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From: University of Washington
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Early Earth's air weighed less than half of today's atmosphere

The idea that the young Earth had a thicker atmosphere turns out to be wrong. New research from the University of Washington uses bubbles trapped in 2.7 billion-year-old rocks to show that air at that time exerted at most half the pressure of today's atmosphere.

The [results](#), published online May 9 in [Nature Geoscience](#), reverse the commonly accepted idea that the early Earth had a thicker atmosphere to compensate for weaker sunlight. The finding also has implications for which gases were in that atmosphere, and how biology and climate worked on the early planet.

"For the longest time, people have been thinking the atmospheric pressure might have been higher back then, because the sun was fainter," said lead author [Sanjoy Som](#), who did the work as part of his UW doctorate in Earth and space sciences. "Our result is the opposite of what we were expecting."

The idea of using bubbles trapped in cooling lava as a "paleobarometer" to determine the weight of air in our planet's youth occurred decades ago to co-author [Roger Buick](#), a UW professor of Earth and space sciences. Others had used the technique to measure the elevation of lavas a few million years old. To flip the idea and measure air pressure farther back in time, researchers needed a site where truly ancient lava had undisputedly formed at sea level.

Their field site in Western Australia was discovered by co-author Tim Blake of the University of Western Australia. There, the Beasley River has exposed 2.7 billion-year-old basalt lava. The lowest lava flow has "lava toes" that burrow into glassy shards, proving that molten lava plunged into seawater. The team drilled into the overlying lava flows to examine the size of the bubbles.

Continue reading at the [University of Washington](#).

Image credit: [Roger Buick/University of Washington](#)

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