# Prototype winter forecast for cover crops and land management

As part of the European project EUPORIAS, we are working closely with Clinton Devon Estates (CDE) to develop a working prototype to provide seasonal winter weather forecasts (1-3 months ahead) in support of decision making on cover crop planting, choice, and management. We are focusing on winter decision making because recent advances in long-range weather forecasting mean it is often possible to provide advance notice of a colder and drier, or warmer and wetter winter than average conditions.

Devon outlook for March-May 2015
issued end February 2015

The latest predictions for March-May favour <u>above-average</u> Devon-mean temperature and <u>normal</u> precipitation.
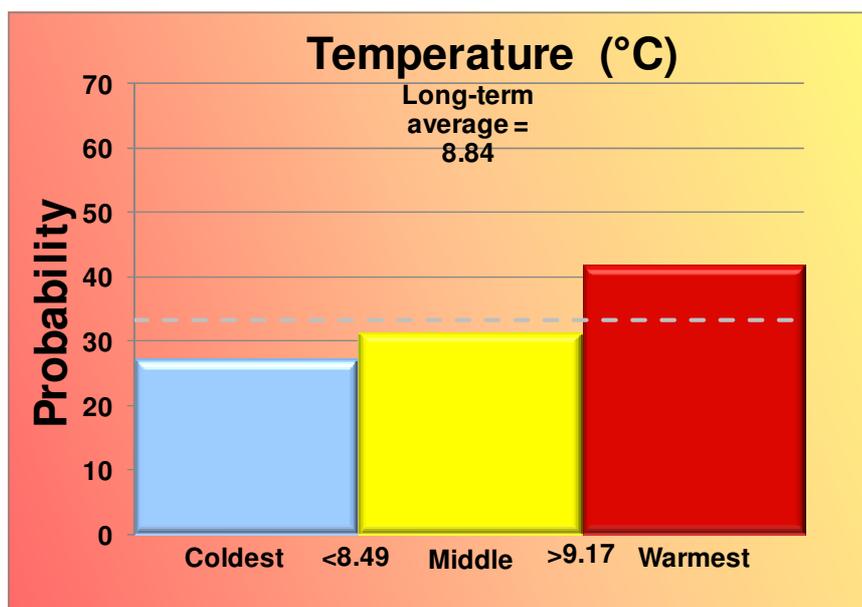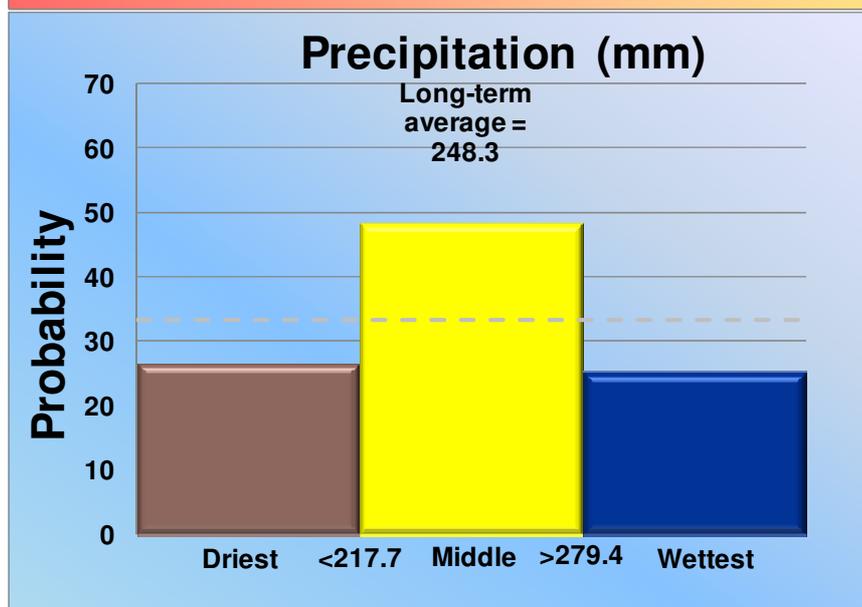

Temperature

The probability that the Devon-mean temperature for March-May will fall into the *warmest* of our three categories is around 42%.

The probability of temperature falling into the *coldest* of our three categories is close to 27%

The 1981-2010 probability for each of these categories is 33%.

The value for March-May 2014 was 9.7°C.

Precipitation

The probability that the Devon-mean precipitation for March-May will fall into the *wettest* of our three categories is around 25%.

The probability of precipitation falling into the *driest* of our three categories is close to 26%

The 1981-2010 probability for each of these categories is 33%.

The value for March-May 2014 was 272.6mm.

The bar charts show the probability that Devon-average temperature (top) or precipitation (bottom) for the three month period will fall into three different categories (coldest or driest 33%, near average, and wettest or warmest 33%). The dashed lines show the probability based on long-term observational records (between 1981 and 2010). The numbers on the chart show the actual temperature and precipitation values (for the coldest/driest 33%, average, and warmest/wettest 33%) from long-term observational records (between 1981 and 2010).

See overleaf for full details on how to interpret this forecast.

What is a seasonal forecast?

A seasonal prediction aims to estimate the change in the likelihood of a climatic event happening in the coming months. It is a forecast of the possible conditions averaged over a large region (e.g. country-wide) and over a specified period of time (e.g. three months). Specifically, the seasonal prediction gives an indication of the possible conditions over the UK for the coming 3-month period.

It does not indicate that these average conditions will prevail continuously, as the period is likely to contain a range of different types of weather. Nor does it indicate that these average conditions will be the same over the whole region. The questions we can answer in seasonal forecasting are different to the questions we are trying to answer in weather forecasting. For example, in seasonal forecasting we try to address questions like:

- *If the average temperature in Devon in winter is 5.2°C, what is the chance of having warmer or colder temperatures this year?*
- *If, on average, the first frost in South East England is on 3 November, what is the probability that this winter will have frosts earlier than this?*

As you can see, in both these questions there is a comparison with an average value which is usually calculated from observations. So, in seasonal forecasting we are trying to estimate the difference between the chance of an event happening this year and the frequency with which it has happened in the past. The forecast below is based on the UK Contingency Planners forecast: http://www.metoffice.gov.uk/publicsector/contingency-planners

How should I use the prototype forecast?

We are aiming to provide our prototype monthly, as outlooks for three months ahead during autumn/winter 2014/2015. Your feedback will help improve the first version of the service during this winter, and to provide the final prototype for autumn/winter 2015/2016. We would like you to read the forecast below and consider how it might affect your decisions regarding planting, choice and management of cover crops this winter, and provide your feedback via email or using the attached form. Here's how to use it:
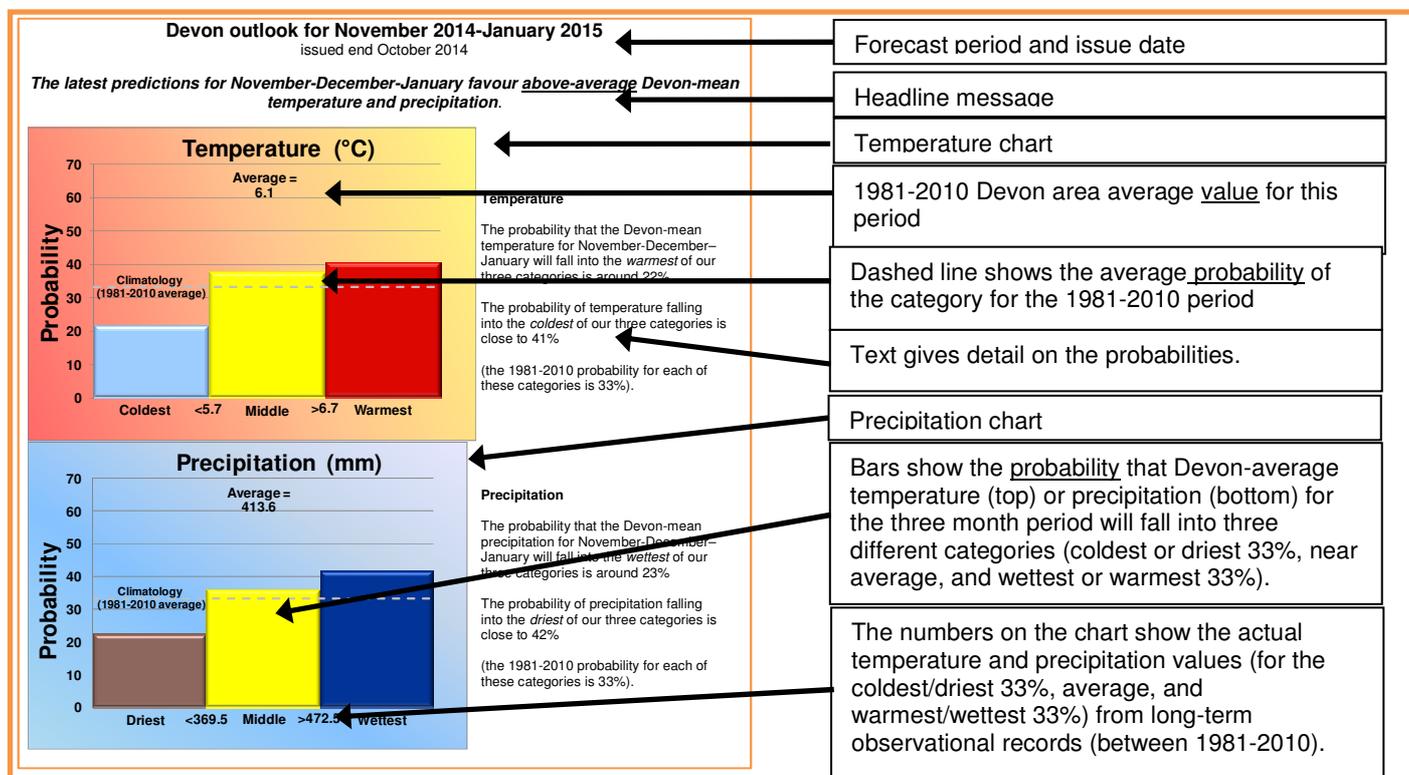
How we've already used your feedback to change the forecast

During the interviews in November 2014, CDE farmers gave us very valuable feedback on our first forecast. Here's how we've used your suggestions to help improve the forecast so far:

- *Too much information on the forecast sheet*: we've simplified the main forecast sheet to keep the main messages, and make the graphics bigger, putting supporting information on the reverse side.
- *Hard to interpret the different probability categories*: we've moved from using five categories to three. With this new presentation, it is easier to interpret the results because the bar which is furthest from the "average/climatology" line is the most likely outcome.
- *Add information on last year's weather*: we've added text to the forecast to show this.
- *Better explain what is meant by climatology*: we've added more information on how to interpret the forecast, and hope that adding information on last year's weather will help put climatology into context.

We hope to be able to incorporate your other suggestions into later versions of the forecast, including:

- Website delivery, with overlay of different information sources (e.g. historic values; previous forecasts)
- Shorter-range forecast information (for example, 4-6 week outlooks)
- Outlooks starting from the end of August (for September-November) through to the end of February (for March-May)
- More relevant weather variables (e.g. length of wet/dry spells, rain days)

For more information please contact:
Pete Falloon (Project Leader), Met Office Hadley Centre, Fitzroy Road, Exeter, EX1 3PB. Tel: 01392 886336 pete.falloon@metoffice.gov.uk