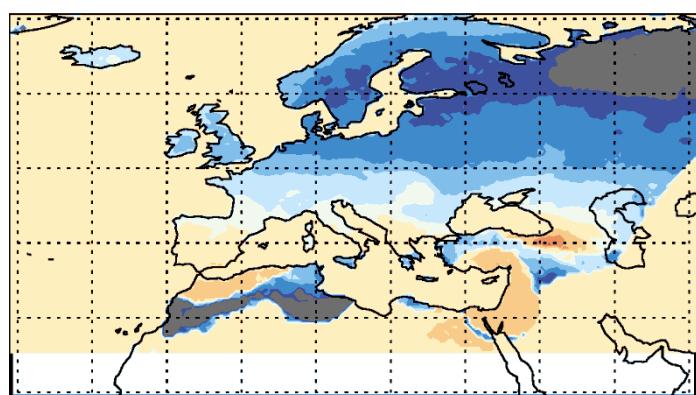
Figure 4. "Real" forecast test of the winter North Atlantic Oscillation (NAO) for the period from 2001 to 2017. The forecasted winter NAO values are calculated separately for each year and then merged into a single time series. The correlations between the MR-30 (gray line), the MR-Sub ensemble mean NAO (red line), and the ERA-Interim NAO (black line) are 0.42 and 0.86, respectively (significant at the 99% confidence level). Similar to Figure 2 each cell in gray four-cell blocks represents one of the four predictors. Ten ensemble members for each predictor are used in subsampling. DJF = December, January, and February.

From Dobrynin et al., 2018

Winter mean surface temperature dependence on NAO



Modelled (CMIP6 historical EC-Earth)



Suggestion: Could the observed NAO-temperature relationship combined with a predicted NAO improve predictions of winter temperatures?

