

And now for tomorrow's weather ...

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"Tomorrow will be another scorcher with temperatures soaring above 40°C. Gardeners can expect little in the way of rain for the rest of the month and those venturing outside remember to cover up...And that's all for today, the 4th of August 2081"

According to a new report, 'Climate Change Scenarios for the United Kingdom', compiled for the UK government by scientists at the Meteorological Office's Hadley Centre, the UK Climate Impacts Programme (UKCIP) and the Tyndall centre for Climate Research. It says that temperatures across the world for January, February and March this year were probably the warmest for over 1,000 years. On average recorded temperatures worldwide were 0.71 degrees Celsius higher than for the previously highest recorded between 1961 and 1990.

The impacts of such increases, if temperatures continue to rise at the current rates, include major changes in climatic conditions across the UK.

The new (UKCIP) forecast based on a 'high emissions' scenario (if the emissions rate increases to approximately four times today's level) predicts that by 2080:

- rising sea levels leading to coastal flooding, especially on the south and east coasts of England
- annual temperature averaged across the UK increasing by up to 3.5°C
- increase in winter precipitation of between 15 and 35% - increasing the chance of river flooding events
- warmer, drier summers with a decrease in rainfall of up to 50%
- milder, wetter winters and drier summer
- less snowfall (up to 90% less in coastal and lowland areas)
- weakening of the Gulf Stream
- 20% fewer foggy days in winter
- 20% less cloud in summer

The table below shows the percentage of years experiencing various extreme weather across central England and Wales relative to the 1961-90 climate average:



	Anomaly	2020s	2050s	2080s
Mean Temperature				
A hot '1995-type' August	3.4°C warmer	1%	20%	63
A warm '1999-type' year	1.2°C warmer	28	73	100
Precipitation				
A dry '1995-type' summer	37% drier	10	29	50
A wet '1994/95-type' winter	66% wetter	1	3	7
Source: The UKCIP02 Briefing Report				

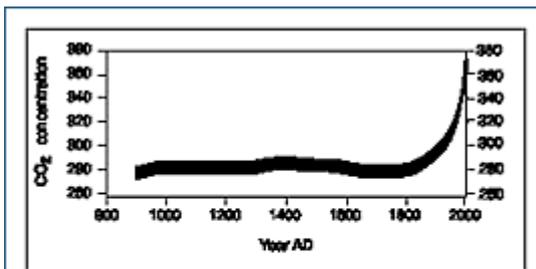
Such changes could cause, on the one hand, in winter, widespread flooding e.g. in London and, on the other, in summer, insufficient rainfall leading to a 40% decrease in soil moisture - creating problems for farming.

Even for the 'low emissions' scenario (which assumes that levels of carbon dioxide will eventually fall below today's levels) the future rate of global warming over the present century would be about four times that experienced during the twentieth century. In this case, by the 2080s:

- annual temperature averaged across the UK would rise by about 2°C
- winter precipitation will increase from 10 to 20%
- in summer, a decrease in rainfall of up to 35%
- cloud cover will decrease by around 10% in the summer
- in summer, average soil moisture will decrease in the whole of the UK but the highest reduction would be by 20% in the southeast

Why is climate changing?

The graph below shows the increasing historic concentration (parts per million) of carbon dioxide in the global atmosphere. Line thickness indicates uncertainty in the concentrations.



Increasing historic concentration of carbon dioxide in the global atmosphere.

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A combination of natural and human causes has led to the change in global climate. The earth's climate varies *naturally* on cycles of differing duration due to interactions between the oceans and the atmosphere, changes in the Earth's orbit, fluctuations in energy received from the sun and volcanic eruptions. However the *human* influence is largely the input of carbon dioxide from emissions from the burning of fossil fuels. 6.5 million tonnes of carbon are emitted into the atmosphere globally from this source. Changes in land use are resulting in a further net annual emission of between 1 and 2 billion tonnes of carbon. Why is this?

Activity: There are some scientists that are sceptical about the research on climate change. Use the links in this Feature to investigating the credibility of some global warming claims and counter claims.