

Climate Change – Explaining the Science of Climate Change

People say the world isn't really getting warmer, some years are just hotter than others, and it varies/goes around in cycles.

The 10 warmest years on record have all occurred since 1997. That's a fact, based on recorded temperatures since 1850 (when reliable records began). Over the last 100 years the Earth has warmed by about 0.75 degrees Celsius and the speed it is warming at is getting faster.

These days the UK Spring arrives about 10 days earlier than it did in the 1970s. In 159 years of records, the 10 hottest years have been in the last 12 years. Arctic sea ice is melting, the extent it reaches has shrunk by about 10% every 10 years since the late 70s. The smallest amounts of Arctic summer ice on record were in the last 3 years: 2007-2009. In a few decades, large parts of the Arctic Ocean are expected to have no late summer sea-ice at all.

But not all scientists agree through, right?

The overwhelming majority of climate scientists claim that human induced climate change poses a huge threat to the world. The Intergovernmental Panel on Climate Change is not run by any government – 'intergovernmental' means it answers to all 192 governments signed up to it. Its reports are written by independent scientists. It is one of the most rigorous scientific bodies that exists. It brings together many thousands of scientists from countries all over the world to put together the best assessments of climate science available.

Surely if the scientists are right then its too late, we just need to accept it?

No. This international scientific panel says we need to stop the world getting more than 2degrees warmer if we want to avoid dangerous climate change. After that it becomes harder to produce food and competition for water, sea level rises and loss of species get much worse. We've got the technologies we need for a low-carbon world we just need to go for it now. It'll cost much less to go low carbon than it will to let climate change happen.

A bit of melting ice and slightly hotter summers, what's the problem?

Global sea levels have already risen by 10 centimetres in the last 50 years, thanks to melting ice and warming oceans. This is already threatening low-lying countries, such as pacific islands and Bangladesh. Millions more people are expected to be flooded every year by 2080. Latest predictions suggest the sea could rise by 1 metre this century. In Europe alone this could affect over 20 million people. And it looks like the sea is rising more quickly now than in the 20th Century.

Some countries have always had droughts, it's nothing new.

Severe droughts are now twice as common as they were in 1970. More drought is affecting which crops we can grow effectively. Global demand for food is expected to nearly double by 2050. But by 2025, lack of water could mean we produce a third less of the volume of cereals we currently eat – that's the same as losing the entire grain crops of India and the US combined

What with the recession and everything, we've all got a lot on our plate – let's worry about it later.

Even if all greenhouse gas emissions stopped tomorrow, we are already locked into a global temperature rise of at least 1.4oC (since 1750) because of the delayed impact between emissions and temperature. It is already happening, and we need to act now to stop it getting much worse.

It won't happen to us though.

Developed countries suffer impacts too. The 2003 heat wave in western Europe, which caused 35,000 deaths (2,000 in the UK), is already twice as likely to happen again next year. By the 2040s Europe will consider such a summer normal. By 2060s they will consider it cool.

Surely it's only the odd polar bear, who cares?

Species are already being forced to migrate or adapt. Scientists think that around 20% of species will become extinct with 2 degrees of warming – and it will be a real challenge, even if we act right now, to keep to that limit.

There's no scientific evidence for climate change

Scientists have been commenting on the relationship between emissions of gases and the climate since the 1800s, and have worked with governments to do something about climate change for a long time.

In 1988, the UN set up the Intergovernmental Panel on Climate Change (IPCC) – a body of scientists from all parts of the world who assess the best available scientific and technical information on climate change.

Their 2007 report warned of an increase in average global temperatures ranging from 1.1 to 6.4 degrees Celsius by the end of this century, depending on future levels of emissions. It also said that changes to the climate were "very likely" (over 90 per cent probable, based on current science) the result of human activity

It's too late to make a difference

The last report from the Intergovernmental Panel on Climate Change, the IPCC, indicated that global emissions must peak in the next decade or two and then decline to well below current levels by the middle of the century if we are to avoid dangerous climate change. This is possible, and can be achieved with technologies that are available now. Putting off action to cut greenhouse gases will make it more difficult and costly to reduce emissions in the future, as well as creating higher risks of severe climate change impacts.

There's no point in me taking action

Every reduction in emissions makes a difference by not adding to the risk. Countries like the UK are in a position to give a positive example to the rest of the world – if the UK can rise to the challenge successfully, others will follow.

Climate Change will make life more comfortable in the UK

Climate change will lead to warmer winters, but temperatures will become uncomfortably hot in summer, and the climate may also be unpredictable and extreme. There's also the risk of rising sea levels and extreme weather like storms and floods. Tackling climate change and securing a more stable climate will make life a lot more comfortable.

It would cost too much to tackle climate change

Tackling climate change needn't damage the economy as a whole. Industry will have to adapt and jobs may change – but more may be created overall. Using less energy can also save companies and households money. Not tackling climate change has a price too. The recent Stern report examines the economic impact of climate change. It estimates that not taking action could cost from five to 20 percent of global GDP every year, now and forever. In comparison, the cost of reducing emissions to avoid the worst impacts of climate change can be limited to around one per cent of global GDP each year.