



NCAS Science Highlight

Reliability of seasonal climate forecast

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What are the new findings?

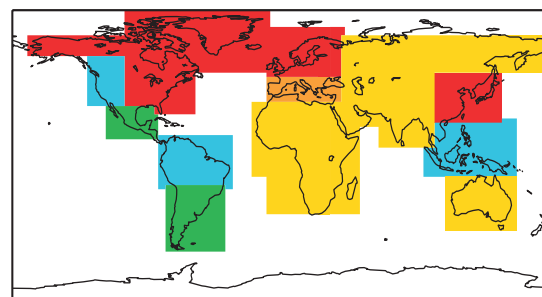
We ask how good, on a scale of 1 to 5 (5 is very good), are forecasts of winters and summers around the globe. These forecasts are made 1-4 months ahead of time and are expressed as the probability that it will be warmer or cooler and wetter or drier than normal. “Goodness” is determined by how reliable these probabilities are. We find a wide range of goodness rankings, depending on region, variable (temperature or rainfall) and time of year. Forecasts of summer rainfall over Northern Europe are exceptionally poor (red shaded areas in the figure on the right).



Antje Weisheimer is an NCAS Research Fellow at Oxford University interested in uncertainties in weather and climate forecasts.

Why are these findings important?

Seasonal forecasts are used for a broad range of applications. For example, information about rainfall and temperature for the growing season can influence a farmer's decision about which crops to plant, or a humanitarian organization's strategy for anticipating food shortages in drought-prone regions of the developing world. Reliable forecasts are essential for forecast-based decision making; unreliable forecasts can mislead users and result in bad decisions. Information about the reliability of our seasonal forecasts may guide policymakers like the UK Government when they consider options for investment in science.



5 Perfect 4 Still useful 3 Marginally useful
2 Not useful 1 Dangerous

Above: Reliability (“goodness”) categories for forecasts of wetter than normal conditions in June, July and August. Forecasts were made in May. Red shading indicates areas where forecasts often perform poorly.

Find out more:

- [The Conversation](#)
- Email Weisheimer@atm.ox.ac.uk
- Take a look at the [journal article](#) Weisheimer, A. and T.N. Palmer (2014), On the reliability of seasonal climate forecasts. *J. R. Soc. Interface*, **11** (96) 20131162, doi: 10.1098/rsif.2013.1162.

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How did we discover this?

We can determine reliability (“goodness”) only by examining probabilistic forecasts over many years. We use a large set of forecasts from the current European Centre prediction model. We propose five distinct categories of reliability, then classified the forecasts into those categories. We determined the reliability of each kind of condition (drier, wetter, warmer or colder than normal) separately, to assess whether certain kinds of forecasts are more reliable than others.

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