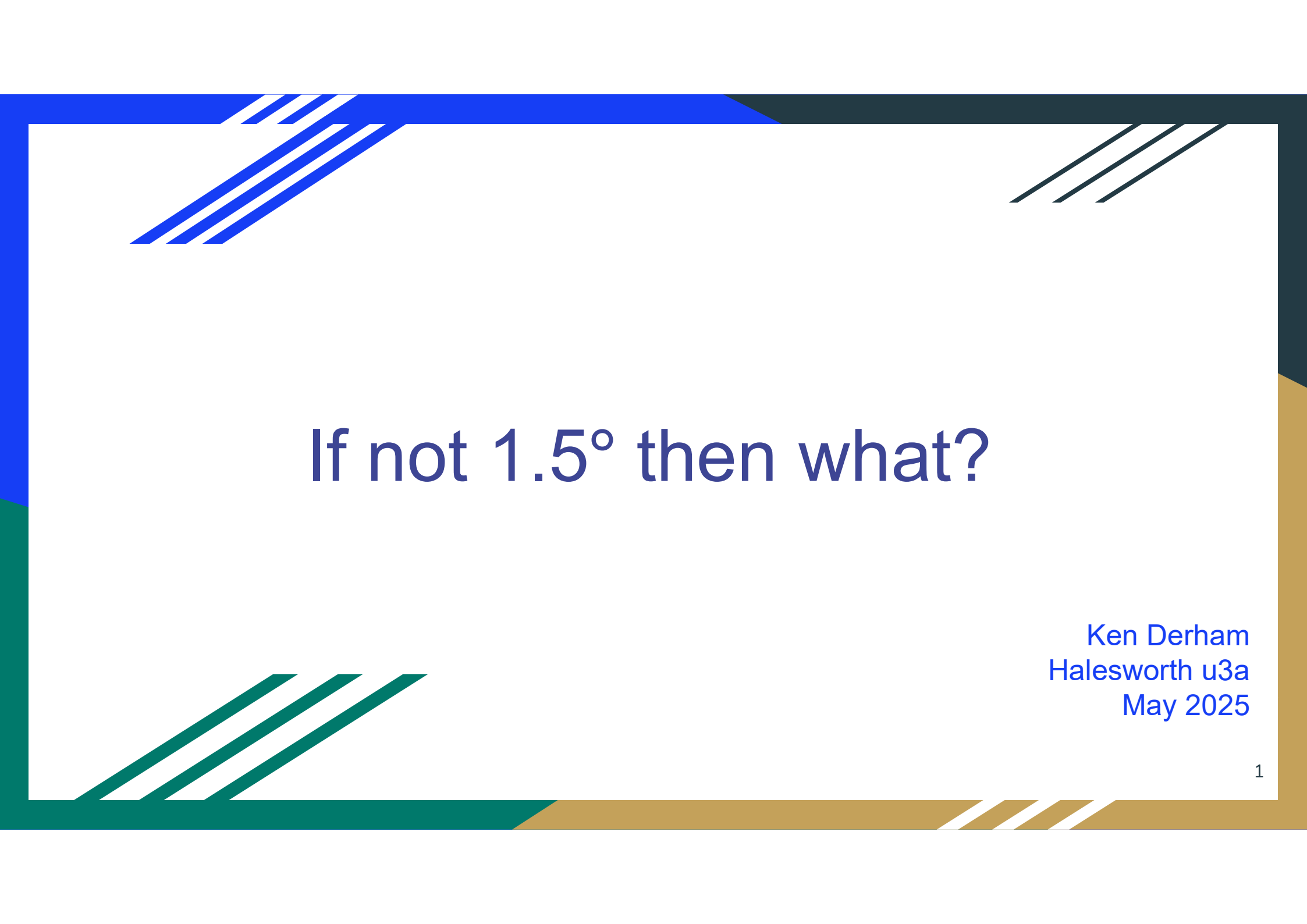




If not 1.5° then what?

Ken Derham
Halesworth u3a
May 2025

The Paris Agreement

The Paris Agreement (the Paris Climate Accords) is an international treaty on climate change, negotiated by 196 parties at the 2015 United Nations Climate Change Conference. Signed in 2016.

The central objective of the Paris Agreement is its long-term goal to hold global average temperature increase to “**well below 2°C above preindustrial levels** and **pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels**”

Why 1.5° - 2°C?

- We are talking about global average temperatures
- For any global average, there will be a lot of local variation
- At 1.5°C it is expected that changes can be reversed in time
- However, even if we stopped all emissions now, the temperature would continue rising because of GHGs already in the atmosphere

Why 1.5° - 2°C?

- Above 2°C it becomes more difficult to return to a previously sustainable state
- Extinctions and ecosystem destruction are not reversible
- Difference between 1.5° and 2° is much greater than that between 1° and 1.5°
- Every fraction of a degree counts
- Above 2°, recovery will take centuries or millennia

Have we reached 1.5°C?

The short answer is:

Yes and No!

Have we reached 1.5°C?

- 2024 was a year of record high average temperatures
- Different methods of measurement varied between about 1.45° and 1.65°
- But the consensus is that globally we reached or exceeded 1.5°C above preindustrial temperatures

Have we reached 1.5°C?

However ...

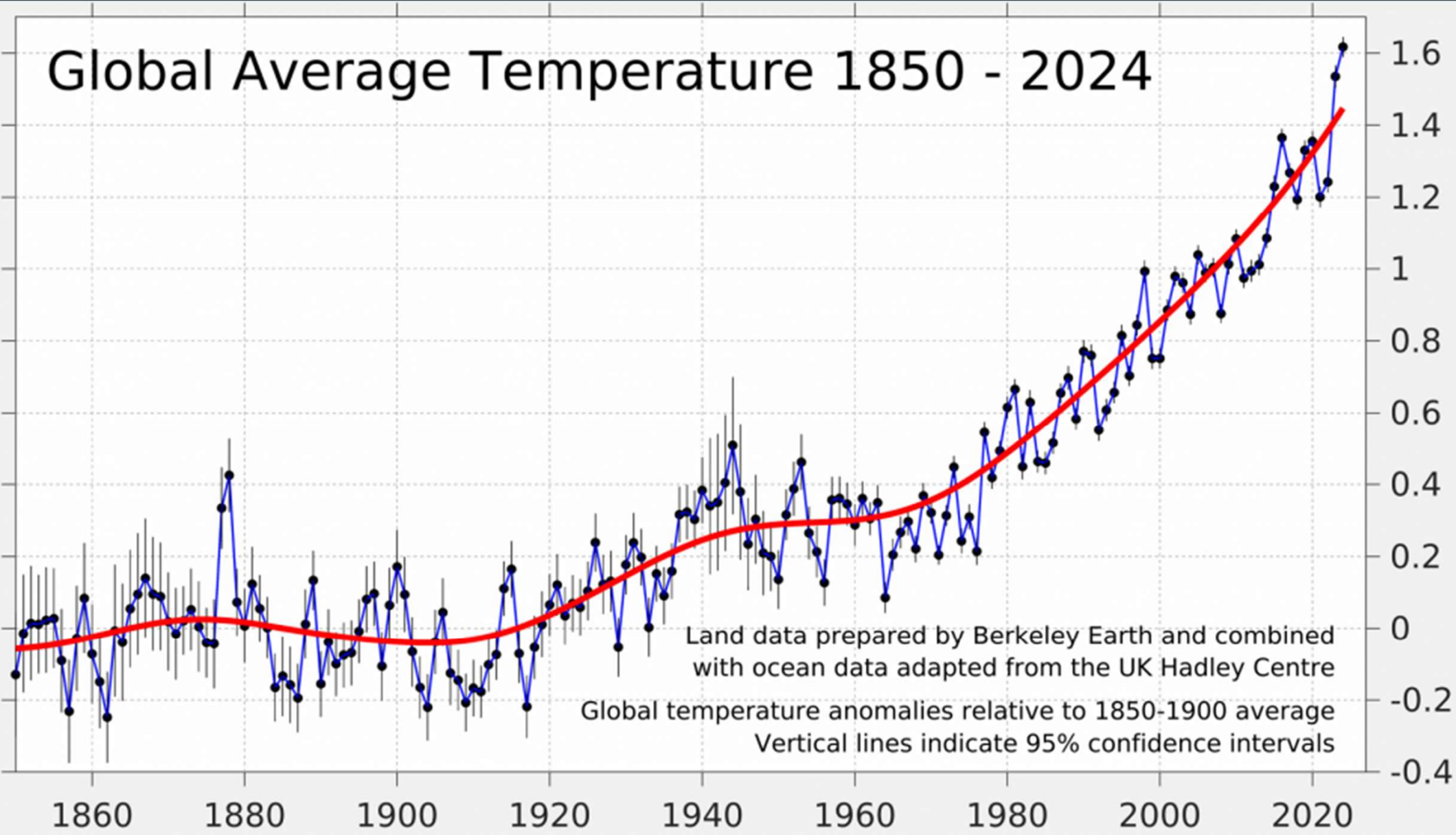
Have we reached 1.5°C?

- The IPCC* and the Paris Agreement deal with 20 -30 year average temperatures
- Therefore, we will not officially be at or in excess of 1.5°C average global temperature increase until about 2030

*IPCC = The UN International Committee on Climate Change

Global Average Temperature 1850 - 2024

Global Temperature Anomaly (°C)



What are the estimates for the final peak temperature?

The Guardian surveyed scientists connected to the authoritative Intergovernmental Panel on Climate Change (IPCC).

77% of respondents expect at least 2.5°C of global heating

Almost half anticipate at least 3°C

Only 6% thought the internationally agreed 1.5°C limit would be met

The Guardian approached every contactable lead author or review editor of IPCC reports since 2018. Almost half replied, 380 of 843. The IPCC's reports are the gold standard assessments of climate change, approved by all governments and produced by experts in physical and social sciences. The results show that many of the most knowledgeable people on the planet expect climate havoc to unfold in the coming decades.

Is there room for Optimism?

About 23% of the IPCC experts who responded to the Guardian survey thought global temperature rise would be kept to 2°C or below but even they tempered their hopes.

“I am convinced that we have all the solutions needed for a 1.5°C path and that we will implement them in the coming 20 years,” said Henry Neufeldt, at the UN’s Copenhagen Climate Centre. “But I fear that our actions might come too late and we cross one or several tipping points.”

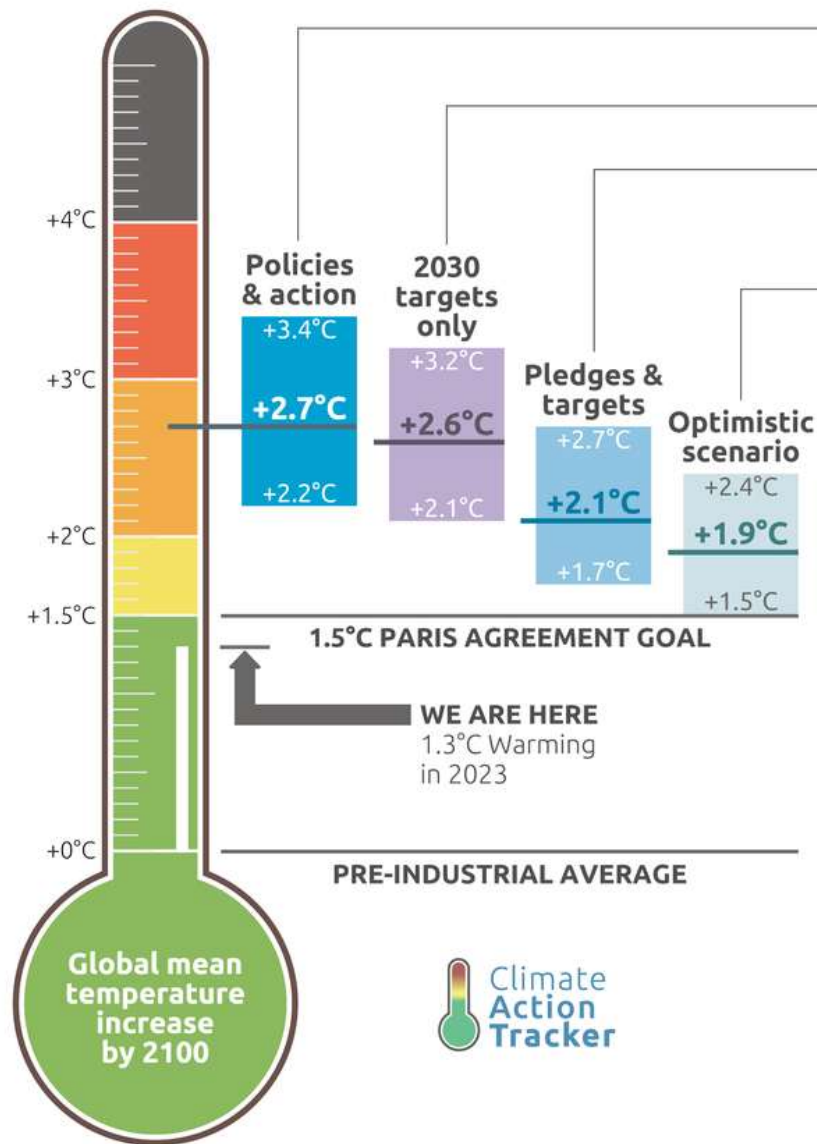
World on track for between **1.9** and **3.7°C** of warming by 2100

A review* of more than a dozen studies published 2019-2024, looking at the implications of current policies, concluded the world is most likely to warm by between **2.3 and 3°C by 2100**.

However, these numbers don't fully take account of the uncertainties about future emissions of greenhouse gases as a result of human actions, and also in how the climate system will respond to those emissions.

Including those uncertainties gives a broader range, of **1.9 to 3.7°C**.

*Review carried out by Zeke Hausfather, a climate scientist at Stripe, a California-based software company that invests in carbon-removal technology. Reported in New Scientist, January 2025.



Policies & action

Real world action based on current policies †

2030 targets only

Based on 2030 NDC targets* †

Pledges & targets

Based on 2030 NDC targets* and submitted and binding long-term targets

Optimistic scenario

Best case scenario and assumes full implementation of all **announced** targets including net zero targets, LTSS and NDCs*

† Temperatures continue to rise after 2100

* If 2030 NDC targets are weaker than projected emissions levels under policies & action, we use levels from policy & action

CAT warming projections Global temperature increase by 2100

November 2024 Update

Implications and Conclusions

- The implications of a rise above 2°C are profound (existential?), affecting:
 - Wildlife, biodiversity, extinctions, ecosystems etc
 - Ocean temperatures, Sea level rise, collapse of oceanic biosystems etc
 - Increase in severity and frequency of weather extremes – droughts, floods, storms, wildfires etc
 - Disruption to agriculture and food supplies, mass migration, war and civil conflict, possible break down of civilisation
- Changes are occurring now and will worsen during in this century. Affects for our generation might not be severe, but children and even young adults alive now will experience extreme changes by the end of the century.
- Essential that humanity reaches Net Zero by 2050. That requires that GHG emissions are halved by 2030 (they are still rising!). No time to lose, don't give in to those who say it can't or shouldn't be done.
- While some technical solutions may help, the only certain way to avoid catastrophe is to reduce and eventually end all use of fossil fuels.

Sources

- New Scientist – Several recent articles - <https://www.newscientist.com>
- The Guardian - <https://www.theguardian.com/uk>
- Climate Action Tracker - <https://climateactiontracker.org>
- International Panel on Climate Change - <https://www.ipcc.ch> - and other websites reporting on IPCC