

THE CONVERSATION | The Conversation

Methane emissions reach new highs despite pandemic – they are four times more sensitive to climate change than first thought



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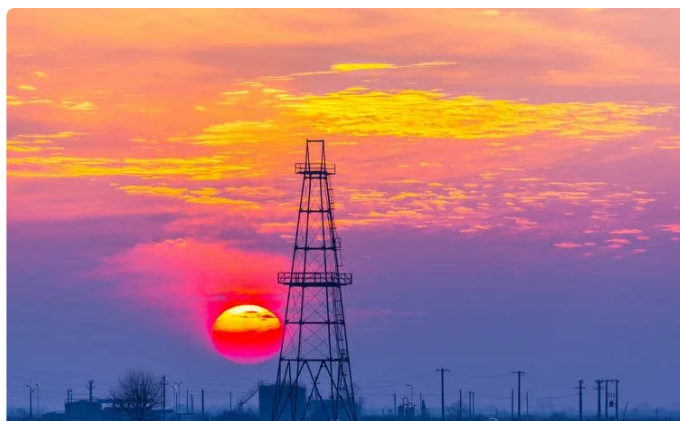
Wildfires may be slowing the rate at which the atmosphere removes methane. [Gonzalo Keogan/Shutterstock](#)

Eliminating emissions of CO₂ is high up the environmental agenda – but the world should not lose sight of the threat from methane. There has been a disturbing recent surge in atmospheric methane, which is more than [25 times more potent](#) as a greenhouse gas over the course of a century than CO₂.

Anthropogenic methane emissions account for roughly 60% of the total and come mainly from agriculture, in particular beef and dairy farms and paddy fields, as well as from oil and gas wells and coal mines, and from sewage treatment plants and landfills. Methane is also emitted naturally from wetlands, sometimes known as marsh or swamp gas, which makes up the remaining 40%.

The latest [report](#) from the Intergovernmental Panel on Climate Change (IPCC) showed that methane is responsible for around one-third of the estimated 1.5°C of global warming (sulphur dioxide emissions have contributed around [0.5°C of cooling](#), so total warming is now just over 1°C since pre-industrial times), with around half due to CO₂.

Scientists have puzzled over the fact that methane emissions have not only grown rapidly since 2007, but have been increasing at an even faster rate in just the past two years. Despite the pandemic, when lockdowns and stuttering industrial activity might have dampened many sources, methane emissions increased by the [highest amount on record](#) in 2021. The amount of methane in the atmosphere just [keeps on growing](#).



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is not only delivering more methane to the atmosphere, but removing less of it –

may hold the answer. In [a new study](#), my colleague Chin-Hsien Cheng and I showed that climate change has increased the rate at which methane accumulates in the atmosphere, trapping more heat and causing the Earth to warm more and faster and, potentially, releasing more methane in a vicious cycle. This indicates that climate change has an effect on methane – ultimately increasing the amount of it in the atmosphere – that is up to four times greater than estimates in the [latest IPCC report](#), which was only published in February 2022.

Read more: [Methane in the atmosphere is at an all-time high – here's what it means for climate change](#)

Wildfires gobbling up methane scrubbers

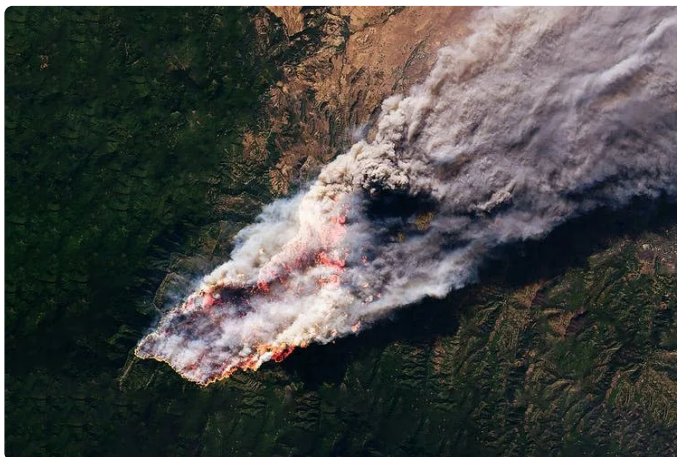
To explain why atmospheric methane keeps growing, we need to understand how the input and removal of methane to and from the atmosphere is balanced. Even if inputs from gas leaks and coal extraction fall, as may be expected during an economic slowdown, the total annual increase can still rise if the removal rate decreases by even more, or becomes less efficient.

Our study suggests increasing methane emissions may be due to unexpected and complex linkages. For example, wildfires, which are becoming [more common](#) as the world warms, may increase atmospheric methane – not necessarily by adding more, but by slowing down how it is removed from the atmosphere.

Read more: [Climate change: wildfire risk has grown nearly everywhere – but we can still influence where and how fires strike](#)

The hydroxyl radical, a powerful oxidising agent found in air which is composed of an oxygen and hydrogen atom ($\cdot\text{OH}$), has been called the detergent of the atmosphere because it cleanses the air of harmful trace gases. Methane is removed by an oxidation reaction with hydroxyl radicals, and this reaction is by far the most important way that methane disappears from the atmosphere.

Wildfires burn carbon-rich wood and plant matter and typically generate carbon monoxide (CO) in the smoke. This gas reacts strongly with hydroxyl, becoming oxidised to form CO₂. On average, a carbon monoxide molecule remains in the atmosphere for about three months before it is oxidised, while methane persists for about a decade. So, plumes of carbon monoxide from wildfires swiftly use up the hydroxyl “detergent”, leaving less to react with and remove methane.



Fires consume the atmosphere's methane 'detergent'. [Artsiom P/Shutterstock](#)

These results are shocking, as they highlight one way the effects of climate change on the Earth system have been underestimated. The world cannot ignore the worrying sensitivity of methane emissions to increasing global temperatures given the strength of methane as a greenhouse gas.

Methane emissions must not go unchecked. But which sources do we have the greatest ability to reduce? Reducing how much methane seeps from landfills and fossil fuel extraction is important. Cutting back on how much beef and dairy products you eat will [certainly help too](#).

adjusting what cattle are fed and regularly draining rice paddies have [all been identified](#) as routes to lowering how much methane reaches the atmosphere.

But to protect the atmopshere's natural ability to remove methane, the world must redouble efforts to slow climate change and its assault on the natural world.

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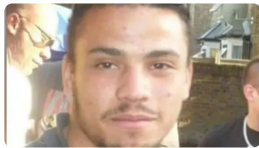
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Victoria Beckham celebrated her 23rd wedding anniversary on Monday — poking fun at the critics along the way. It came as she opened up to Vogue Australia on her fears for her daughter, 10-year-old Harper, in an age of body shaming on social media. It comes after her eldest son Brooklyn married Nicola Peltz i...

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Police say they are 'aggressively' pursuing suspect of July 4 shooting in Illinois

Chicago police say they are 'aggressively' pursuing suspect of July 4 shooting in Illinois. Local law enforcement and the FBI are pursuing leadsSource: Reuters

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"Talks are in fact going on now with Turkey and the U.N. (and) our representatives who are responsible for the security of the grain that leaves our ports," Zelenskiy told a news conference alongside Swedish Prime Minister Magdalena Andersson. Zelenskiy said Ukraine was working "directly" with U.N. Secretary...

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The blaze broke out at a block of flats in Bromley, south-east London, on Sunday.

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Cameron Norrie preparing for 'biggest match of my career'

Cameron Norrie says his Wimbledon quarter-final match against the Belgian David Goffin will be the "biggest match of my career". The British number one is the only UK singles player left in the tournament, and he says he is "not satisfied yet" and wants to "keep pushing for more".

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At least six dead after glacier chunk strikes hikers on Italian mountain

It could not be determined how many were in the area at the time or whether any were missing, according to a spokesperson for the national Alpine rescue corps. Walter Milan, the spokesperson, said that rescuers were now checking license plates in the car park to figure out how many people might be...


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Two protesters from the Just Stop Oil group on Monday covered a famous British pastoral painting with a poster of an apocalyptic future, then glued themselves to its frame.

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Reuters

Confidence drains from UK companies as economic woes mount: BCC

British companies have turned increasingly glum about the outlook, with inflation surging and investment plans looking stagnant, according to the latest business survey that shows momentum rapidly draining from the economy. The British Chambers of Commerce (BCC) said 54% of more than...

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Sky News

Cameron Norrie reaches Wimbledon quarter-finals as Heather Watson crashes out

British number one Cameron Norrie is through to the Wimbledon quarter-finals after beating 30th seed Tommy Paul in straight sets. "To make the quarters for the first time, in front of my family and friends here from college is so special," Norrie said on court amid loud cheers from the crowd.

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https://uk.news.yahoo.com/methane-emissions-reach-highs-despite-144845552.html

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