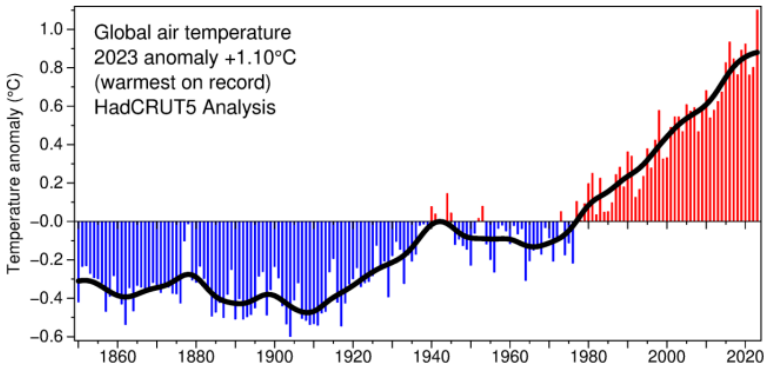
Climate Change: Key Information

Climate change is generally used to refer to **long-term changes** in our weather patterns and variables like temperature, rainfall and wind. Specifically, it is often referring to such changes arising as a consequence of human activity using fossil fuels e.g., for heating and transport, releasing greenhouse gases like carbon dioxide and methane, into the atmosphere – strictly speaking **anthropogenic climate change**.

What is the evidence for a changing climate?

- **Historical temperature observations** from around the globe indicate that average global surface air temperature has increased by **about 1.3°C** since the pre-industrial era. Measurements also indicate **increases in temperature extremes**, shrinking ice sheets, rising sea-levels, and in many regions occurrences of heavy rainfall are increasing.



Source: Climatic Research Unit

- The fundamental **physics** of **the greenhouse effect** is well-established, dating back to the 19th century, and explain how gases like carbon dioxide retain heat in the climate system.
- **Attribution science** is a branch of climate science that acknowledges that there are other, natural causes of climate variability. It uses models of the climate system to assess the contribution of greenhouse gases to the warming we have observed and has led the **Intergovernmental Panel on Climate Change** (IPCC) to conclude '*It is unequivocal that human influence has warmed the atmosphere, ocean and land*' due to emissions of greenhouse gases like carbon dioxide and methane.

These different sources of information provide **consistent evidence of a changing climate**.

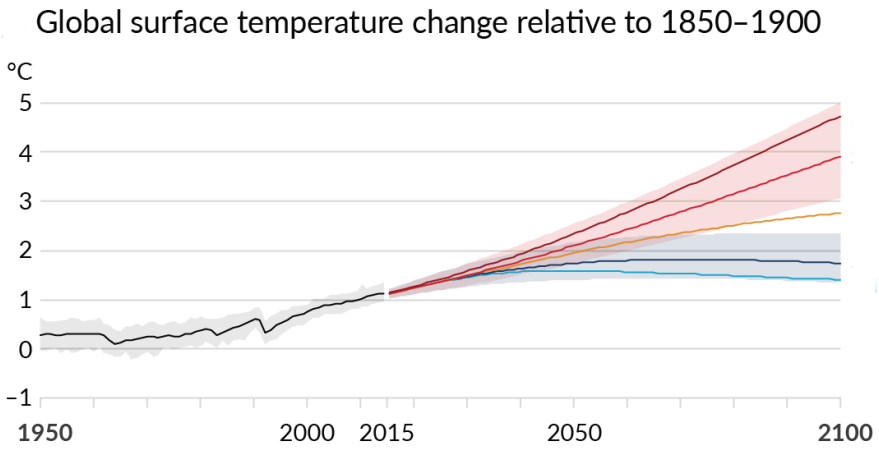
How do we know what the future looks like?

Climate scientists use very sophisticated **computer models** based on physics to simulate our complex climate system to produce projections of our future climate. They use **scenarios** of different potential futures that provide different visions of what the world might be like in terms of population growth, technological developments and socio-economic change, and therefore greenhouse gas emissions. We can think of these scenarios as being like **different possible storylines** in a movie.

Funded by
Department for Education
University of Reading
Newcastle University

What might the future look like?

Depending on the scenario we use, we see different future projections of temperature. Each of the different coloured lines is a different scenario. For example, the lower blue line below is a world where global CO_2 emissions are cut to net zero by around 2050, limiting warming to withing the 1.5°C global target. The upper red line is one where CO_2 emissions roughly double by 2050, driven by fossil fuel use – here temperatures increase by over 4°C. School climate action plans that aim to address decarbonisation **can contribute towards ensuring our future follows a lower trajectory** of climate change.



Source: IPCC

Find out **what this will mean for local education settings** in your region by entering a postcode in this '**What will climate change look like near me?**' tool, or by

What are the impacts of climate change?

Human emissions of greenhouse gases result in **changes to the climate system**, e.g. temperature changes. These in turn have **impacts** on natural and human systems, for example, causing heat stress, flood impacts on cities, or risk to water supplies.

By recognising climate risks in their climate action plans and identifying options to adapt to these risks, **schools can increase their resilience** to these impacts.

Now get ready! Why not check out this list of **10 climate change myth-busters** by the WWF.

Source: Chris Northwood

Funded by
Department for Education
University of Reading
Newcastle University