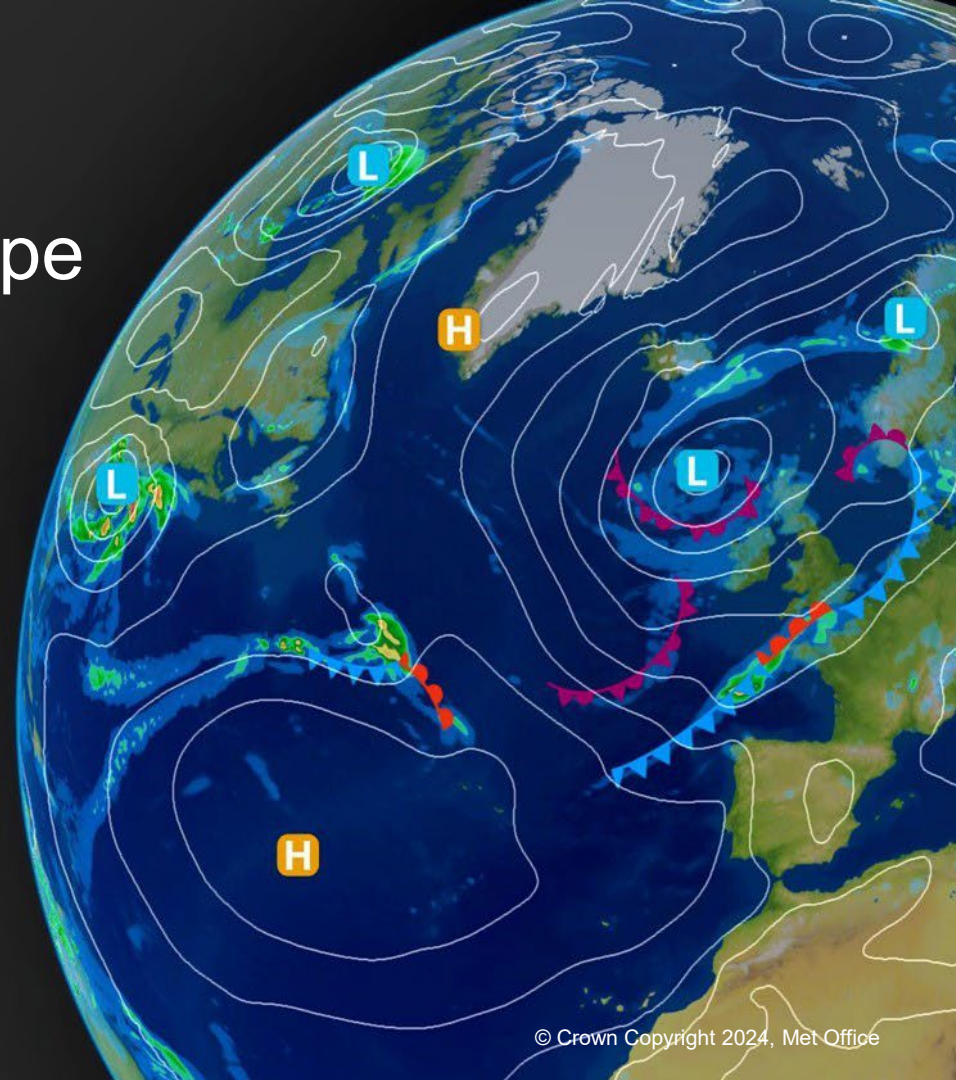


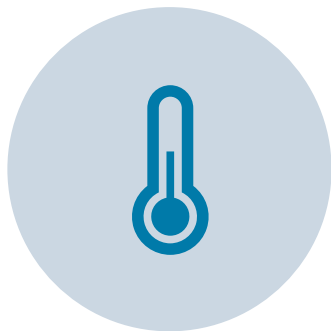
Potential climate change implications for Oilseed rape growing

Tom Crocker – Met Office

OREGIN Stakeholders Forum
19/12/2024



Overview



CLIMATE CHANGE IN
THE UK



POSSIBLE EFFECTS
ON CULTIVATION,
PESTS AND DISEASES



POTENTIAL
RESEARCH AVENUES

How will the seasons change?

Summers



HOTTER

Winters



MILDER



DRIER



WETTER

Year-to-year variations mean we'll still see some cold dry winters and cool wet summers, but they will become less likely.

Projections for average annual warming over the UK give a range of 1°C to 4°C for the lowest and highest emission scenarios.

How will extremes change?



Maximum temperature of a summer's day could increase by as much as 10°C in some places

Rainfall is expected to be more intense, increasing the risk of flash flooding



Climate impacts on agriculture

“Climate change poses a direct risk to crops, livestock and commercial trees through increased exposure to

- heat stress,
- drought risk,
- waterlogging,
- flooding,
- fire, and
- pests, diseases and invasive non-native species”

*“Independent Assessment of UK Climate Risk”,
Climate Change Committee, June 2021*



Climate and oil seed rape



Abiotic

Low temperatures

Waterlogging

Higher temperatures / Heat stress

Drought / water stress

Biotic

Stem canker

Leaf spot

Sclerotinia

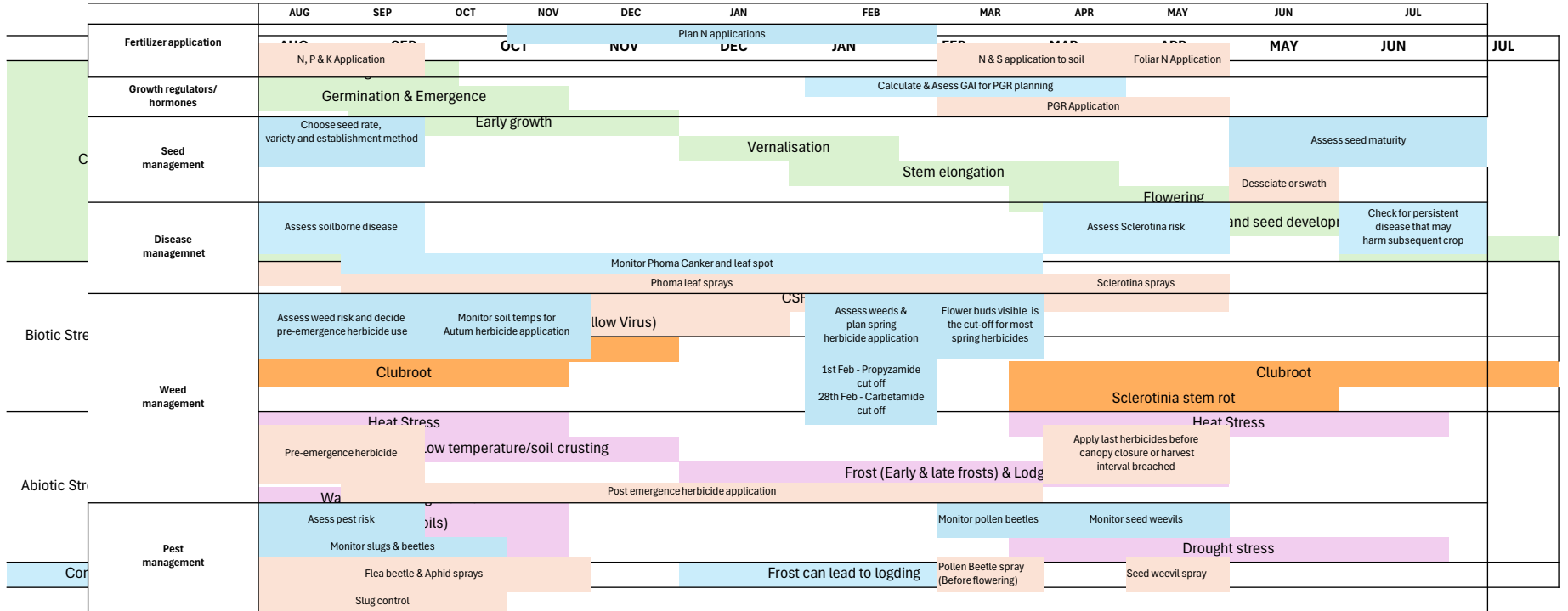
Cabbage stem flea beetle

Aphids

Clubroot

Weeds

Climate and oil seed rape

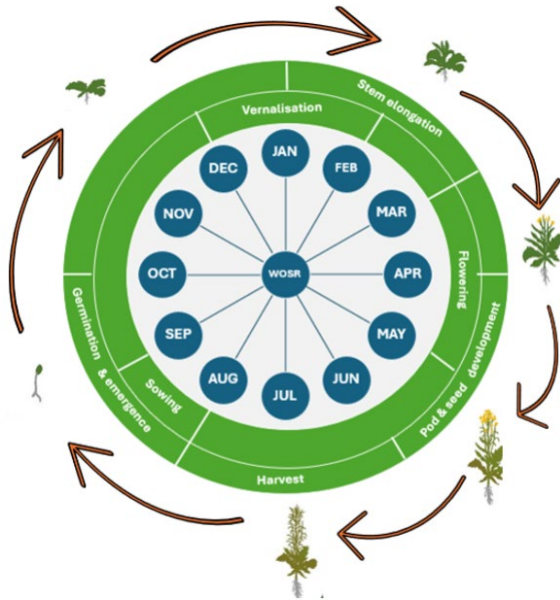


Impacts on IPM strategies



- Pest / predator migration, overwintering and phenology
- Pesticide effectiveness and mobilization
- Weeds, crop rotations, cover crops ...

How will climate hazards impact crops and pests / disease threat?

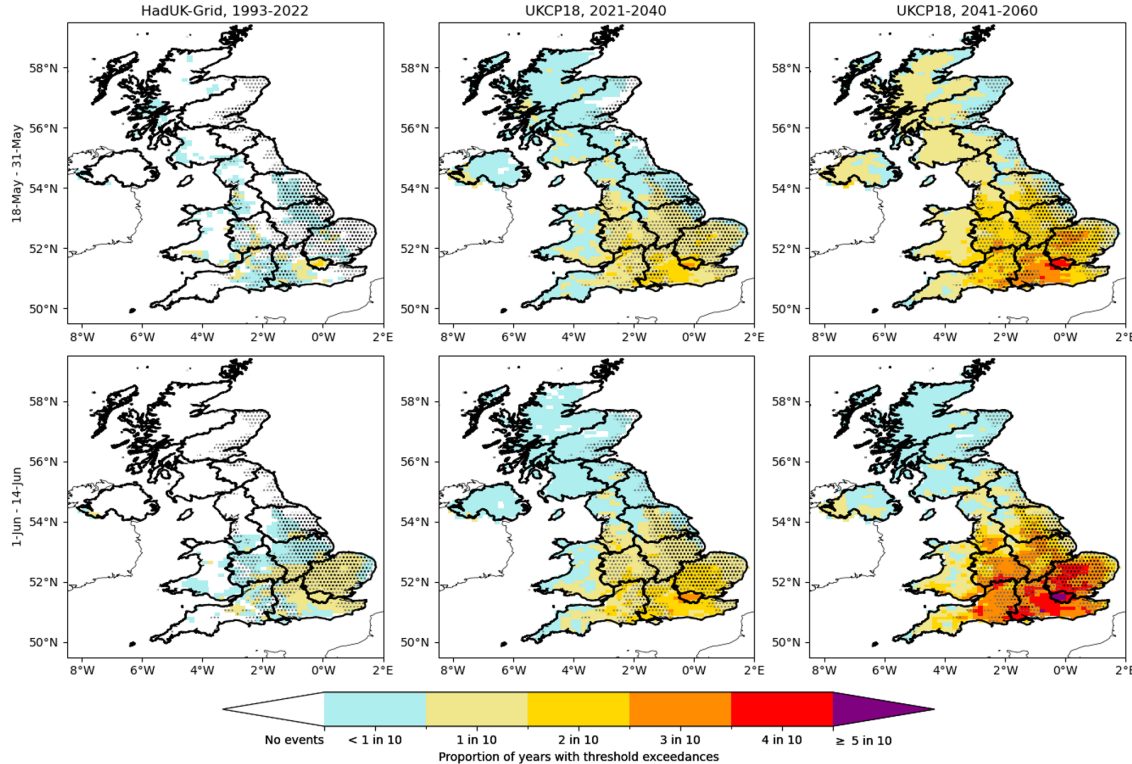


- Do hazards coincide with vulnerability / phenology?
- Which hazards should be considered a priority?
- How quickly will change happen?
- Climate analogues of future UK climate



Heat Stress at anthesis

Proportion of years with threshold exceedances: 3-day consecutive Max daily temperature above 25°C
Stippling indicates main arable areas



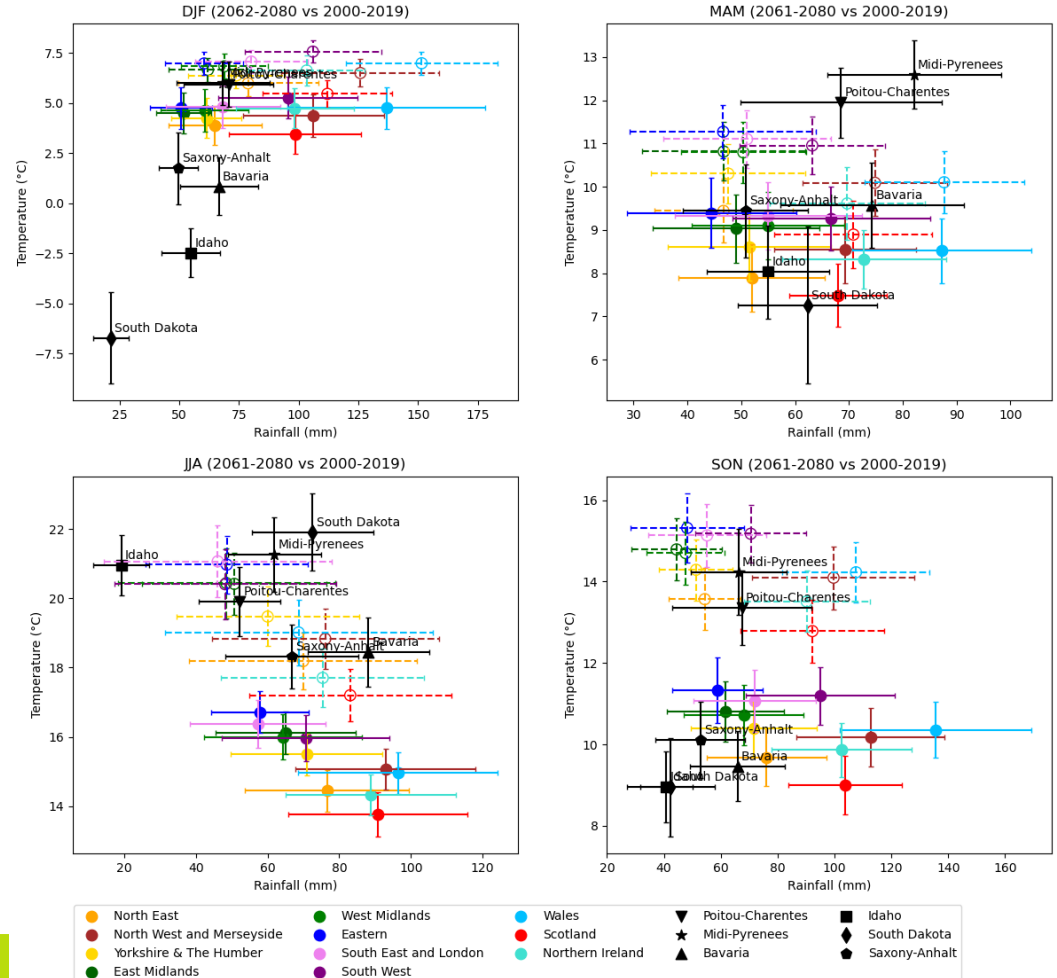
- 2 potential anthesis periods: 18 May-31 May and 1 Jun-14 Jun
- 3 time periods: Historical (1993-2022), Near future (2021-2040), Mid-century (2041-2060)
- Heat stress events occur 2-3 (or more) years out of 10 by mid-21st century across arable region

Climate Analogues

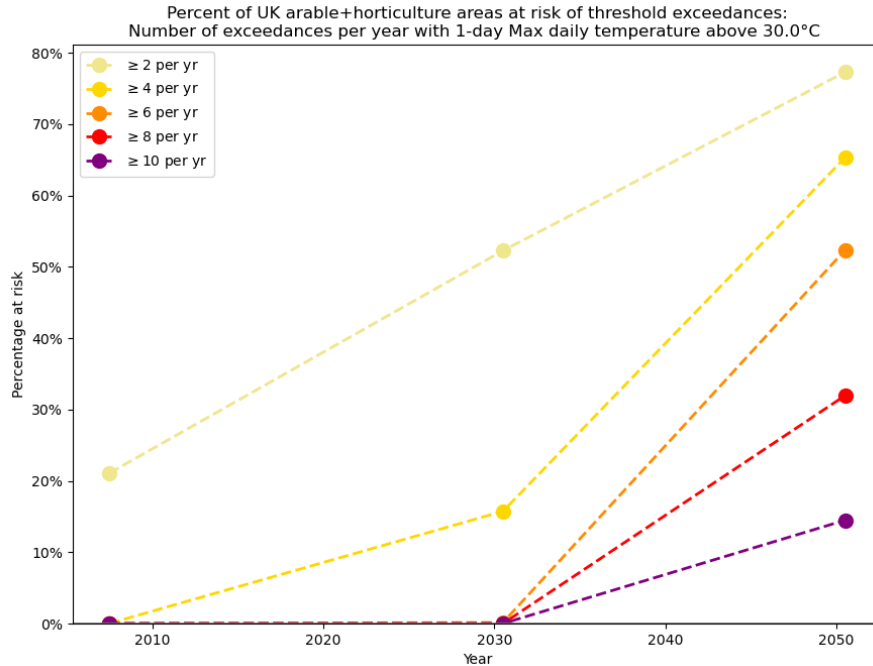
Understanding UK regional climate:

- How are UK regional climates changing?
- How do future UK regional climates compare to current international climates?
- What are the implications for new crops and varieties?

Regional climates, mean +/- 1 std deviation: Average monthly rainfall vs Average monthly temperature
UK (wheat area weighted) and selected wheat-growing regions



Rate of change



- Crops / horticulture heat stress: 1-day maximum temperature > 30°C

Summary

- Wide variety of potentially impactful changes likely as climate changes
- Potential to explore further detail:
 - Most impactful hazards
 - Growing environment for new crops and varieties (and pests?)
 - Speed of changes over coming decades
- Crossovers with other GINs (WGIN, VEGIN, PCGIN)