

# UKCP18

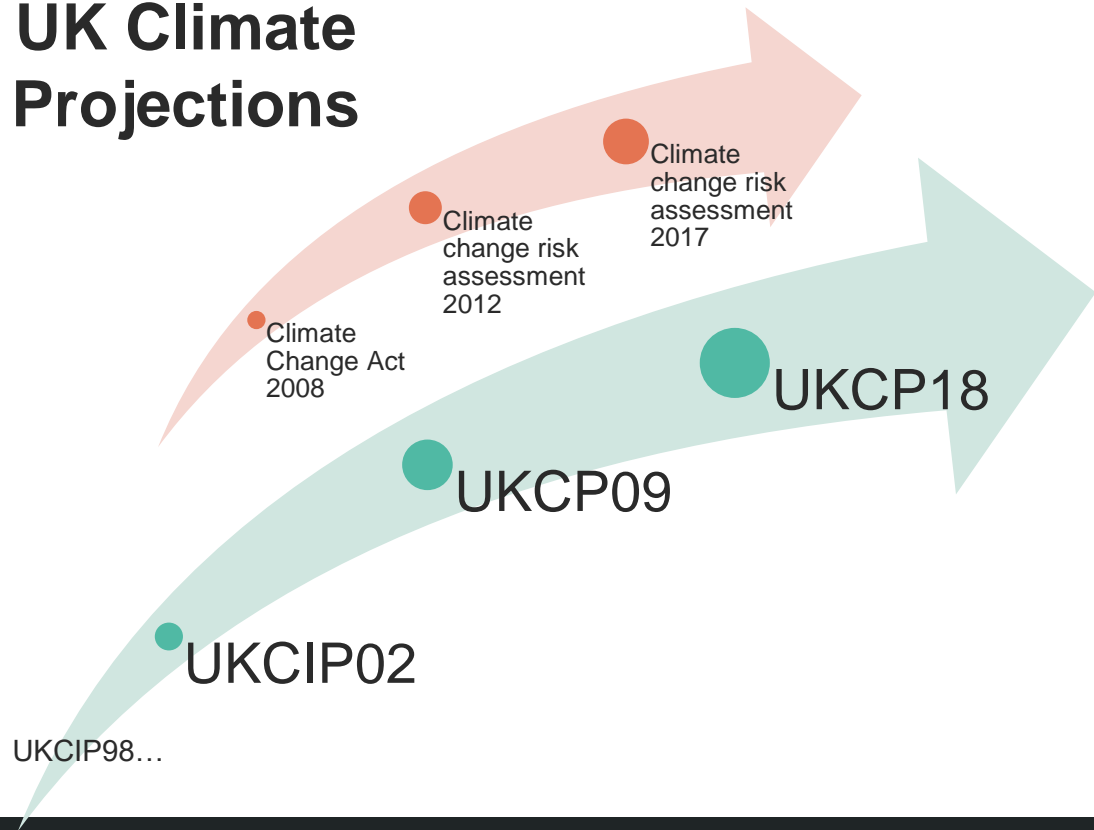
# National Climate Projections

Fai Fung  
UKCP Climate Services Manager, Met Office

Climate Resilience and Extreme Incidents: Building Resilient Infrastructure and Communities  
CIWEM Conference, 30 April 2019

Jason A. Lowe, Dan Bernie, Philip Bett, Lucy Bricheno, Simon Brown, Daley Calvert, Robin Clark, Karen Eagle, Tamsin Edwards, Giorgia Fosser, Fai Fung, Laila Gohar, Peter Good, Jonathan Gregory, Glen Harris, Tom Howard, Neil Kaye, Elizabeth Kendon, Justin Krijnen, Paul Maisey, Ruth McDonald, Rachel McInnes, Carol McSweeney, John F.B. Mitchell, James Murphy, Matthew Palmer, Chris Roberts, Jon Rostron, David Sexton, Hazel Thornton, Jon Tinker, Simon Tucker, Kuniko Yamazaki, and Stephen Belcher.

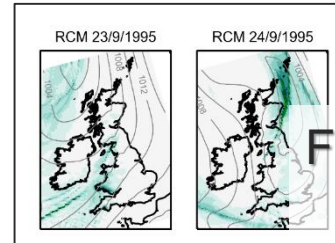
# UK Climate Projections



The best new science



Co-developed with users

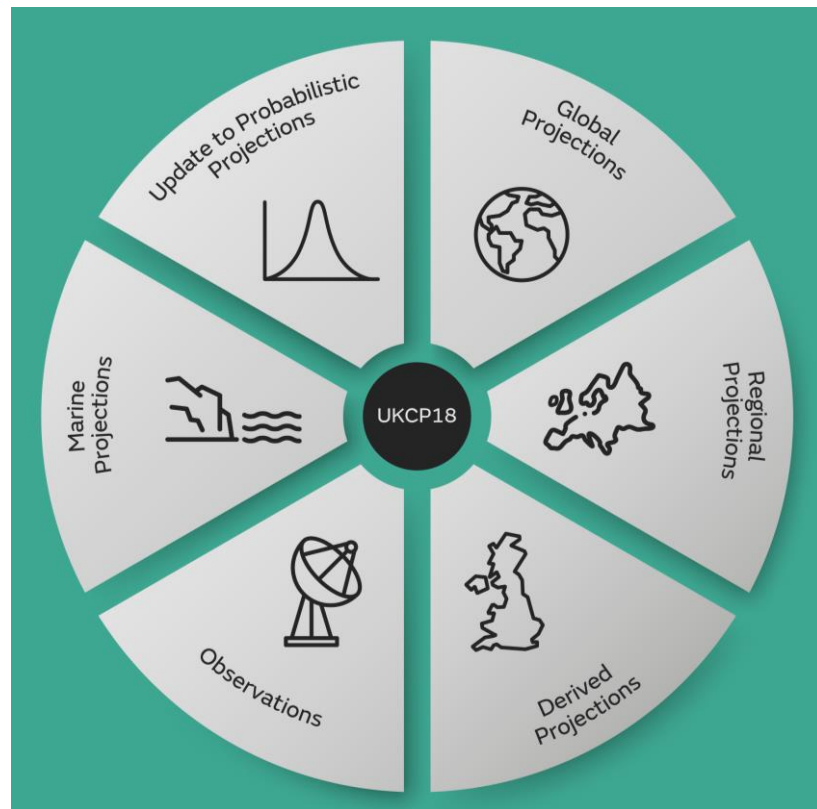


From climate trends to future weather

## Headline results:

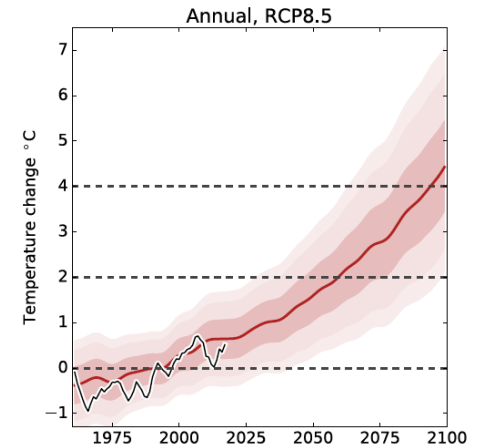
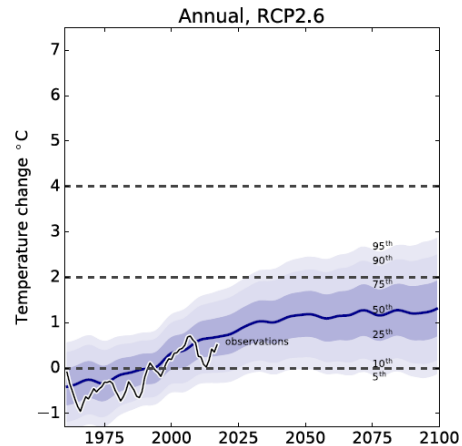
“A greater chance of warmer, wetter winters and hotter, drier summers”

“Sea levels have been rising and will continue to rise”



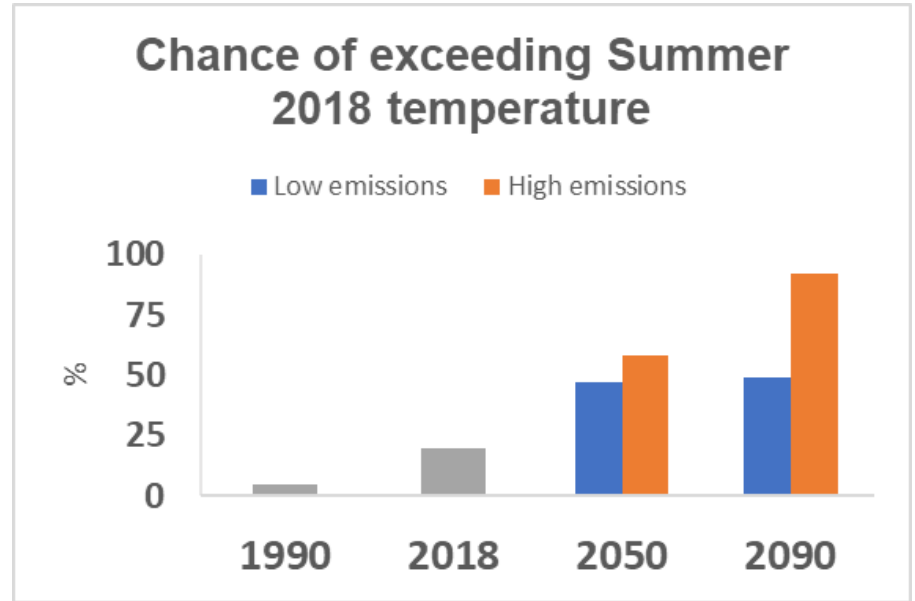
# Future UK temperatures

- All areas of the UK are projected to experience warming
- Warming is greater in the summer than the winter
- Future rise depends on the amount of greenhouse gases the world emits
- The lowest scenario is compatible with aims to limit global warming since pre-industrial levels to below 2°C
- The highest scenario will likely require **significant further adaptation**



# Summer 2018 heatwave

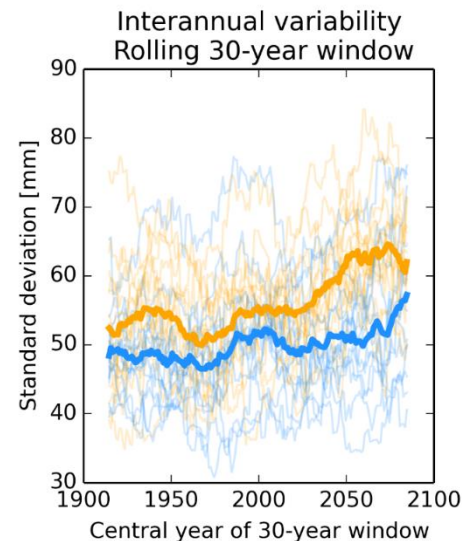
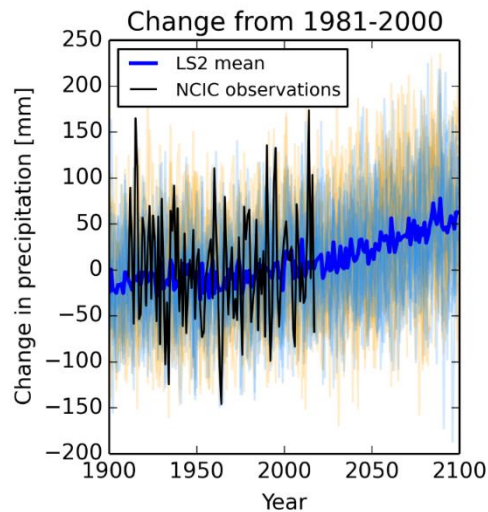
- Chance of such hot summers low in the baseline period (<10%)
- By mid-century the chance of hot summers will be of the order of 50%
- Beyond 2050 the chance of a warmer summer more strongly depends on emission scenario



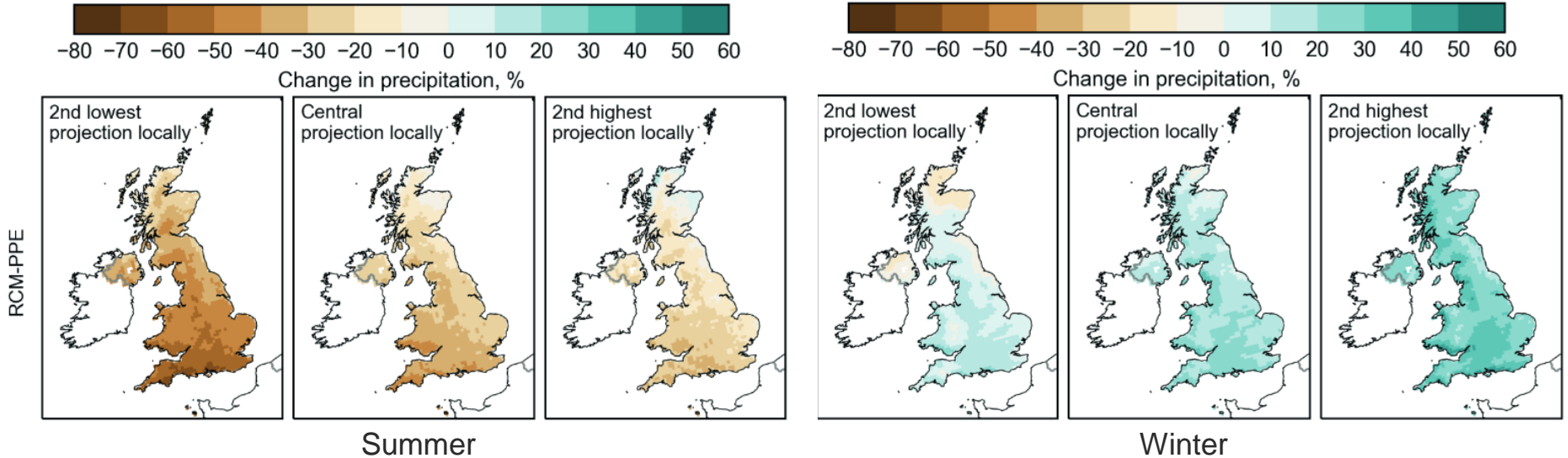
# Future UK precipitation

- Winter precipitation is expected to increase significantly but still have relatively dry winters
- Summer rainfall is expected to decrease significantly. But when it rains in summer there may be more intense storms
- Increase in year-to-year variability in winter precipitation in Met Office members of global projections
- Wider range of weather to adapt to in the future

England mean winter precipitation



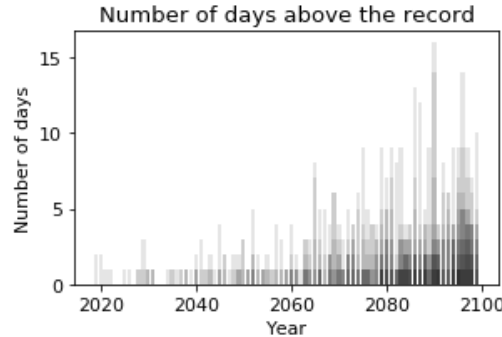
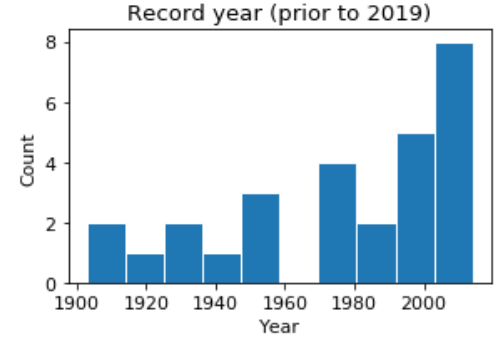
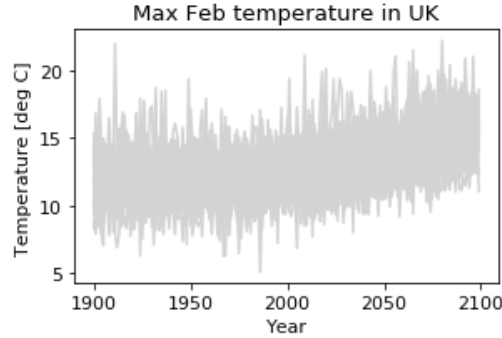
# Pattern of precipitation change



The spatial pattern of change to 2061-2080 shows detailed structure over the UK (RCP8.5). Compare SE England and N Scotland.

# February 2019 record temperature

- Records can come from any year in 20<sup>th</sup> century with a slightly greater chance from 2000-2018
- Suggests largely natural variability topped up by anthropogenic warming
- Records difficult to beat until 2060s onwards



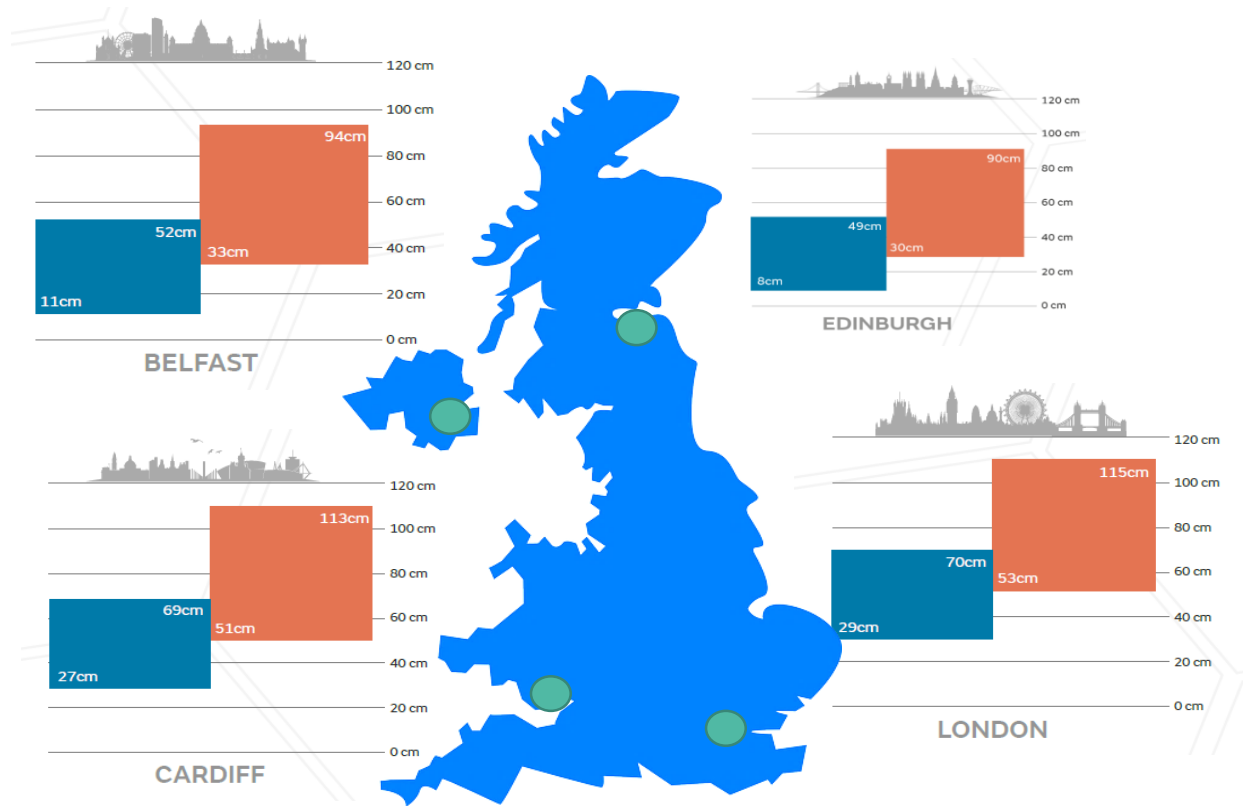


# Sea-level rise

Increase will generally be greater in the south than in the north

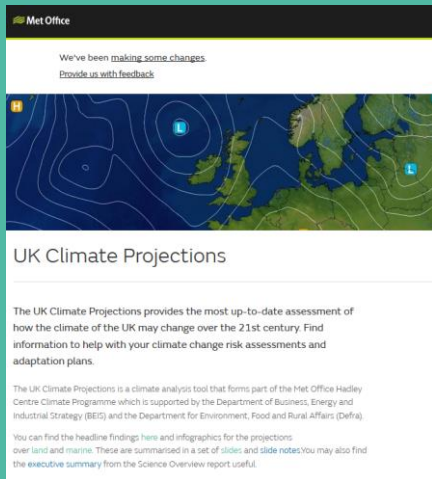
(by 2100 relative to 1981-2000)

■ Range in low emission scenario   ■ Range in high emission scenario




# Where to find the information

<https://ukclimateprojections.metoffice.gov.uk>



Met Office

We've been making some changes  
Provide us with feedback



## UK Climate Projections


The UK Climate Projections provides the most up-to-date assessment of how the climate of the UK may change over the 21st century. Find information to help with your climate change risk assessments and adaptation plans.

The UK Climate Projections is a climate analysis tool that forms part of the Met Office Hadley Centre Climate Programme which is supported by the Department of Business, Energy and Industrial Strategy (BEIS) and the Department for Environment, Food and Rural Affairs (Defra).

You can find the headline findings here and infographics for the projections over land and marine. These are summarised in a set of slides and slide notes. You may also find the executive summary from the Science Overview report useful.



### UK Climate Projections User Interface

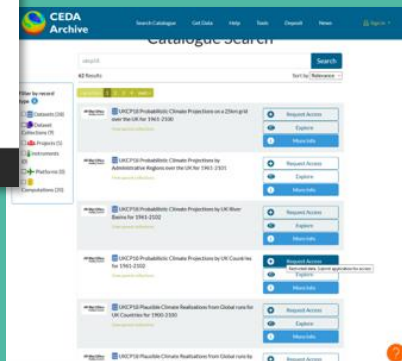


Get to the old UKCP18 web pages  
Go to the old UKCP18 user interface. The UKCP18 user interface will remain available until the end of 2018.

Working together on  
**UK Climate Projections**

Department for Environment, Food & Rural Affairs | Department for Business, Energy & Industrial Strategy | Met Office Hadley Centre | Environment Agency

<https://ukclimateprojections-ui.metoffice.gov.uk>



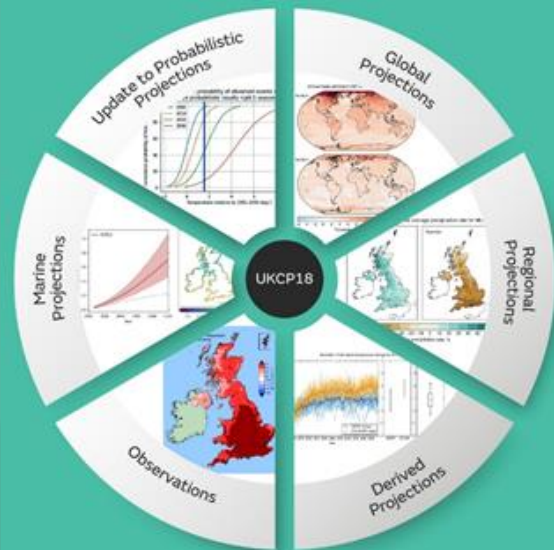
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42 Results

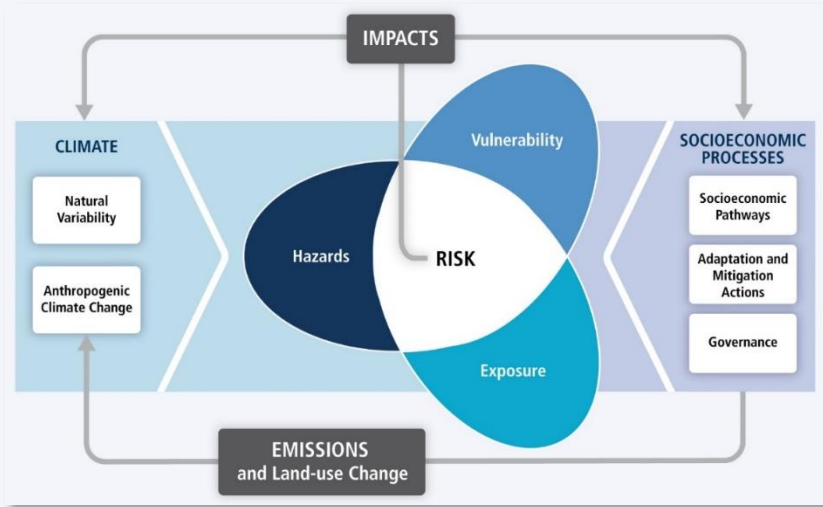
Title	Request Action
UKCP18 Probabilistic Climate Projections on a 2km grid over the UK for 2043-2100	Request Action Download Metadata
UKCP18 Probabilistic Climate Projections by Administrative Region over the UK for 2043-2100	Request Action Download Metadata
UKCP18 Probabilistic Climate Projections by UK County for 2043-2100	Request Action Download Metadata
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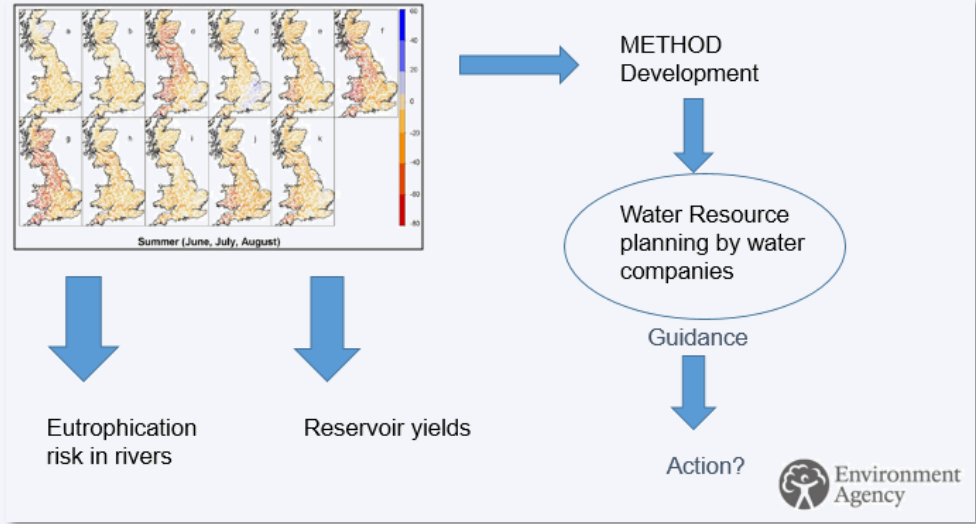


@metoffice  
@MetOffice\_Sci  
#ukcp18

# From climate hazard to risk



IPCC (2013)



# Climate projections at 2.2km resolution

## UKCP18 2.2km ensemble

- 2.2km resolution for UK
- 12 members
- 1980-2000, 2020-40, 2060-80

Launch 2019

New estimates of changes in daily and hourly extremes

- Storms
- Summer downpours
- Severe wind gusts



Supports UK risk assessments e.g. CCRA3

First estimate of uncertainties in changes at local and hourly scales

Hydrological impacts modelling e.g. flash



Climate change for cities e.g. urban extremes



- Improved representation of convection
- Added-value particularly for precipitation (especially extremes) and subdaily timescales
- Improved daily timing of convection and extremes, hourly intensity of extremes, spatial structure

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