Update on the Met Office forecast for winter 2006/7

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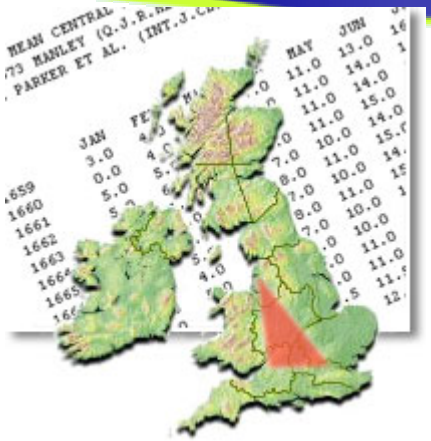
Presentation to Ofgem, Lewis Media Centre, London

20 December 2006

Content

- October, November and December so far
- update on winter forecast (issued 5th December)
- winter forecasting methods
- outlook through holiday period
- summary

2006 - a year for the UK record books…

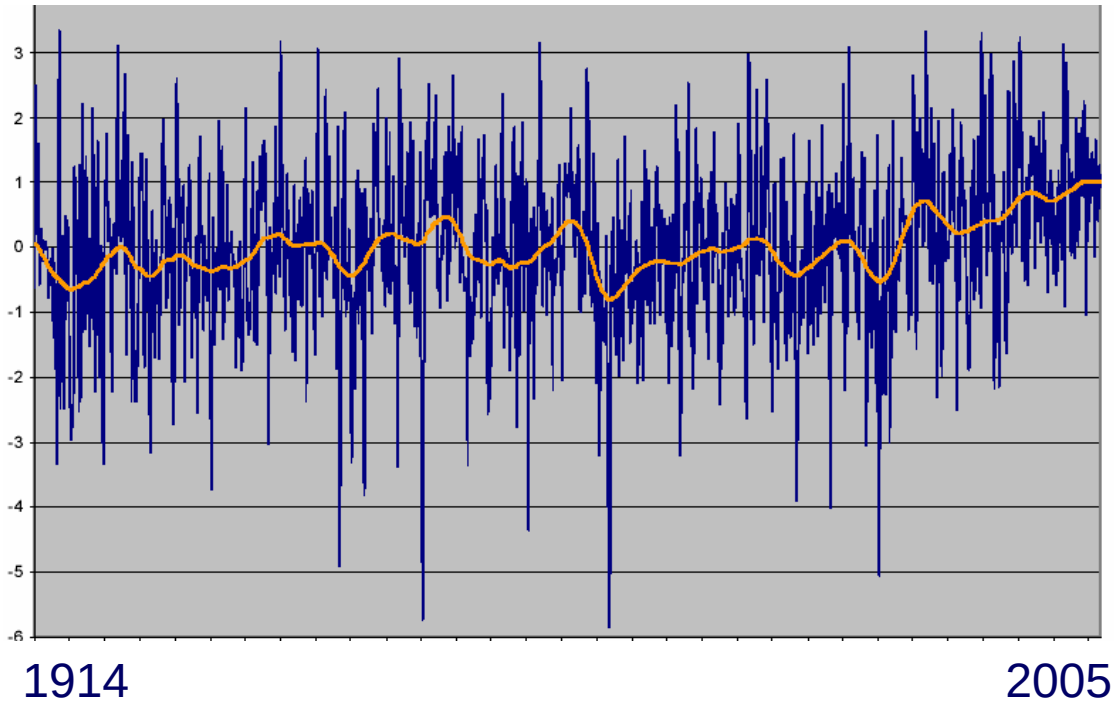


Central England Temperatures (CET), from 1659

- warmest ever Jan-Dec: 10.8ºC (+1.4ºC over 61/90 avg)
- warmest month on record (July): 19.7ºC (+3.7ºC)
- warmest ever September: 16.8ºC (+3.2ºC)
- warmest ever April to October: 14.6ºC (+1.9ºC)
- warmest ever Sept-Oct-Nov: 12.6ºC (+2.4ºC)
  - October 13.0ºC (+2.4ºC, 3rd warmest)
  - November 08.1ºC (+1.5ºC)

UK's changing climate

UK
Mean Temp °C



Extreme winters are less likely due to global warming

The changing climate
UK area averages Dec-Feb

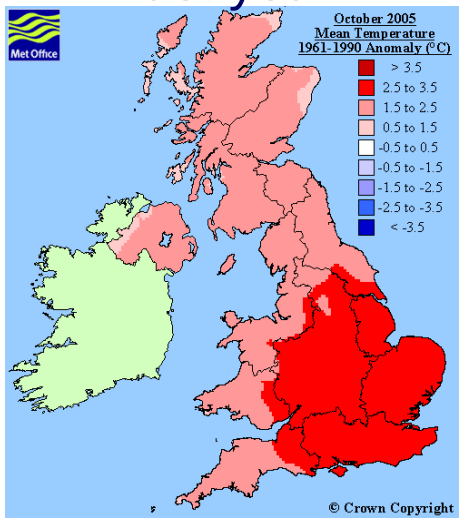
1961-1990 **3.3**°C
1971-2000 **3.7**°C
1987-2001 **4.0**°C

As a consequence, use of return periods (eg. 1 in 50 year winter) needs review.

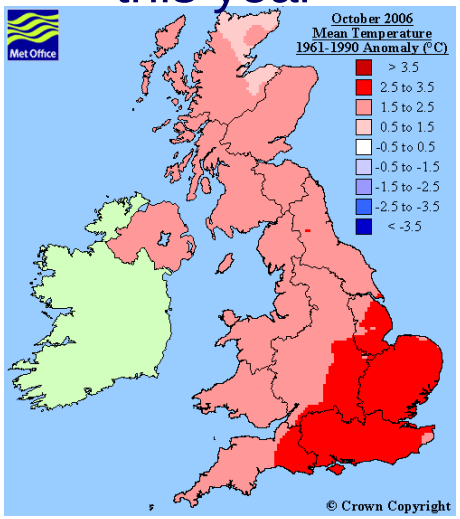
Mean temperature anomalies (relative to 1961-90)
October and November, this year and last year

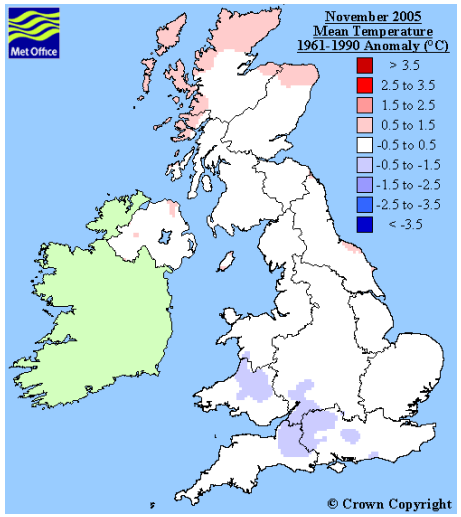
last year

this year

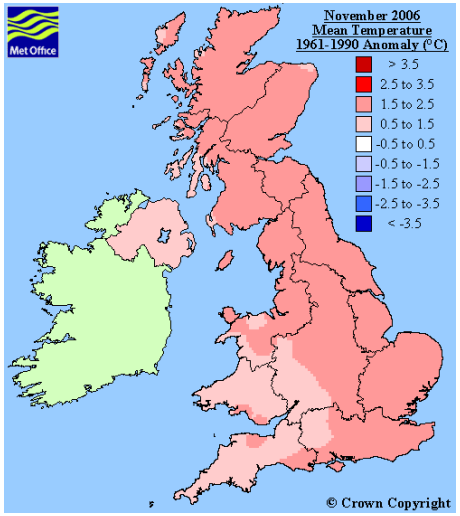


October

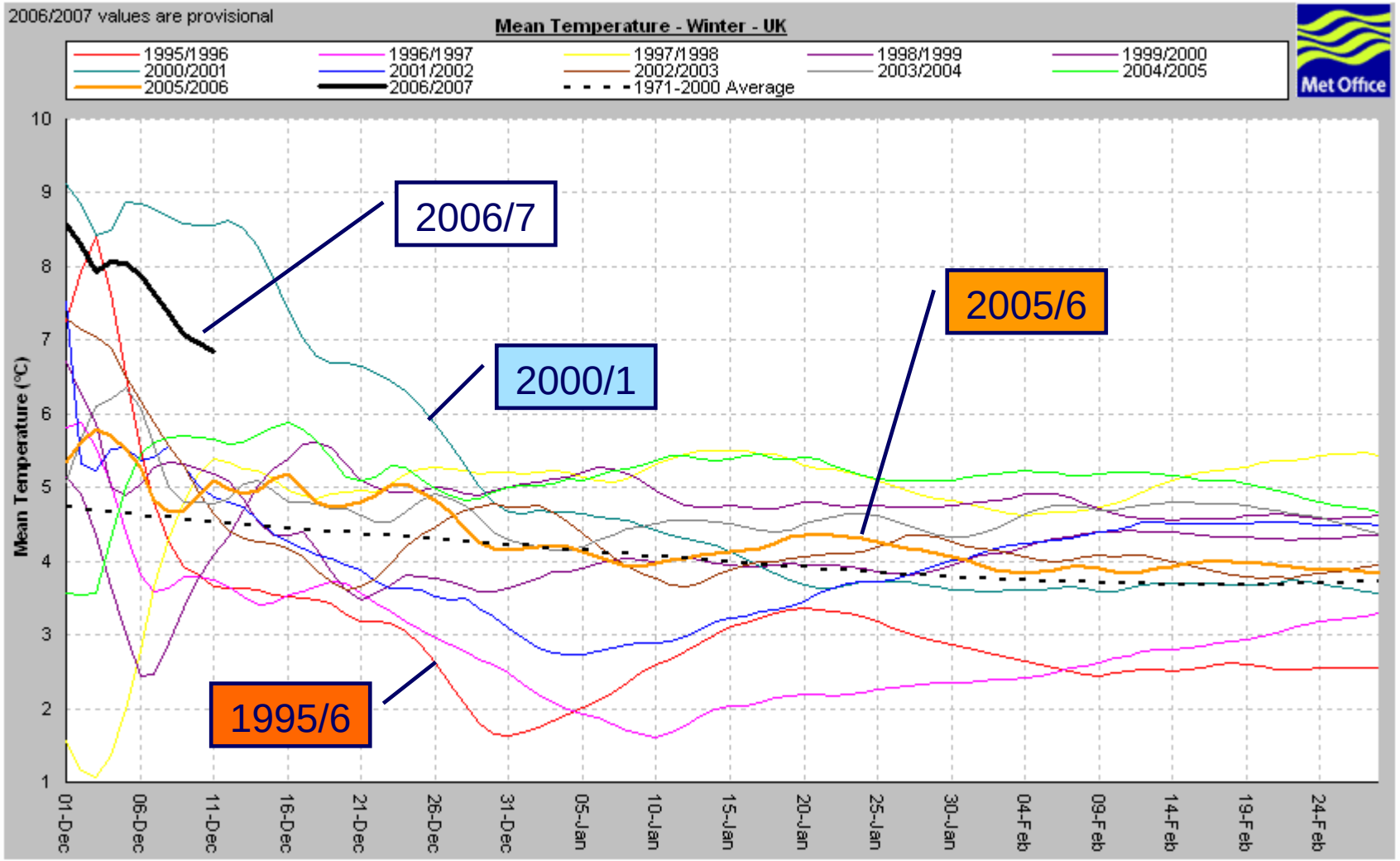




November



Dec-Jan-Feb, 2006/7 so far and previous 12 years: UK mean temperature



Winter forecast update, issued 5th December

(next update for remainder of winter: 4th Jan 07)

Temperature forecast

- Probabilities weakly favour temperatures warmer than 1971-2000 averages over much of western and central Europe.

- Over northern Europe the influence of El Niño may encourage cold outbreaks during mid to late winter; at times such outbreaks can be expected to affect parts of the UK.

- For the UK, near average or warmer-than-average temperatures are the more likely outcomes for the winter period as a whole with the potential for lower temperatures (relative to average) in mid to late winter.

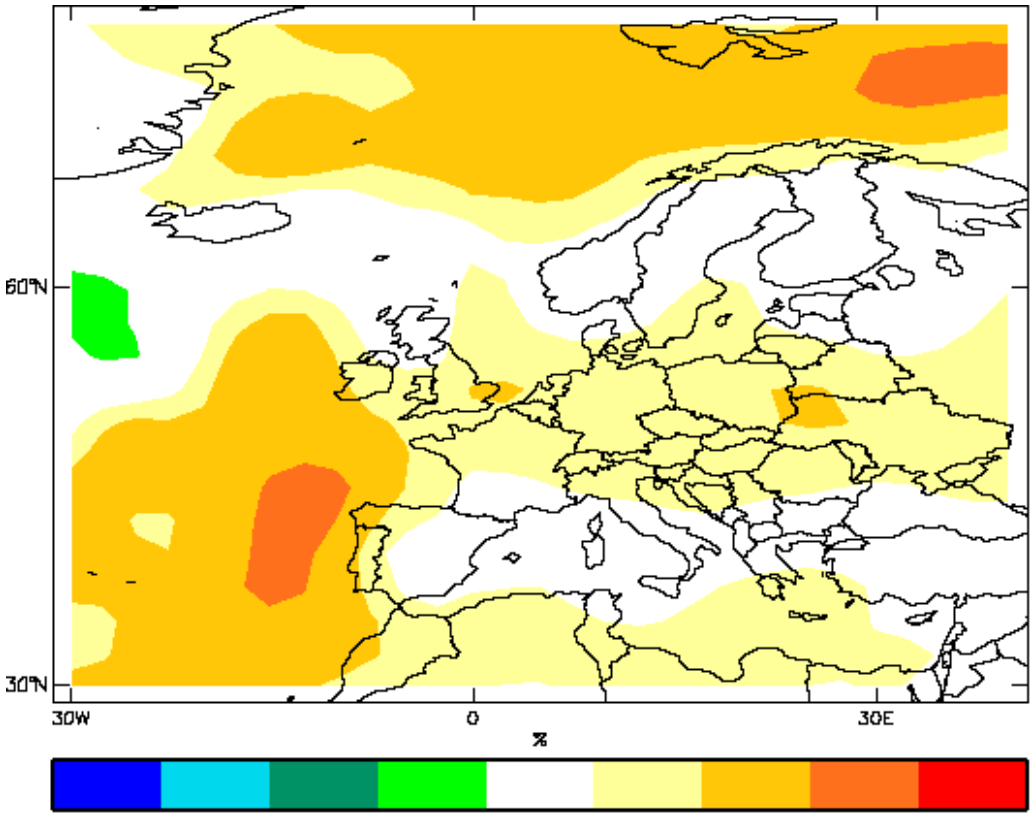
Precipitation forecast

- Signals for precipitation from our forecasting methods are mixed over Europe, and in most regions there is no clear indication for either above or below normal

- For the UK, best-estimates slightly favour average or above-average precipitation for the winter as a whole

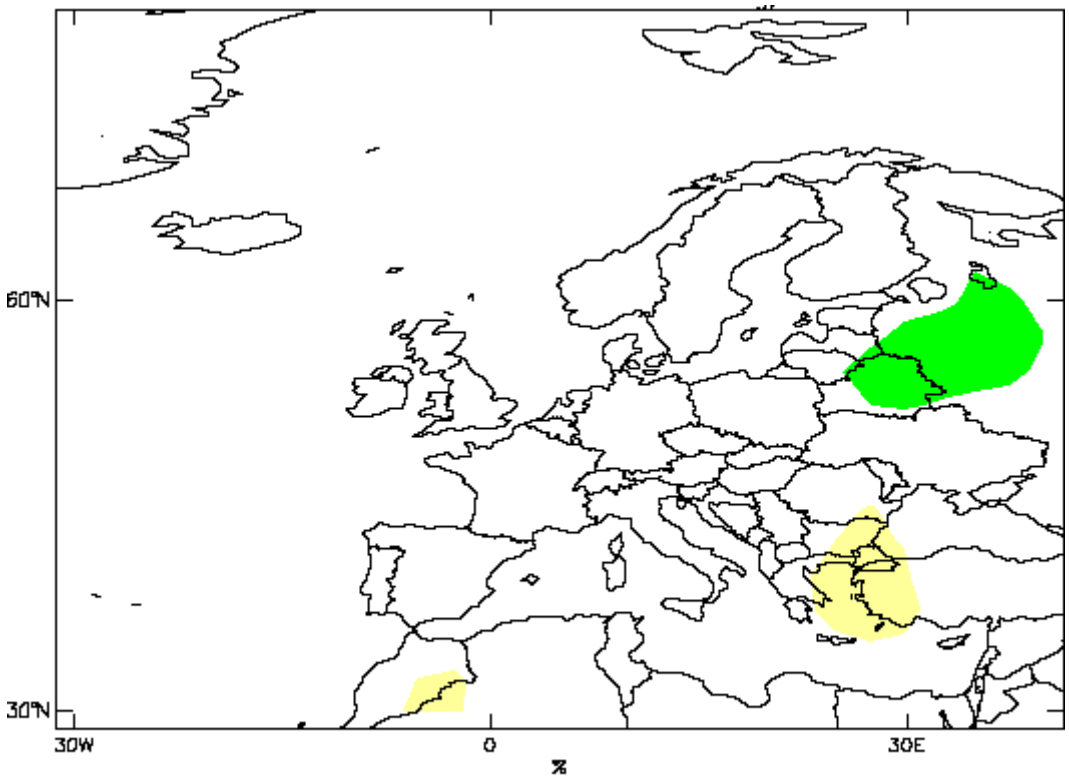
Winter forecast update, issued 5th Dec 06:
probability of temperature above/below 1971-2000 averages

Probability of winter-mean temperature above/below average



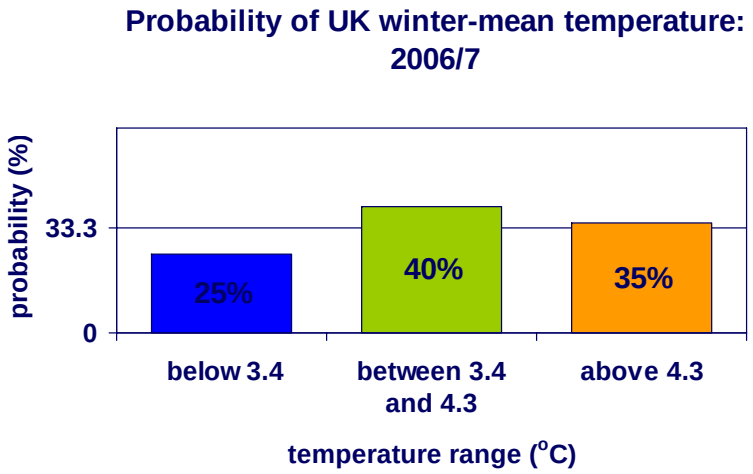
Winter forecast update, issued 5th Dec 06:
probability of precipitation above/below average

Probability of winter-mean precipitation above/below average

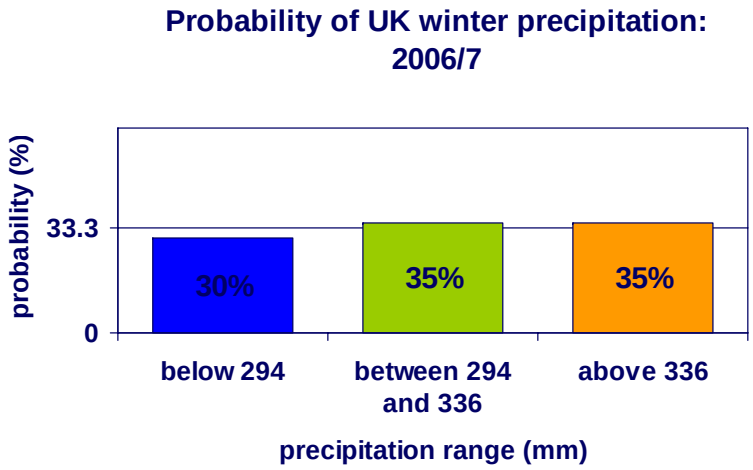


Winter forecast update, issued 5th Dec 06:
UK temperature and precipitation probability

Temperature



Precipitation



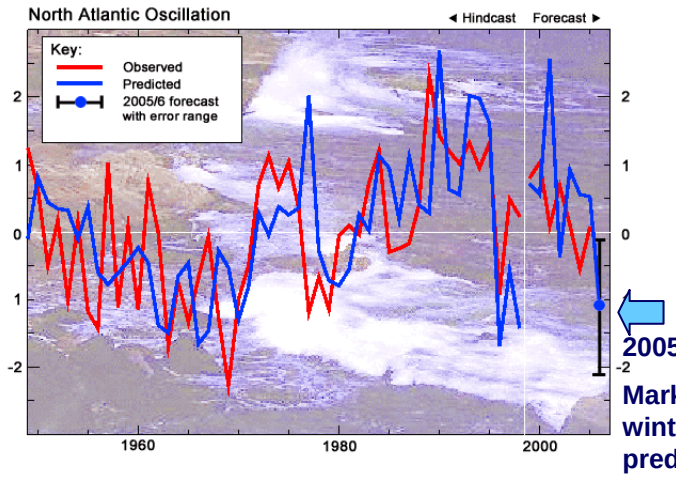
The forecast process

Statistical Prediction of the North Atlantic Oscillation (NAO)

2005/6

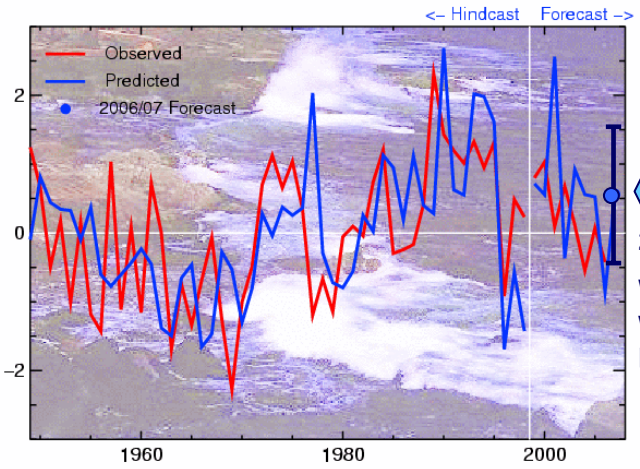
winter NAO index

2006/7



2005

Marked negative winter NAO predicted



2006

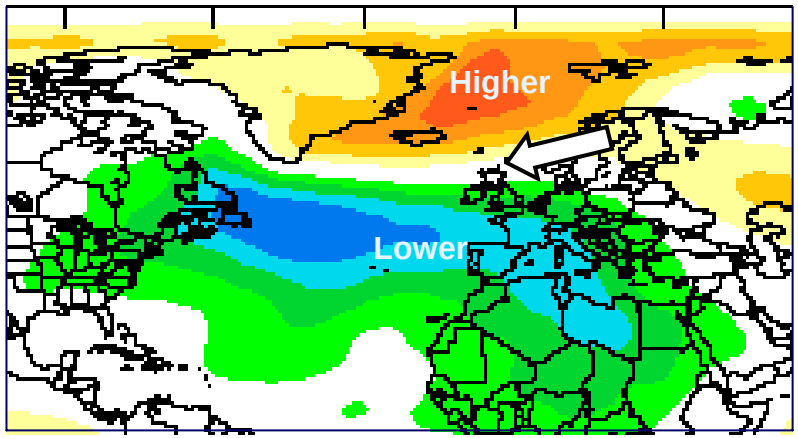
Weakly positive winter NAO predicted

predictions correct in 2 years out of 3

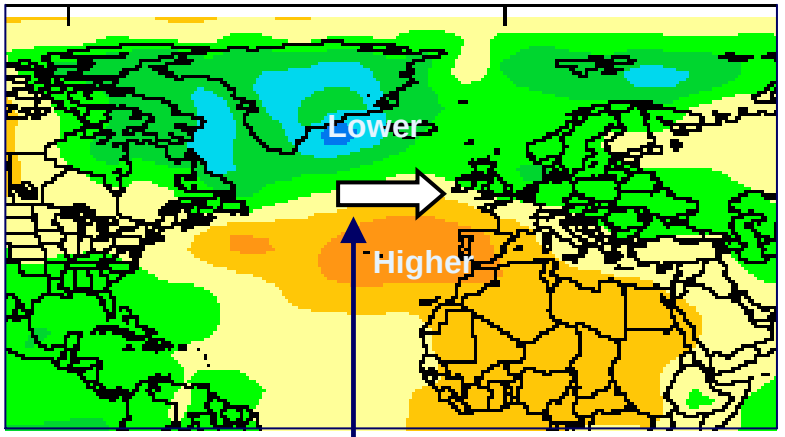
statistical NAO prediction is based on patterns in North Atlantic Ocean temperatures

Global seasonal climate forecast model

2005/6



2006/7

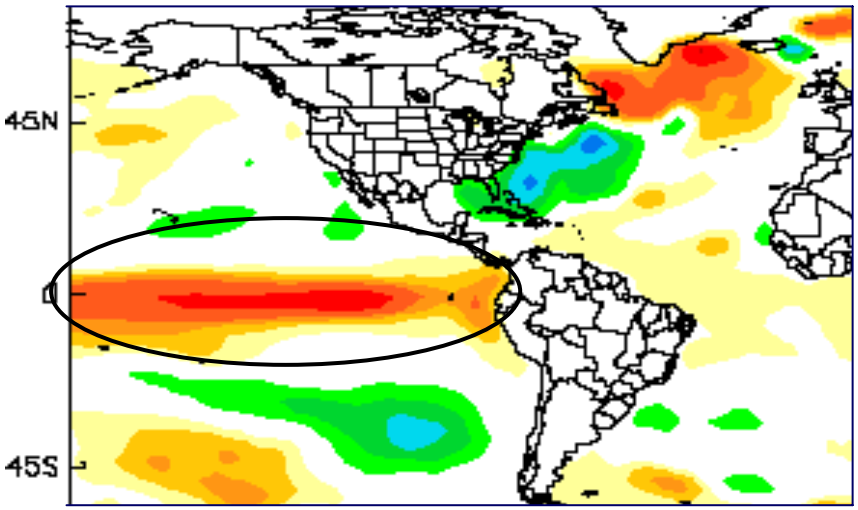


Predicted winter pressure anomalies

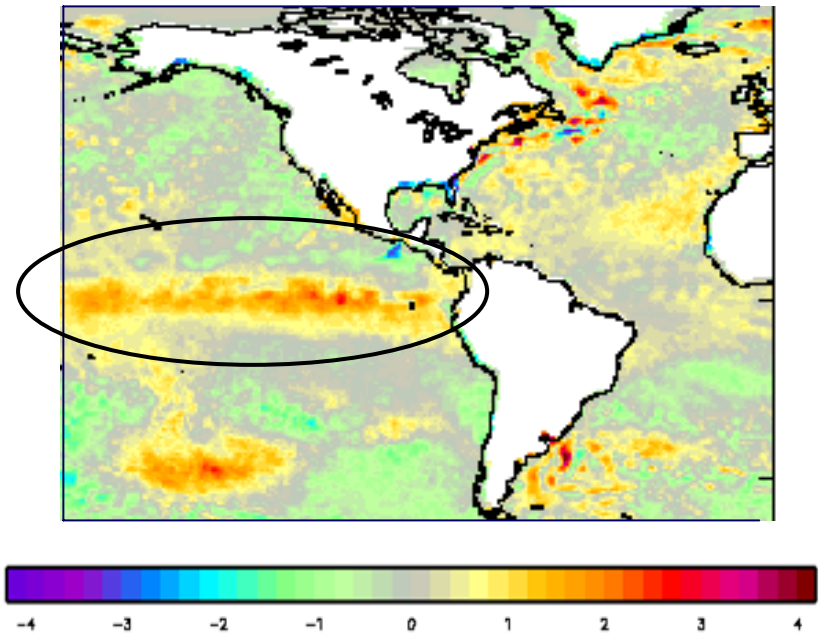
enhanced westerly flow favoured this winter

El Niño: Sea Surface Temperature anomalies

Dec06-Feb07 mean anomalies, predicted from September



Observed anomalies, 07-14 Dec 06



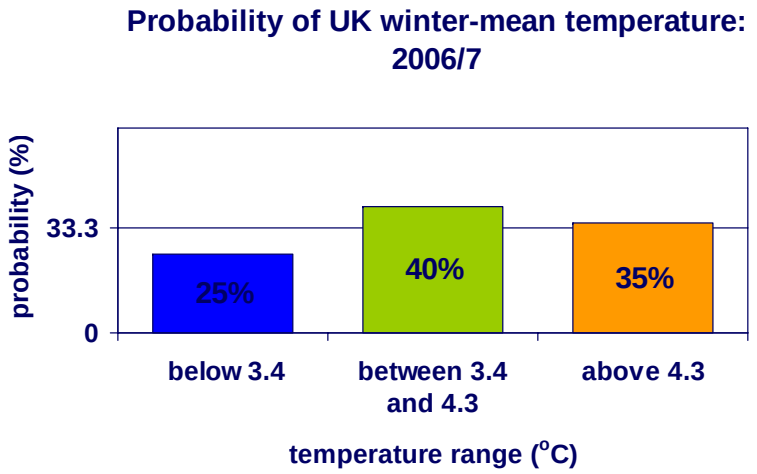
- Historically, moderate strength El Niño conditions are often associated with colder-than-normal late winter spells in northern Europe, particularly in the Scandinavian region.
- but there is uncertainty, as this effect does not materialise in all cases

Summary of winter forecast inputs:

The forecast is a combination of:

- predictions from the global seasonal climate model
- statistical prediction of the North Atlantic Oscillation
- historical associations between moderate strength El Niño events and mid to late winter temperatures
- interpretation by Met Office climate and forecasting experts

UK temperature probability

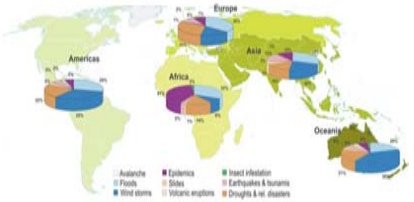


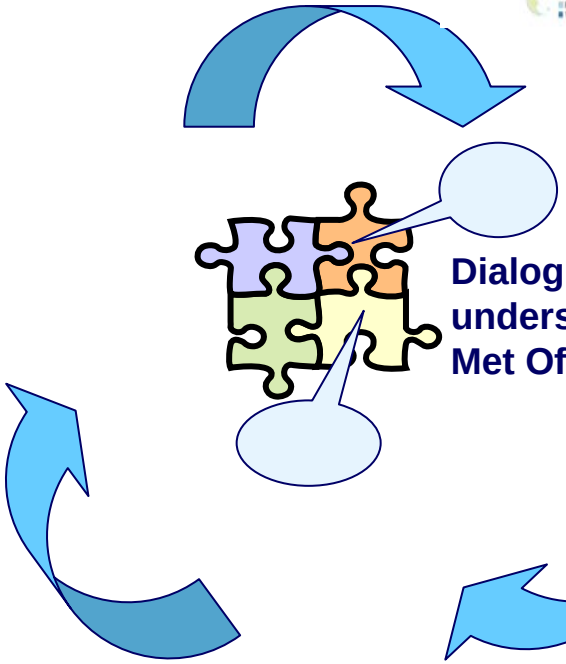
Met Office consulting:
Enabling decision making & reducing risk exposure:

"Time to see necessity as opportunity"

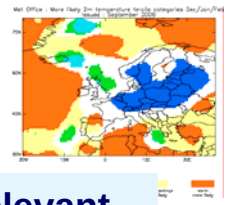
Sir Nic Stern
8 Nov 2006

Business Exposure to environmental risks

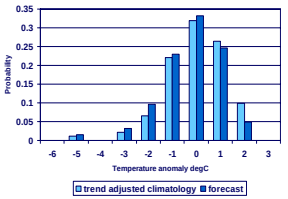




Dialogue, analysis and understanding – Met Office Consulting



User-relevant forecasts and climate predictions



Business impact forecasts
Decision models
Increased certainty
Reduced risks

Outlook to 2nd Jan 2007

Outlook to 2nd January 2007

- complete change of type to more settled and notably colder weather
- central and southeast England most affected
  - day time temperatures within a few degrees of freezing
  - night time minima generally a few degrees below freezing
  - mist and fog persisting all day in places – gloomy.
  - trend towards milder weather in the New Year
- any ‘whiteness’ at Christmas likely to be frost!
- For more information:
  - contact your account manager
  - or customer centre: enquiries@metoffice.gov.uk

Summary

So far:

- autumn and early winter have seen well-above normal temperatures

winter temperature forecast:

- near average or warmer-than-average temperatures are the more likely outcomes for the winter period as a whole
- there remains potential for lower temperatures (relative to average) in mid to late winter

Outlook to 2nd Jan 2007:

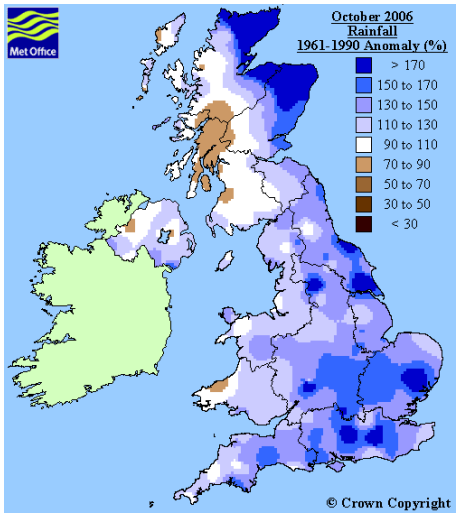
- Complete change to more settled and notably colder weather

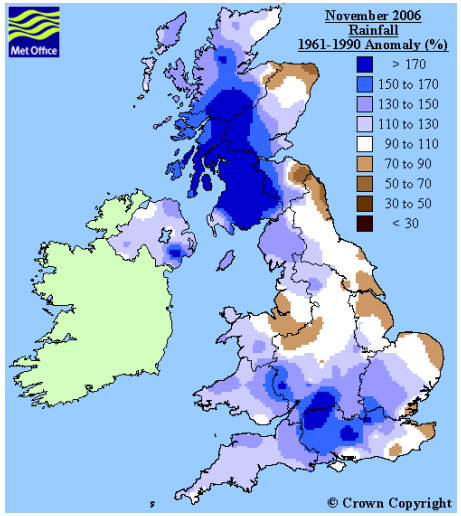
Next update for remainder of winter – 4th Jan 2007

Questions & Answers

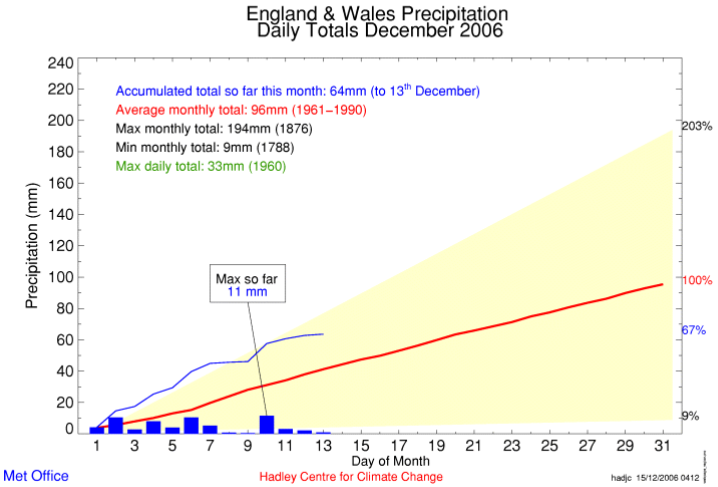
Observed rainfall anomalies, Oct, Nov, Dec 2006

October



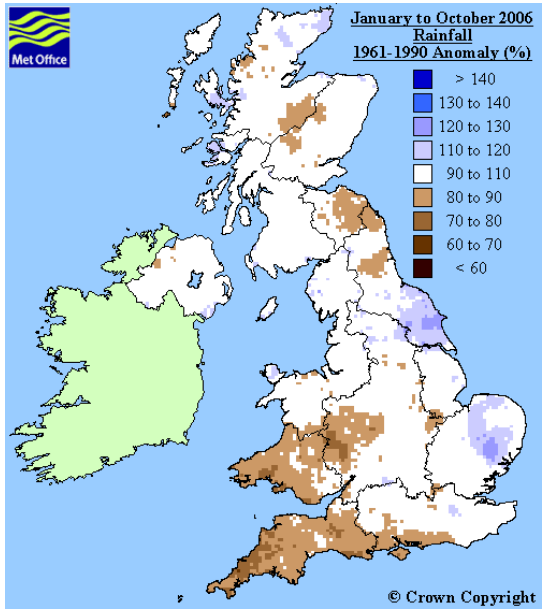


November

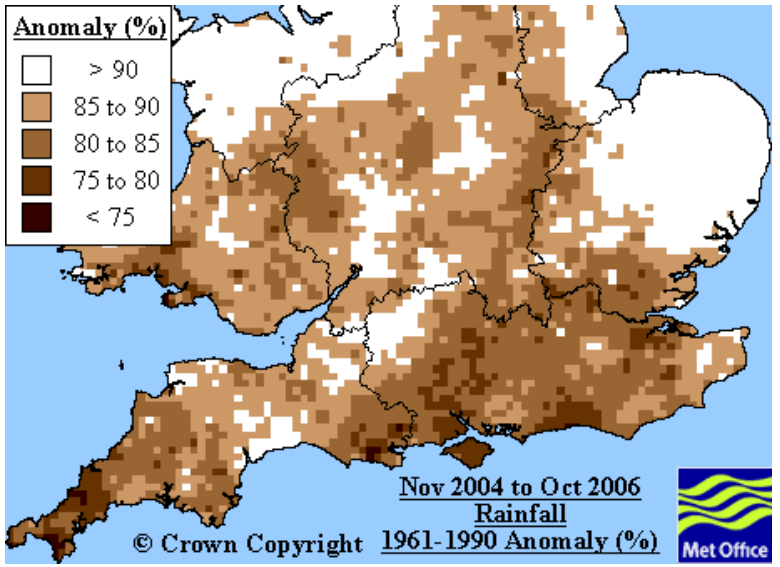


December

Drought situation: long term rainfall deficit remains



Jan 06 to Oct 06 anomaly



Nov 04 to Oct 06 anomaly

Met Office consulting

Application of seasonal forecasts

Tailored forecast of UK drought risk 2006/07
By Met Office Consulting

Unique seasonal climate forecast systems and historical data tailored within 3 days following urgent request.

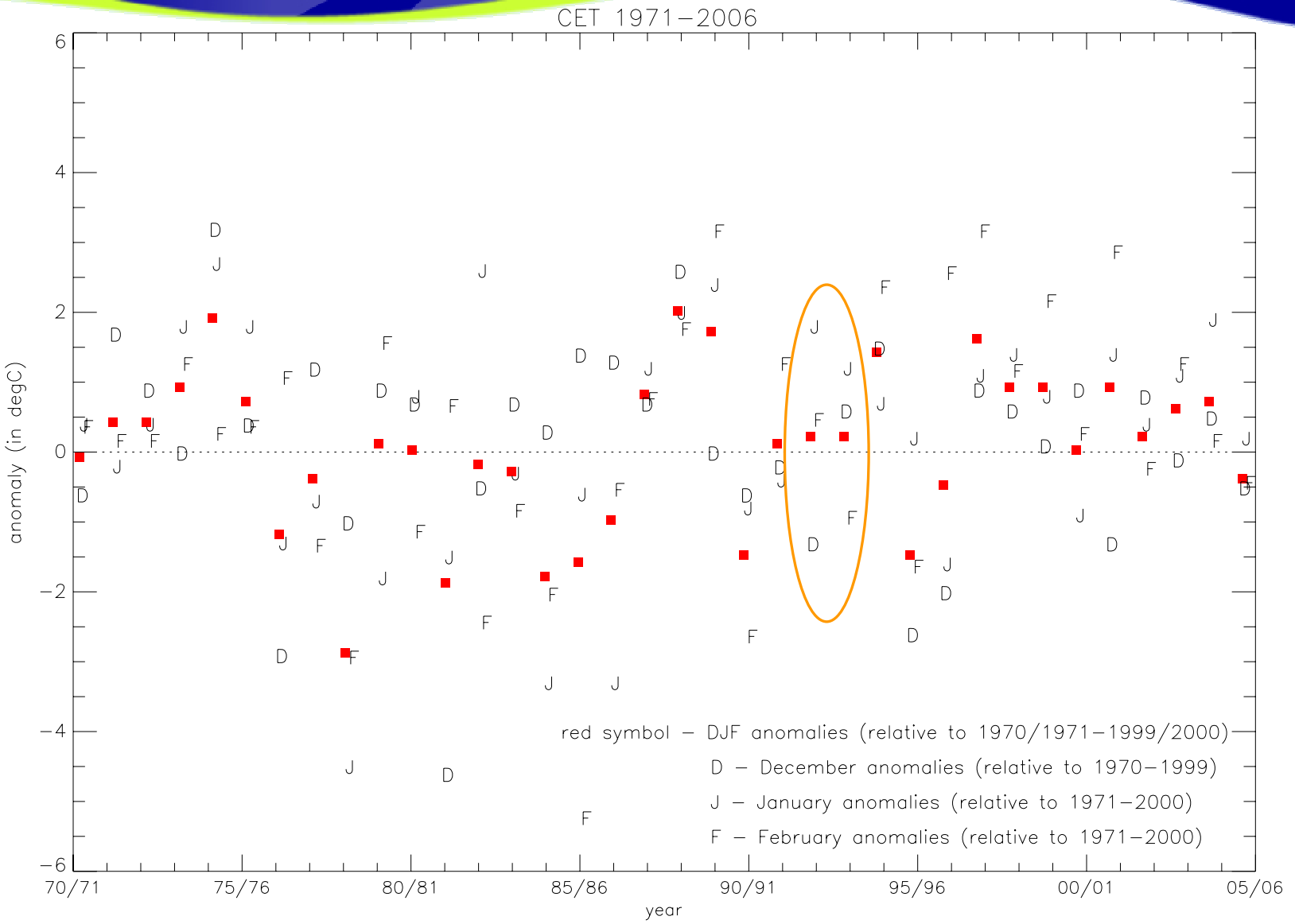
Specific risk assessment of exceedance of critical thresholds assessed

Risk assessment informed in multi-billion pound decision, potentially saving company huge losses.

Risk-based climate analysis –
Protecting investments

Additional slides

Month-to-month variability in winter is often substantial



Factors driving the inter-annual variability in seasonal conditions