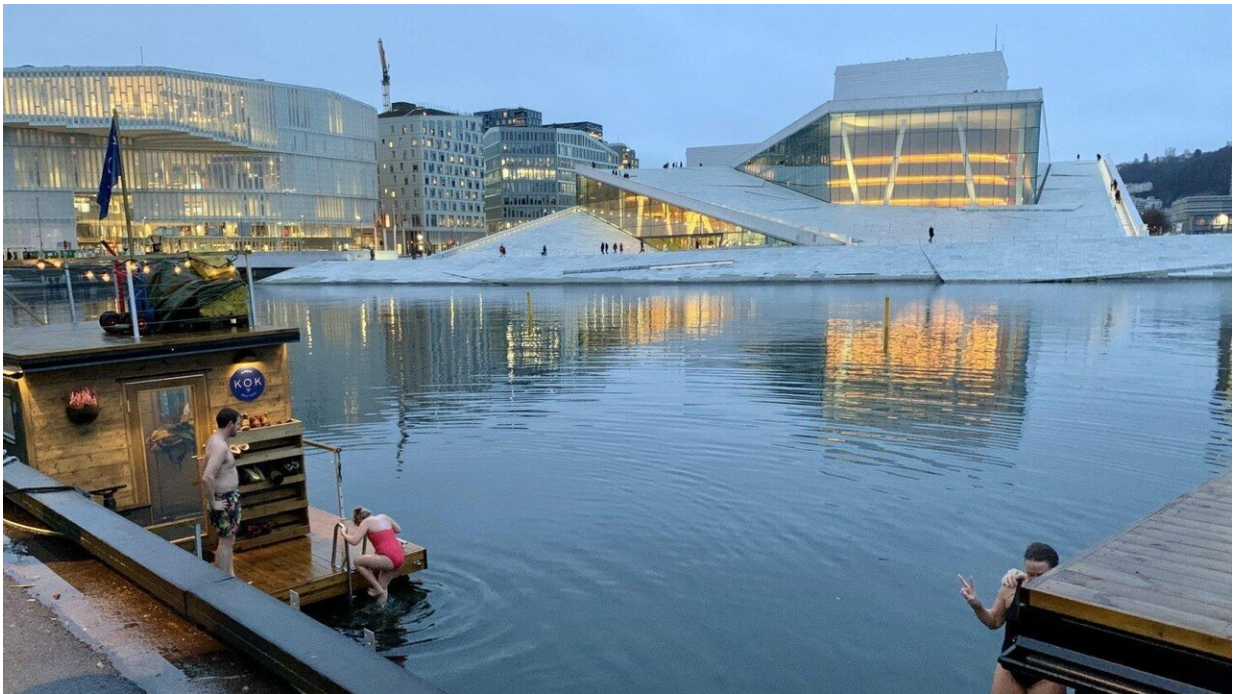


The current winter is a big win for seasonal forecasts

February 3 2020



Oslo city centre in Mid-December: Temperatures above freezing and no snow in sight. Credit: Iselin Rønningsbakk / CICERO

Seasonal forecasts for this winter were markedly accurate, with mild conditions in Northern Europe in December and January predicted already in October. Researchers in the S2S4E project are now working to find out how to improve the reliability of future outlooks.

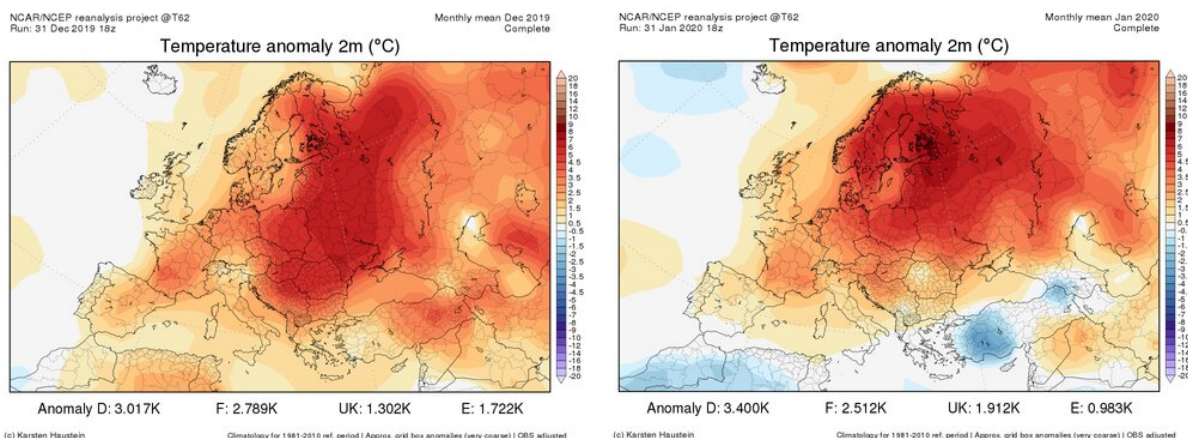
As [we wrote in October](#)—before the onset of the current unusually mild [winter](#) in Northern Europe—the seasonal [forecast](#) models for this winter from the world's six leading weather agencies all showed a clear signal for a positive North Atlantic Oscillation (NAO) phase.

"This normally translates into warmer and wetter weather than average in Northern Europe, and colder and drier conditions than normal in Southern Europe," explains Nathalie Schaller, senior researcher at CICERO Center for International Climate Research, and involved in the S2S4E project.

The [seasonal forecasts](#) published in November for the December-February period, and in December for January-March were on the same path, and showed a clear positive NAO signal, with warmer than [average temperatures](#) in the northern part of Europe.

Unusually mild December and January

Now that December and January are over, we see that the seasonal forecasts were right: this winter has so far been markedly warmer than normal in Europe, and temperature records have been broken in several countries, particularly in the northern part of the continent.



Temperatures in Europe in December and January were well above normal for the winter season. Temperature anomalies for December in the image on the left, and for January on the right. Credit: Centre for International Climate and Environmental Research (CICERO)

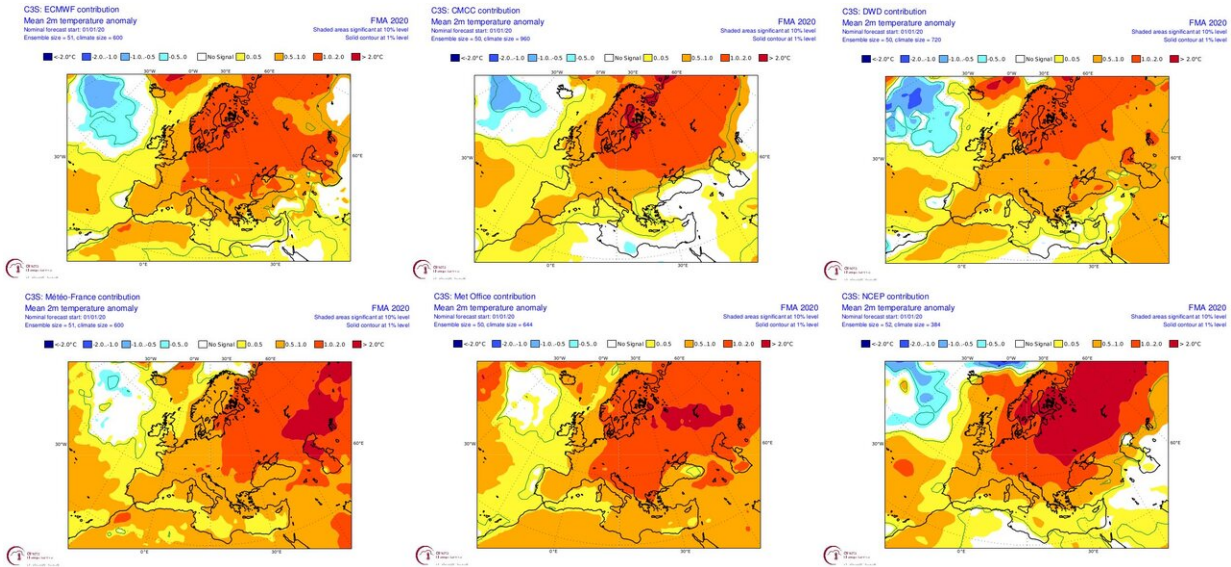
"The record high temperatures in December and January are likely due to a combination of the strong positive NAO phase, and the fact that the earth has already warmed by more than 1⁰C since pre-industrial times," Schaller explains.

Over the coming months, researchers involved in the S2S4E project will analyse why the weather models turned out to be so accurate in their predictions for this winter, because understanding the reasons why could help scientists improve the models.

Lower than normal electricity demand

The unusually warm temperatures seen in December and January may have resulted in substantial reductions in electricity demand in Europe, due to a reduced need for heating.

So, in terms of energy trading, one thing is certain, and that is that this winter, the winners are those who have based their decisions on the seasonal forecasts.



The latest forecasts from the world's six leading weather agencies suggest that the NAO+ may remain the dominant circulation pattern in February, March and April, resulting in continued mild weather in large parts of Europe. From left to right: The European Centre for Medium-Range Weather Forecasts (ECMWF), The Euro-Mediterranean Center on Climate Change (CMCC), The German Weather Service (DWD), Météo-France, the UK's Met Office and the US National Weather Service's NCEP. Credit: Centre for International Climate and Environmental Research (CICERO)

"Modelling work within the S2S4E project has shown that each European country has a very different sensitivity to winter temperatures depending on multiple factors, such as the amount of electric heating installed, or the resilience of the population to cold weather," explains Hannah Bloomfield, a researcher at the University of Reading, who is also involved in S2S4E project.

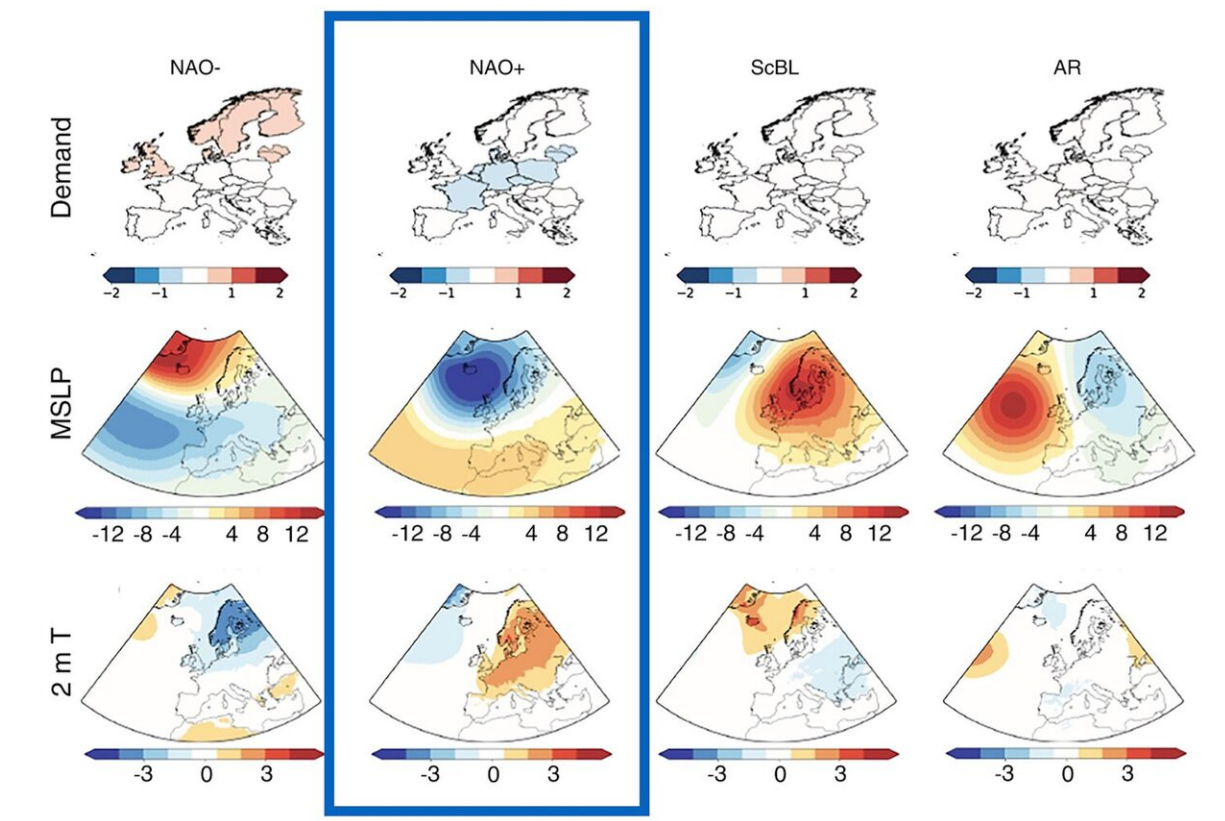
"The electricity demand in France is particularly sensitive to temperature, due to their reliance on electric heating. Here, temperatures in December and January averaged 3°C above the seasonal norm, and

our models show power demand averaging 6 GW below normal," Bloomfield says.

"In Sweden, meanwhile, it was about 5°C warmer than normal, and this implies that demand would have been around 2 GW lower than average," says Bloomfield, adding that "similar results are seen in Norway and Finland."

More wintry conditions ahead?

But the winter is not over yet so the question remains: Could we still get some more [winter weather](#) before spring sets it?



The different weather regimes are large-scale recurrent atmospheric patterns

which can be associated with different types of surface weather conditions. Temperature anomalies such as those from December and January are very similar to those seen in the positive phase of the North Atlantic Oscillation (NAO+), which you can see here in the blue box. Row 1 shows normalised electricity demand, row 2 shows mean sea level pressure (MSLP) anomalies, and row 3 shows temperature anomalies measured at a height of two metres during each of the regimes. The other weather regimes shown in this figure are the Negative phase of the North Atlantic Oscillation (NAO-), Scandinavian blocking (ScBL) and Atlantic Ridge (AR). Credit: Bloomfield et al., 2019

If you look at the seasonal forecast model simulations launched at the beginning of January, the answer is no, as these indicate that the weather will remain warmer than normal until the end of April, explains Schaller.

"The latest medium-range weather forecast simulations show a similar picture, predicting an almost record positive NAO over the coming weeks, meaning Europe will see more of the same mild [weather](#)," Schaller adds.

More information: Hannah C. Bloomfield et al. Characterizing the winter meteorological drivers of the European electricity system using targeted circulation types, *Meteorological Applications* (2019). [DOI: 10.1002/met.1858](https://doi.org/10.1002/met.1858)

Provided by Centre for International Climate and Environmental Research (CICERO)

Citation: The current winter is a big win for seasonal forecasts (2020, February 3) retrieved 27 April 2024 from <https://phys.org/news/2020-02-current-winter-big-seasonal.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.