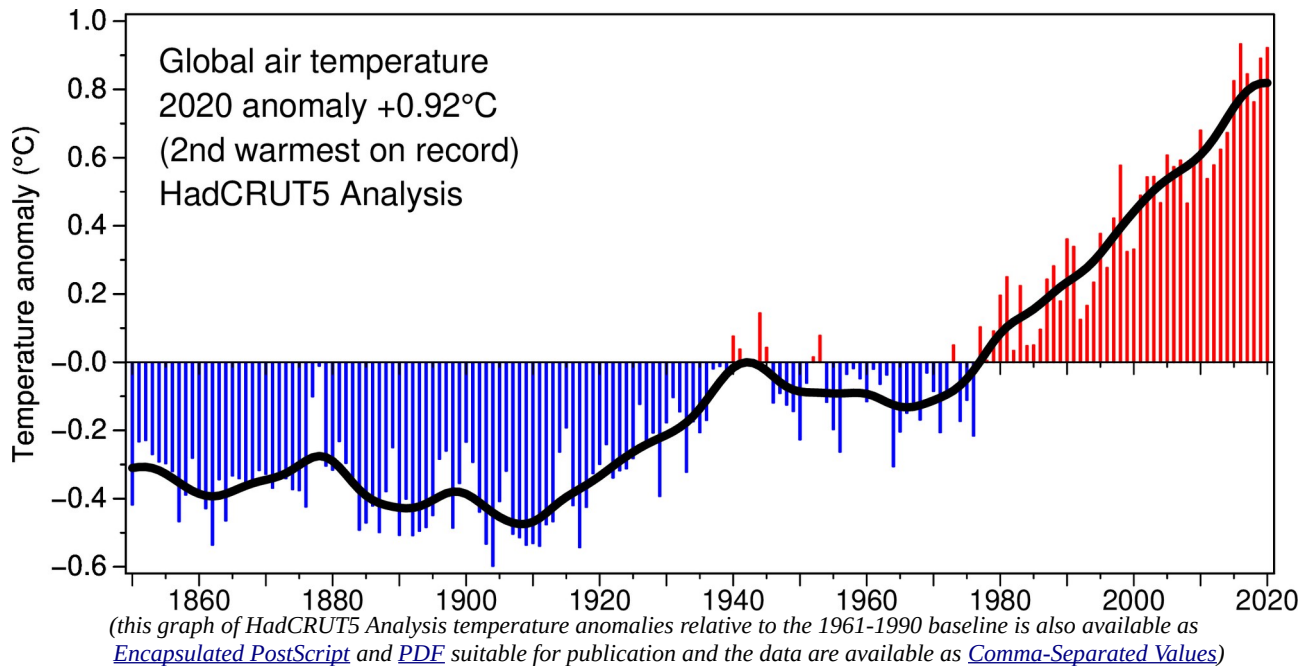


# Global Temperature Record

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The time series shows the combined global land and marine surface temperature record from 1850 to 2020. Last year (2020) was the second warmest on record using our latest analysis, referred to as HadCRUT5 Analysis (Morice *et al.*, 2021).

Each decade since the 1980s has been warmer than all preceding decades in our record. The average global temperature during the 2010s (2011-2020) was  $0.76(\pm 0.05)$  °C above the 1961-1990 average and  $1.12(\pm 0.11)$  °C above the late nineteenth century average. The Earth's surface has warmed by about 0.2 °C per decade since the 1970s. Not surprisingly, the last six years are the warmest six years in our record.

This time series is compiled jointly by the Climatic Research Unit at UEA and by the Met Office Hadley Centre. The UEA work is undertaken under the auspices of the UK's National Centre for Atmospheric Science (NCAS) funded by the Natural Environment Research Council.

The warmth or coldness of individual years is influenced by natural climate variability, such as whether there was an El Niño or a La Niña event occurring in the equatorial Pacific Ocean. This type of variability can temporarily warm or cool the global temperature by 0.1 or 0.2 °C above or below the underlying warming trend.

The dominant cause of the long-term warming observed since the 19th century is clear: it is the increased concentrations of greenhouse gases in the atmosphere due to human activities. And it is because of this human-caused warming trend that, e.g., the last six years are the warmest six in our record.

The Intergovernmental Panel on Climate Change (IPCC) in its most recent assessment report in 2013 stated:

**‘Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, sea level has risen, and the concentrations of greenhouse gases have increased’**

**‘Human influence on the climate system is clear. This is evident from the increasing greenhouse gas concentrations in the atmosphere, positive radiative forcing, observed warming, and understanding of the climate system’**

**‘Human influence has been detected in warming of the atmosphere and the ocean, in changes in the global water cycle, in reductions in snow and ice, in global mean sea level rise, and in changes in some climate extremes. It is extremely likely that human influence has been the dominant cause of the observed warming since the mid-20th century’**

## Links

Global temperature anomaly datasets	<a href="https://crudata.uea.ac.uk/cru/data/temperature/">https://crudata.uea.ac.uk/cru/data/temperature/</a>
Further graphs and maps of global temperature	<a href="https://crudata.uea.ac.uk/~timo/diag/tempdiag.htm">https://crudata.uea.ac.uk/~timo/diag/tempdiag.htm</a>
Central England Temperature (CET) data	<a href="http://hadobs.metoffice.com/hadcet/">http://hadobs.metoffice.com/hadcet/</a>
IPCC: Intergovernmental Panel on Climate Change	<a href="http://www.ipcc.ch/">http://www.ipcc.ch/</a>
Latest IPCC report from Working Group 1	<a href="http://www.ipcc.ch/report/ar5/wg1/">http://www.ipcc.ch/report/ar5/wg1/</a>

The key reference for this time series is:

Morice, C.P., Kennedy, J.J., Rayner, Winn, J.P., Hogan, E., Killick, R.E., Dunn, R.J.H., Osborn, T.J., Jones, P.D., and Simpson, I.R., 2021: An updated assessment of near-surface temperature change from 1850: the HadCRUT5 dataset. *Journal of Geophysical Research*, <https://doi.org/10.1029/2019JD032361>

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