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Building resilience along the pathway to net zero

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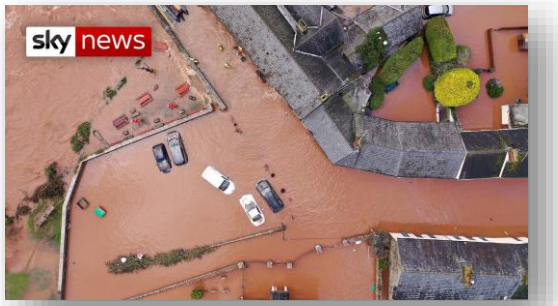
Met Office and University of Leeds

27/01/2021

We already experience damaging weather events

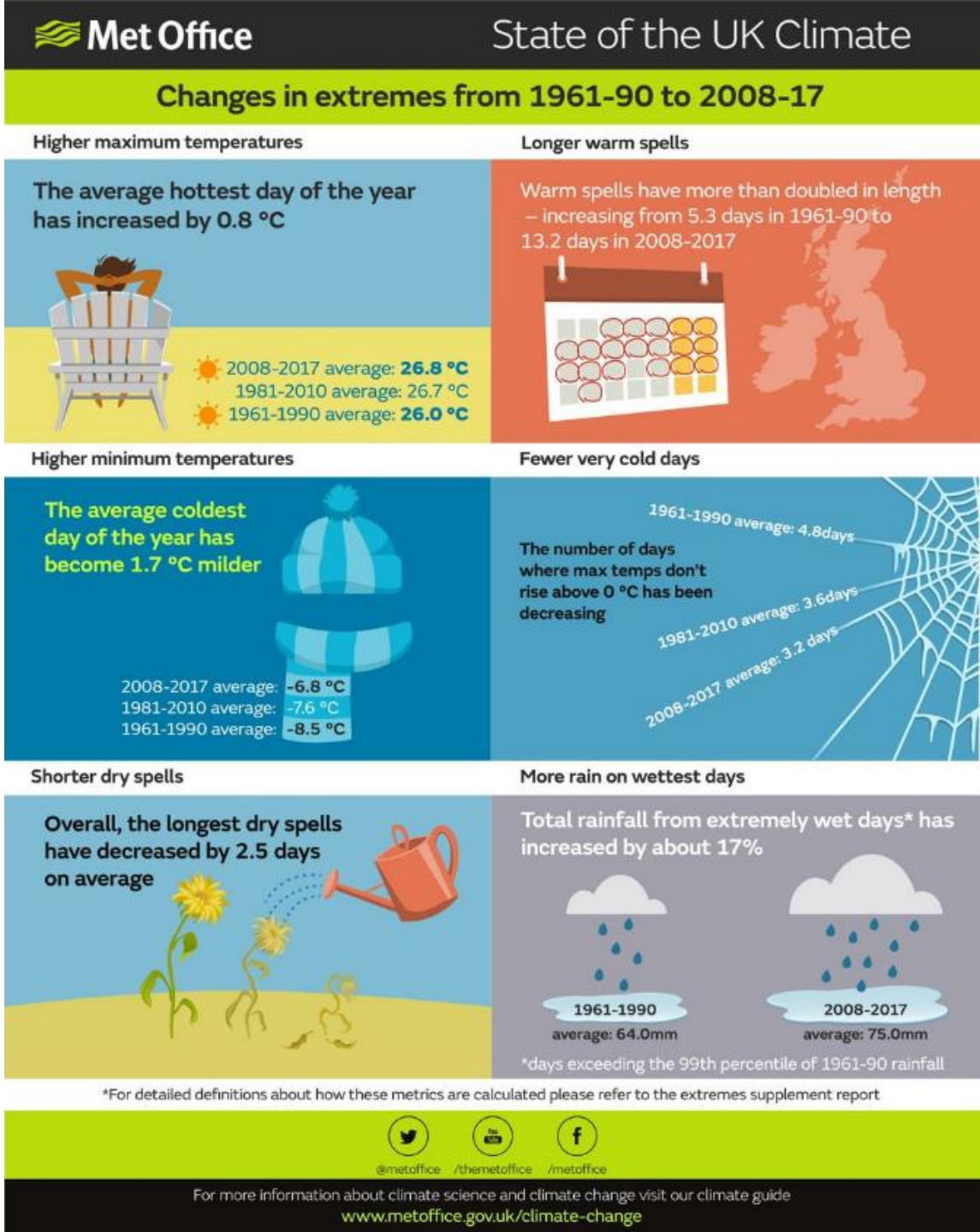
UK flooding, 2007

Storm Dennis, February 2020

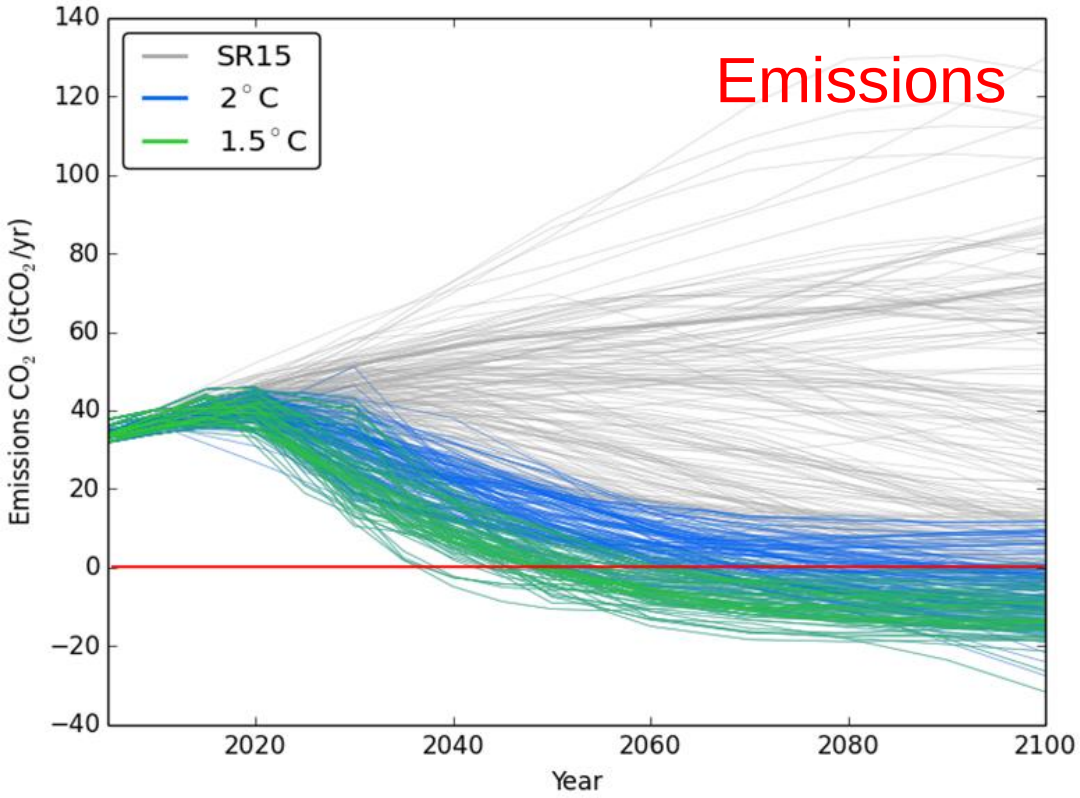


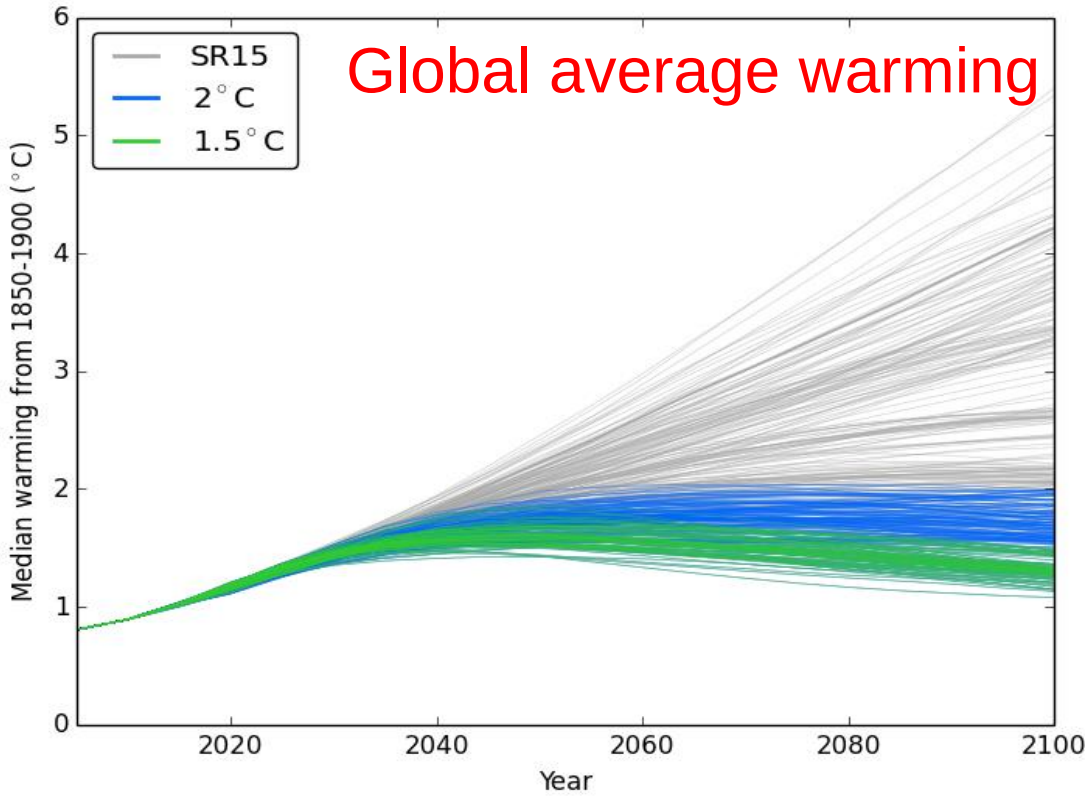
Summer temperatures, 2018

The global and UK climate is changing



How much will climate change in the future?





We examine many alternative views of how greenhouse gas emissions might change

Then, we use models based on our physical understanding to project the climate changes

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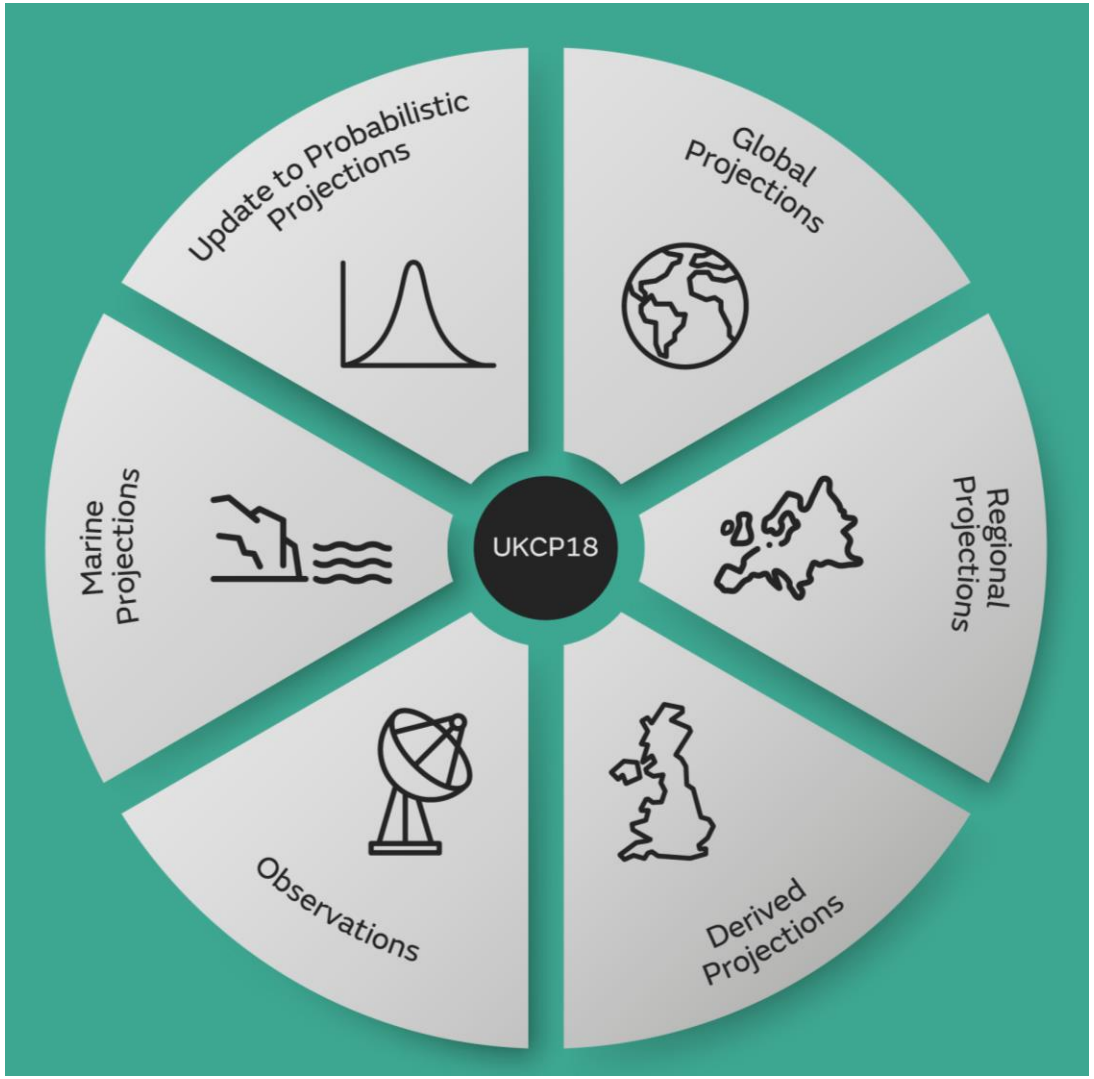
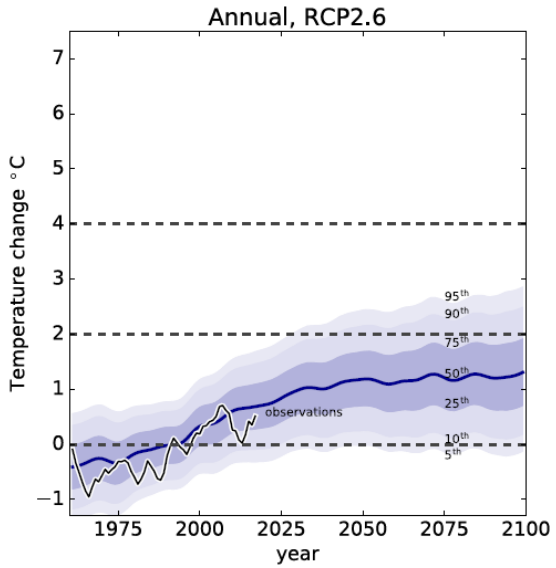
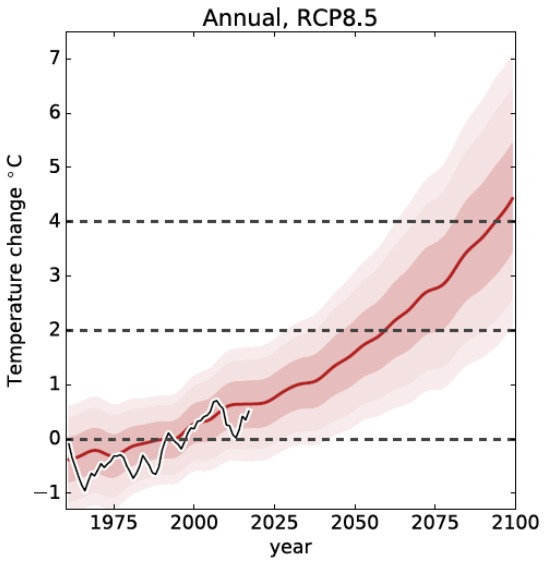
Focus on UK:

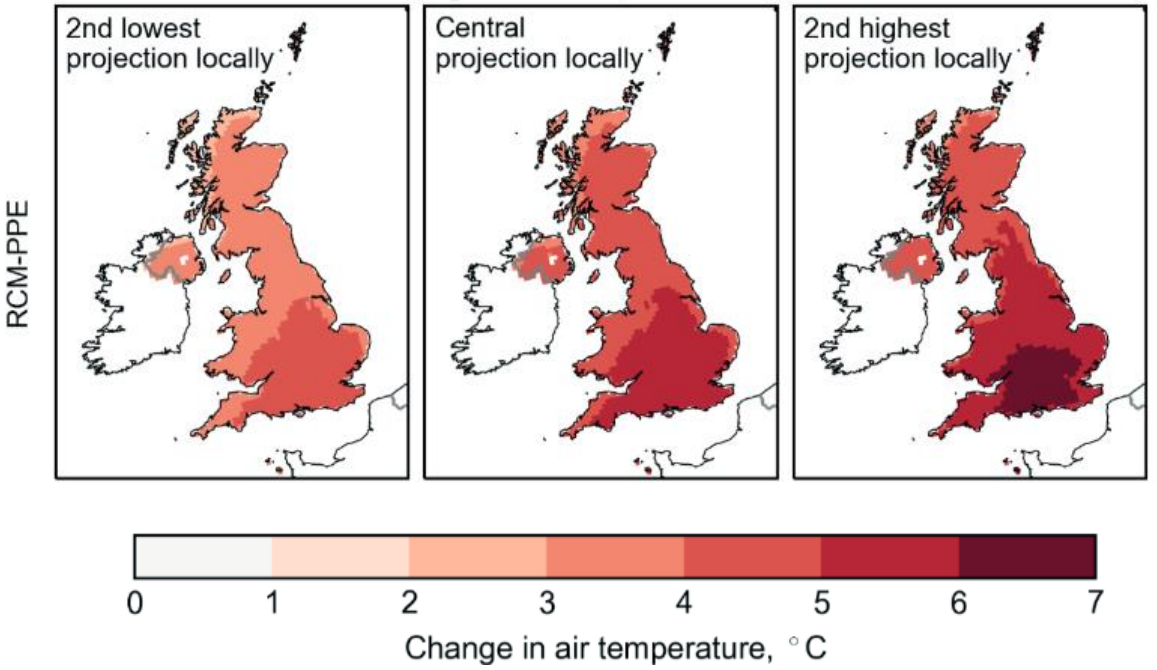
"a greater chance of warmer, wetter winters and hotter, drier summers"



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

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Department for Business, Energy & Industrial Strategy

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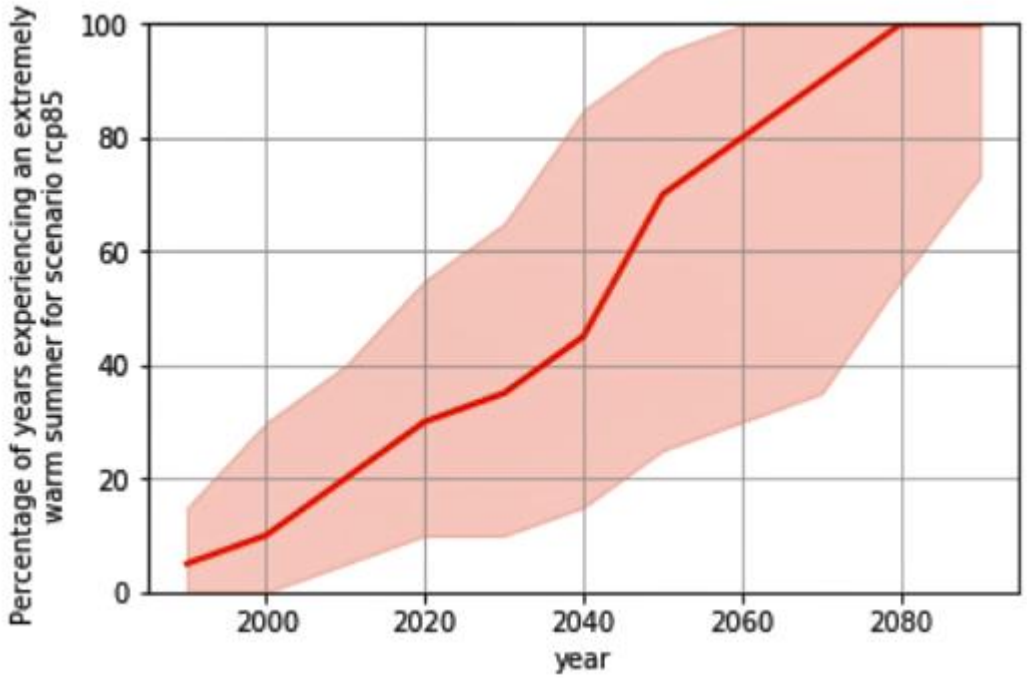
Environment Agency

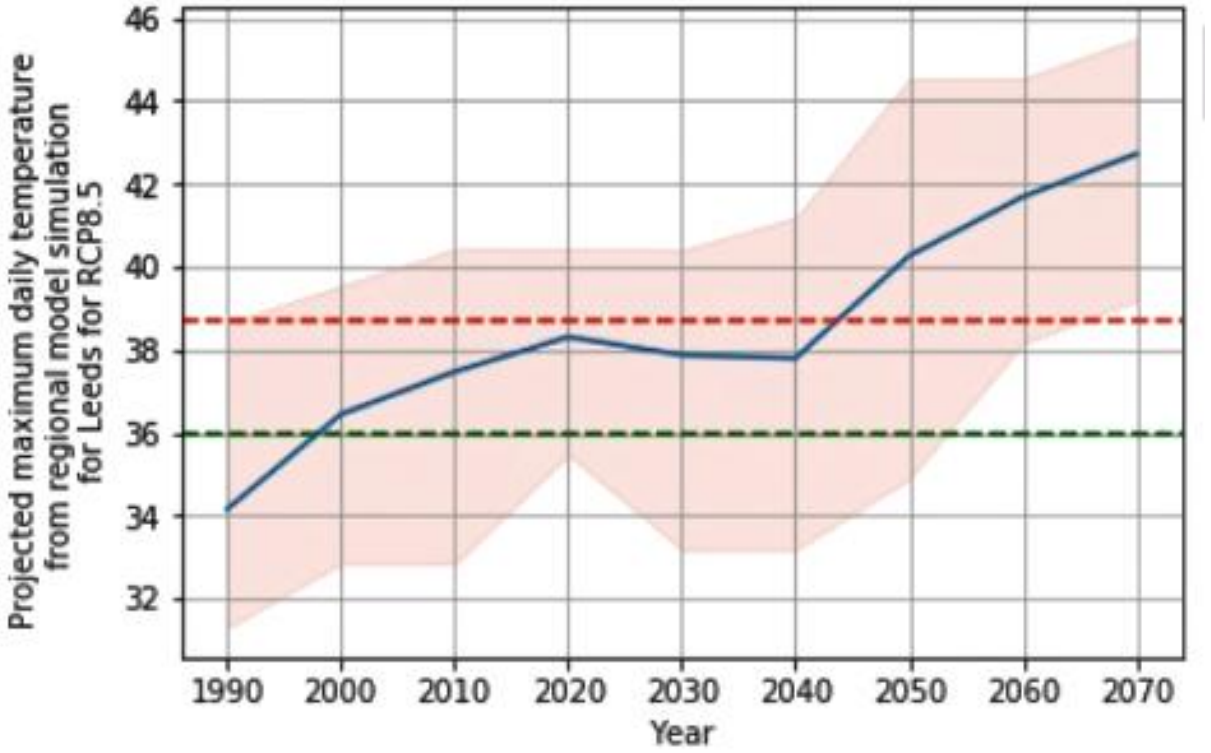
Working together on UK Climate Projections

UKCP also projects changes to seasonal and daily extremes

High emissions scenario – RCP8.5

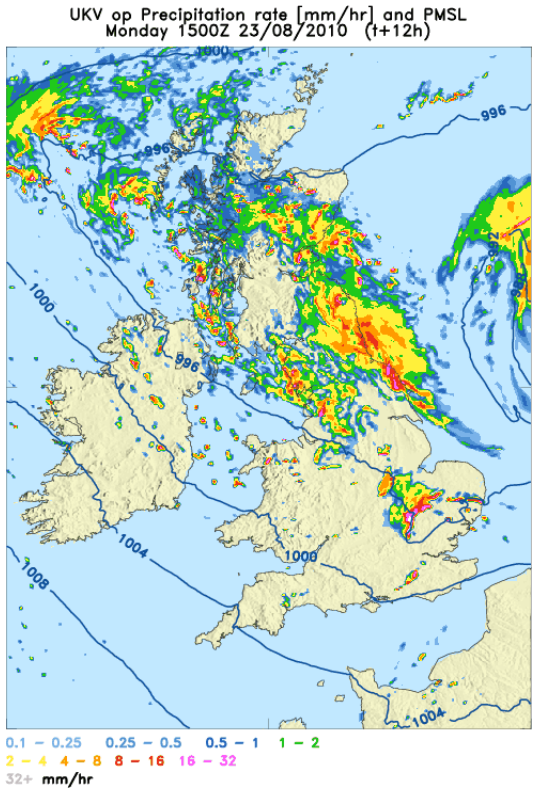


Probability of an extremely warm summer, like that of 2018. Defined here as the level of warming encountered with 5% chance in the 1981-2000 baseline period.



Summer daily maximum temperature change from 12km regional climate model simulations

Future change in UK extreme summer rainfall



Hydrological impacts modelling e.g. flash floods

Climate change for cities e.g. urban extremes

The rainfall associated with a 2-year return period increases by 25% by 2070s

The frequency of days with hourly rainfall >30mm/h almost doubles by 2070s – increasing from UK-average of once every 10 years now to almost once every 5 years

Exploring the new 2.2km projections

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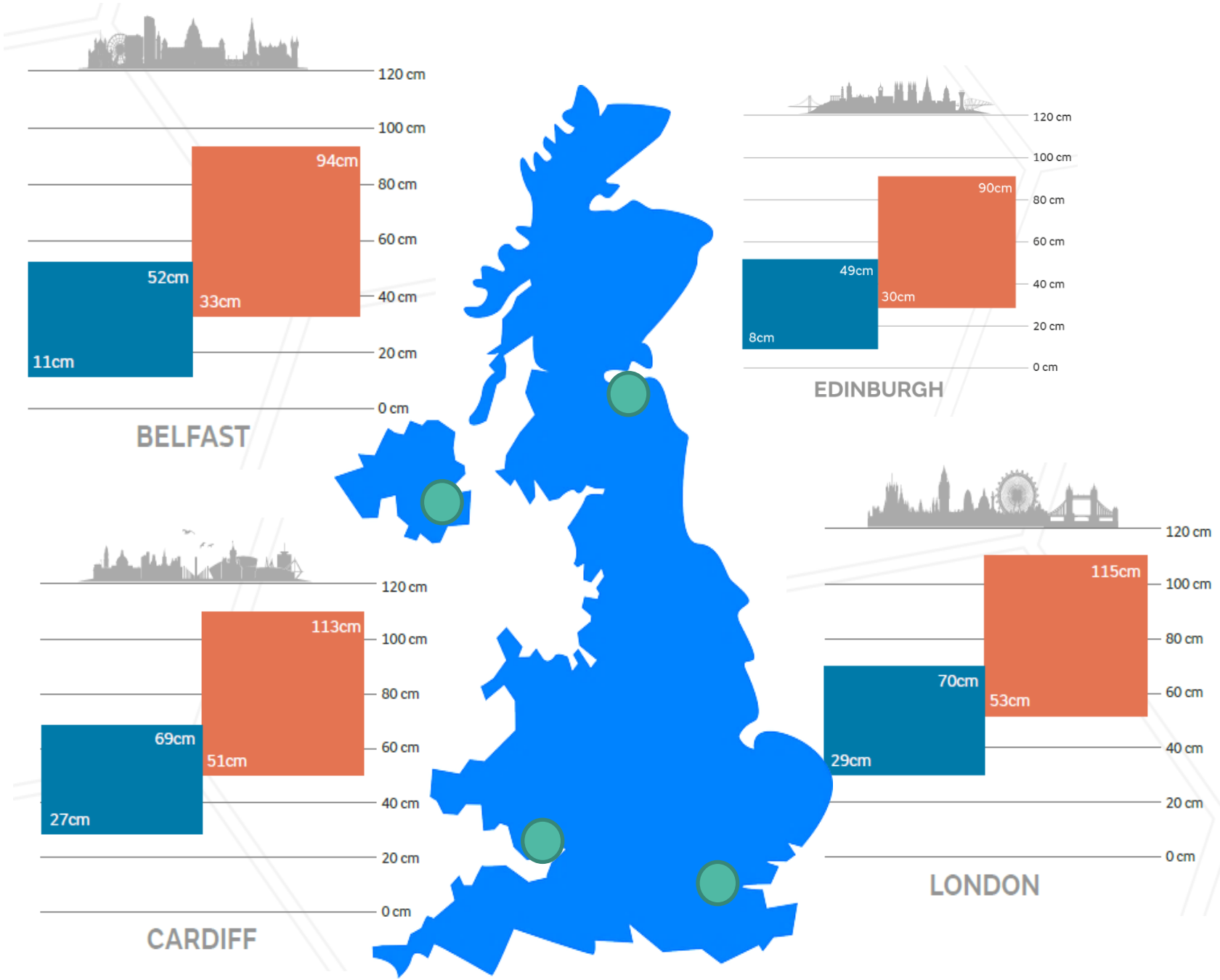
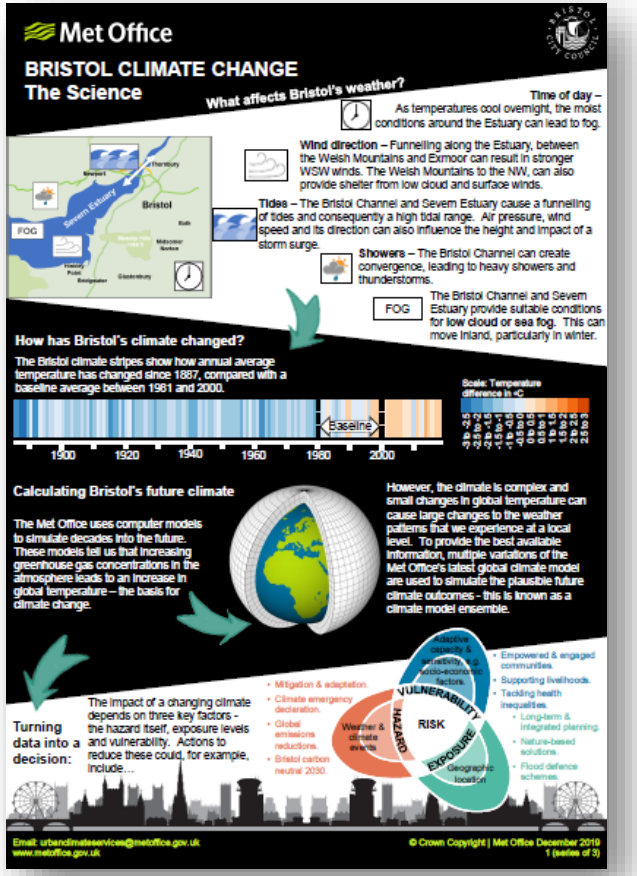
Sea-level rise

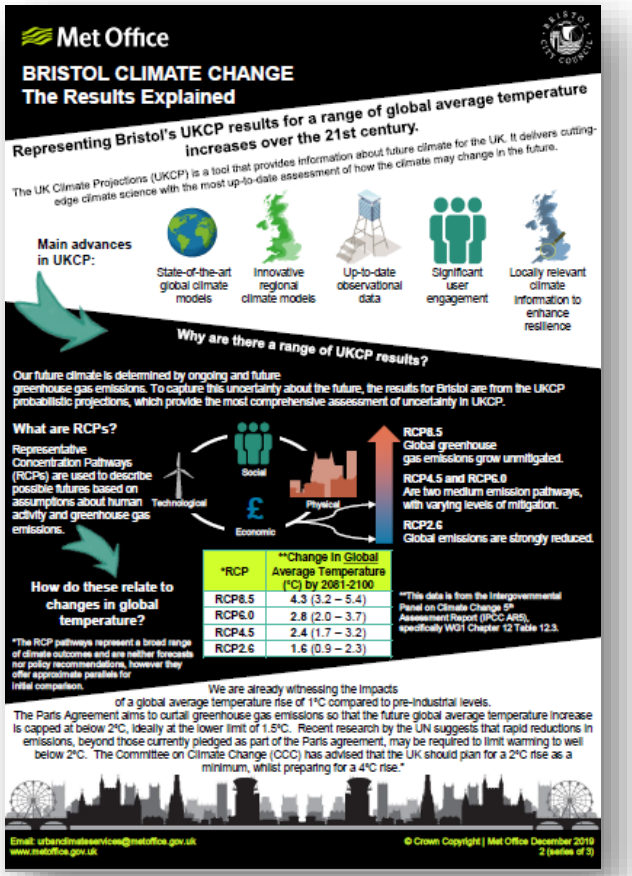
Increase will generally be greater in the south than in the north

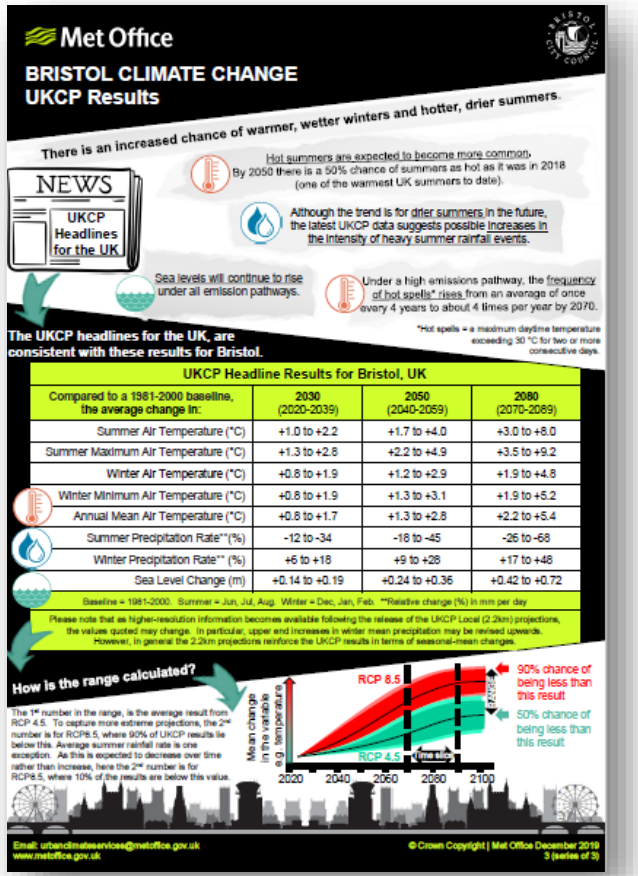


(by 2100 relative to 1981-2000)

Urban resilience application: phase 1 focused on user engagement and development of awareness







Phase 2 involves developing a heat risk climate service (underway)

Phase 3 will focus on precipitation and flooding (when future-drainage or aquaCAT project results are available in 2021)

Visualisation tool being developed

Urban engagement with: Bristol, Manchester, Belfast, Glasgow, Leeds and London

www.ukclimateresilience.org

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Mainstreaming resilience building and growing participation: Further examples from UKCR

Review of climate resilience mainstreaming into regulatory and voluntary standards, national guidance, and other sectorial/industry codes of practice

Climacare: governing the climate adaptation of care settings Understanding the human behaviour, organisational capacity and governance to enable the UK's care provision to develop adaptation pathways to rising heat stress under climate change.

Mobilising Adaptation: Governance of Infrastructure through Co-Production (MAGIC) Developing a community-led approach to reducing flood risk, whilst providing opportunities for flood-vulnerable urban residents to improve health and wellbeing, through better engagement with blue and green spaces.

Mainstreaming resilience building and growing participation: Further examples from UKCR

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Co-development:

- Brings the user into the process
- Requires new skill sets
- Is increasingly seen as essential practice but it is difficult to do!

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Thankyou for your time

30 years
Leading climate science and services in our changing world