

Study shows today's atmospheric carbon dioxide levels greater than 23 million-year record

June 1 2020



The remains of land plants can be used to calculate the amount of CO₂ in Earth's atmosphere. Credit: A. Hope Jahren.

A common message in use to convey the seriousness of climate change to the public is: "Carbon dioxide levels are higher today than they have been for the past one million years!" This new study by Brian Schubert (University of Louisiana at Lafayette) and coauthors Ying Cui and A. Hope Jahren used a novel method to conclude that today's carbon dioxide (CO₂) levels are actually higher than they have been for the past 23 million years.

The team used the fossilized remains of ancient plant tissues to produce a new record of atmospheric CO₂ that spans 23 million years of uninterrupted Earth history. They have shown elsewhere that as [plants](#) grow, the relative amount of the two stable isotopes of [carbon](#), carbon-12 and carbon-13 changes in response to the amount of CO₂ in the atmosphere. This research, published this week in *Geology*, is a next-level study measuring the relative amount of these carbon isotopes in fossil plant materials and calculating the CO₂ concentration of the atmosphere under which the ancient plants grew.

Furthermore, Schubert and colleagues' new CO₂ "timeline" revealed no evidence for any fluctuations in CO₂ that might be comparable to the dramatic CO₂ increase of the present day, which suggests today's abrupt greenhouse disruption is unique across recent geologic history.

Another point, important to geological readers, is that because major evolutionary changes over the past 23 million years were not accompanied by large changes in CO₂, perhaps ecosystems and temperature might be more sensitive to smaller changes in CO₂ than previously thought. As an example: The substantial global warmth of the middle Pliocene (5 to 3 million years ago) and middle Miocene (17 to 15 million years ago), which are sometimes studied as a comparison for current global warming, were associated with only modest increases in CO₂.

More information: Ying Cui et al. A 23 m.y. record of low atmospheric CO₂, *Geology* (2020). [DOI: 10.1130/G47681.1](https://doi.org/10.1130/G47681.1)

Provided by Geological Society of America

Citation: Study shows today's atmospheric carbon dioxide levels greater than 23 million-year record (2020, June 1) retrieved 3 May 2024 from <https://phys.org/news/2020-06-today-atmospheric-carbon-dioxide-greater.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.