



This is the print version of the [Skeptical Science](http://sks.to/significant) article '[Humans are too insignificant to affect global climate](http://sks.to/significant)', which can be found at <http://sks.to/significant>.

Are humans too insignificant to affect global climate?

What The Science Says:

Humans are small but powerful, and human CO₂ emissions are causing global warming.

Climate Myth: Humans are too insignificant to affect global climate

To suggest that humanity is capable of impacting and disturbing forces of such magnitude is reflective of a self-centred arrogance that is mind numbing. Humanity is a subset of Nature. Nature is not a subset of humanity. We have travelled full circle. We are back in the mindset that prevailed when Society's leaders dictated what people in Copernicus' days may or may not think. The Earth is once again flat. (source: [Financial Sense University](http://FinancialSenseUniversity.com))

When we experience weather events like hurricanes and floods, it's very easy for us to feel insignificant and powerless in the face of such massive natural forces. How can humans influence **this**? Well, yes, we can. Of course we can't influence a single *weather* event, but we can and do have a long term influence on the *climate* that causes it.

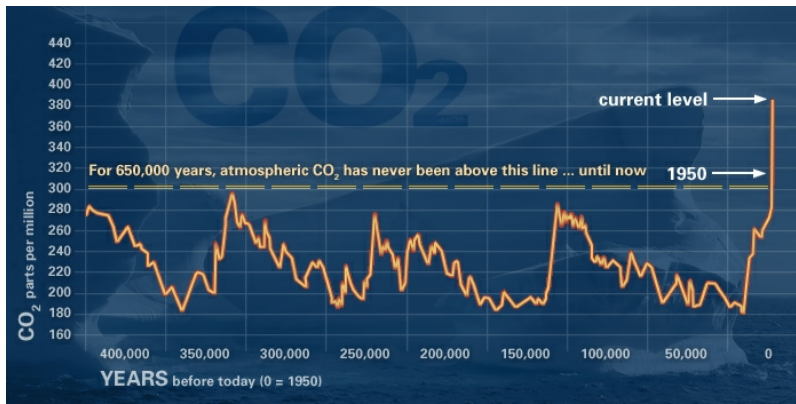
Since the industrial revolution, with ever-increasing supplies of fossil fuels, the activities of a dramatically expanding world population have made significant alterations to the make-up of our atmosphere.

In some cases human-caused change is direct and unambiguous. The harmful effect of the human release of CFCs on the ozone layer is well documented and not disputed. Down on the ground, draining of marshland and deforestation can produce a significant decrease in water vapour in the atmosphere downwind; while the introduction of irrigation for agriculture has the opposite effect. Over time, both of these human activities can alter patterns of rainfall, turning deserts into green areas and green areas into deserts.

In other cases the human causes of climate change are more complex. Emissions from cement production, pollution and the release of particulates to form smog in the atmosphere, all affect climate.

Without doubt the most significant of all the human causes of changing climate is the dramatic increase in CO₂. After remaining relatively steady for the last 650,000 years or more, in just the last two hundred years the concentration of CO₂ in the atmosphere has suddenly shot up from 280, to more than 380 parts per million. And it's still rising. This dramatic 30% increase has all taken place at the same time as humans have been burning fossil fuels at a greater and greater rate.

Of course there are also natural sources of the CO₂ in the atmosphere, such as vegetation, but fortunately there are differences that scientists can measure between the CO₂ derived from fossil fuels and the CO₂ derived from plants. The changing concentrations of the two types demonstrate that the additional CO₂ can **only** be the result of human activity.



This graph, based on the comparison of atmospheric samples contained in ice cores and more recent direct measurements, provides evidence that atmospheric CO₂ has increased since the Industrial Revolution.

(Credit: [Vostok ice core data/J.R. Petit et al.](#); [NOAA Mauna Loa CO2 record](#))

Of course, as CO₂ is the most common of greenhouse gasses, the additional concentration is what causes most of the rise in temperature. This is resulting in a change in weather patterns and ocean currents; the melting of global ice formations; and an increase in extreme weather events.

So, yes; though we might be pretty helpless when it comes to controlling the weather, humans are certainly capable of changing the world's climate.

Basic rebuttal written by John Russell

Update July 2015:

Here is a related lecture-video from [Denial101x - Making Sense of Climate Science Denial](#)

[see video at [this link](#).]



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Skeptical Science explains the science of global warming and examines climate misinformation through the lens of peer-reviewed research. The website won the Australian Museum 2011 Eureka Prize for the Advancement of Climate Change Knowledge. Members of the Skeptical Science team have authored peer-reviewed papers, a [college textbook on climate change](#) and the book [Climate Change Denial: Heads in the Sand](#). Skeptical Science content has been used in university courses, textbooks, government reports on climate change, television documentaries and numerous books.



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