**MCC Press Release**

**The rate of global heating caused by humans is at an all-time high**

Second update of the “Indicators of Global Climate Change” research initiative with contributions from MCC. The 1.5 degree Celsius threshold is all but breached.

**Berlin, 06/06/2024.** Global heating caused by humans is increasing at 0.26 degrees Celsius (°C) per decade – the highest rate since records began, according to new research by 57 leading international scientists. They find that in 2023, global surface temperatures were 1.43°C above their pre-industrial levels, with human activity accounting for 1.31°C of that figure. The “Indicators of Global Climate Change” research initiative is being led by the University of Leeds, and supported by the Berlin-based climate research institute MCC (Mercator Research Institute on Global Commons and Climate Change). The new indicator report has now been published in the renowned journal *Earth System Science Data.*

The research finds that last year there were substantial additional emissions which are not directly caused by human activity, but by global heating itself. For example, warming and rainfall changes are driving increases in methane emissions from tropical wetland areas. These drive additional temperature rise. High greenhouse gas emission levels are also affecting the Earth's energy balance: ocean buoys and satellites are tracking unprecedented flows of heat into the Earth’s oceans, ice caps, soils and atmosphere. On the other hand, northern hemisphere heating has led to increases of organic carbon emissions from wildfires, which contribute a cooling effect.

“The analysis comes as climate experts meet in Bonn to prepare the ground for the COP29 climate conference in Azerbaijan”, highlights [Jan Minx](https://www.mcc-berlin.net/en/about/team/minx-jan.html), head of the MCC working group Applied Sustainability Science, and co-author of the study. “By providing this new data updates, we aim to help close the information gap, particularly when climate indicators are changing rapidly.” The authoritative source of scientific information on the state of the climate is the UN’s Intergovernmental Panel on Climate Change (IPCC) but the turnaround time for its major assessments is five to ten years.

According to the report, the 1.5 degree Celsius threshold noted in the Paris Agreement is all but breached.

The remaining carbon budget, i.e. how much carbon can be released into the atmosphere to give a 50 percent chance of keeping global temperature rise within 1.5°C, is estimated to have been at around 150 gigatonnes of carbon dioxide by the start of 2024. This represents a reduction of 70 percent over the last four years: in 2020, the IPCC had calculated it at around 500 gigatonnes. The changes are the result of sustained record high levels of greenhouse gas emissions – the equivalent of 54 gigatonnes of carbon dioxide over the last year. (Note: these figures are not comparable with those used in the calculation of the [MCC Carbon Clock](https://www.mcc-berlin.net/en/research/co2-budget.html), where the annual emission rate is CO2 only, the contribution of other greenhouse gases to global heating is subtracted before calculating the remaining carbon budget, and the budget is calculated with reference to a 67 rather than 50 percent probability of meeting the temperature target.)

Piers Forster, Director of the Priestley Centre for Climate Futures Leeds and lead author of the study, says: “Even though climate action has slowed the rise in greenhouse gas emissions, global temperatures are still heading in the wrong direction and faster than ever before. Our analysis is designed to track the long-term trends caused by human action. So, when observed temperature records are broken, as in last year, we can identify how much of the record is caused by natural factors, in this case less than 10 percent.“

William Lamb, researcher in the MCC working group Applied Sustainability Science, and lead author of emissions section of the study says: “Until we dramatically reduce deforestation and the combustion of coal, oil and gas, greenhouse gases will continue to accumulate in the atmosphere and drive climate impacts.”

The annual report is accompanied by an open data, open science platform “Climate Change Tracker”. The dashboard provides easy access to updated information on the key climate indicators every year.

**Further information:**

* The study: Forster, P., Smith, C., Walsh, T., Lamb, W., Lamboll, R., Hall, B., Hauser, M., Ribes, A., Rosen, D., Gillett, N., Palmer, M., Rogelj, J., von Schuckmann, K., Trewin, B., Allen, M., Andrew, R., Betts, R., Boyer, T., Buontempo, C., Burgess, S., Cagnazzo, C., Cheng, L., Friedlingstein, P., Gettelman, Gütschow, J., Ishii, M., Jenkins, S., Lan, X., Morice, C., Muhle, J., Kadow, C., Kennedy, J., Killick, R., Krummel, P., R., Minx, J., Myhre, G., Naik, V., Peters, G., Pirani, A., Pongratz, J., Schleussner, Seneviratne, S., C., Szopa, S., Thorne, P., Kovilakam, M., Majamäki, E., Jalkanen, J., van Marle, M., Hoesly, R., Rohde, R., Schumacher, D., van der Werf, G., Vose, R., Zickfeld, K., Zhang, X., Masson-Delmotte, V., Zhai, P., 2024, Indicators of Global Climate Change 2023: annual update of key indicators of the state of the climate system and human influence, *Earth System Science Data***https://doi.org.ölkjölkjölkjölkjöklj**
* The data platform “Climate Change Tracker”: <https://climatechangetracker.org/igcc>
* The website “Indicators of Global Climate Change”: <https://www.igcc.earth/>

**About MCC**

MCC explores and provides solution-oriented policy portfolios for climate mitigation, for governing the global commons in general, and for enhancing the many aspects of human wellbeing. Our six working groups are active in fields like economic growth and development, resources and international trade, cities and infrastructure, governance, and scientific policy advice. Co-founded by the Mercator Foundation and the Potsdam Institute for Climate Impact Research. | [www.mcc-berlin.net/en](http://www.mcc-berlin.net/en) | <https://twitter.com/MCC_Berlin>

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