

Climate Change is caused by Humans

The uncertainty surrounding the past, present, and future of our climate elucidates different perspectives about the cause of climate change. However, the scientific community and environmental advocates are confident that climate change is an effect of anthropogenic advances. To understand how humans have caused climate change, we must accept the change between historical and present climate, recognize the physical and chemical plausibility for specific molecules to warm the earth, and realize that these same molecules have increased due to human emissions since the 1850s.

The industrial revolution enhanced the development of climate measurement tools in the last few hundred years, making it possible to compare historical and present climate. Even with the multiple scientists and sources measuring climate, the climate from the 1880s to present-time is universally trending positive, with about an adjusted 1.2°C increase from 1880.¹ According to the International Panel on Climate Change (IPCC), it is scientifically indisputable that each decade was warmer than the previous one, starting in 1850.² Climate does not only consist of temperature, it also contributes to long-term weather patterns and subsequent natural disasters. The most regarded organizations on climate change have confirmed that climate change has caused an increase in hot and very hot days while also causing a decrease in cold days across the globe.³ The certainty behind this increase in warmer temperatures also contributes to the certainty behind the increase in heatwaves, cold waves, heavy precipitation, drought, hurricanes, flooding, and sea level rise.² With experts and scientists actively measuring climate from past to present, the change in climate is explicit.

Molecules that conduce global warming are called greenhouse gases (GHGs). Based on their chemical and physical properties, these molecules capture heat in the earth's atmosphere and act as a coating of warmth.⁴ Of the sunlight that reaches earth's atmosphere and surface, a majority of it is reflected back out of earth's atmosphere as infrared light. This light is then captured by the GHGs, preventing infrared light from escaping outside of earth's atmosphere.⁵ The most popular and most abundant molecule is carbon dioxide (CO₂), which both naturally exists and is emitted by human activity.⁵ Other noteworthy and concerning GHGs include methane (CH₄), nitrous oxide (N₂O), fluorinated gases, and water vapor.^{4,5} With an increase of GHGs released, the planet is bound to chemically and physically warm itself.

Since the start of the industrial revolution, human GHGs have increased due to technological advancement to reach today's feats. Burning fossil fuels for energy production first started in the 1700s and amplified the release of GHG emissions.⁶ The sectors that have both flourished and emitted the most GHGs include energy, agriculture, and transportation.⁷ In 2019, the concentration of CO₂ in the atmosphere was 410 ppm², when the concentration of CO₂ before the industrial revolution was approximately 280 ppm.⁸ It is evident that the world nations with the most wealth also contribute the most to GHG emissions, with China, US, and India emitting 19 billion tons, 5.3 billion tons, and 2.5 billion tons respectively in 2017.⁹ Human reliance on fossil fuels provided sectors with the tools needed to succeed while also degrading earth's climate through the release of and warming from GHGs.

With scientific evidence surmounting the increase in temperature, the chemical characteristics of a warming planet, and anthropogenic release of GHG emissions, climate has and will continue to change. Human impact on climate is irrefutable as our reliance on fossil fuels drives our warming planet, which ultimately influences our health impacts.

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