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Influence of Recent Climate Change on Late Blight Risk in the UK

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Background

- § Practical evidence of climate change in last 10 years – winter snowfall rare, spring flowers earlier, lawns need cutting all year
- § UK summers predicted to become warmer and drier
- § Recent summers however appear wetter and cooler, due to southerly jet streams.
- § Extreme weather events more common, eg widespread floods June-July 2007
- § Blight control more challenging, emergence of A2 Blue 13 strain
- § Increased fungicide use, even with DSS use
- § Perception of increased risk

New potato growing regions in Northern Europe

Climate change results in shift of growing regions up to 2050

-  Potato growing marginalises
-  Potato growing more difficult
-  Conditions for growing are good
-  New potato growing regions



Around med. Sea potato growing marginalises because of water shortages. Eastern Europe will become too dry. NW Europe remains possible but with **MORE RISKS** Potato growing in Northern Europe increase



The Questions

- § What effect is recent climate change having on late blight risk in the UK?
- § Is it decreasing, increasing or staying the same?
- § What is the effect on fungicide use?



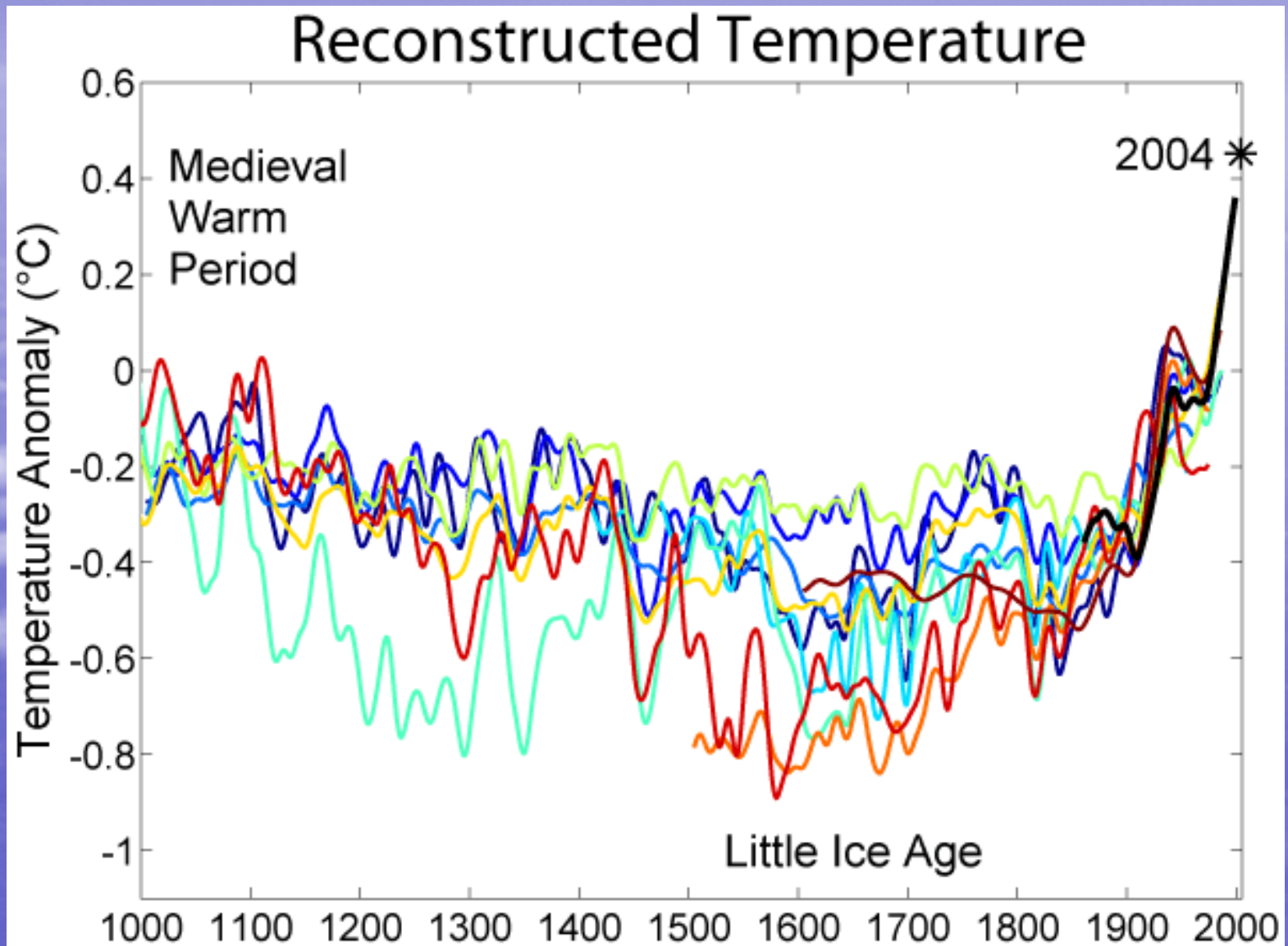
To answer

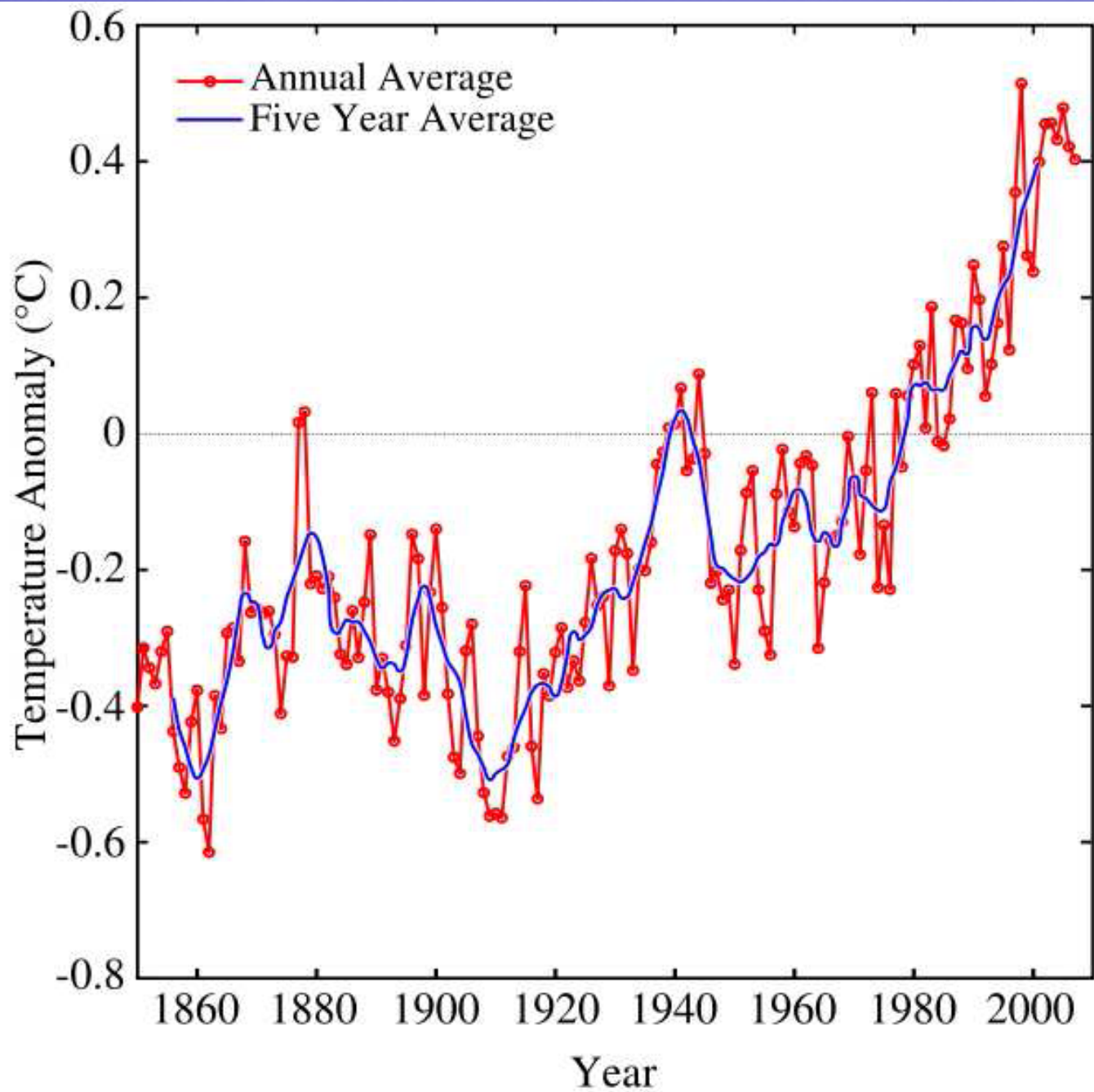
- § Review climatic data – synoptic and local data
- § Review late blight risk – DSS output
- § Review fungicide use

Review of weather data

A dramatic landscape featuring a large, dark, swirling cloud formation, possibly a storm or a large-scale weather system, dominating the upper half of the frame. The cloud is dark blue and black, with a bright, white, curved edge. Below the cloud, a valley is visible, characterized by rolling hills and fields. The foreground shows a line of dark, silhouetted trees. The overall scene is captured in a cinematic style, with a mix of dark and light tones.

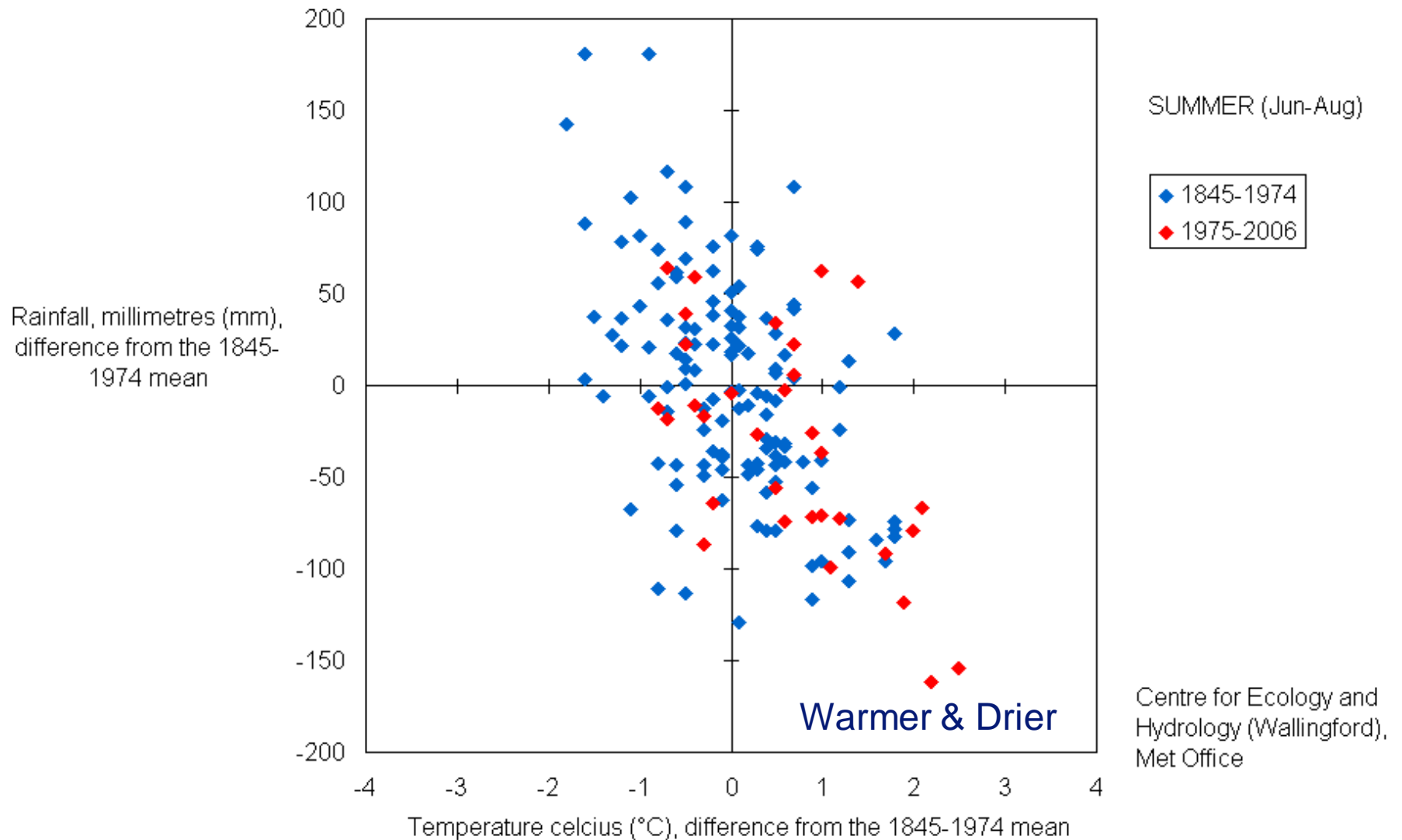
Temperature in last 1000 yrs – The Hockey Stick





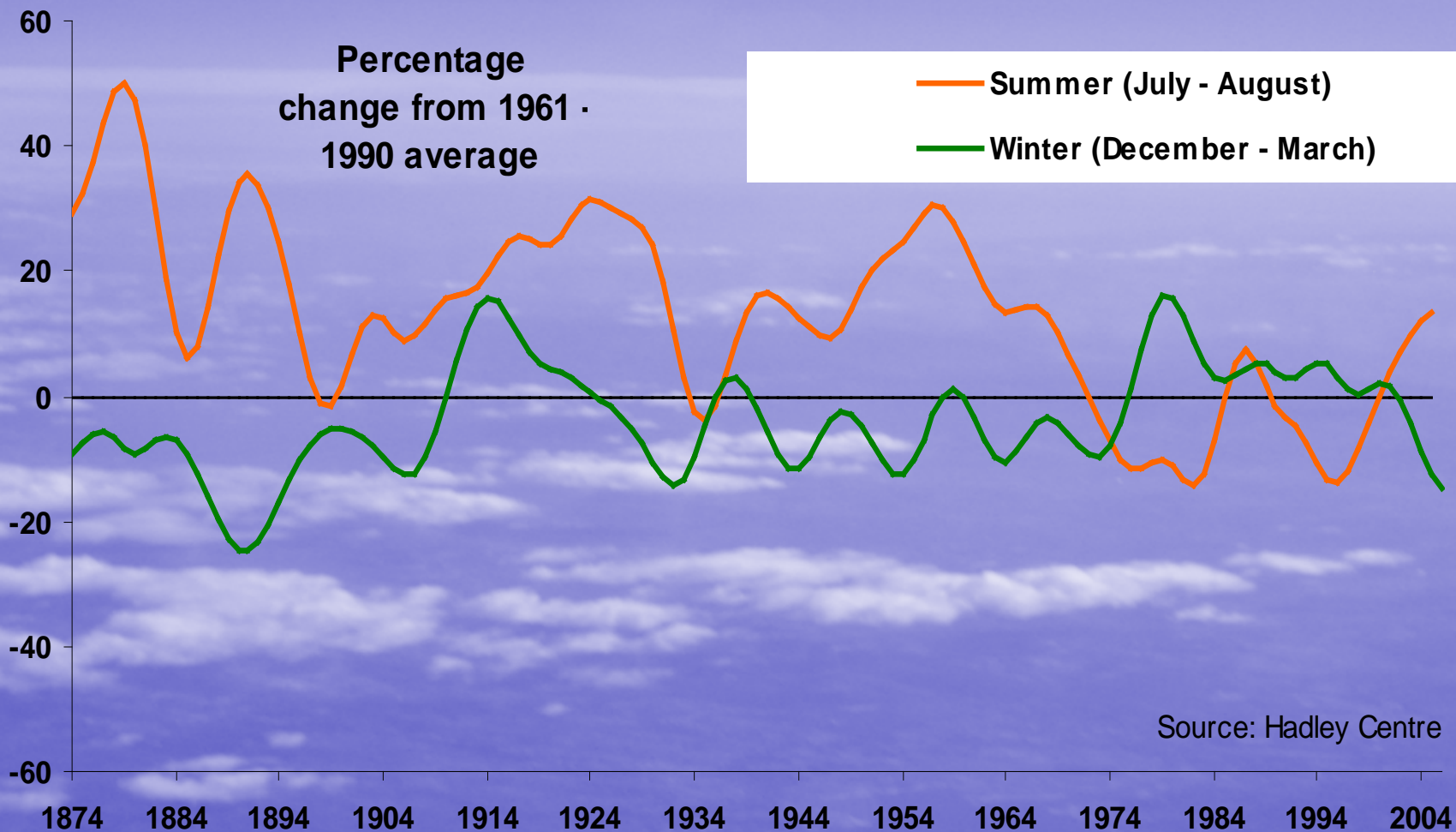
**Recorded
Temperature
In last 100
years**

Average temperature and total rainfall in England and Wales : 1845-2006



Seasonal precipitation, high summer and winter: 1874-2005

England and Wales



Source: Hadley Centre

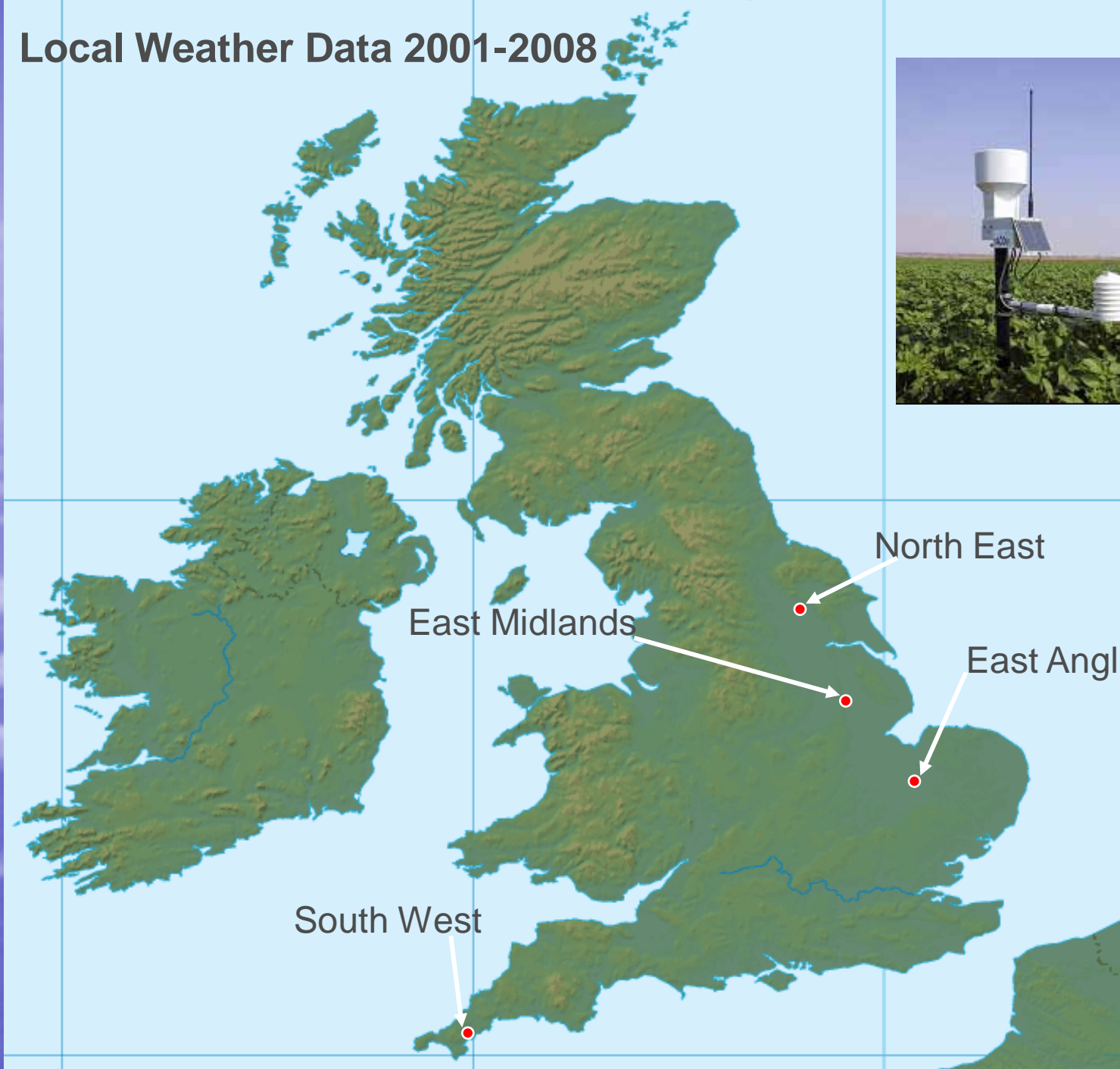
Data shown has been smoothed

June 2007





Local Weather Data 2001-2008



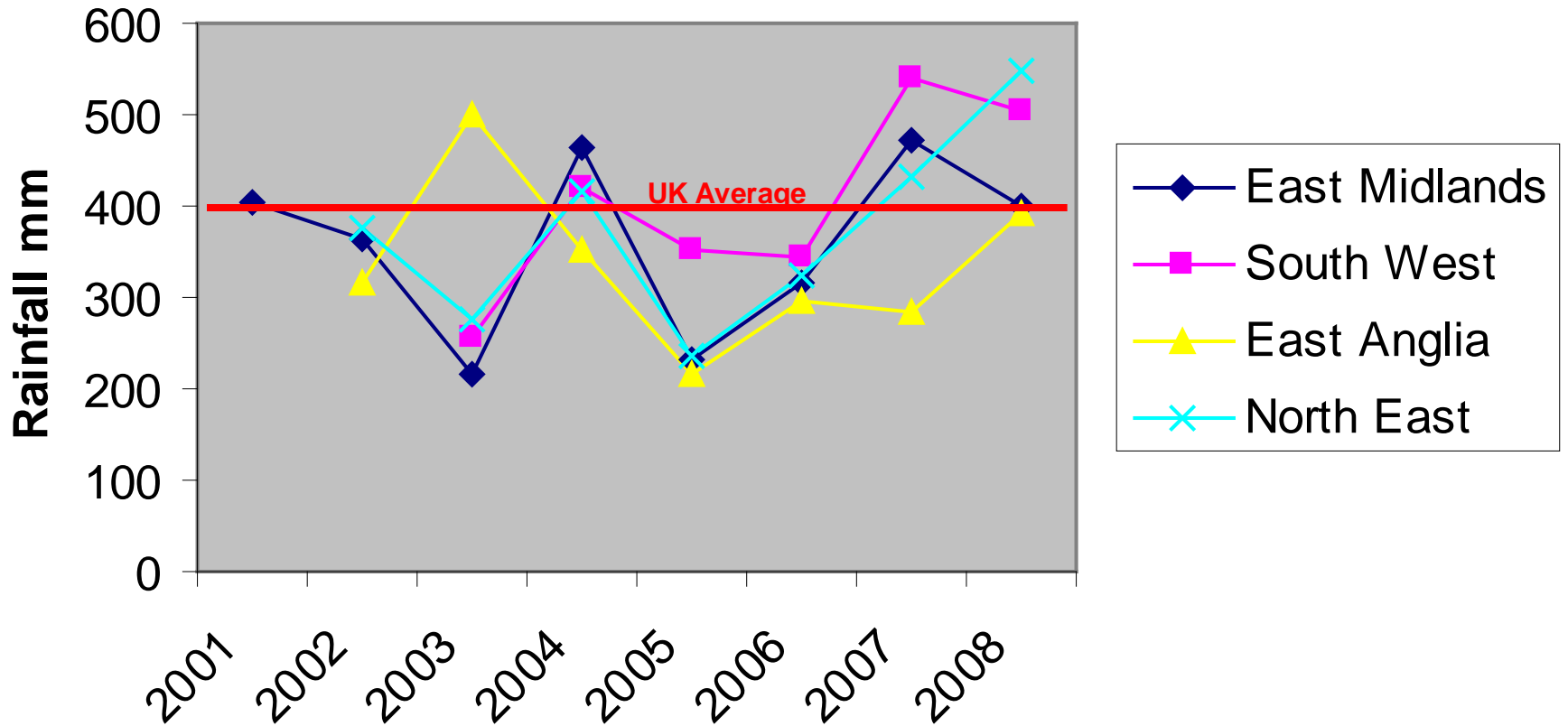
North East

East Midlands

East Anglia

South West

UK regional rainfall 2002-08 April-Oct

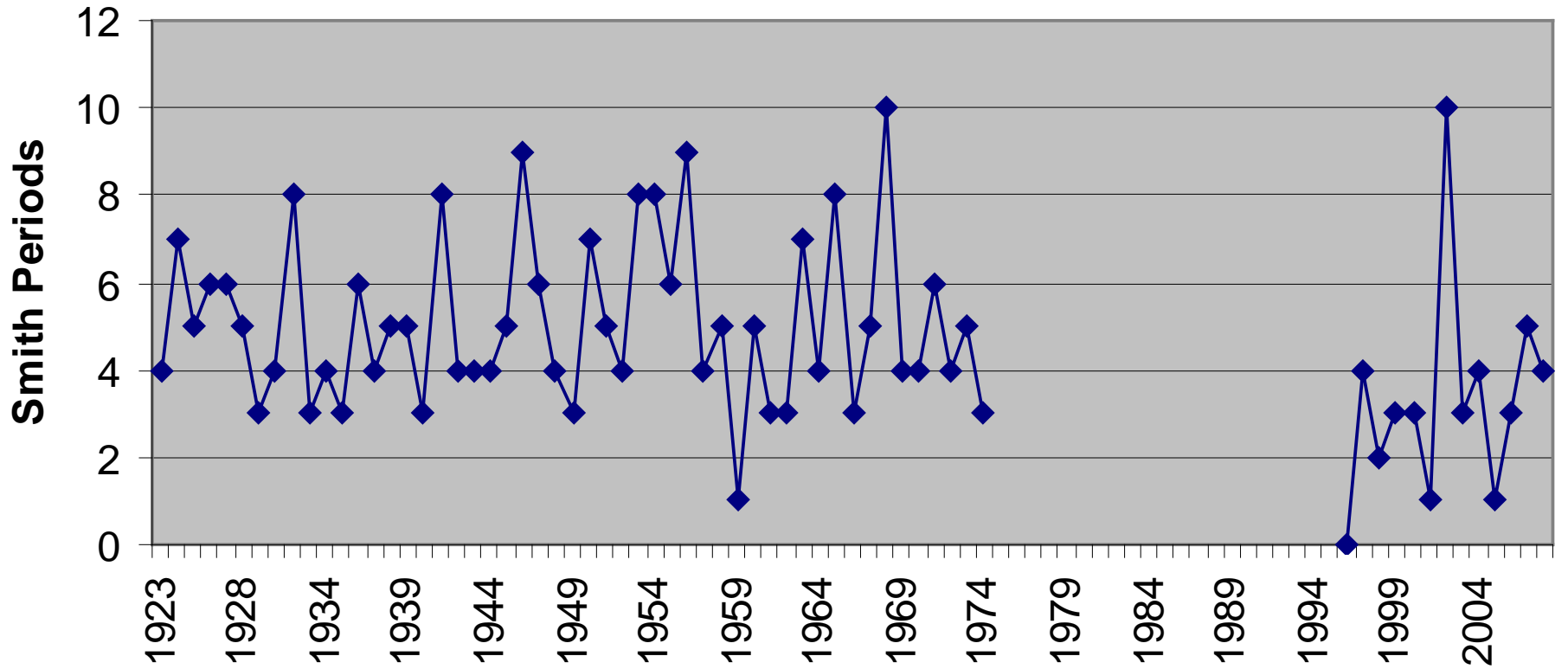




Review of blight risk

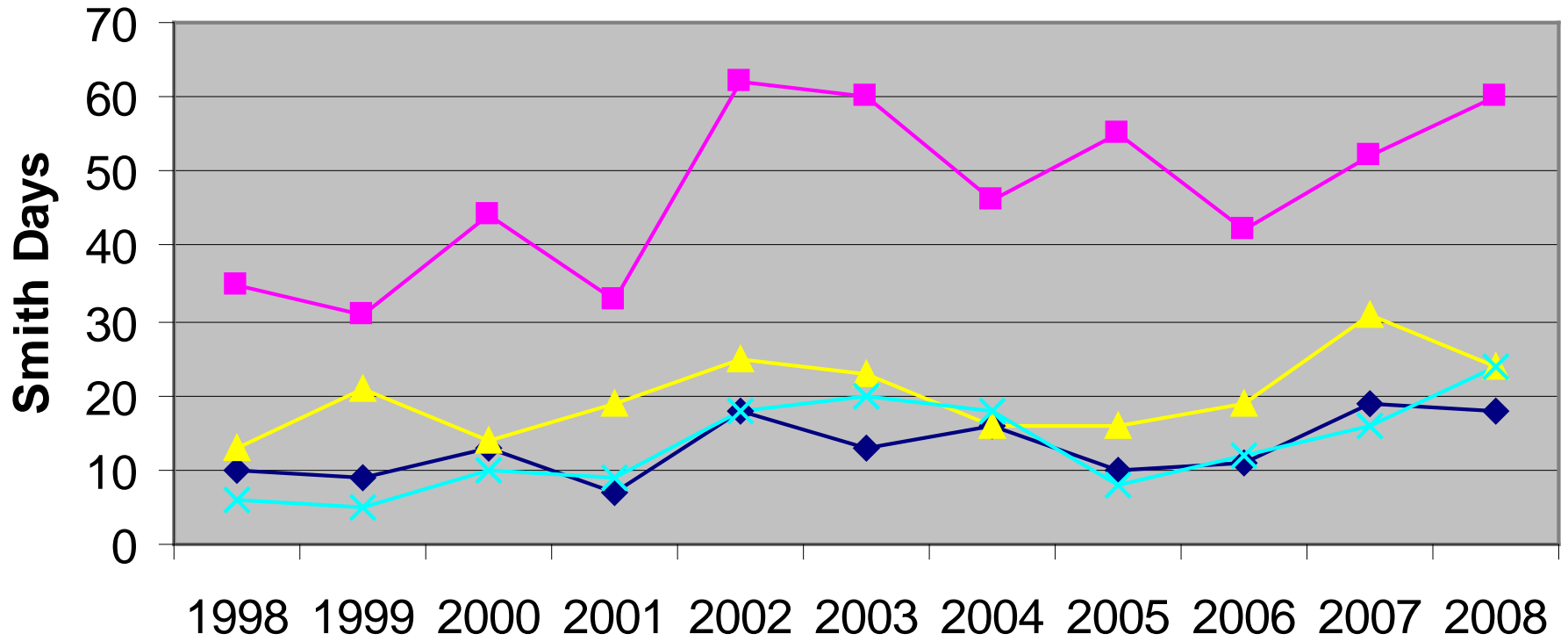
- § Smith Period (1956) – when temperature is above 10°C and relative humidity is above 90% for 11 hours on 2 consecutive days
- § Smith Day (Blightwatch 2003) as above but for 1 day
- § Plant-Plus (since 1998 in the UK) – based on disease lifecycle parameters of infection, growth, sporulation and dispersal

East Midlands Smith Periods 1923-2008 May-Sept

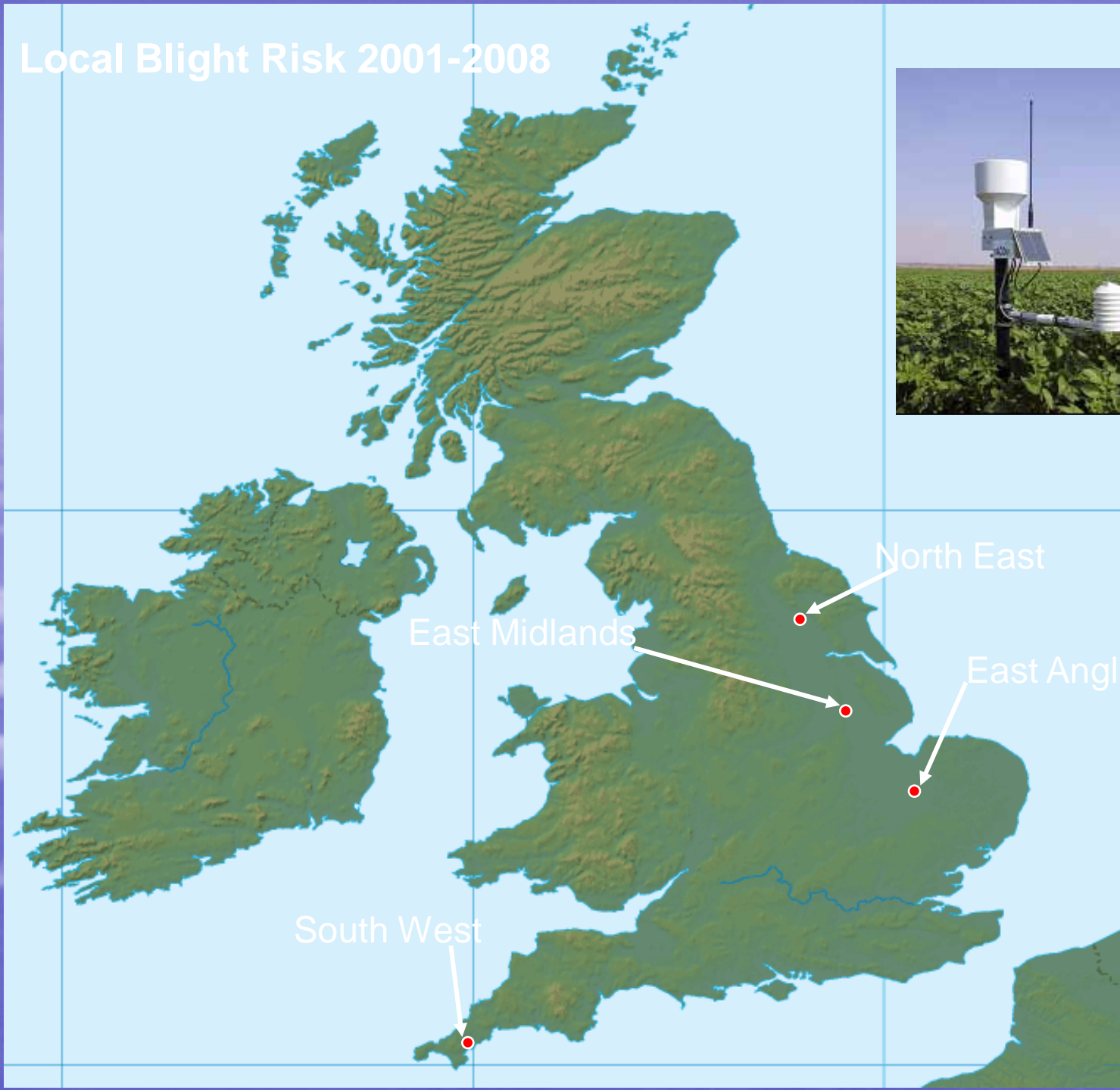


Smith Days 1998-2008 in UK Regions May-Sept

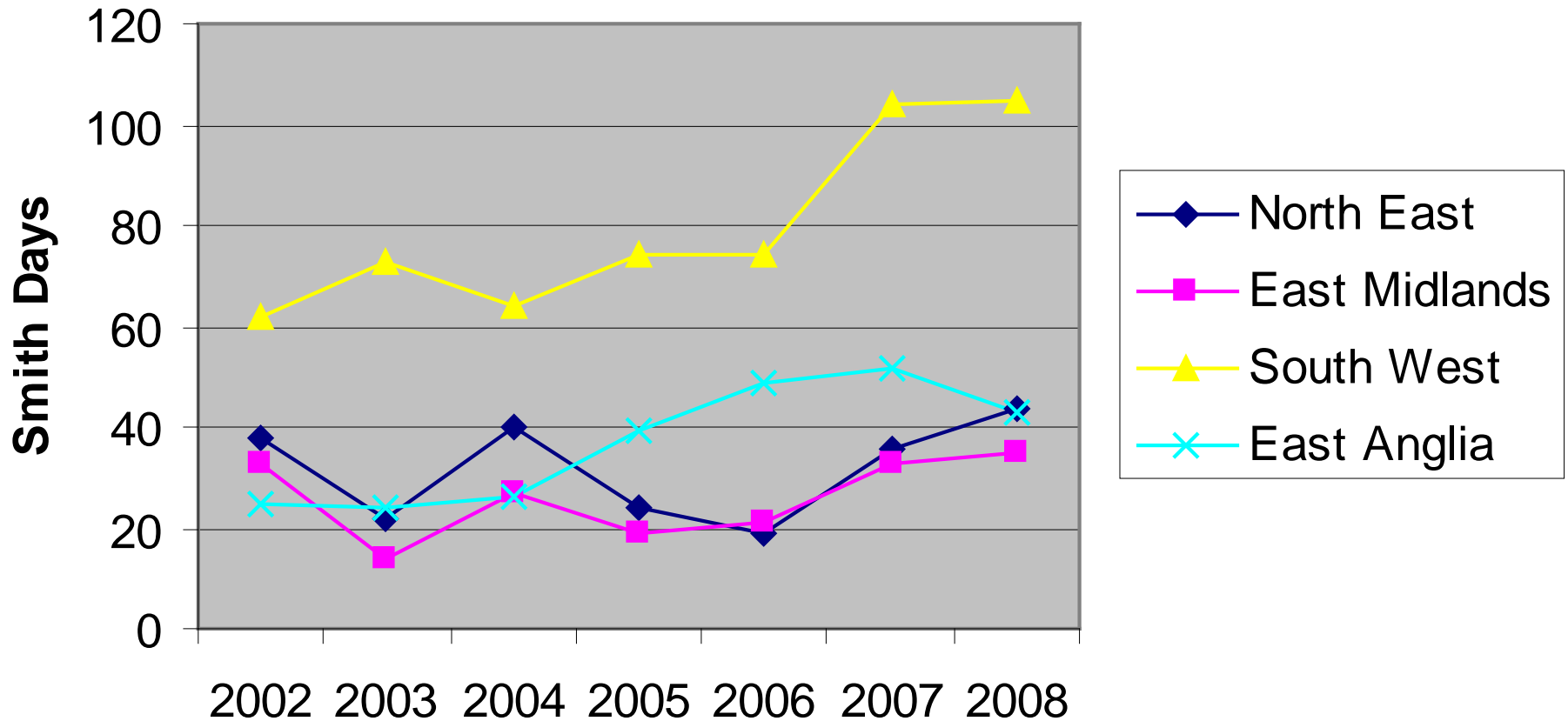
◆ East Midlands ■ South West ▲ East Anglia × North East



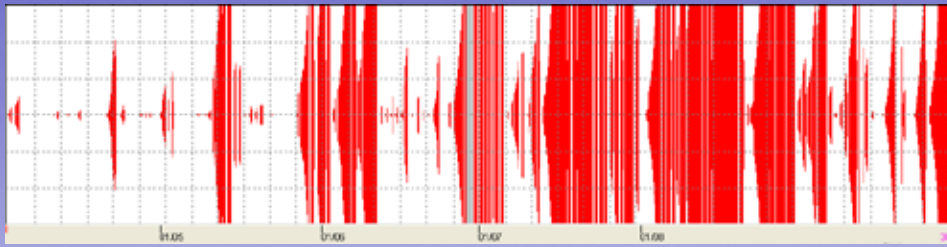
Local Blight Risk 2001-2008



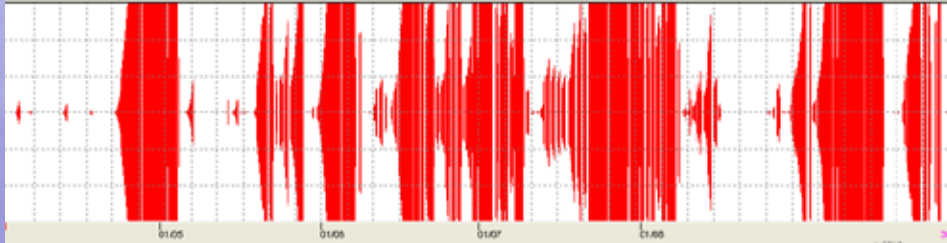
Smith Days 2002-08 local data April-Oct



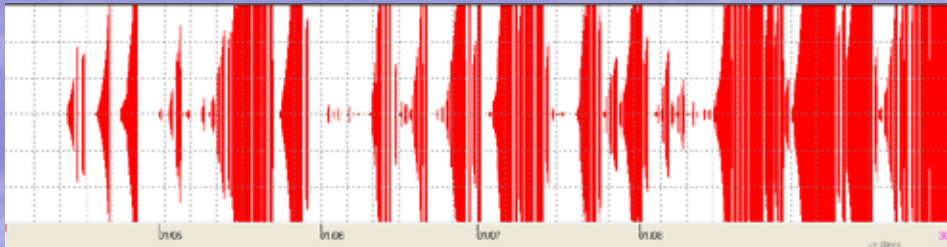
2004



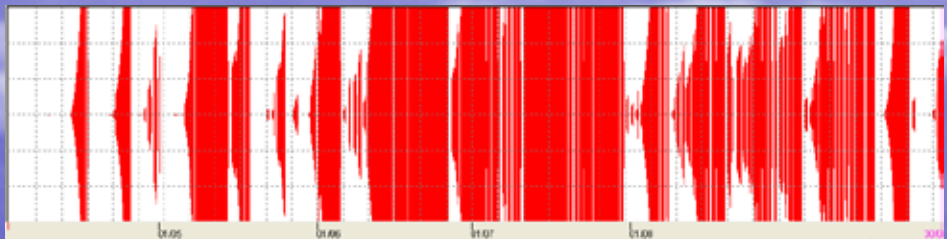
2005



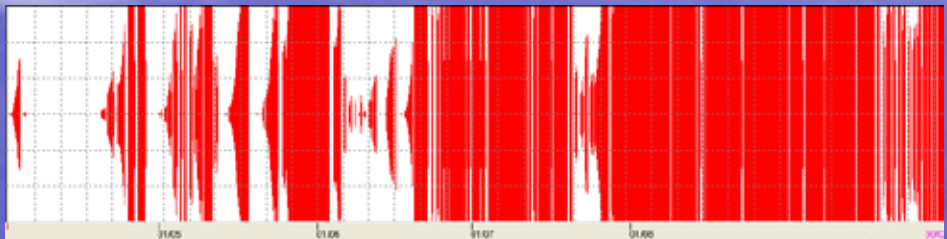
2006



2007

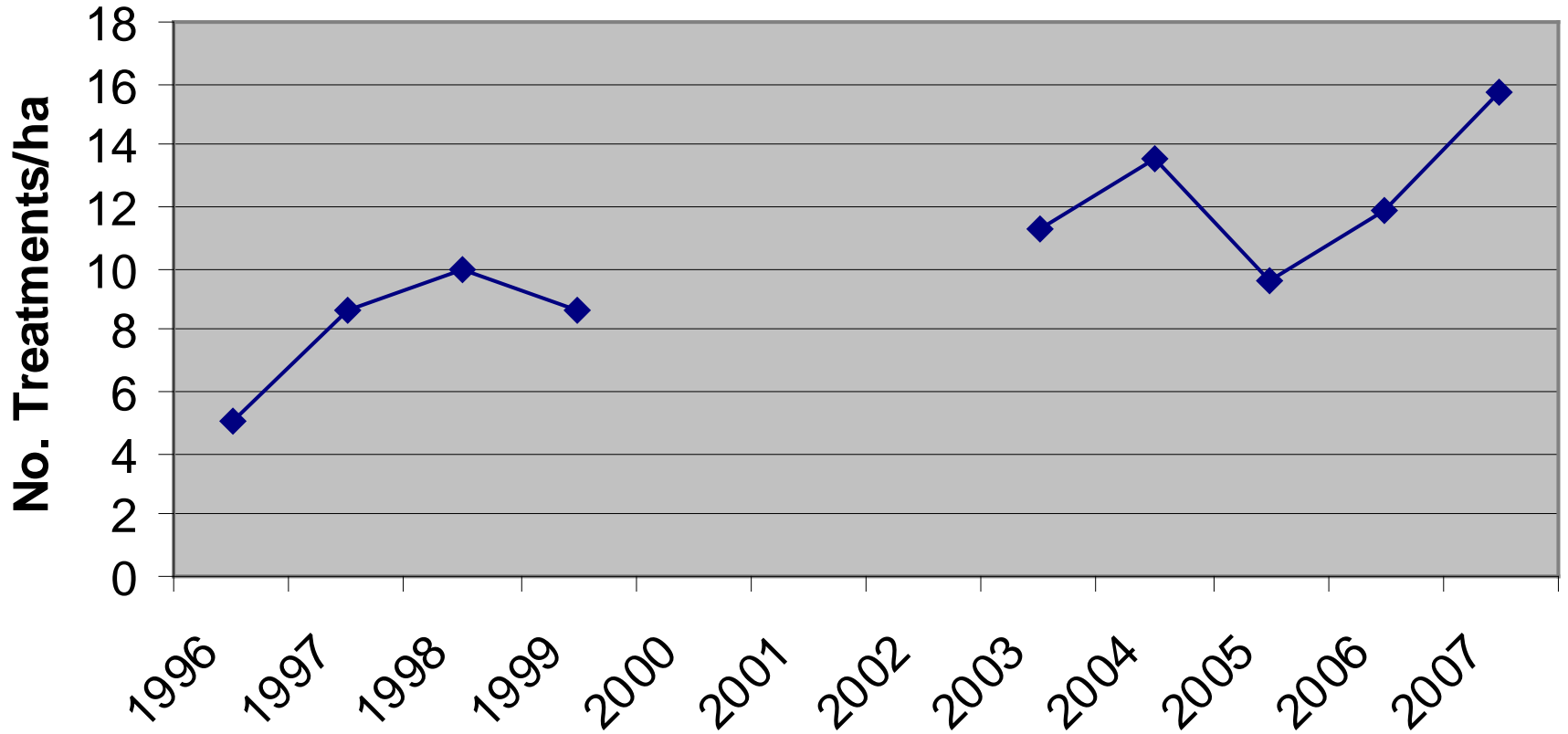


2008



South West Late Blight Risk Plant-Plus model 2004-08

UK Fungicide Use





Conclusions & Answers

- § Risk in East Midlands in last 80 years—
about the same (need to review more regions, and
April/September data)
- § Recent risk in last 10 years— increasing,
more evident in South West
- § Fungicide use also increasing in last 10
years



The Future

- § Late Blight risk in UK (North West Europe) continues to increase?
- § More unpredictable weather?
- § Less opportunities for saving fungicides?
- § New roles for DSS's – barometers of change and tools for management of change



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Acknowledgements

- § Huub Schepers (WUR)
- § Morray Taylor (CSL)
- § Dacom
- § Bayer Crop Science

Thanks for your attention.