

UK DROUGHTS & WATER SCARCITY

Supporting decision making and identifying solutions

Delivering evidence to inform adaptation and mitigation

The UK Droughts and Water Scarcity Programme is an interdisciplinary NERC Programme in collaboration with ESRC, EPSRC, BBSRC & AHRC

IMPETUS

Improving Predictions of UK Drought for User

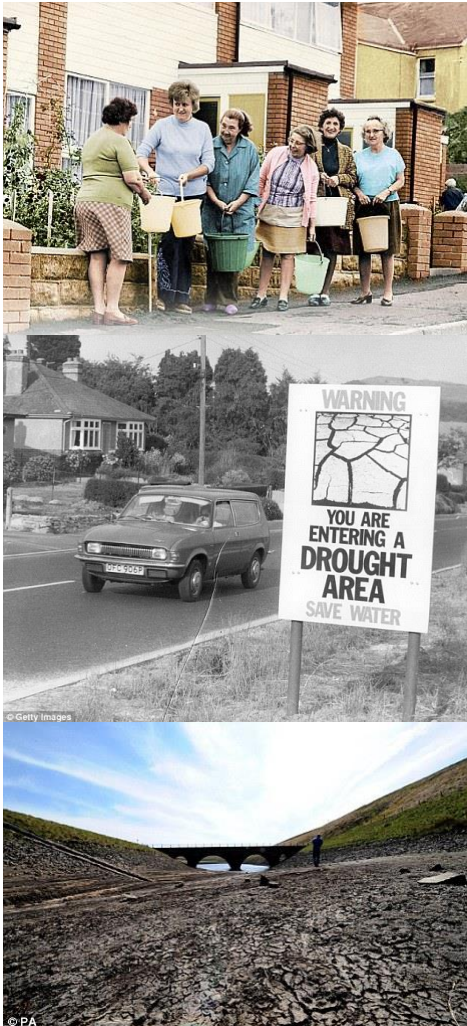
Decision Making

Len Shaffrey, University of Reading

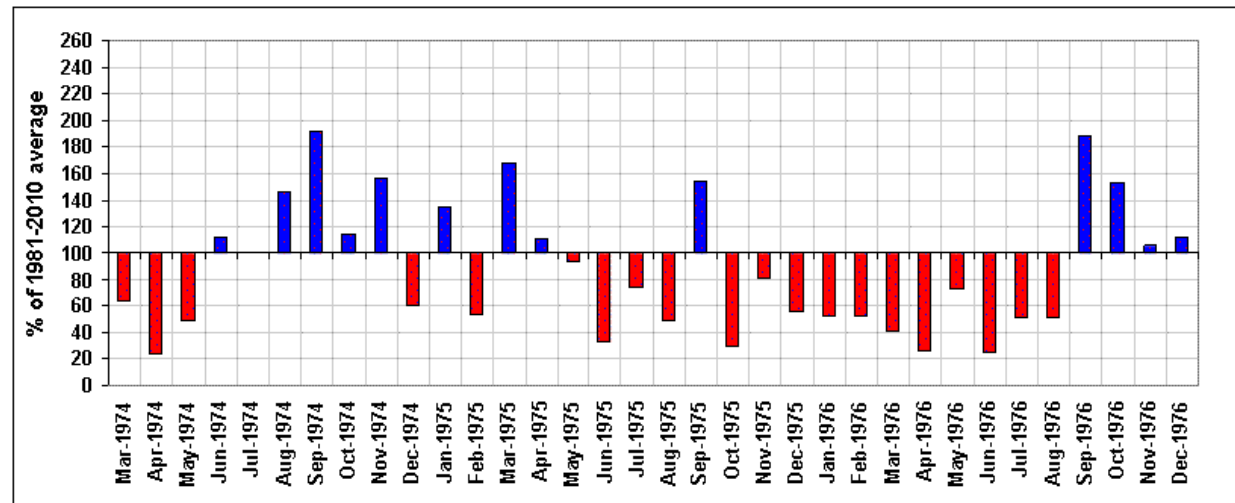
Forecasting droughts and water scarcity, and methods to support decision-making

- Improve our ability to predict future UK drought and water scarcity in the range of months to decades
- Consider the drivers of domestic water demand
- Develop methods to support stakeholder decision-making

Seasonal Forecasting

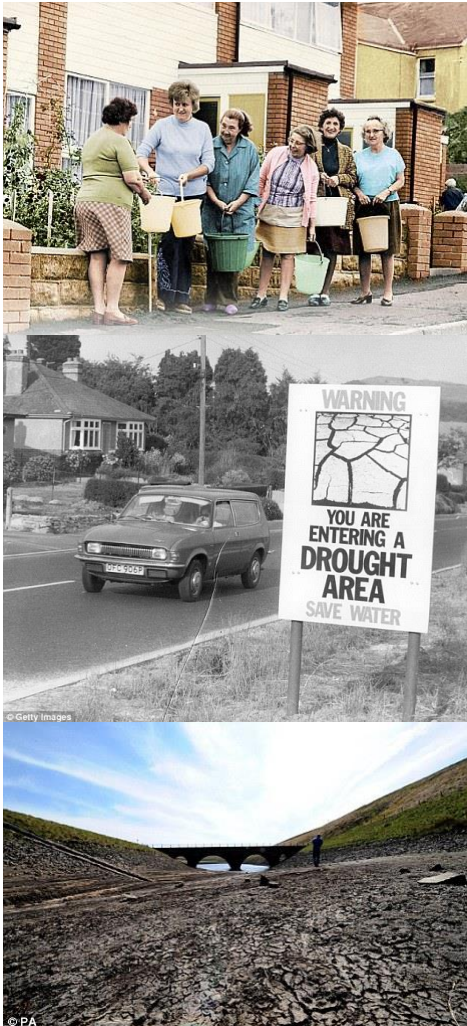


Can we use forecasts for next season to inform drought management?

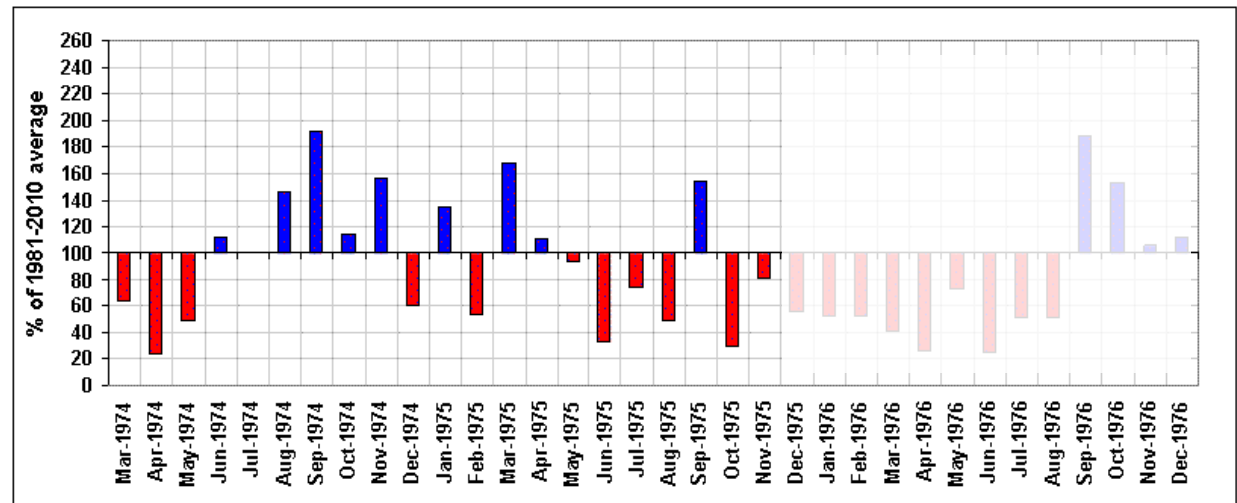


1975-1976 Drought: England and Wales rainfall

Seasonal Forecasting

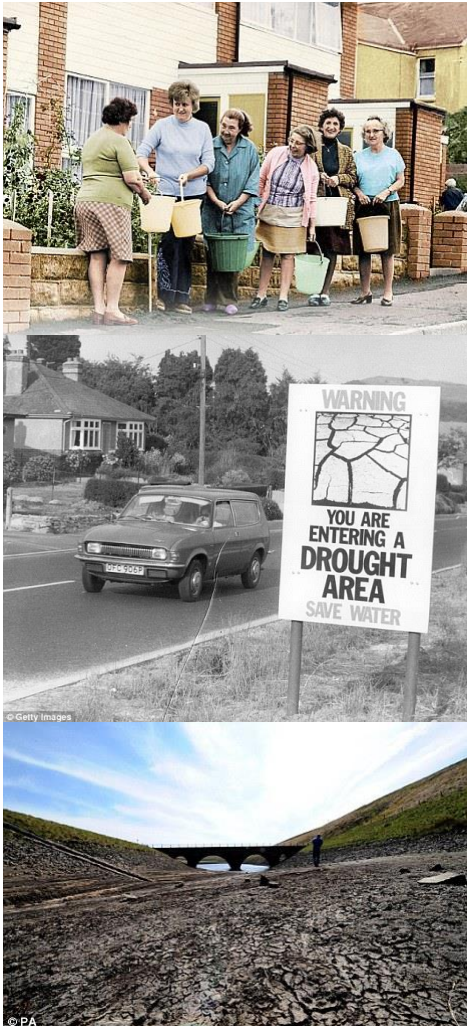


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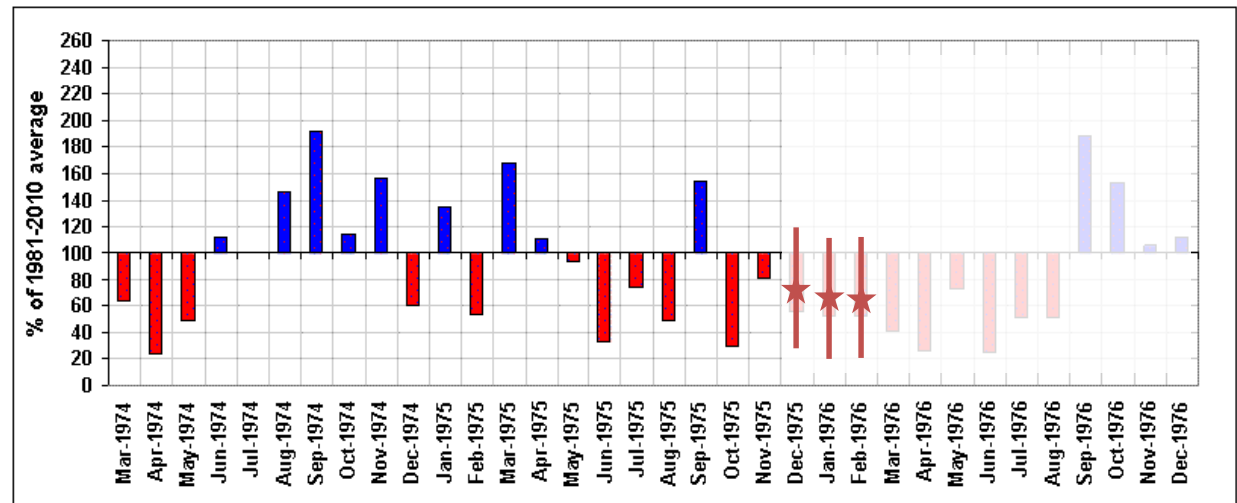


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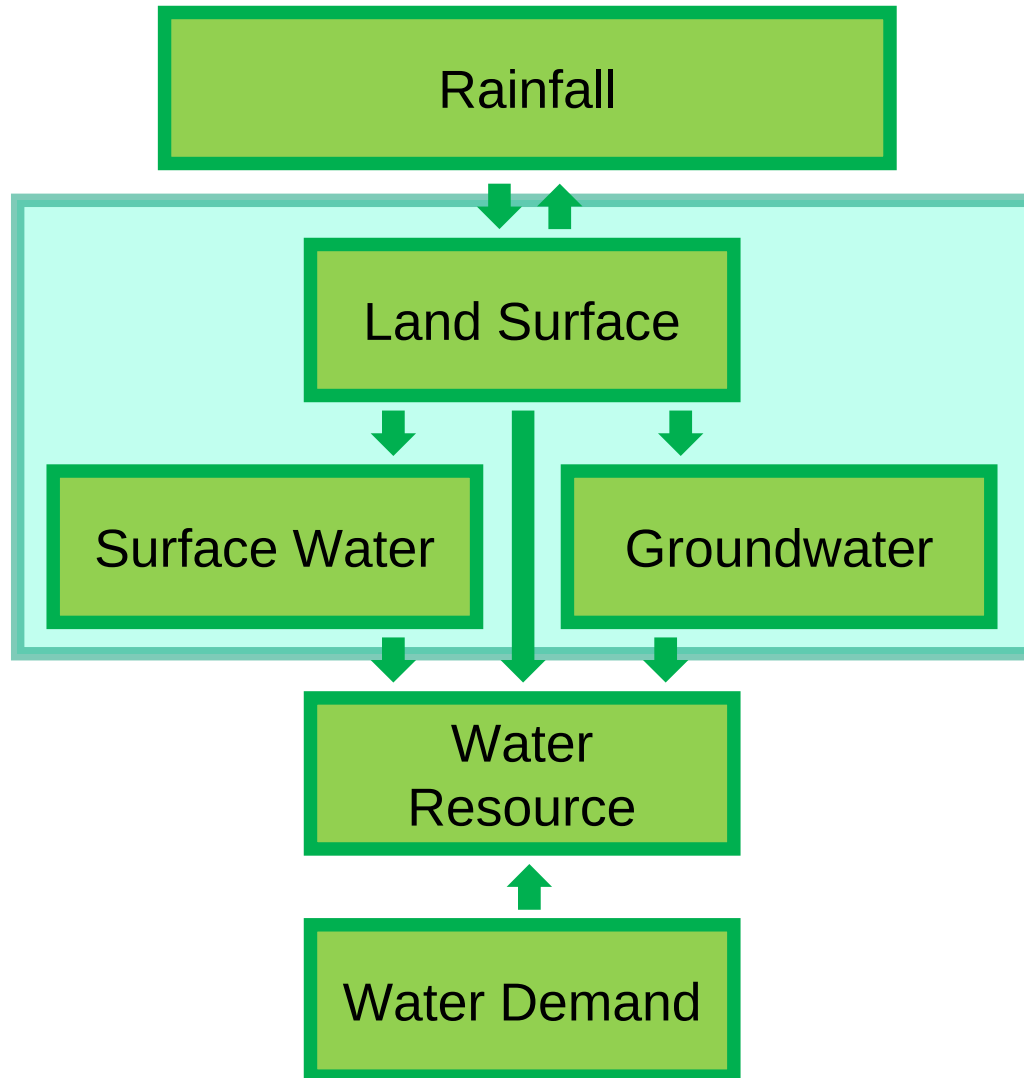


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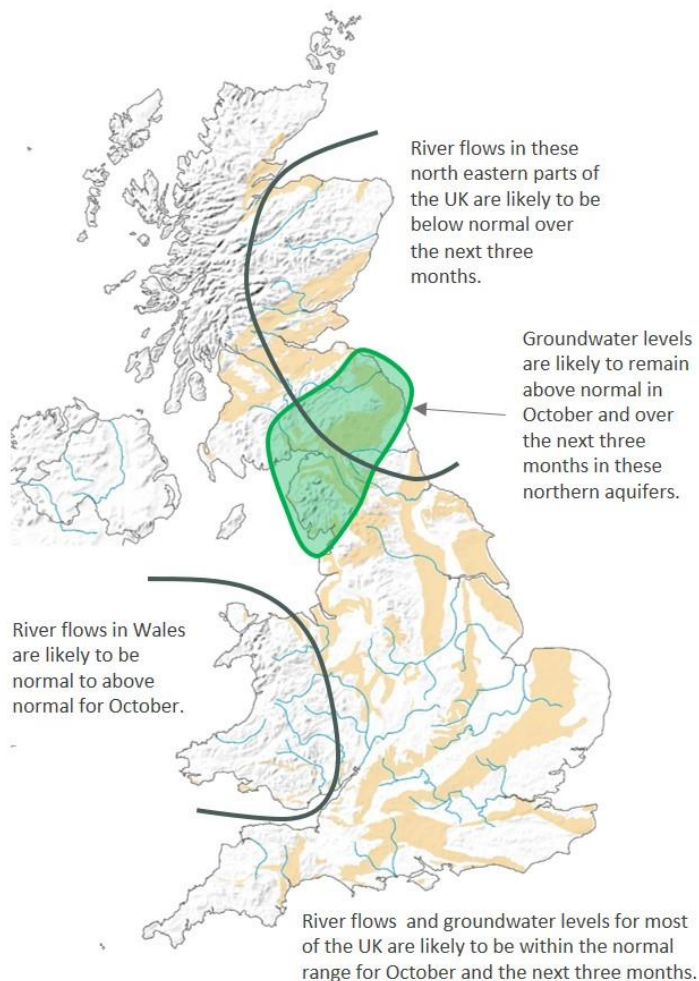
Forecasting UK Drought



What information do users need from Drought Forecasts?

How might drought forecasts be used for decision making?

Hydrological Outlooks



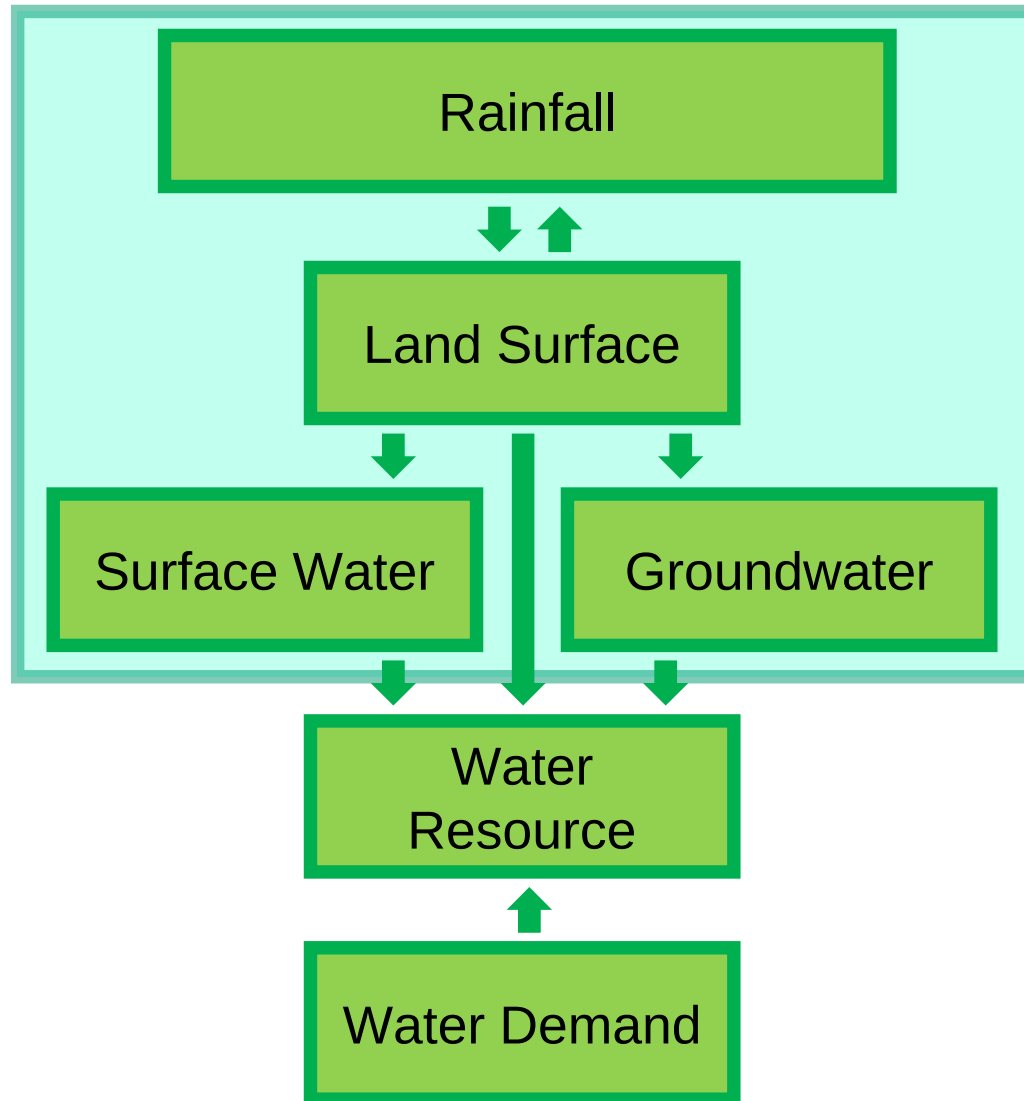
Shaded areas show principal aquifers

Forecasting droughts and water scarcity, and methods to support decision-making

<http://www.hydoutuk.net/>

October 2016

Forecasting UK Drought

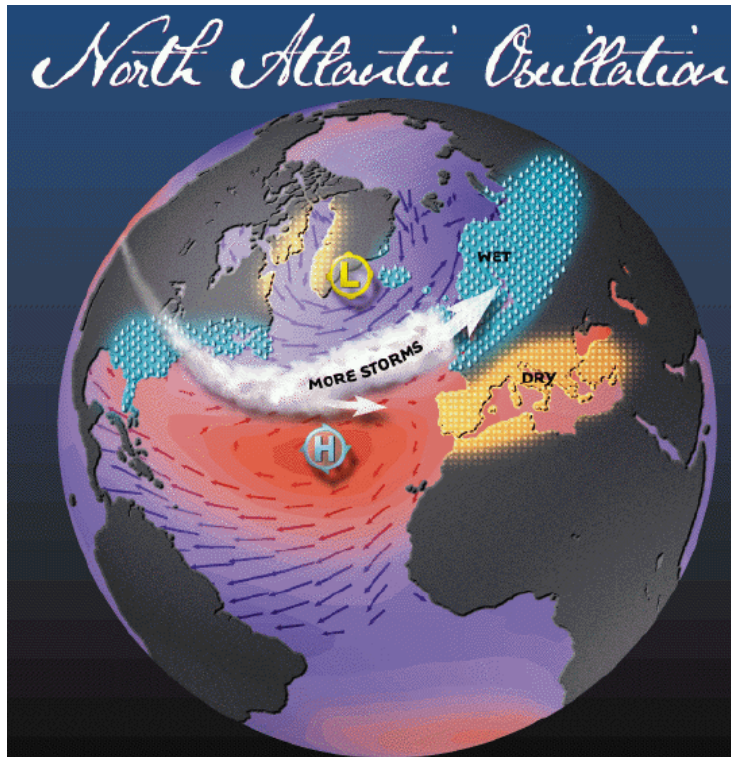


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How might drought forecasts be used for decision making?

North Atlantic Oscillation

NAO positive

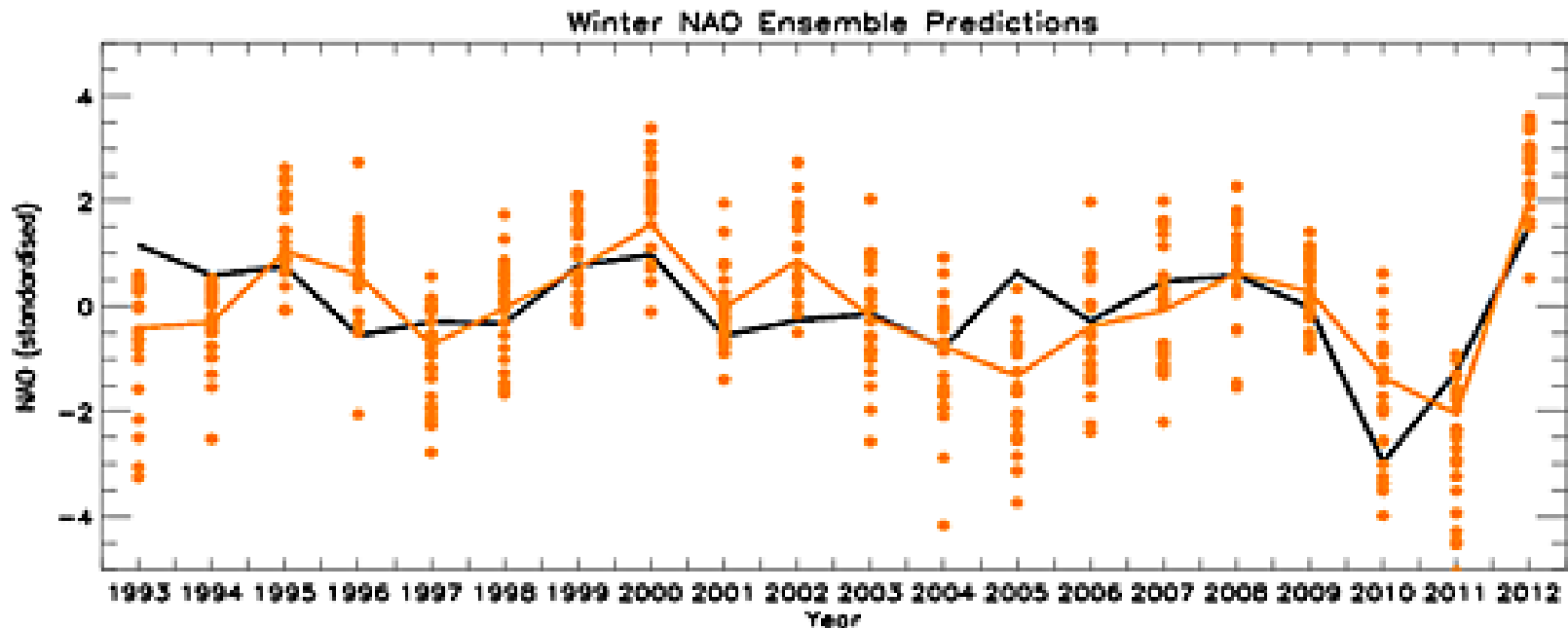


NAO negative



The North Atlantic Oscillation (NAO)

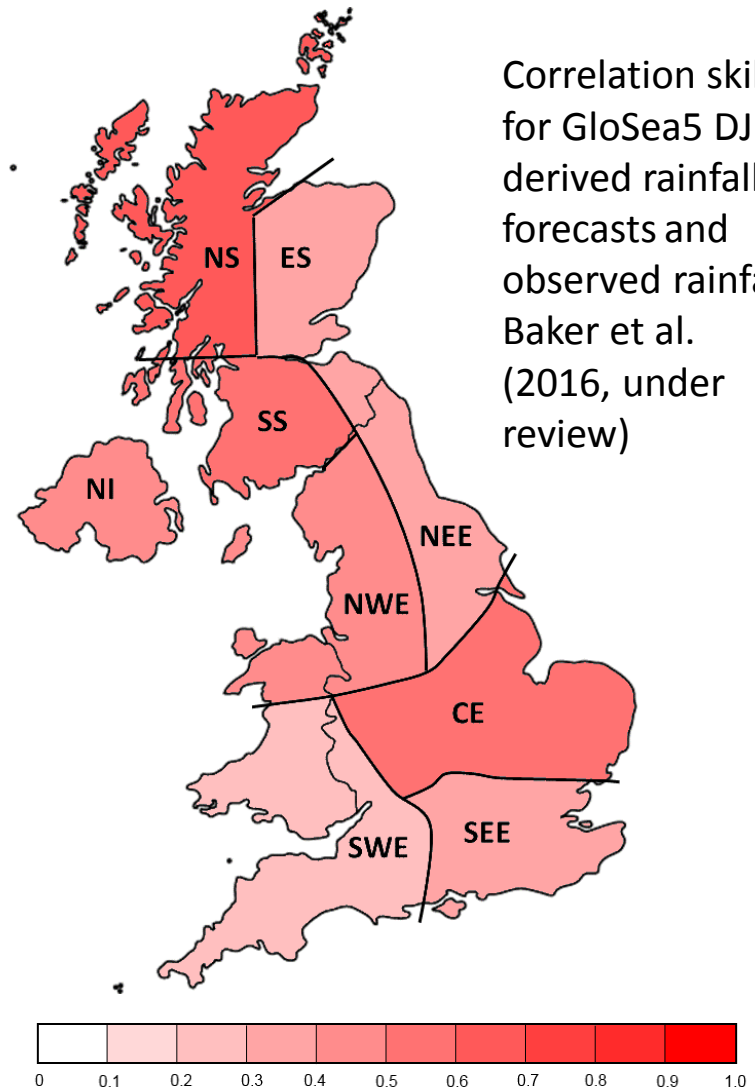
Seasonal Forecasting



Normalised time-series of wintertime NAO from observations (black) and GloSea5 hindcasts (orange). Forecasts are started on 1 Nov. Correlation = 0.62. Scaife et al. (2014)

Seasonal Forecasting

- Seasonal hindcasts for winter (DJF) using the Met Office Gloasea5 forecasts for the NAO and East Atlantic Pattern
- 24 ensemble members, initialised at the start of November from 1992-2011



Summary



- Met Office forecasts have limited skill for UK wintertime rainfall
 - Is this useful for making real world decisions?
 - Other seasonal forecasting systems?
 - Forecast skill in summer? Longer timescale skill?
- How much translates into skill for hydrological forecasts?
- Input into operational forecast system (e.g. Hydrological Outlooks, Met Office seasonal forecasts)