

# Average global surface temperatures rose to more than 1.5 degrees Celsius above preindustrial levels in 2023

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A statement by the Copernicus Climate Change Service last week confirmed that the surface temperature on Earth, averaged over the course of all of 2023, was 1.56 degrees Celsius warmer than the preindustrial average. The data confirm 2023 as the hottest year in human history and herald an ever greater toll in damage caused and lives lost as global warming continues unabated.

The high temperatures continued in January and February of this year. January was 1.52 degrees Celsius above the preindustrial record and February was 1.77 degrees Celsius above the preindustrial record.

The Copernicus data also revealed the extent of sea ice lost in the Arctic and the Antarctic, both of which are long-term indications of the state of global warming. Compared to the 1981–2010 baseline, the amount of sea ice in the Arctic during February was 0.7 million square kilometers below average, a reduction of more than 4 percent from previous decades. The loss in the Antarctic has been much more drastic; the extent of Antarctic sea ice fell to 0.9 million square kilometers below average, a loss of 28 percent compared to 1981–2010.

While both cases are not records (the current February sea ice loss records were set in 2017 for the Arctic and 2023 for the Antarctic), they continue the sharply downward trend of sea ice loss in both regions.

Commenting on the record high temperatures, Carlo Buontempo, director of Copernicus, noted: “February joins the long streak of records of the last few months. As remarkable as this might appear, it is not really surprising as the continuous warming of the climate system inevitably leads to new temperature extremes. The climate responds to the actual concentrations of

greenhouse gases in the atmosphere so, unless we manage to stabilize those, we will inevitably face new global temperature records and their consequences.”

Buontempo’s comments are referencing two facts about climate change. First, it has been known for more than a century that carbon dioxide, water vapor and other gases in the atmosphere trap heat from the Sun, and that even slight changes in the atmosphere’s composition can drastically alter how much of that heat is trapped.

Second, it has been proven from careful studies over the past several decades that the release of carbon dioxide, methane and other so-called greenhouse gases by the anarchic nature of capitalist production has directly contributed both to trapping this extra heat, what is called global warming, and to increasingly catastrophic ecologic consequences.

The most dramatic of these consequences are collective known as “extreme weather”: hotter and longer heatwaves, more powerful hurricanes, lengthier droughts, more devastating floods and more acres burned by wildfires. Every year, millions are temporarily or permanently displaced and tens of thousands die in such “natural disasters,” none of which has ever been seriously addressed by the capitalist governments.

It’s also worth emphasizing the long timescales over which climate change occurs. After the Paris Accords were signed in 2015, the United Nations Intergovernmental Panel on Climate Change (IPCC) was commissioned to write a report on how global warming could be limited to 1.5 degrees Celsius by the end of the century to limit the worst effects of the crisis.

The Special Report was released in 2018 and showed that even with the most drastic cuts to carbon dioxide and other greenhouse gas emissions, global warming would exceed 1.5 degrees Celsius somewhere between 2030 and 2050, would likely peak at 1.75 degrees Celsius and might not come back below the figure of 1.5 degrees Celsius until *next century*.

In other words, even in the unrealistic scenario in which CO<sub>2</sub> emissions reach net-zero in 2040, a warming by at least 1.5 degrees Celsius is “locked in.” And in the intervening years, emissions did not fall but continued to rise, resulting in a world in which a warming of more than 1.5 degrees Celsius was reached not in 2030, but in 2023.

The IPCC special report can also be used to understand how the delayed effect of past emissions are causing the current crisis. Greenhouse gases put into Earth’s atmosphere now result in warming about two decades later. Conversely, the warming now was caused by emissions from about two decades ago. And to have avoided, for example, the extreme weather that has emerged in the past 10–15 years, greenhouse gas emissions would have had to be curtailed 30–40 years ago.

The world’s governments and corporations were well aware of these issues at least as far back as the 1980s. In 1982, an internal document was circulated among the upper management of Exxon (now ExxonMobil) titled “CO<sub>2</sub> ‘Greenhouse’ Effect.” The document makes note of “calculations recently completed at Exxon” to show that the increasing amount of carbon dioxide emitted into the atmosphere will cause increasing temperature changes on Earth, fairly accurately estimating an increase of global average temperatures of about 1.0 degrees Celsius by 2020.

The same document also warned of “some potentially catastrophic events that must be considered,” specifically, that Antarctic land ice could melt and “could cause a rise in sea level on the order of 5 meters.” The report continues, “Such a rise would cause flooding on much of the U.S. East Coast, including the State of Florida and Washington D.C.”

The warnings from Exxon’s own internal research were kept within the company, while the warnings from independent climate scientists have never been heeded. Instead, the drive by American and world capitalism to fight over markets has driven further expansion of

fossil fuel use. It has only been in the past 10 years that there have been even token efforts to seriously develop alternative sources of energy, such as solar, wind, tidal, geothermal, to name a few.

That climate change has accelerated over the past four decades is another example of the criminality of a social system controlled by private profit. Like the genocide in Gaza, the ongoing coronavirus pandemic and soaring social inequality, climate change poses an existential threat to human civilization, one which can only be resolved by a scientifically reorganized world economy on an internationalist and socialist basis to both meet the immediate and oncoming dangers of climate change and ultimately rein in the damage done to Earth’s climate by capitalism.



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