Met Office 3-month Outlook

Period: December 2015 - February 2016 Issue date: 26.11.15

The forecast presented here is for December and the average of the December-January-February period for the United Kingdom as a whole. The forecast for December will be superseded by the long-range information on the public weather forecast web page (www.metoffice.gov.uk/public/weather/forecast/#?tab=regionalForecast), starting from 4 December 2015.

This forecast is based on information from observations, several numerical prediction systems and expert judgement.

SUMMARY - TEMPERATURE:

During December above-average temperatures are more likely than below-average temperatures. The likelihood of a prolonged spell of cold weather is relatively low compared to normal.

Predictions for UK-mean temperature for the whole of the winter season (December-January-February) show only a slight shift from the normal range of expected conditions. In this instance, however, there are reasons to believe that this unremarkable outlook conceals the likelihood of a switch from a mild start to winter towards colder conditions later on. These different phases balance the probability of above- and below-average conditions in the overall 3-month average, but that does not imply normal chances of weather impacts this winter. Specifically, we consider there to be an increased risk of storms and very wet conditions in the early part of the winter, and a greater risk of cold weather impacts in late winter.

Overall, the probability that the UK-average temperature for December-January-February will fall into the coldest of our five categories is 15% and the probability that it will fall into the warmest of our five categories is between 20% and 25% (the 1981-2010 probability for each of these categories is 20%). As stated above, however, these overall statistics disguise a shift in probabilities as winter progresses.

CONTEXT:

A strong, mature El Niño event continues in the tropical Pacific Ocean. Seasonal prediction systems suggest it will strengthen slightly before the end of the year. This El Niño is comparable in strength to the 1997-98 and 1982-83 events and is highly likely to rank among the three strongest on record.

El Niño is already creating wide-ranging weather impacts across the globe. The influence on UK weather, however, is more subtle. El Niño moderately increases the probability of the positive phase of the North Atlantic Oscillation (NAO) in early winter. At this time of year, the positive phase of the NAO is associated with milder- and wetter-than-average conditions, whilst the negative phase is associated with colder- and drier-than-average conditions. In late winter El Niño increases the probability of sudden stratospheric warming events occurring. These events disrupt the stratospheric polar vortex and, more often than not, bring cold weather to the UK.

The Quasi-Biennial Oscillation (QBO), an oscillation of the equatorial winds in the stratosphere, remains in a westerly phase. The QBO influences winter conditions over Western Europe by modulating the strength of the stratospheric polar vortex and thereby the phase of the NAO at the surface. The westerly phase of the QBO tends to favour a stronger stratospheric polar vortex, particularly in early winter, leading to a higher likelihood of a positive phase of the NAO.

During December, the factors described above suggest an increased likelihood of positive NAO, which is consistently supported by predictions from the Met Office seasonal prediction system along with systems from other global forecast centres. The left-hand graph in figure T2 shows a clear shift towards milder conditions. This does not preclude temporary incursions of colder weather, but the chance of a prolonged spell of cold weather taking hold in December is low compared to normal.

Through the first half of the 3-month period, milder-than-average conditions are more likely than colder-than average. However later in the winter, particularly into February, several seasonal forecasting systems, including the Met Office system, are in good agreement in suggesting a shift towards more blocked weather patterns; these patterns increase the chance of cold northerly or easterly winds affecting the UK. Therefore, the right-hand graph of figure T2 does not tell the whole story and in late winter the probability of colder-than-average conditions is actually higher than normal. Thus we consider the greatest risk of cold weather impacts, such as snow, to be in late winter.

Fig T1

3-month UK outlook for temperature in the context of the observed annual cycle

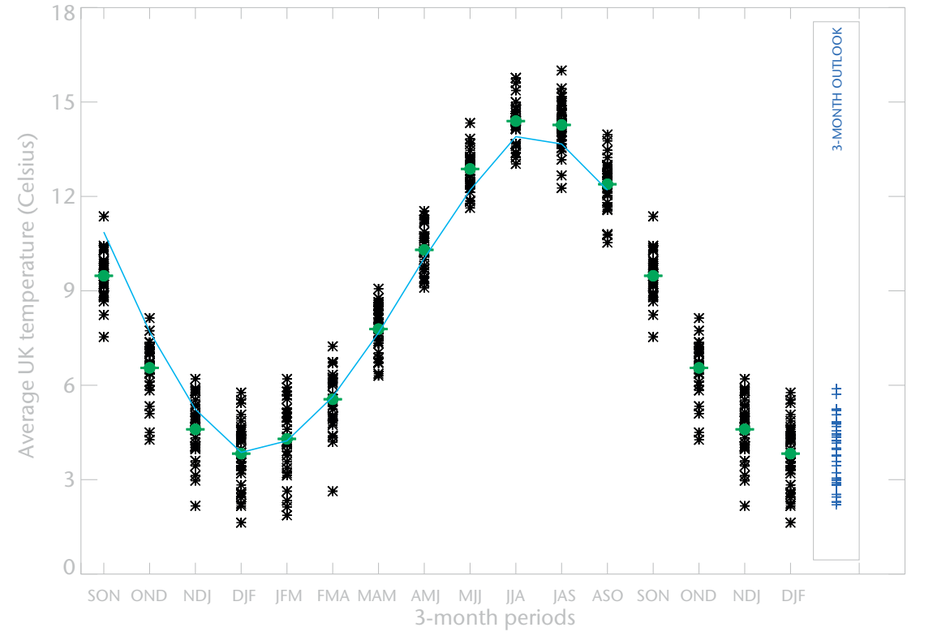


Fig T2

1-month and 3-month UK outlook for temperature in the context of observed climatology

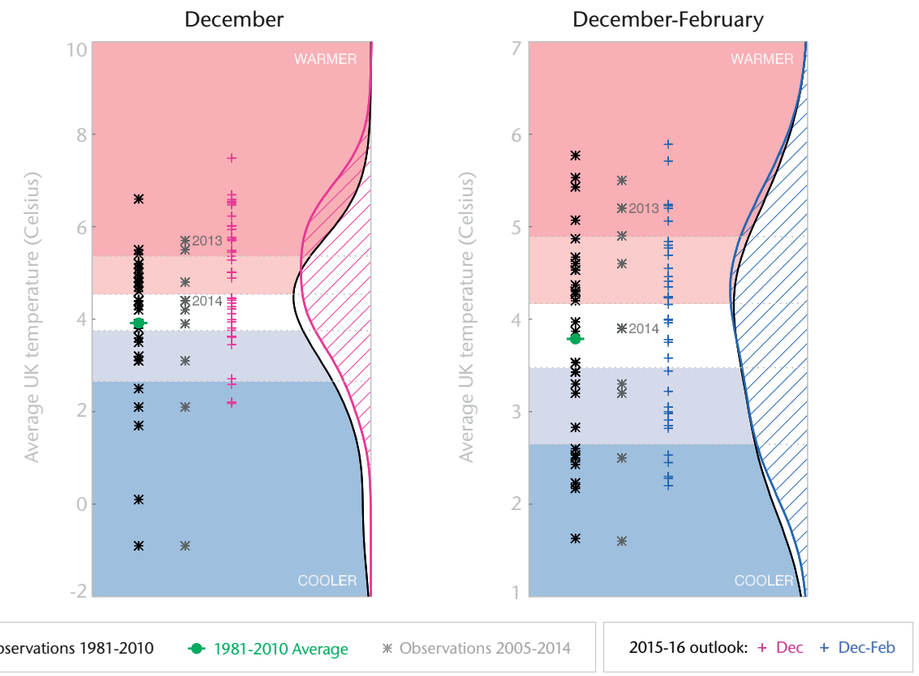
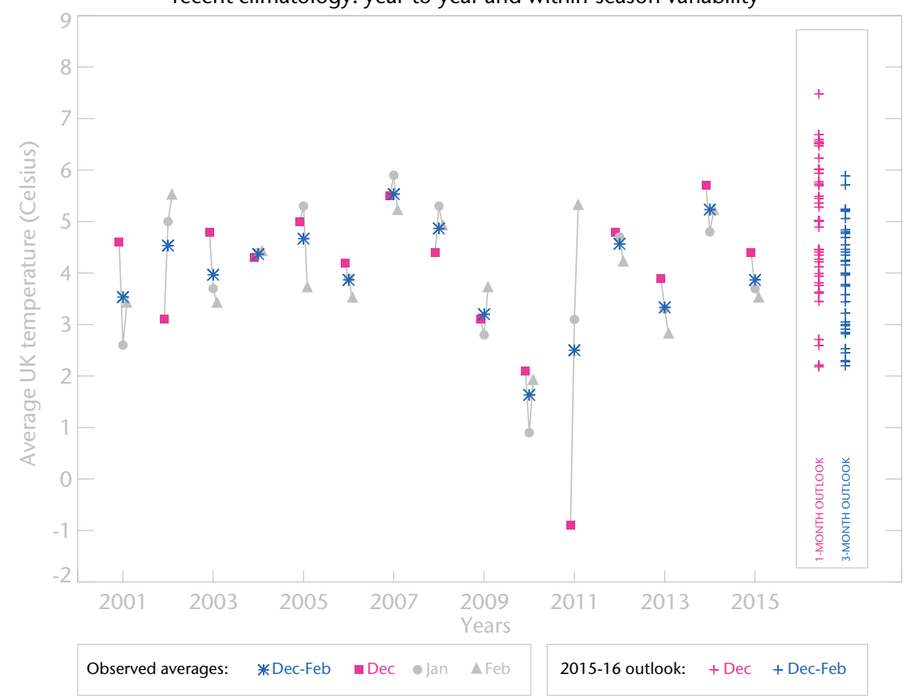


Fig T3

1-month and 3-month UK outlook for temperature in the context of recent climatology: year-to-year and within-season variability



This Outlook provides an indication of possible temperature and rainfall conditions over the next 3 months. It is part of a suite of forecasts designed for contingency planners.
The Outlook should not be used in isolation but should be used with shorter-range and more detailed (30-day, 15-day and 1-to-5-day) forecasts and warnings available to the contingency planning community from the Met Office.