

# 2023 YEARENDER: SIGNIFICANT CLIMATE RECORDS MILESTONES OF THE YEAR

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A man looks through smoke from wildfires in Canada at the George Washington Bridge in New Jersey in June 2023. (File photo) | Photo Credit: AP/Seth Wenig

From registering the hottest summer on record to some significant steps at the yearly United Nations Climate Summit, 2023 was a year of climate extremes. *The Hindu* takes a look at some climate-related milestones that occurred during the course of the year.

2023 saw temperature records being broken month after month, and the year is all but set to be declared the [hottest in history](#). According to Copernicus Climate Change Service (C3S), 2023 was 0.1°C warmer than the ten-month average for 2016, currently the warmest calendar year on record, and 1.43°C warmer than the pre-industrial reference period from January to October. In October 2023, average surface air temperature reached 15.30°C, 0.85°C above the 1991-2020 average for October.

“We can say with near certainty that 2023 will be the warmest year on record, and is currently 1.43°C above the preindustrial average,” said Samantha Burgess, C3S’s Deputy Director, in a statement in November.

Marine heat waves, which are periods of unusually warm ocean temperatures (warmer than 90% of the previous observations for a given time of year), were widespread in 2023. According to an analysis by the U.S. National Ocean and Atmospheric Administration (NOAA), 48% of global oceans saw marine heat waves in August 2023, which is an area larger than for any other month since the start of the record in 1991.

Global sea surface temperatures (SST) are usually at their highest in March. However, according to C3S data this year, global average SSTs remained at record high levels for the time of year throughout April, May, June, and July 2023, with the largest SST anomaly for any July on record.

“Over the long term, we’re seeing more heat and warmer sea surface temperatures pretty much everywhere. That long-term trend is almost entirely attributable to human forcing — the fact that we’ve put such a huge amount of greenhouse gas in the atmosphere since the start of the industrial era,” said Gavin Schmidt, the director of NASA’s Goddard Institute for Space Studies.

Sea ice extent is the area of ice that, in this case, covers the Antarctic Ocean at a given time. In 2023, [Antarctic Sea ice](#) maintained record low ice growth since April. According to NOAA, sea ice in the Antarctic reached an annual maximum extent of 16.96 million square km on September 10, 2023, setting a record low maximum in the satellite record that began in 1979. This year's maximum is 1.03 million square km, below the previous record low set in 1986.

Global carbon dioxide emissions (one of the main greenhouse gases) from burning fossil fuels are predicted to have hit a record high in 2023, up 1.1% from 2022. The Global Carbon Budget Report, published in December 2023, also added that overall CO2 emissions, which reached a record high last year, have plateaued in 2023 due to a slight drop from uses of land like deforestation.

While 2023 saw many climate extremes breached, it also saw the creation of a [loss and damage fund](#) for the first time ever. The fund, which is aimed at helping developing countries mitigate impact of climate change, was first announced at the conclusion of COP27 in Sharm El-Sheikh, Egypt, last year.

The COP28 member countries agreed to make a loss and damage fund operational, right on day one of this year's Climate Summit in Dubai. The fund will be based at the World Bank but managed by an independent secretariat. According to Simon Stiell, head of UN Climate Change, it has received pledges of \$792 million from governments, though billions of dollars are still needed to meet its purpose.

For the first time in the history of Climate Summits, 134 countries at COP28 signed a declaration pledging to tackle the climate impacts of the food industry. These countries represent over 5.7 billion people, 70% of the food we eat, nearly 500 million farmers, and 76% of total emissions from the global food system. However, observers have noted that the declaration contains no quantified targets and does not take note of livestock.

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