SUPPLEMENT

DECEMBER 2016: LINKING THE LOWEST ARCTIC SEA-ICE EXTENT ON RECORD WITH THE LOWEST EUROPEAN PRECIPITATION EVENT ON RECORD

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This document is a supplement to "December 2016: Linking the Lowest Arctic Sea-Ice Extent on Record with the Lowest European Precipitation Event on Record," by Juan C. Acosta Navarro, Pablo Ortega, Javier García-Serrano, Virginie Guemas, Etienne Tourigny, Rubén Cruz-García, François Massonnet, and Francisco J. Doblas-Reyes (*Bull. Amer. Meteor. Soc.*, **100**, S43–S48) • ©2019 American Meteorological Society • *Corresponding author:* Juan C. Acosta Navarro, jacosta@bsc.es • DOI:10.1175/BAMS-D-18-0097.2

Sea ice cover loss in the Arctic, especially in marginal sea ice zones (e.g., the Barents and Kara Seas) is a clear consequence of human-induced climate change. There is a negative correlation between global surface temperature and Barents–Kara sea ice cover in both observations and EC-Earth3 experiments for the period 1980–2015, indicating that the model is capable of capturing the observed effect (Fig. ES1).

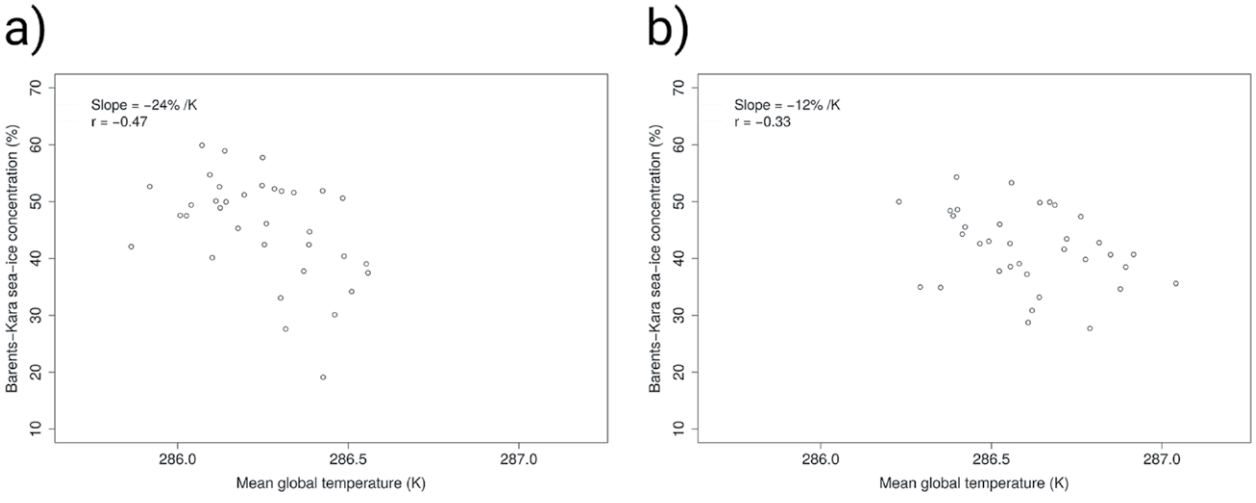

Fig. ES1. (a) Observed and (b) modeled (Hindcast, first member of each start date) relation between Barents–Kara sea ice cover and mean global temperature for November–December during the period 1980–2015. Slope stands for linear regression slope and r stands for linear correlation coefficient.

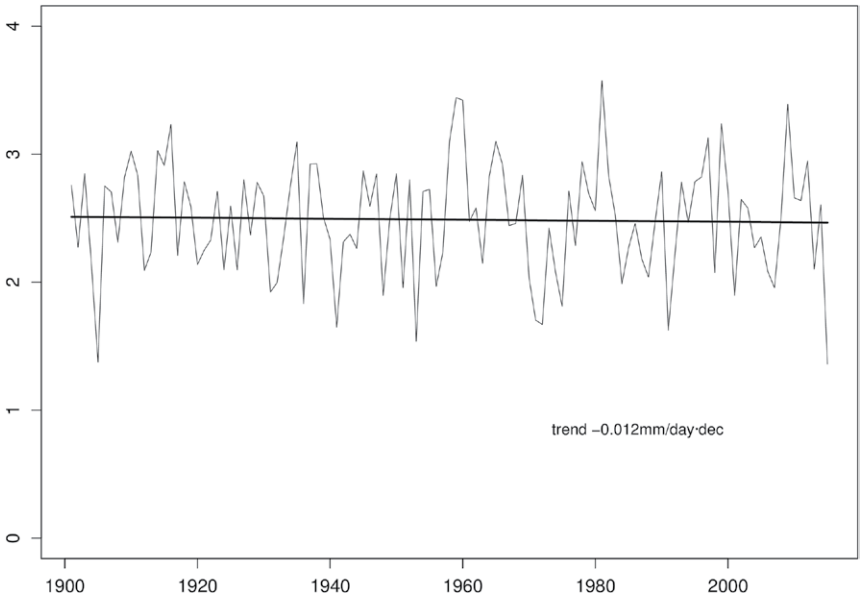

Fig. ES2. Observed 1901–2015 December precipitation in Europe. The trend is not significant at the 95% confidence level. The units of the y axis are mm day^{-1}.

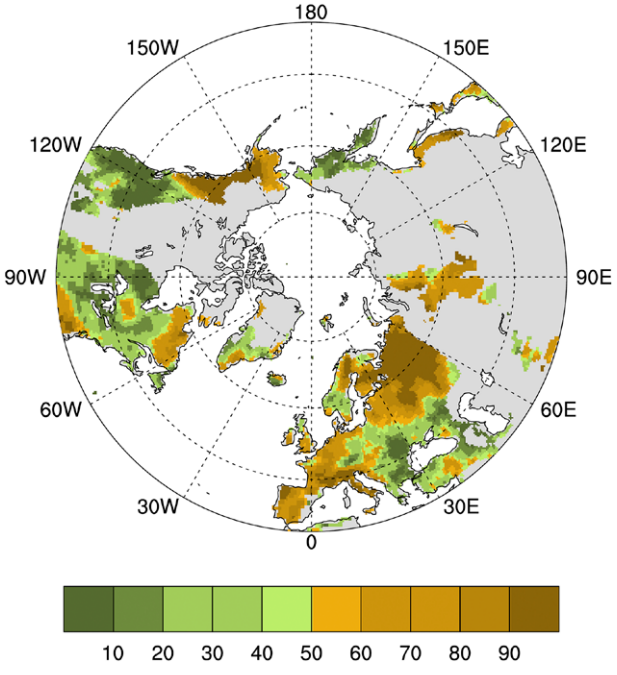

Fig. ES3. Percentage of agreement on the negative sign of the mean in the differences between Forecast16 and Forecast16_Ice14 for precipitation for the 1000 randomly sampled 50-member subgroups drawn from the full 100-member ensemble.

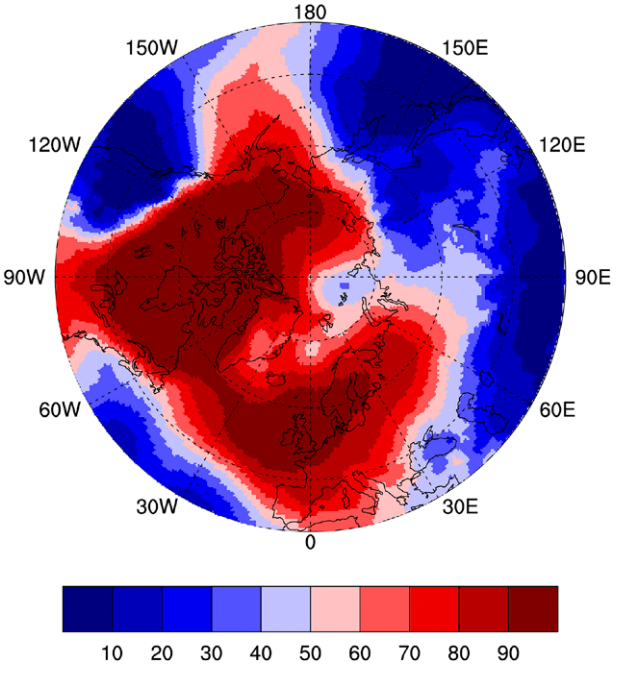

Fig. ES4. Percentage of agreement on the positive sign of the mean in the differences between Forecast16 and Forecast16_Ice14 for sea level pressure for the 1000 randomly sampled 50-member subgroups drawn from the full 100-member ensemble.