

## News & Comments

# Global Warming will Continue After Emissions End, Here is Why?

*Zhiqin Zheng*

It is a fact that humans are altering Earth's climate, but the real issue is how quickly can we halt, even reverse, the damage?

Associate Professor of Earth Sciences, Julien Emile-Geay tried answering this question.

According to him, this question can be answered by considering the concept of "committed warming," also known as "pipeline warming" which is an increment in global temperature due to greenhouse gases. How much warming would result if the clean energy switch happened overnight?

As a result of the rising carbon dioxide concentration in the atmosphere, more of that energy is trapped. As Earth's thermal energy increases due to more energy entering than leaving, the temperature of land, oceans and air rises, and ice melts.

According to the author there 3 possible reasons for the continuation of warming, even after emissions stop.

The lead contributor to global warming, carbon dioxide, and methane lingers on long after their emission stops. Methane stays in the atmosphere for 10 years, while it is 400 years for carbon dioxide. So stopping emissions will not immediately reduce the amount of these greenhouse gases.

Secondly, the man-made sulfate aerosols, which are the result of burning fossil fuels, have been affecting the biosphere and human health alike. Julian Emile believes that the removal of those short-lived greenhouse gases leads to about one-tenth of a degree of additional warming over about a decade before reaching a new equilibrium.

Lastly, any change in Earth's energy balance takes time for the climate to adapt. Water makes up almost two-thirds of Earth's surface, a lot of it deep and slow to absorb excess carbon and heat.

### KEYWORDS

Climate; climate change; faculty; research; sustainability; climate change; pollution; methane; air pollution; global warming; environment; aerosols; sulfate aerosols; carbon dioxide; Greenhouse Gas Emissions

