UK Climate Resilience
NERC Capabilities and Current Research Activities

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Climate Resilience

- Climate Resilience requires **the robust characterisation and quantification of climate-related risks in decision-relevant terms**

NERC has extensive, internationally leading, capabilities, for characterizing and quantifying:

- **Climate-related hazards**, e.g. extreme temperatures & rainfall, wind storms
- **Impacts on the terrestrial and marine environment**
- **Wider partnerships** often essential for identifying adaptation options

IPCC AR5
WGII
Fig SPM.I

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NERC Centres - National Capability

- Changing risk of high impact weather
- Impacts on terrestrial and freshwater environment including flooding & ecosystems
- Influence of oceans on weather risks
- Impacts on sea level, shelf seas and coasts
- Monitoring from space including rainfall, vegetation, algal blooms, extreme events
- Impacts on ground water, subsidence, coastal erosion

**Joint Weather and Climate Research Programme** with Met Office

*Maintain core capabilities in long-term measurements, field observations and numerical modelling*

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The development of robust resilience strategies requires approaches to deal with this uncertainty that build on solid scientific understanding and do not neglect potential surprises (i.e. low-likelihood high impact scenarios)

Some aspects of regional climate change are much more robust

Wintertime lower tropospheric zonal wind speed climatology (contours) and end-of-century response to RCP 8.5 (shading)

Shepherd (2014 Nature Geosci.)
The non-local nature of climate risks

• It is increasingly recognised that many of the most serious risks to the UK may arise from the impacts of climate change in other countries and regions, via disrupted supply chains, political instability or other mechanisms

• NERC’s capabilities are global
Some relevant recent NERC programmes

- UK Droughts and Water Scarcity (with ESRC, EPSRC, BBSRC, AHRC)
- Valuing Nature (with ESRC, AHRC, BBSRC and Defra)
- Flooding from intense rainfall
- Drivers of variability in atmospheric circulation
- Understanding the Pathways to and Impacts of a 1.5°C Rise in Global Temperature
£12m programme co-funded by BBSRC, AHRC, EPSRC & ESRC (2013-19)

- Characterise the drivers of UK droughts and water scarcity
- Examine the impacts of UK droughts and water scarcity
- Co-development of tools to support decision-making for planning and management is central to the programme