

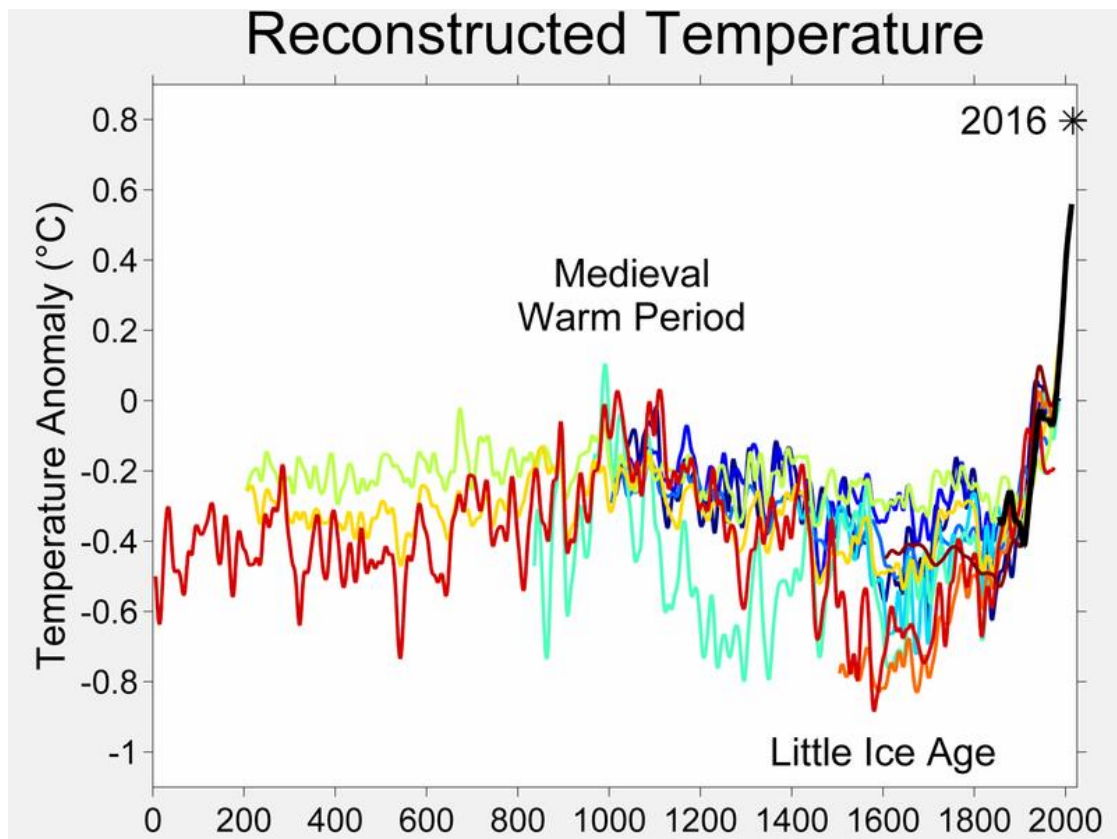
COP 26: tackling the effects of climate change and what we can do to help

- 1. What's the problem?** As the latest report of the International Panel on Climate Change (IPCC) concludes 'Human-induced climate change is already affecting many weather and climate extremes in every region across the globe. Evidence of observed changes in extremes such as heatwaves, heavy precipitation, droughts, and tropical cyclones, and, in particular, their attribution to human influence, has strengthened since the Fifth Assessment Report (AR5)' (IPCC Sixth Assessment, Working Group 1 – The Physical Science Basis, Headline Statements, 2021).

Here's how the Earth's climate system works. Sunlight heats the Earth's surface, which in turn warms the atmosphere, stirring it around the globe, rather like water being heated in a saucepan. As the atmosphere warms, energy leaks back into space from its upper surface, so balancing that coming in from the Sun. However, the average temperature of the atmosphere at the Earth's surface at which this balance is achieved – the 'global mean surface temperature' – changes in response to fluctuations in the energy coming in from the sun. Such astronomical influences range from sunspot cycles of 11 years on average to those caused by slow, regular oscillations of the Earth's orbit around the sun of up to hundreds of thousands of years, controlling the ice ages of the last couple of million years, for example. These external drivers of climate change are, of course, beyond our influence.

On the other hand, global mean surface temperature can also be affected by changes in the composition of the atmosphere itself that modify the flow of energy through it. Among the most important of Earth-bound influences on climate are 'greenhouse gases', most notably carbon dioxide (CO₂). They earn their name because although they are transparent to light, they absorb heat that is leaving the Earth's sunlit surface and re-radiate it all around, further warming the surface below and the air above it. Despite the tiny proportion of the atmosphere that they comprise, greenhouse gases nevertheless play a significant role in global climate warming. And as successive IPCC reports on the work of climate scientists across the world have increasingly shown, we humans are the chief cause of historically increasing levels of CO₂ in the atmosphere, much of it derived from the burning of 'fossil fuels' (coal, oil and gas).

Just by way of the broadest illustration of the problem, current levels of atmospheric CO₂ now routinely exceed 410 parts per million (ppm), measured at the Mauna Loa observatory on Hawaii, in contrast to those from 2010 of around 390 ppm, and further back to those of the estimated pre-industrial (18th C) base of about 280 ppm (you can find these levels reported weekly by the *Guardian* newspaper, for example). Going back further, ice-core records from the polar ice-caps (based on trapped air bubbles) show current levels to exceed those of the last 800,000 years, and possibly for several million years before that. The alarmingly rapid associated rise in mean global temperature reaches well outside the natural cyclicity of the last few million years mentioned above.



Source: <https://commons.wikimedia.org/wiki/File:2000 Year Temperature Comparison.png>

Graph showing reconstructed changes in global mean surface temperature over the last two millennia (years along the horizontal axis), estimated from 11 different kinds of evidence. The black line is based directly on instrumental measurements of temperature made between 1850 and 2004, with the average value for that time interval set at 0 on the vertical axis and deviations above and below it shown in °C. An asterisk has been added for the 2016 value, for comparison. The other, coloured lines are based on various so-called 'proxy' measurements derived from variables known to be correlated with temperature at the Earth's surface, such as ratios of certain isotopes in ice cores and cave deposits, tree ring widths, detailed features of tree leaves and so on. Each of these lines has been calibrated with the black line by matching up their respective mean values within their interval of overlap. There is some inevitable error in matching these different data sets, of course, but the massive increase shown within the last couple of centuries clearly goes well beyond the range of the previous natural variations, coinciding with increased burning of fossil fuels.

2. Whose responsibility is it to tackle the climate problem? The short answer is that it's down to all of us. After all, it is we, especially in the richer parts of the world, who have caused the problem in the first place.

At the highest level, world governments have a vital responsibility to ensure we limit the increase of global mean surface temperature to within 1.5°C – beyond which the combined effects of accelerating climate heating and sea-level rise may prove beyond our ability to cope – by reaching internationally binding agreement on measures to limit greenhouse gas emissions at the 'COP 26' meeting in Glasgow in November. Those

initials refer to the 'Conference of the Parties' (now 196 countries and the EU) who were signatories of the original United Nations Framework Convention on Climate Change treaty, back in 1994. The present conference is the 26th meeting of the Parties, hence 'COP26'. At the national level, the UK parliament declared a Climate Emergency in May 2019, though unfortunately it has no binding effect on the UK government. So a Climate and Ecological Emergency Bill, requiring the UK 'to take responsibility for its fair share of greenhouse gas emissions, to actively restore biodiverse habitats, and to stop damaging our natural world through the production, transportation and disposal of the goods we consume' < <https://www.ceebill.uk/> > was tabled in September 2020, and is now supported by over 116 MPs. Several local authorities in the UK have likewise passed Climate Emergency declarations, including Milton Keynes Council, in January 2019.

- 3. So what can we do to help here in Woburn Sands?** In January 2020, Woburn Sands Town Council resolved to support MK Council's Declaration of a Climate Emergency, and in the following month established a 'Woburn Sands Climate Change Group', with membership drawn both from within the Town Council and from the local community. The group has explored a number of possible ways of reducing our local community's net greenhouse gas emissions, such as the planting of street-trees, traffic-calming measures with improved scope for cycling and walking, and improving the condition and biodiversity of local environments. So in November, we're carrying out a consultation of the local community – to coincide with COP 26 – to gauge the strength of support for these proposals, to determine which ones we can progress with. ... So watch this space!



Increased extreme weather events such as this heavy rainstorm over Woburn Sands on 20th July, 2021, are a predicted outcome of global warming.

Peter Skelton, 27/10/2021.