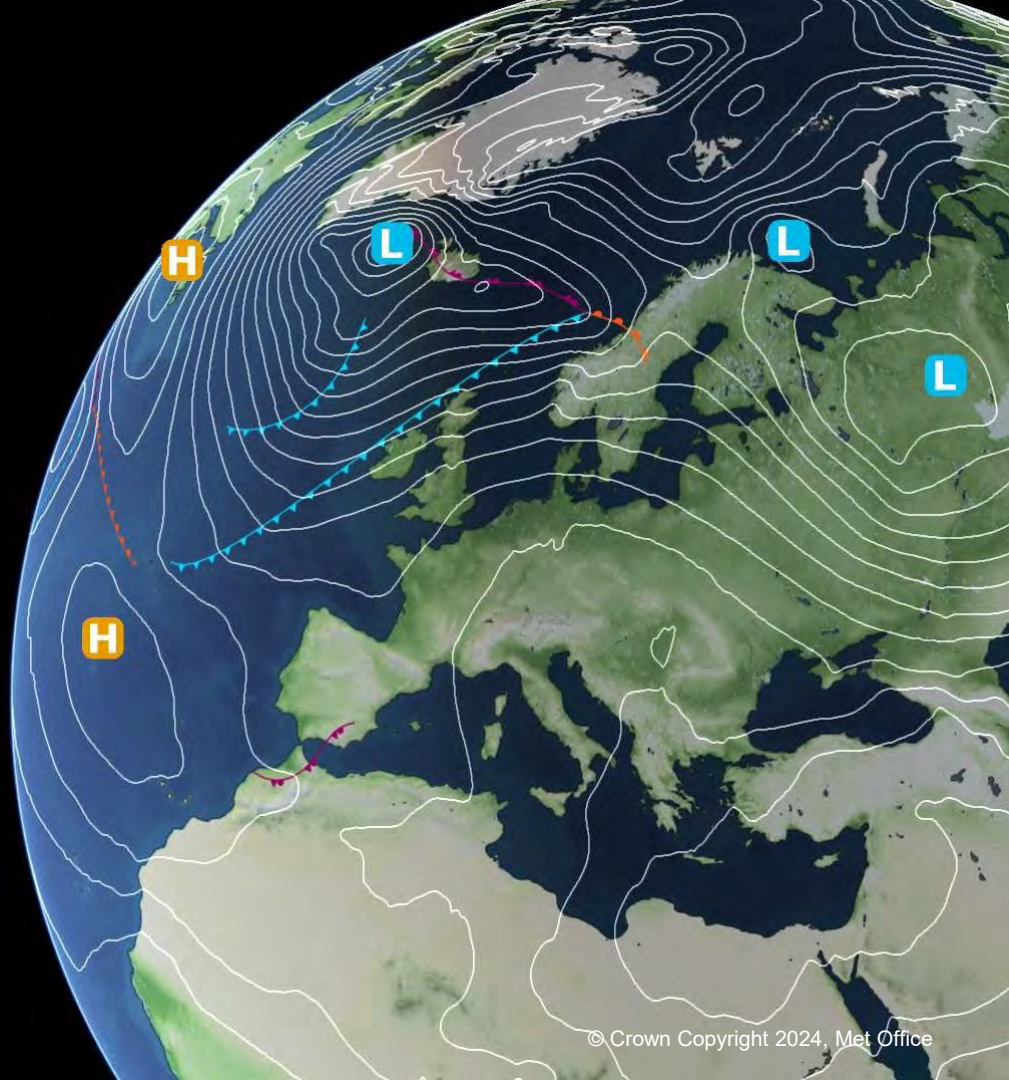


Community Impacts



Short-Term Community Impacts

Increased Rain – Flood Risk

How does Climate Change affect rainfall intensity globally?

Natural Climate
(without human influence)



Warm, moist air
rises to form clouds...



... and then falls as rain.

Future Climate
(with warmer air)



For every 1°C more that
the air warms, it can hold
about 7% more water...



...creating heavier rain.

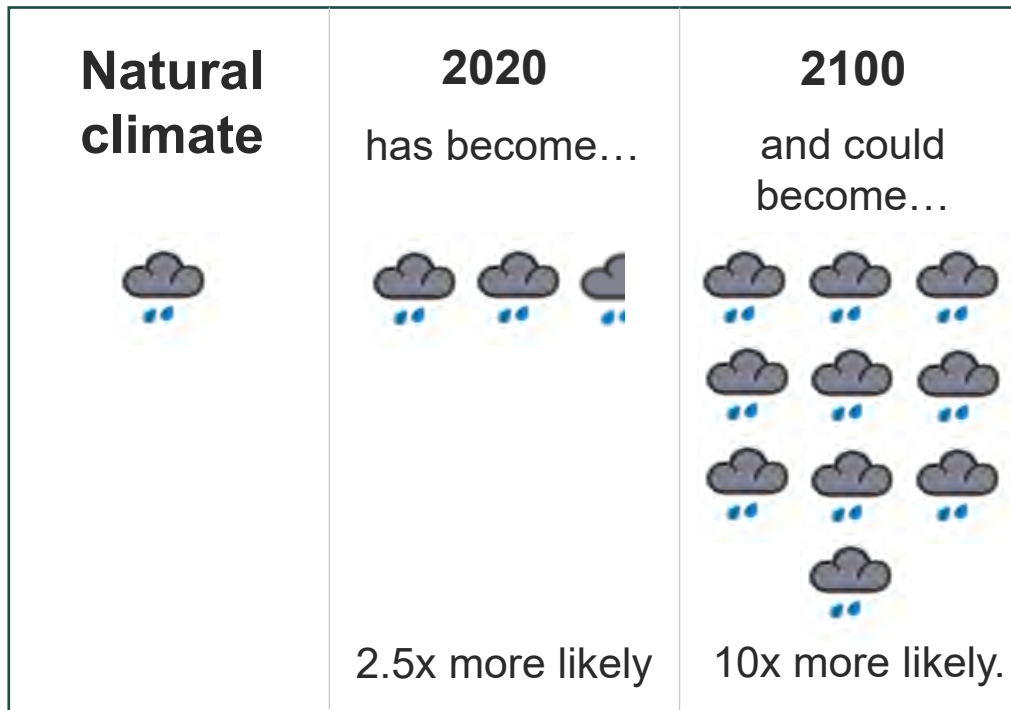
This could lead to a greater risk of
flash flooding.

Extreme UK rainfall becomes more likely and intense with human-induced climate change.

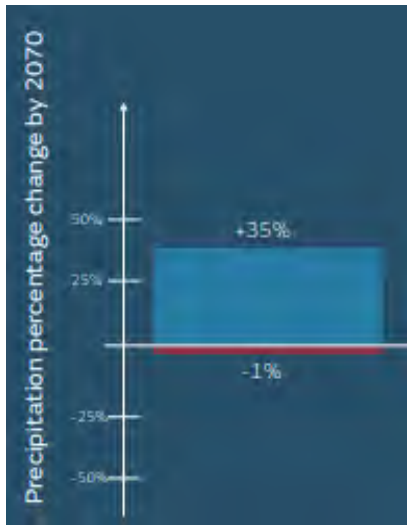
The wettest day on record:



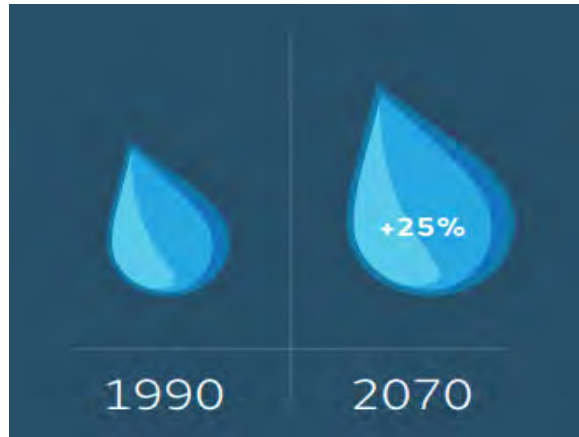
Currently, such an event would happen every 100 years and this may decrease to every 30 years by the end of the century.



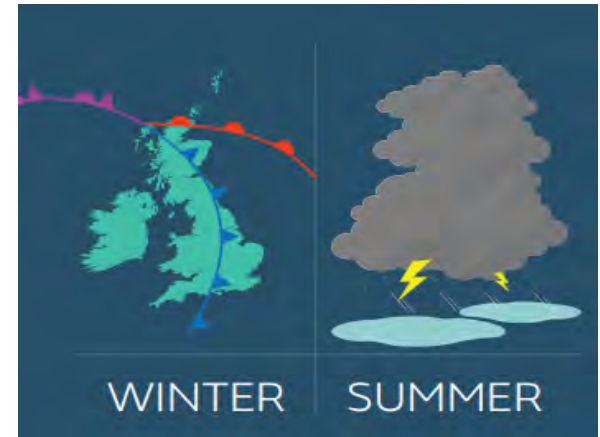
Precipitation Changes



Winter rainfall up 35%

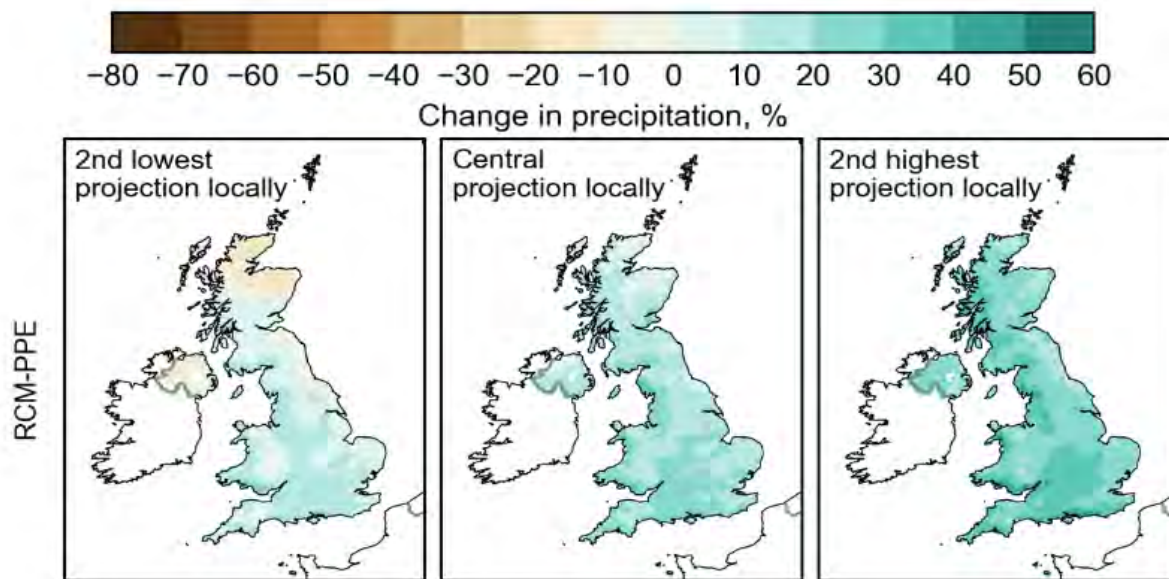


Extreme hourly rainfall up 25%



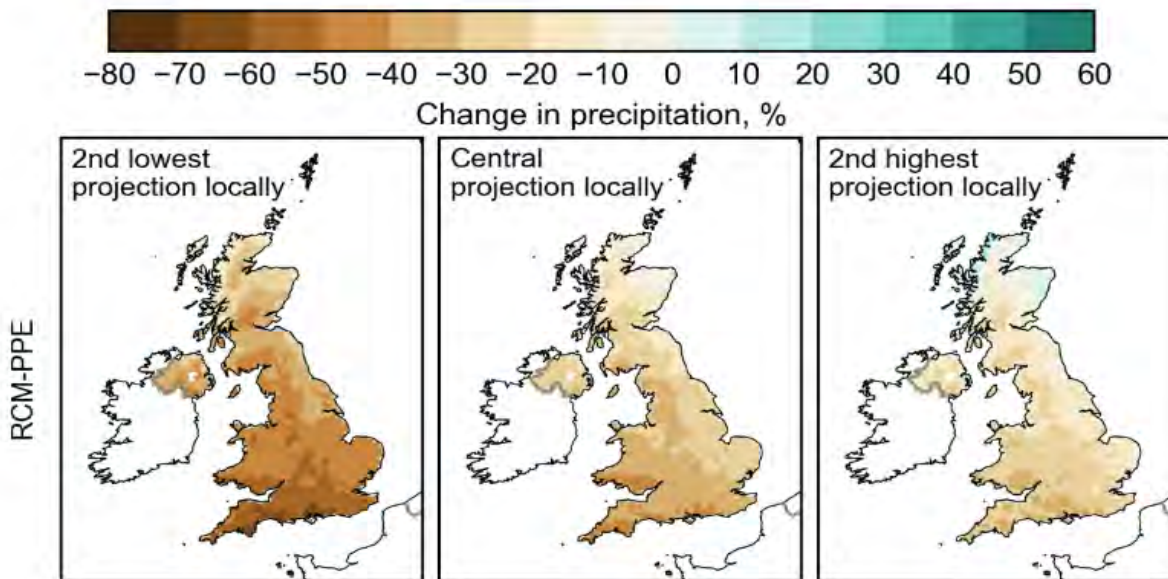
Increased intensity rainfall

Changes for 2061-2080 relative to 1981-2000 for High emissions World (RCP8.5)

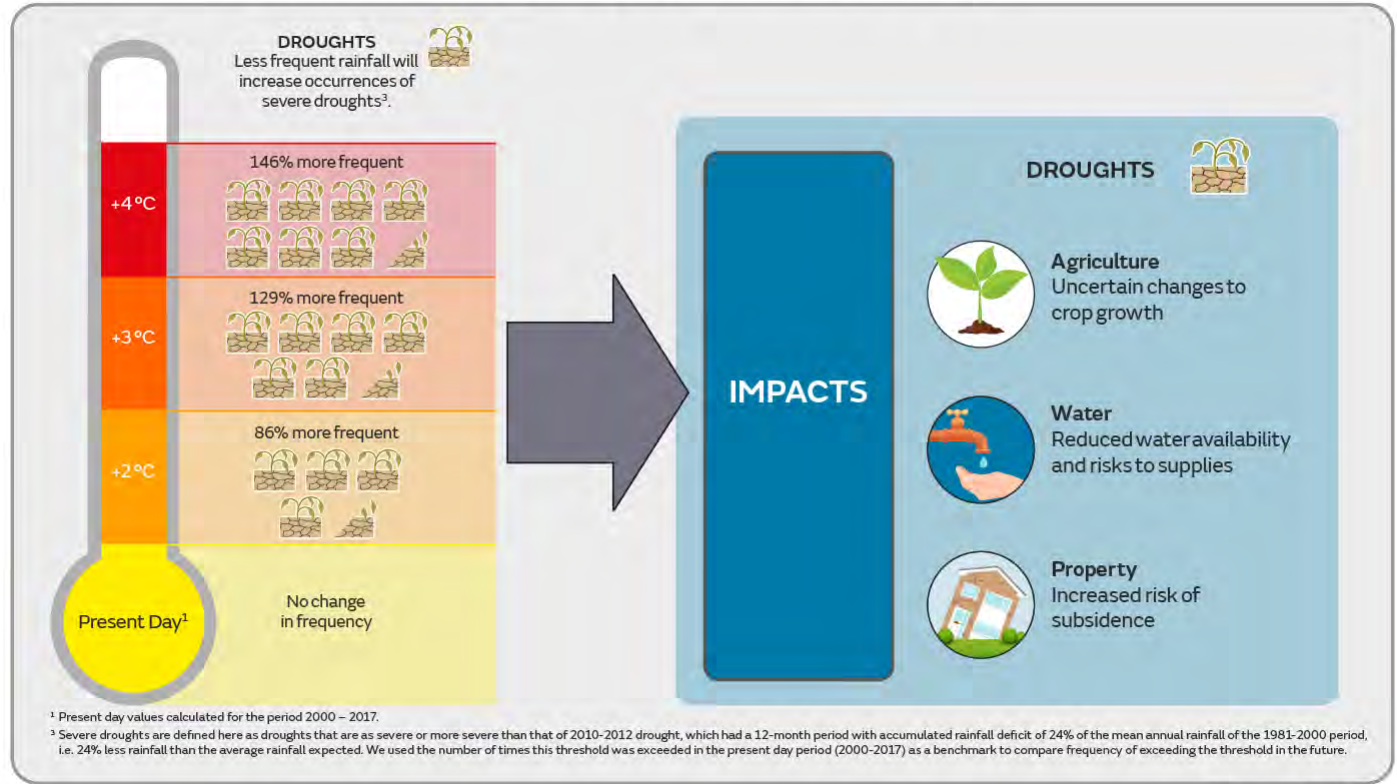


Decreased Rain – Drought risk

Changes for 2061-2080 relative to 1981-2000 for High emissions World (RCP8.5)



Global warming and future high-impact weather in the UK



© Crown copyright 2021. 01246

Sea Level Rise & Coastal Erosion



Sea level rise in the UK

Sea levels will rise more in England/Wales than in Scotland/Northern Ireland.
This is due to glacial isostatic adjustment.

	RCP2.6				RCP4.5				RCP8.5			
	2100*	2100†	2200†	2300†	2100*	2100†	2200†	2300†	2100*	2100†	2200†	2300†
London	0.30 - 0.71	0.30 - 0.72	0.5 - 1.5	0.6 - 2.2	0.38 - 0.84	0.36 - 0.84	0.7 - 1.8	0.8 - 2.6	0.54 - 1.16	0.52 - 1.13	1.1 - 2.8	1.5 - 4.3
Cardiff	0.28 - 0.70	0.28 - 0.71	0.4 - 1.5	0.5 - 2.2	0.36 - 0.83	0.34 - 0.82	0.6 - 1.8	0.8 - 2.6	0.52 - 1.14	0.50 - 1.11	1.1 - 2.8	1.4 - 4.2
Edinburgh	0.09 - 0.50	0.08 - 0.51	0.1 - 1.1	0.0 - 1.6	0.16 - 0.62	0.14 - 0.61	0.2 - 1.4	0.2 - 2.0	0.30 - 0.91	0.28 - 0.88	0.6 - 2.3	0.7 - 3.5
Belfast	0.12 - 0.53	0.11 - 0.54	0.1 - 1.2	0.0 - 1.7	0.19 - 0.66	0.17 - 0.65	0.3 - 1.5	0.3 - 2.1	0.34 - 0.95	0.31 - 0.92	0.7 - 2.4	0.8 - 3.6

Compared to the 1981-2000 average



Temperature Changes

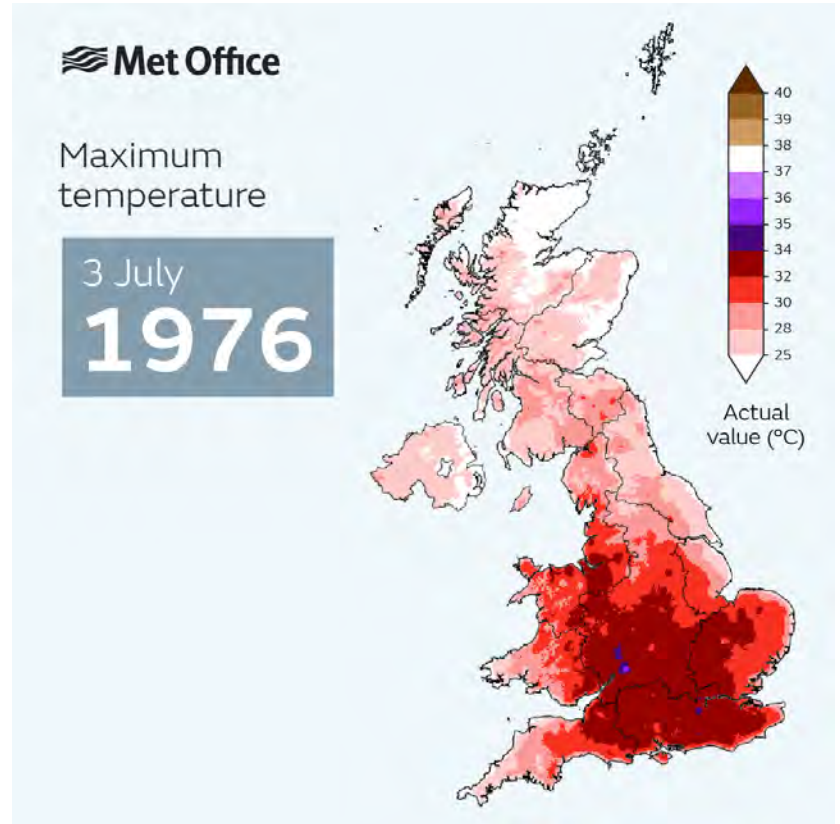
We have already seen temperatures rise across the UK.

UK record in 1990 = 37.1 C (add location)

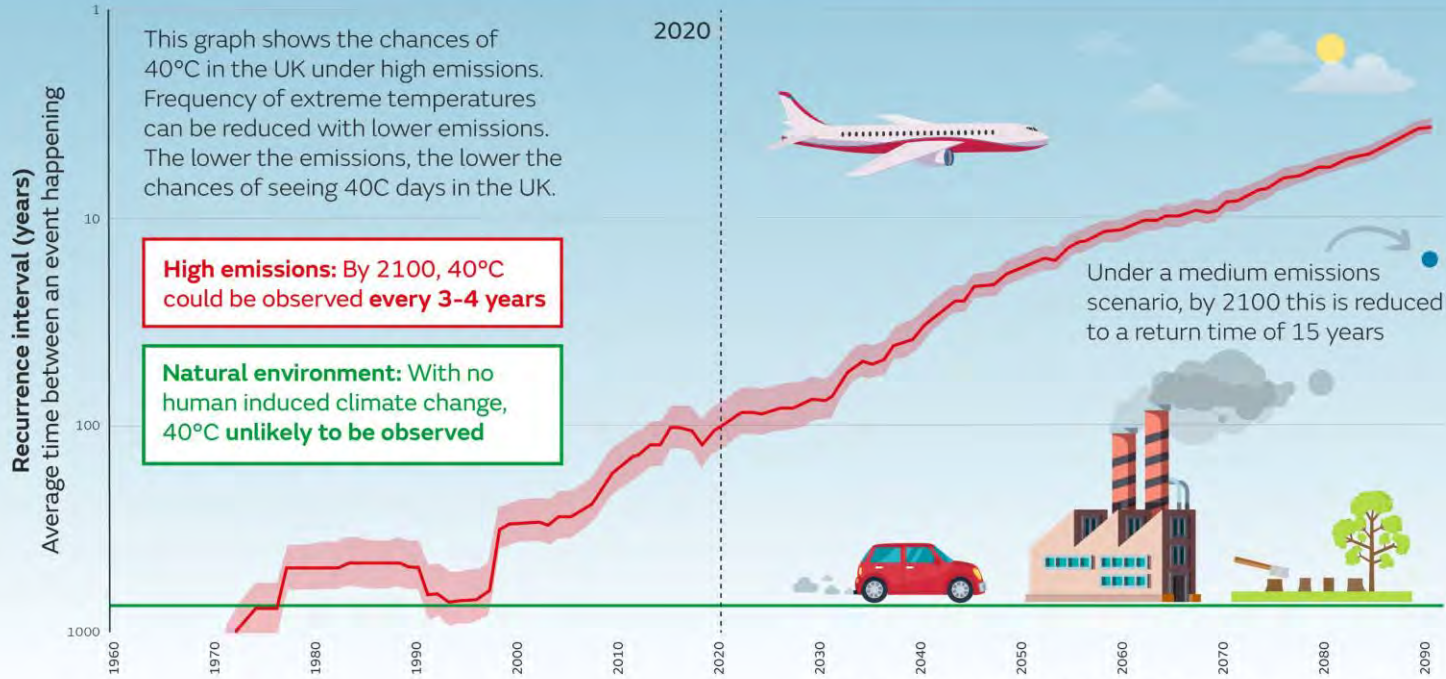
UK record in 2003 = 38.5 C

UK record in 2019 = 38.7 C

UK record in 2022 = 40.3 C



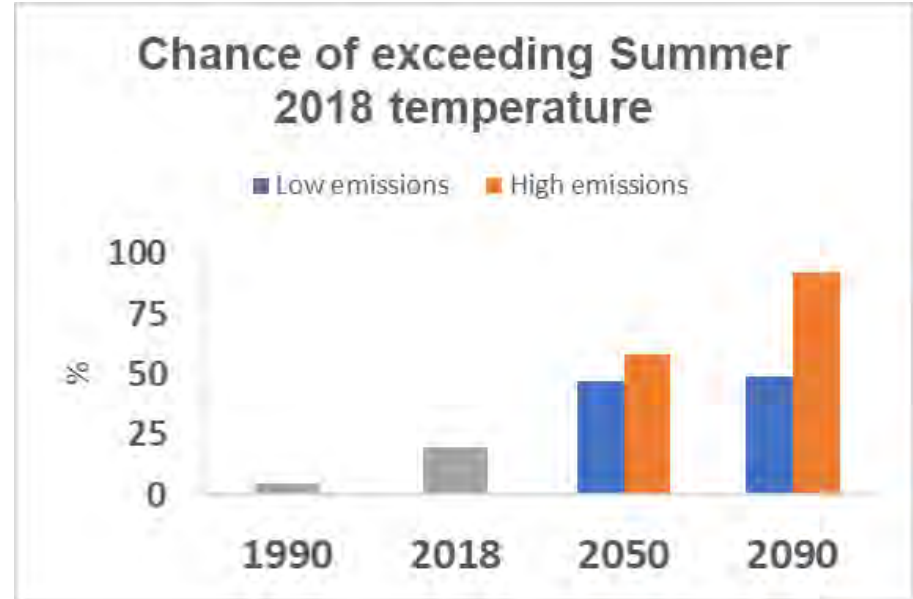
July 2022 UK temperature record of 40.3°C at Coningsby in Lincolnshire.



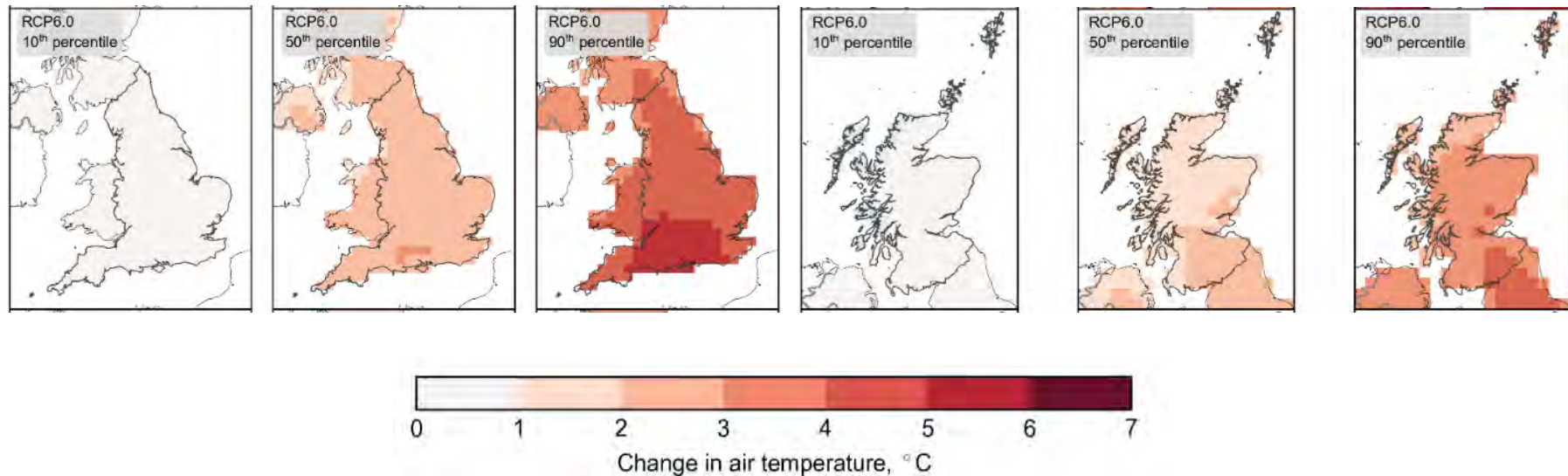
High emissions scenario = RCP 8.5, Medium emissions scenario = RCP 4.5.

Met Office Summer 2018 heatwave (can also relate to 2022)

- 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

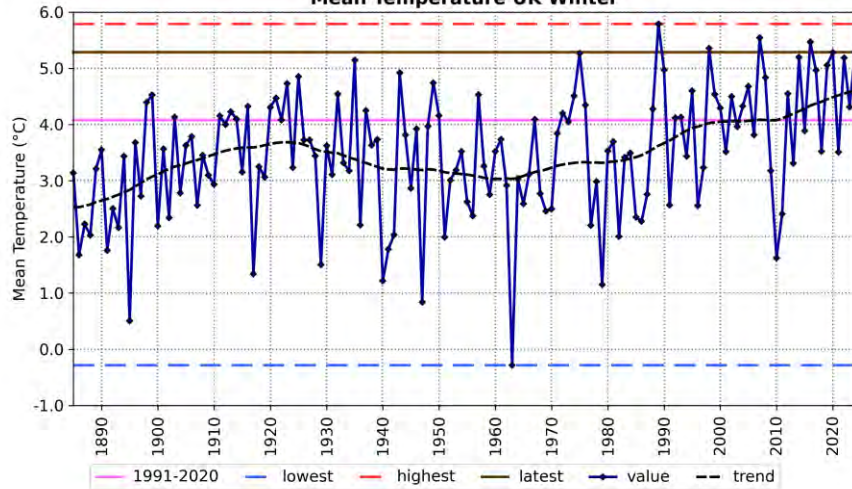


Summer Mean Daily Maximum Temperatures – 2060-2079

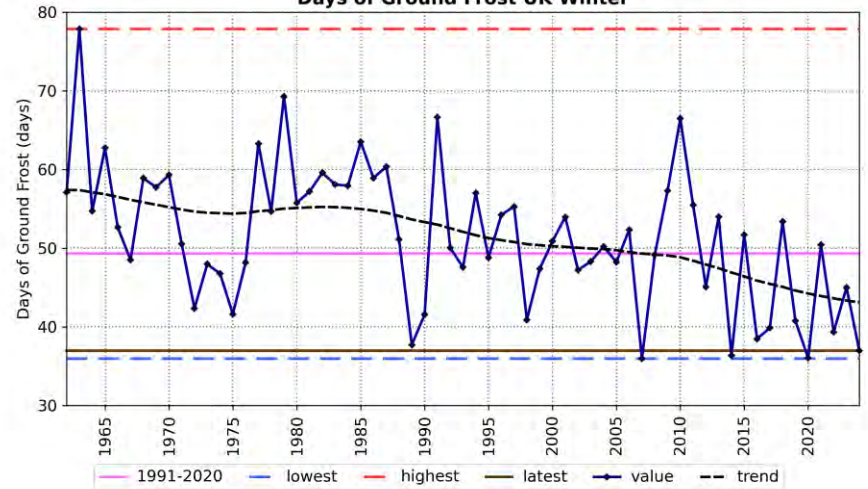


Primary	Secondary
<p>Excess Deaths</p> <p>Serious health risk to those with pre-existing conditions.</p> <p>Dehydration and heat exhaustion</p> <p>Buckled rails and melting roads</p>	<p>Poor air quality leading to breathing difficulties</p> <p>Water safety issues as people try to cool off</p> <p>Power outages and water shortages</p> <p>Closure of schools and businesses</p>

Mean Temperature UK Winter



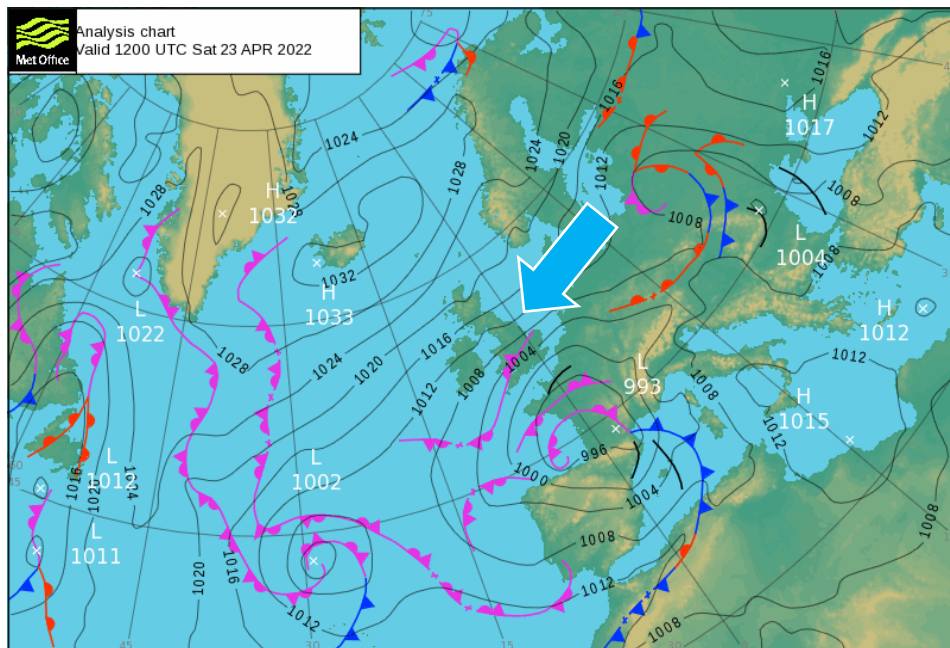
Days of Ground Frost UK Winter



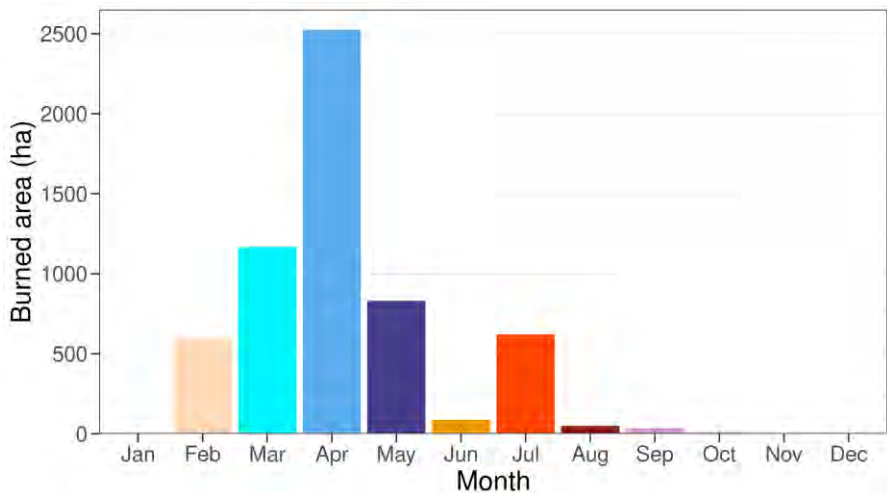
Increased Wildfire Risk

Worst weather conditions for wildfire development:

- High Temperatures
- Low Humidity
- Low Rainfall
- High Winds

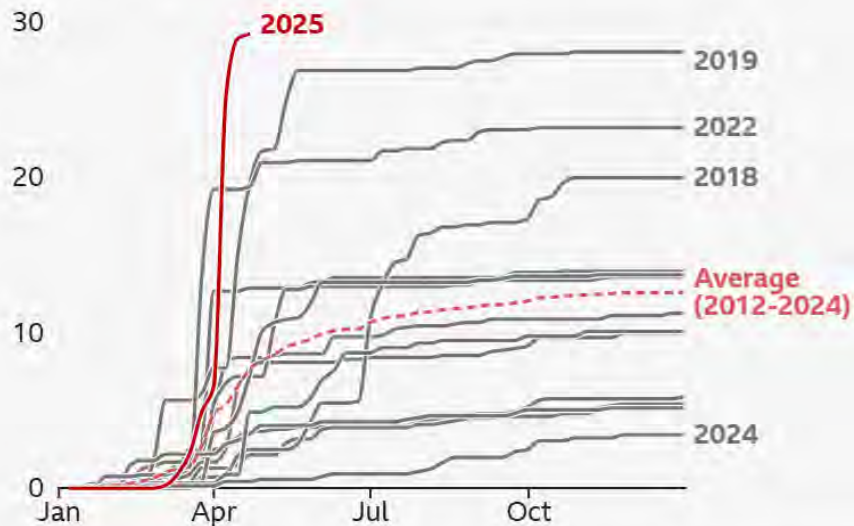


UK Wildfire seasons



UK burnt area already at record high

Weekly cumulative burnt areas, in thousand hectares, 2012-2025



Source: Global Wildfire Information System, as of 25 April (Only fires of approximately 30 ha or larger)



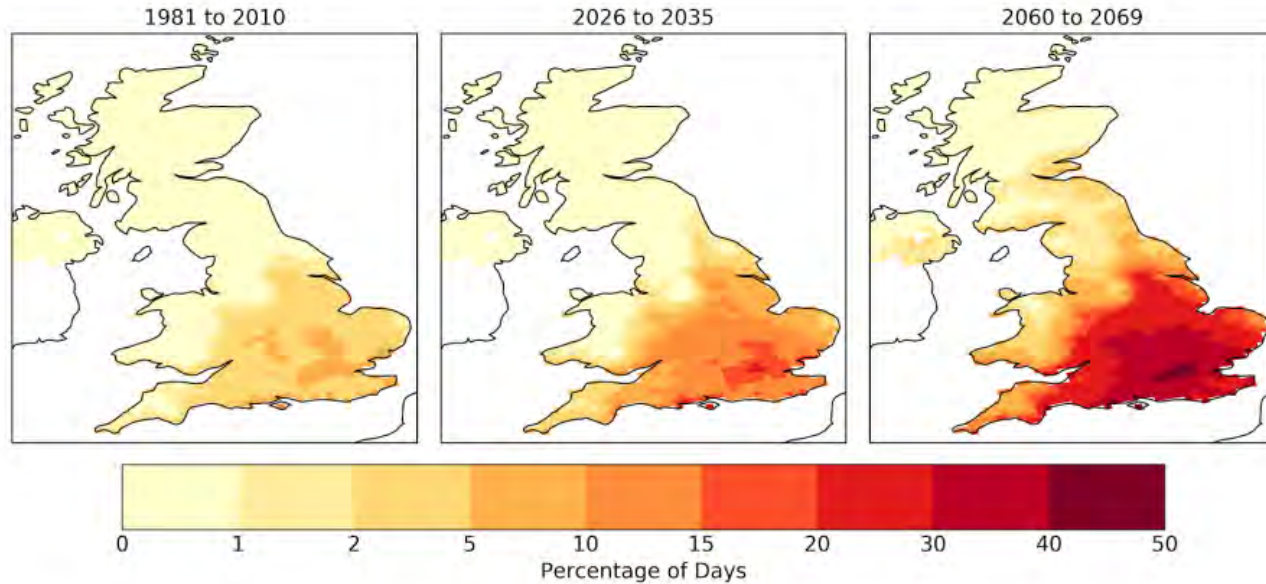


Figure D4: Annual occurrence (% of days) with Fire Weather Index (FWI) > 17.35 (Fire Danger Class 4/5) during summer (JJA) from the UKCP18 12km regional model averaged over the 12 ensemble members for a) 1981-2010 baseline period b) 2026-2035 (2 degC global warming level) and c) 2060-2069 (4 degC global warming level).

Belcher et al., (2021)



@FIRESNAPPER999

Fire crews continued to tackle hotspots at the scene of both blazes on Sunday



BBC News



NICOLA LOCKYER

Impacts could include:

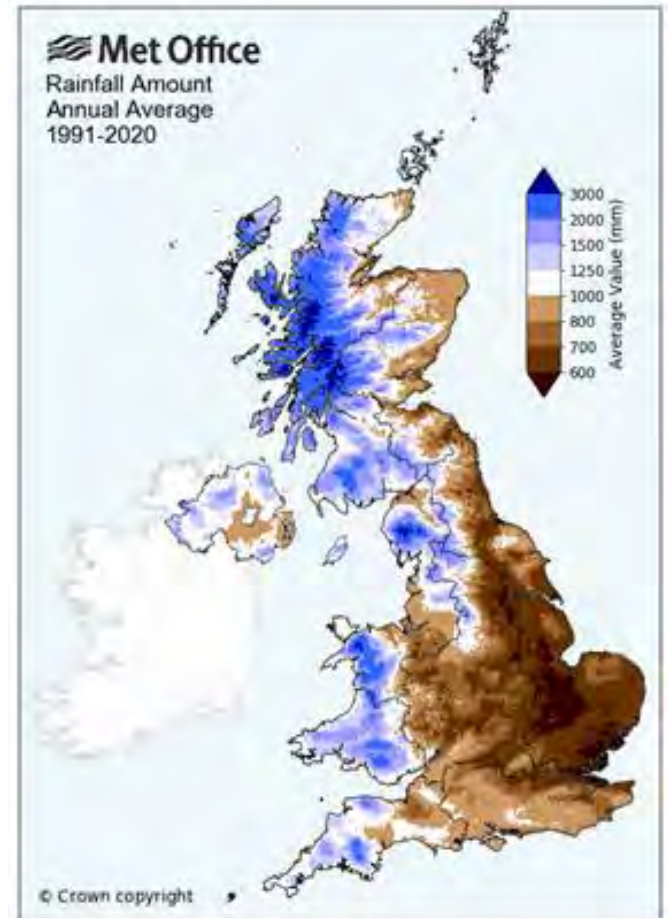
- Habitat destruction
- Species extinction
- Soil erosion
- Agriculture losses
- Property destruction
- Water pollution
- Poor air quality
- Strain on Emergency Responders

Increased Water Outage Risk

Latest projections suggest....

.... between 2025 and 20250 we'll need more than 3.4 billion additional litres of water per day to meet future demand for public water supply. (Met Office)

.... the amount of water available in England could be reduced by 10-15%, with some rivers seeing up to an 80% decrease in water during the summer months. (EA 2020)



Long-Term Community Impacts

Met Office Future of the UK's Climate by 2070

	Changes in intensity or frequency so far	Is this linked to climate change?	What is expected in the future?
UK warm spells	Increase	Yes	Increase
UK cold spells	Decrease	Yes	Decrease
UK heavy rain	Increase	Inconclusive	Increase
UK dry spells	No trend detected	Inconclusive	Increase (summer)
UK wind storms	No trend detected	Inconclusive	Increase*

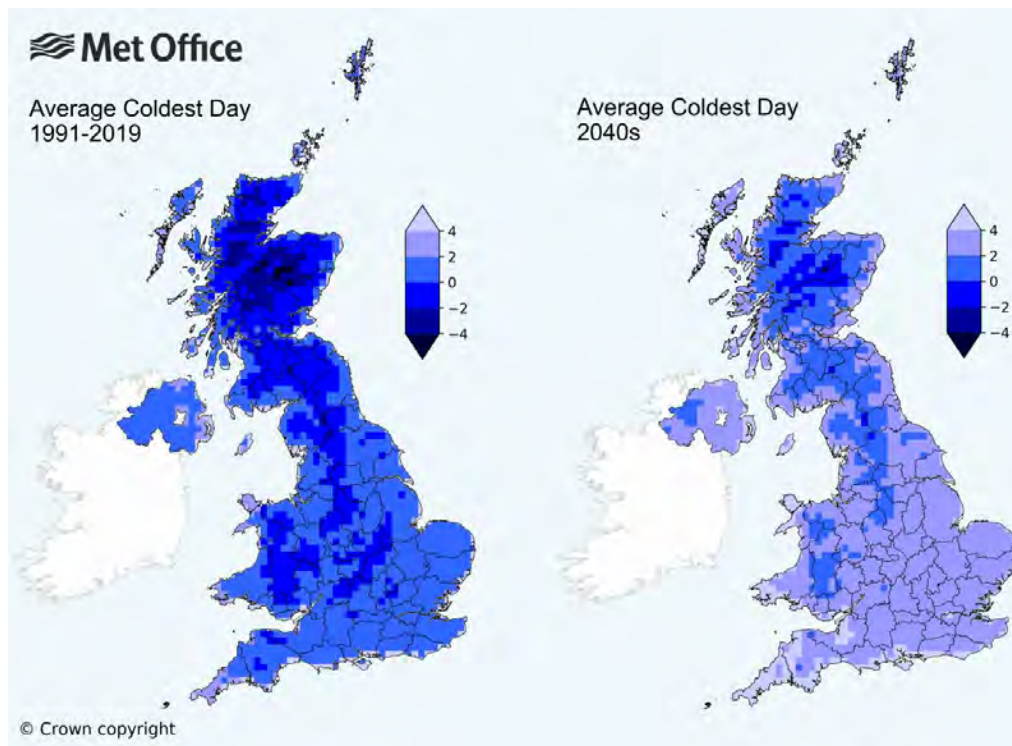
* Some, but not all, evidence supports an increase.

Cold & Snow

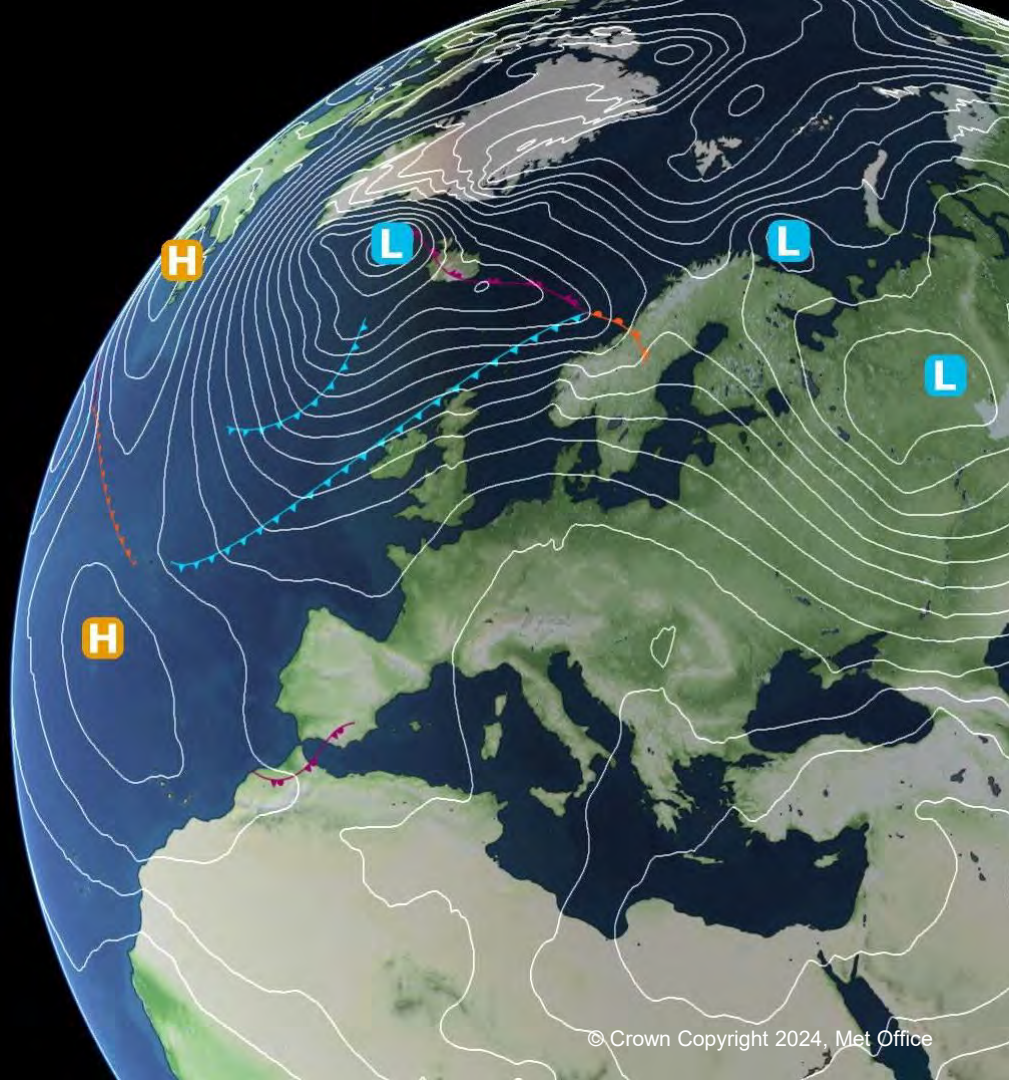
2013-2022 v 1961-1990

- 15% fewer air frosts
- 24% fewer ground frosts

Severe winters could still occur in the future but less often with the frequency of snow events decreasing.

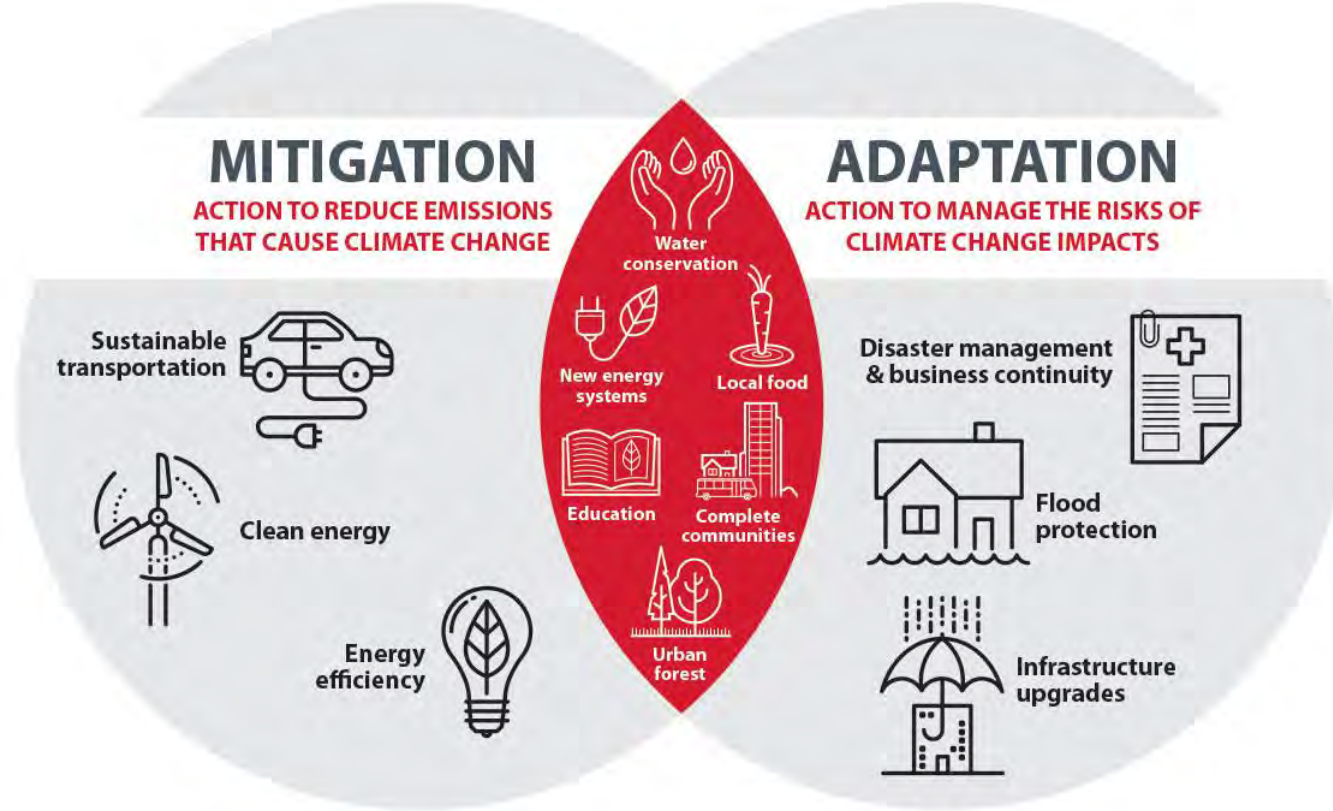


Climate Action



Climate Mitigation and Adaptation

Met Office Mitigation and Adaptation → Increase Resilience



<https://www.calgary.ca/UEP/ESM/Pages/Energy-Savings/Climate-Change.aspx?redirect=/climateprogram>

Mitigation

Key outcomes from COP conferences

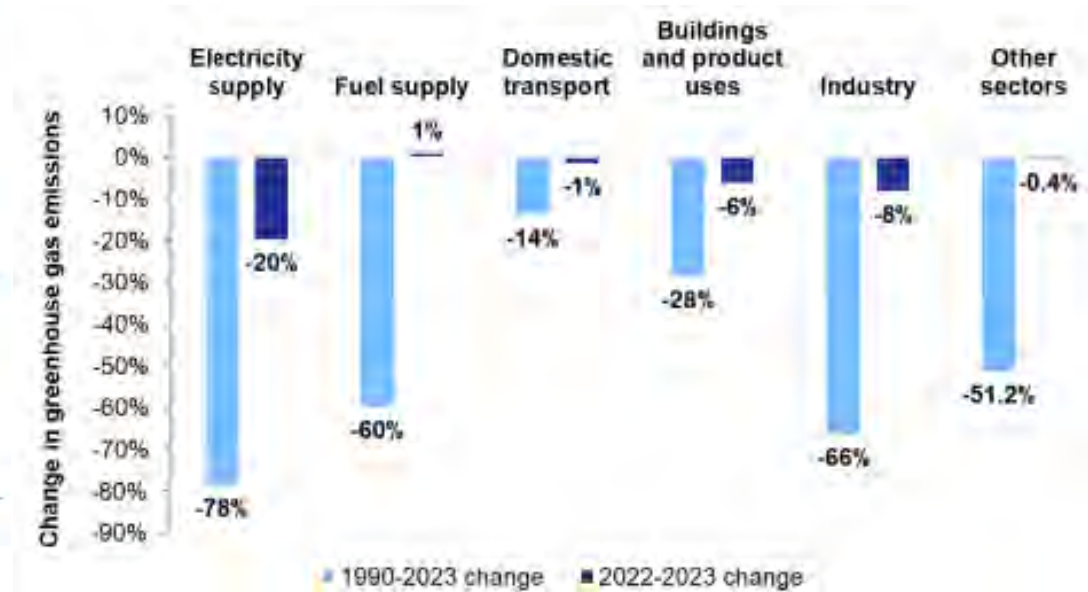
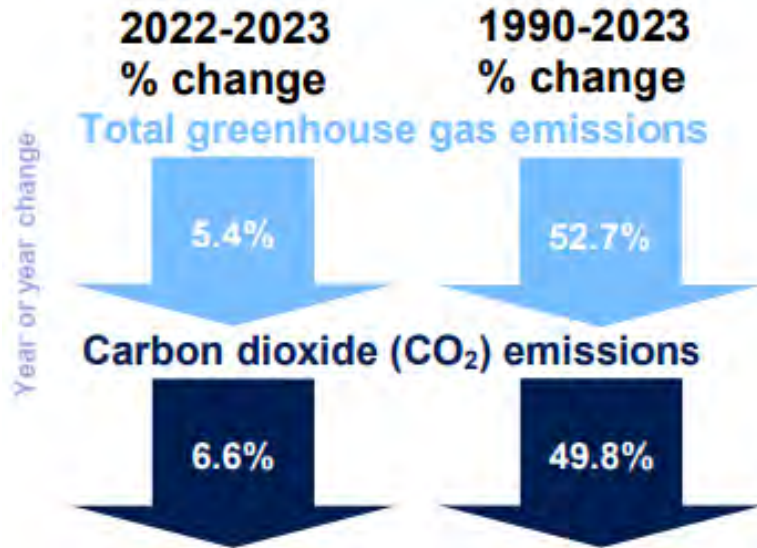
At COP26, the 'Glasgow Climate pact' was agreed which reinforced the ambition for countries to limit global warming to 1.5°C through revisiting and strengthening their NDCs.

In COP27 a 'loss and damage fund' was established targeting vulnerable, developing countries who may suffer from adverse climate change.

At COP28, nearly every country in the world agreed to "transition away from fossil fuels" which is included in the first 'Global Stocktake'.



How is the UK doing so far in reducing emissions?



2023 UK provisional Greenhouse Gas Emissions. Dept. ESNZ 2024

Reducing Emissions



Adaptation

Adapting to climate change is essential



There is a wide range of feasible and effective options which can help reduce climate risks

Adaptation is necessary now and under all warming scenarios to reduce climate risks

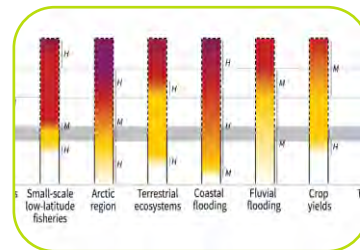
Adaptation is needed to manage risks from:



Ongoing impacts



Committed impacts



Future warming

84% of countries in the UNFCCC are now formally planning adaptation. However, progress is uneven and current levels are insufficient.

Limits to adaptation

Adaptation limits

Soft limits – can be overcome



Some human adaptation has already reached soft limits, e.g., in some Small Islands.



Hard limits – cannot be overcome



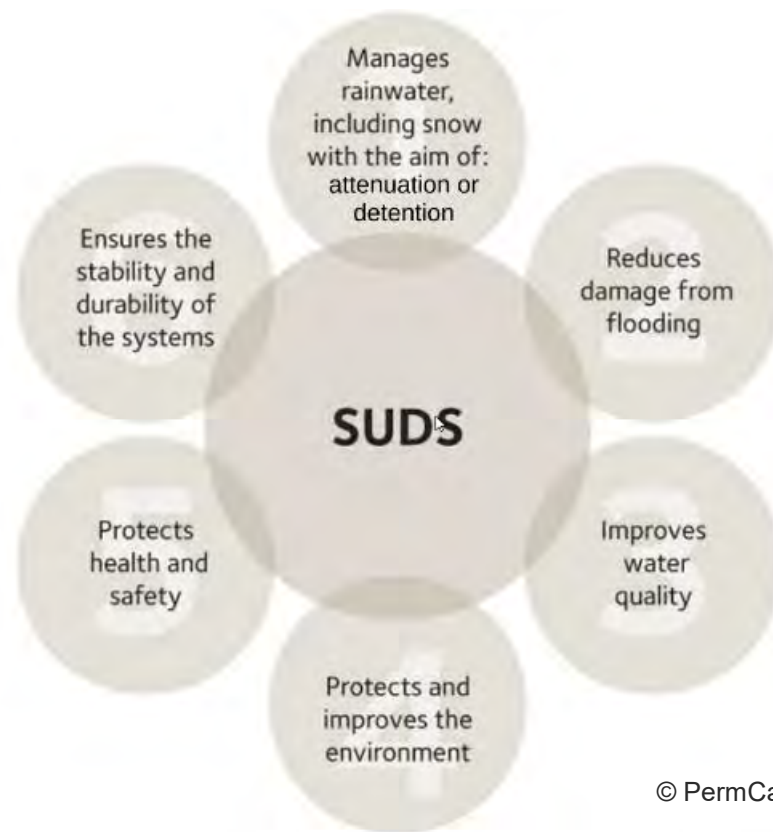
Many ecosystems are already approaching / surpassing hard limits.

- It is not possible to eliminate all climate risks, and adaptation becomes less effective as warming increases.
- The sooner we take action to adapt, and the faster emissions are reduced, the less likely that adaptation limits are reached.
- The choices we make in this decade will have implications for many generations to come.

SuDS aim to alleviate these problems by:

- storing or re-using surface water at source
- decreasing flow rates to watercourses
- improving water quality

Source: BGS



© PermCalc

Bridget Joyce Square, London



Stebonheath Primary School, Llanelli

Downpipe fed
garden planter



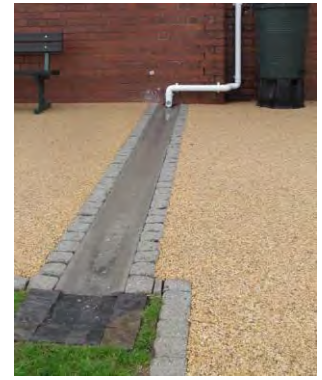
Swale



Tree pit
planter



Downpipe
Disconnection



Flood Gates



Airbrick covers



Non-return Valve





<https://www.lowerotterrestorationproject.co.uk/>

The benefits of planting trees, includes;

- Carbon storage
- Support nature
- Aid flood protection
- Improve mental health

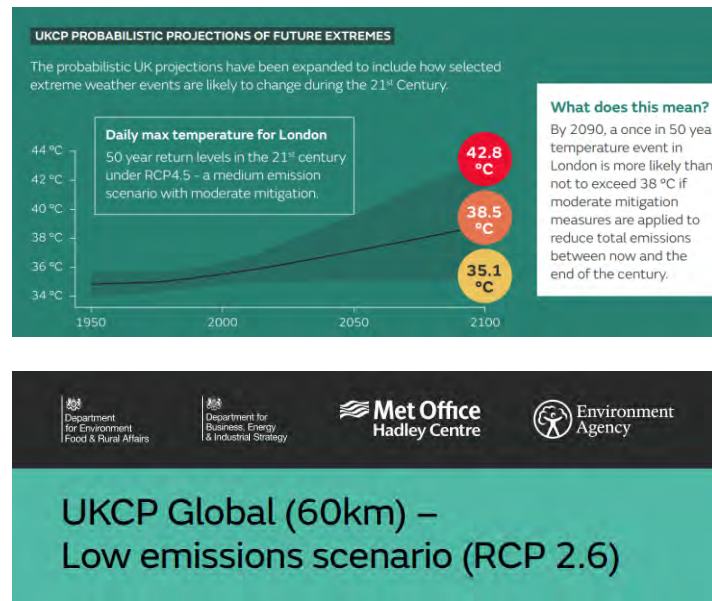


© Friends of the Earth

Climate Information

On this page there are links to a wide variety of information and products including:

- A summary of the most recent climate projections for the UK
- Infographics and Factsheets
- Free [E-Learning](#) to introduce you to the latest UK Climate Projections



What will climate change look like near me?

By Becky Dale and Nassos Stylianou | 7 December 2020 | Science & Environment

Animations on

How high might temperatures climb where you live - and is it likely to rain more? The BBC and the Met Office have looked at the UK's changing climate in detail to find out.

The Met Office climate projections cover different levels of global warming. When, or if, these levels are reached will depend on the concentration of greenhouse gases in our atmosphere.

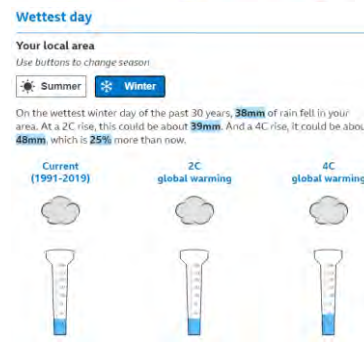
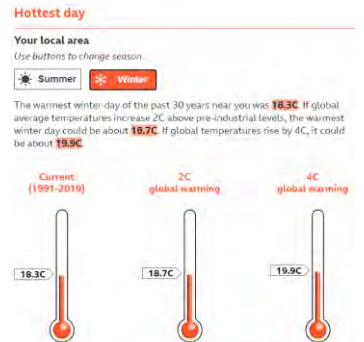
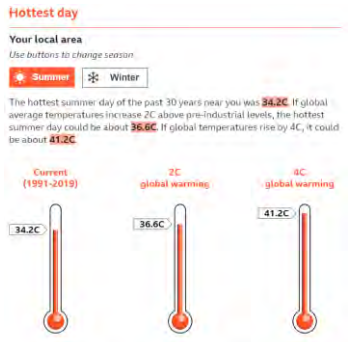
The data is measured in 12km-square (7.5-mile-square) grids across the UK. The results for your postcode represent an average for the grids closest to you and the mid-point of a range of future possibilities.

How could the climate change near you?

Enter a full UK postcode to find out



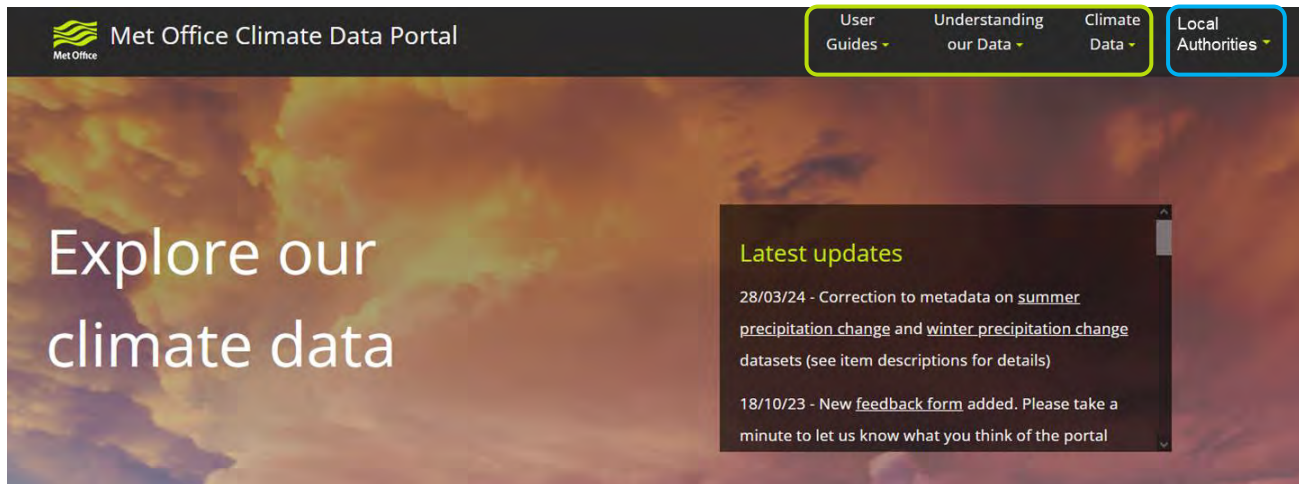


Climate Data Portal (●CDP) Local Authority Climate Service (●LACS)

●CDP and ●LACS
have a single point
of entry.

The ●CDP provides
climate data layers.



Met Office Climate Data Portal

User Guides - Understanding our Data - Climate Data - Local Authorities -

Explore our
climate data

Latest updates

28/03/24 - Correction to metadata on [summer precipitation change](#) and [winter precipitation change](#) datasets (see item descriptions for details)

18/10/23 - New [feedback form](#) added. Please take a minute to let us know what you think of the portal

The ●LACS provides
easy-to-access guidance
on local climate.

Climate Data Portal (●CDP)

1. Choose your data type

Explore our data



Precipitation



Temperature



Sea Level

Observations
(past)Projections
(future)Socioeconomic
data - UK SSPs

2. Select your dataset

1 - 20 of 28 results

Relevance ▾

Data

Annual Max Temperature Observations 1991-2020 12km
Met Office | MetOffice_data

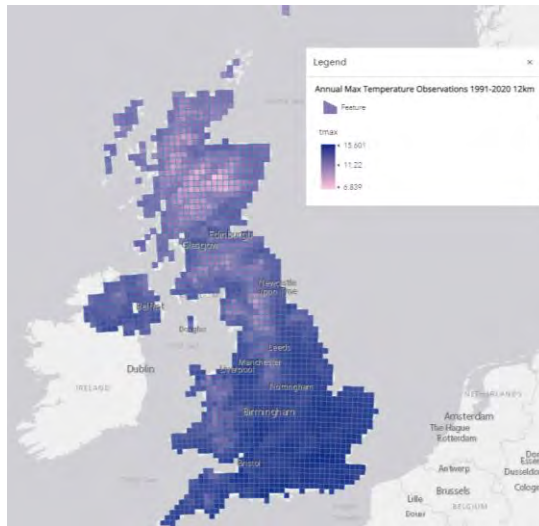
Annual averages of daily maximum surface temperature (C) for 1991-2020 from HadUK 12km gridded data. This data contains a field for the average over the period. It is named 'tmax'...

Type: Feature Layer	Rows: 1,707
Last Updated: 1 September 2022	Tags: temperature, climate, Met Office, HadUK, UK, annual...

Data layers include:

- Annual Count of Summer Days
- Winter Precipitation Rate Change
- Sea Level Rise to 2100
- Annual Heating Degree Days

3. Show map



4. Download

Data is available to access:

- in ArcGIS
- via API
- as downloads,

Data formats include:

- csv
- GIS-friendly formats such as shapefiles, GeoJSON

5. Advanced use

ArcGIS users can combine these data layers with their own or with other public ones.



Local Authority Climate Service

Welcome to the Met Office's climate service for Local Authorities in the UK.

This site provides tools and resources that have been specifically designed for Local Authorities to help you better understand climate change in your local area and support your adaptation journey.

This information may be useful for others, not just Local Authorities. It is free and available for all. This is a Beta service and will be developed further.



[Explore the Climate of your Local Authority.](#)



[How to Assess your Climate Risk](#)



[How to Take Action](#)



[FAQ and Version History.](#)

<https://climatedataportal.metoffice.gov.uk/pages/lacs>

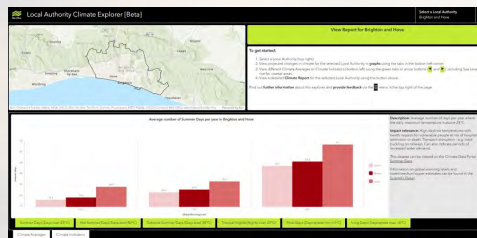
Local Authority Climate Service

Local Authority Community Site



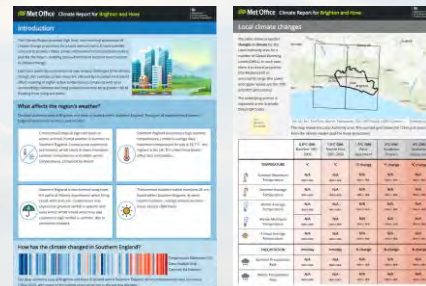
Helpful resources and further support for adaptation planning

Local Authority Climate Explorer



Ready-to-use climate information for your local area

Local Authority Climate Report

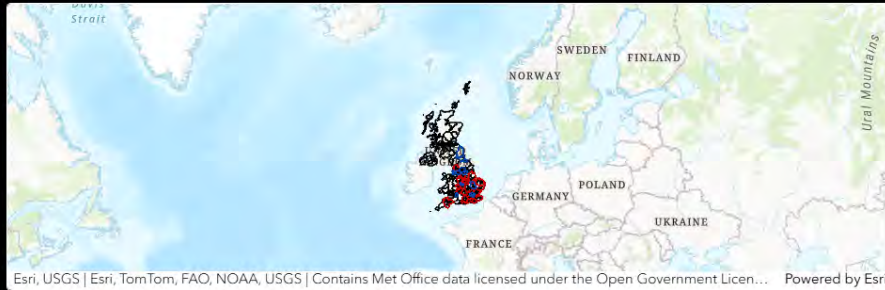


Summary of key results

Climate Explorer



Local Authority Climate Explorer [Beta, V1.0]

Select a Local Authority
None

Select a Local Authority to generate a report

To get started:

1. Select a Local Authority (top right)
2. View projected changes in climate for the selected Local Authority in **graphs** using the tabs in the bottom left corner.
3. View different Climate Averages or Climate Indicators (bottom left) using the green tabs or arrow buttons (◀ and ▶), including Sea Level rise for coastal areas.
4. View a detailed **Climate Report** for the selected Local Authority using the button above.

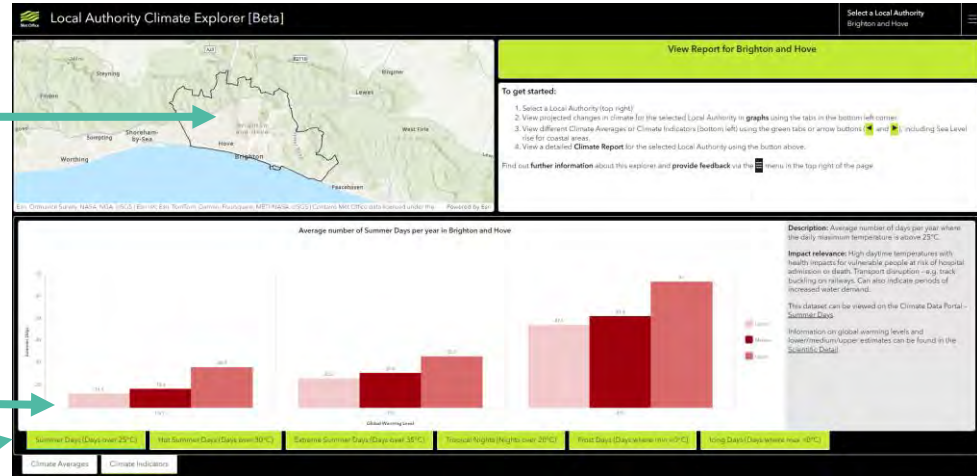
Select a Local Authority using the Selector in the top-right corner of the application

Climate Averages

Climate Indicators

- Key climate variables calculated over your Local Authority area:
 - **Climate Averages:** e.g. summer average temperatures, winter rainfall, sea level rise.
 - **Impact relevant indicators:** e.g. Summer Days (Days over 25°C).
- Information presented for a range of global warming levels consistent with adaptation guidance.
- View data as a graph.
- Based on UKCP Regional (12km resolution) data.

*Local authority level information will be available at launch. Sub-local authority level information will be provided in future iterations.



- Summarises data for the Local Authority area in a PDF printable, shareable and easy to understand format.
- Summarises change and impact indicators in tables.
- Sea level rise page for coastal LA's

Introduction

The Climate Change Act 2009 sets a target for the UK to reduce its greenhouse gas emissions by 100% by 2050. Brighton and Hove is committed to meeting this target and is working towards becoming a net-zero city by 2030.

What affects the region's weather?

Brighton and Hove is a coastal city, which means it is affected by the sea. The sea has a moderating effect on the climate, which means that the weather is generally milder than inland areas.

How has the climate changed in Southern England?

Over the last 100 years, the climate in Southern England has become warmer and wetter. The average temperature has risen by 1.5°C, and there has been an increase in the number of days with heavy rain.

Climate Change in the UK

Over the last 100 years, the climate in the UK has become warmer and wetter. The average temperature has risen by 1.5°C, and there has been an increase in the number of days with heavy rain.

Observed changes

- Temperature: The average temperature in the UK has risen by 1.5°C since 1961.
- Precipitation: There has been an increase in the number of days with heavy rain (more than 2mm) since 1961.
- Sea level rise: The sea level has risen by 100mm since 1993.

Future headlines

The climate is already changing, and we are already seeing the effects. This means that the effects of climate change will be even more pronounced in the future.

Local changes in the global context

The Paris Agreement is a landmark agreement that aims to limit global warming to 1.5°C above pre-industrial levels. Brighton and Hove is committed to meeting this target and is working towards becoming a net-zero city by 2030.

Global Warming Levels

The Paris Agreement aims to limit global warming to 1.5°C above pre-industrial levels. Brighton and Hove is committed to meeting this target and is working towards becoming a net-zero city by 2030.

Timing of changes

The effects of climate change will be felt sooner in some areas than others. Brighton and Hove is a coastal city, which means it is affected by the sea. The sea has a moderating effect on the climate, which means that the weather is generally milder than inland areas.

Local climate changes

The climate in Brighton and Hove is generally milder than inland areas. This is due to the moderating effect of the sea. The sea has a moderating effect on the climate, which means that the weather is generally milder than inland areas.

Indicator	2000-2019	2010-2019	2015-2019	2018-2019	2019
Temperature	14.2	14.3	14.4	14.5	14.6
Sea level rise	100	100	100	100	100
Sea level rise	100	100	100	100	100
Sea level rise	100	100	100	100	100
Sea level rise	100	100	100	100	100

Local climate indicators

The climate in Brighton and Hove is generally milder than inland areas. This is due to the moderating effect of the sea. The sea has a moderating effect on the climate, which means that the weather is generally milder than inland areas.

Indicator	2000-2019	2010-2019	2015-2019	2018-2019	2019
Temperature	14.2	14.3	14.4	14.5	14.6
Sea level rise	100	100	100	100	100
Sea level rise	100	100	100	100	100
Sea level rise	100	100	100	100	100
Sea level rise	100	100	100	100	100

How to use the local climate projections

The climate in Brighton and Hove is generally milder than inland areas. This is due to the moderating effect of the sea. The sea has a moderating effect on the climate, which means that the weather is generally milder than inland areas.

Climate risk

The climate in Brighton and Hove is generally milder than inland areas. This is due to the moderating effect of the sea. The sea has a moderating effect on the climate, which means that the weather is generally milder than inland areas.

Selection of hazard values

The climate in Brighton and Hove is generally milder than inland areas. This is due to the moderating effect of the sea. The sea has a moderating effect on the climate, which means that the weather is generally milder than inland areas.

Sea Level Rise

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Around the UK

The climate in Brighton and Hove is generally milder than inland areas. This is due to the moderating effect of the sea. The sea has a moderating effect on the climate, which means that the weather is generally milder than inland areas.

Brighton and Hove

The climate in Brighton and Hove is generally milder than inland areas. This is due to the moderating effect of the sea. The sea has a moderating effect on the climate, which means that the weather is generally milder than inland areas.

Selection of hazard values

The climate in Brighton and Hove is generally milder than inland areas. This is due to the moderating effect of the sea. The sea has a moderating effect on the climate, which means that the weather is generally milder than inland areas.

Take action

The climate in Brighton and Hove is generally milder than inland areas. This is due to the moderating effect of the sea. The sea has a moderating effect on the climate, which means that the weather is generally milder than inland areas.

Who is this for?

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#ClimateReady

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Climate Explained:

<https://www.metoffice.gov.uk/weather/climate/climate-explained/index>

Get Climate Ready:

<https://www.metoffice.gov.uk/weather/climate/getclimateready/index> (#ClimateReady)



The science is clear, the [#climate](#) is changing.

There's a greater chance of hotter, drier summers & warmer, wetter winters in the UK in future.

Is your home ready?

Get ready for tomorrow [#GetClimateReady](#)
[#UKCP18](#) [#adaptation](#)



From Web

UK Daily Weather Extremes:

<https://www.metoffice.gov.uk/weather/observations/weather-extremes>

Hadley Centre for Climate Science:

<https://www.metoffice.gov.uk/weather/climate/met-office-hadley-centre/index>

IPCC Reports:

<https://www.ipcc.ch/reports/>

Finally.....

Please could you put in the chat any actions your community is taking to adapt to the changing climate and promote climate mitigation and adaptation?

Please complete your feedback form