

SCIENCE

Geologists Are Feuding About the Collapse of Civilization

The year's most acrimonious scientific fight is a mega-drama over a mega-drought. ROBINSON MEYER SEP 20, 2018



ASMAA WAGUIH / REUTERS

This summer, the decree went out: We are living in a new geological chapter in the planet's 4.5-billion-year history.

For a certain corner of the world, this was big news. You have probably heard of the Jurassic period (when dinosaurs ruled the Earth) or the Cambrian explosion (when complex animal life arose). Now we had a new name for our own neighborhood in time: We modern humans—you, me, and Jesus of Nazareth—were all born in the Meghalayan age. According to the global governing body of geologists, this new era began 4,200 years ago, when a global mega-drought sent ancient societies around the world into starvation and collapse.

How interesting!, you may think. *I love science!* And perhaps in an earlier era, that's all you would have had to think. The dawn of the Meghalayan would have earned some wide-eyed headlines, made life slightly easier for a few researchers, and promptly been relegated to a second-round *Jeopardy!* question.

Instead, the Meghalayan kicked off one of the cattiest, most intransigent fights among earth scientists that I can remember—a battle that now concerns some of the most profound questions up for scholarly debate today, including the importance of climate change, the likelihood of societal collapse, and the ultimate place of humanity in the universe.

Not that you would always know this from listening to them. “What the fuck is the Meghalayan?” a tenured professor of geology asked me in July. “It’s silly,” another said. Meanwhile, the new age’s beleaguered advocates claimed an “incredible press campaign” had misrepresented their work.

This week, the fight spilled into the pages of one of the country's most prestigious journals, as a critic raised a new concern with the embattled age. [A short article published Thursday in *Science*](#) contends that the Meghalayan is premised on faulty archaeology. There is scant evidence, it says, that the worldwide mega-drought around 2200 B.C., which started the Meghalayan, brought ancient society to its knees.

"There was no sudden, universal civilizational collapse," writes [Guy Middleton](#), a visiting archaeologist at Newcastle University, in the piece. "Overall, the archaeological and historical evidence suggests that 2200 B.C. was not a threshold date."

Middleton's point is larger than just the Meghalayan: He is siding with a group of scholars, mostly at European universities, that argues that climate change has almost never led to war or total ruin in the past. He writes as much in his piece: "Climate change never inevitably results in societal collapse, though it can pose serious challenges, as it does today."

[Does climate change cause more war?]

The Meghalayan's architects did not mince words in their response.

"This is a totally misleading piece of writing, which displays a lamentable grasp of the facts," said [Mike Walker](#), a professor at the University of Wales and the leader of the team that proposed the Meghalayan.

"I do not see a single accurate claim," agreed Harvey Weiss, a professor of archaeology at Yale who, also helped write the Meghalayan proposal.

In a series of emails, Weiss lambasted his critic's credentials. "Middleton, a pop-archeology writer, failed archaeology Ph.D., and English-as-a-second-language instructor in Japan, now claims archeo-expertise in matters about which he knows nothing, and gets great audience in *Science*—of all journals!" he wrote.

"For me, the most intriguing question is, 'Why does *Science* publish this rubbish?'" he said in another message, sent several hours later under the subject line "and Weiss added ..."

"I see you've been talking to Harvey Weiss!" Middleton replied when I told him about some of these charges without identifying their source. Middleton is the author of [a book about societal collapse](#), and he holds a doctorate in Aegean prehistory. He has also "proudly" taught English for Academic Purposes classes at Tokyo University and Northumbria University, he said, writing: "It has put bread on the table since 2002 and paid me through my Ph.D."

It wasn't always clear that the Meghalayan would arouse this level of controversy. The new age was meant to be an aid for geologists and climate scientists who study the past 11,700 years of Earth's history. This period of time—called the Holocene epoch—contains nearly all of modern human history and is crucial to the study of contemporary climate change.

But much to the chagrin of some scientists, the Holocene epoch is not clearly chunked into subdivisions. This ambiguity makes it hard to compare scientific conclusions: One researcher might consider the year 2000 B.C. to be "late Holocene"; another might think it the "mid-Holocene." So in 2010, [the International Commission on Stratigraphy](#), which standardizes geological timelines, convened a panel to fix this problem by subdividing the Holocene into thirds.

After years of discussion and debate, the commission finalized those new subdivisions in July. The “late Holocene,” it said, would start with the advent of a global mega-drought 4,200 years ago. Since the best record of this worldwide drying event comes from a stalactite in Meghalaya, India, the new age would be called the Meghalayan.

The July paper proposing the new age described the mega-drought of 2200 B.C. as “one of the most pronounced climatic events” to afflict human communities since the end of the Ice Age. It offers a tour of a world in catastrophe circa 2200 B.C.: In Egypt, the Old Kingdom “seems to have collapsed” after the Nile’s floods faltered. In Mesopotamia, the Akkadian empire crumbled, a disaster “linked to sudden acidification.” Throughout the Levant, people abandoned towns and cities. In modern-day Pakistan, the urban Harappan civilization—which once flourished in the Indus Valley—transitioned to a “rural, post-urban society.” In China, multiple Neolithic cultures failed. Settlement around the Yangtze and Yellow Rivers seems to have reached a nadir.

Middleton disputes almost all of these conclusions. Take Egypt, for instance. The pharaoh did lose power during that period, he writes, but he largely chalks this up to bureaucratic changes: “There was no disruption to Egyptian civilization, no dark age, and no mass starvation and death,” he writes.

Weiss directly contests some of these claims. “The great hallmarks of the Old Kingdom, the pyramid royal tombs cease to be built after the ... mega-drought,” he said in an email. “Central government diffused to the provinces. Nile flow was diminished significantly—and thereby agricultural revenues for Old Kingdom pharaohs and their pyramid constructions.”

“I don’t think you can point to just the climate and say that the climate caused the collapse of the Old Kingdom,” said Peter Der Manuelian, a professor of Egyptology at Harvard who was not connected to either Meghalayan effort. “There’s also changes to the kingship, to the bureaucracy, economic factors, and *also* this general desiccation [of the environment]. Some people lean more toward the climate, and some lean more toward economics or the kingship.”

But he agreed that there was “definitely some fragmentation” in the Old Kingdom around 2200 B.C. “But thinking these days is that it was not anarchy, total collapse, and chaos and starvation,” he said.

Middleton takes a skeptical view of the idea that the 23rd century B.C. was especially devastating for human society. “I think that if you take a two-century period, you are indeed likely to find lots of changes and potentially things that modern scholars might sometimes term collapse (not necessarily helpfully),” he told me in an email. “Two hundred years separates us from the Napoleonic Wars ... Take any 200 years of archaic or classical Greece or modern Europe and see how much the world changes in different ways.”

He declined to say whether the Meghalayan should be reexamined. “The Meghalayan may exist stratigraphically, that is ultimately for geologists to determine,” he told me. “As a threshold for human cultures, and in terms of the archaeology, the Meghalayan seems to me to be questionable and rather pointless.”

Walker, the professor who led the Meghalayan team, told me that “the archaeological record has no relevance whatsoever” in helping to set the new age. The mega-drought that set in 4,200 years ago is the important boundary in time, he said, adding: “I cannot understand why *Science*, which is supposed to be a flagship journal for global science, would publish such a poorly researched article as this.”

Middleton’s article ran as a short, two-page “perspective” in *Science*. In a statement, a spokeswoman for *Science* said that articles like Middleton’s “are examined by members of *Science*’s Board of Reviewing Editors (outside practicing scientists) who are experts in the related topic, as well as by *Science*’s in-house editors who handle papers in related areas.”

Middleton’s “call for archaeologists to pursue more interdisciplinary collaborations and publish in journals so that their latest assessments are visible to the wider discourse—for further evaluation—is one that makes it a good candidate for a perspective,” she added.

Even if Middleton’s criticism prompts no change to the Meghalayan, it points to a scholarly battle that remains unresolved. As I wrote earlier this year, scholars across economics and the social sciences currently do not agree about whether environmental change increases the chance of war and societal collapse. European scholars tend to dispute such a link; American scholars have mostly affirmed it.

“A decade ago Jared Diamond’s book was called *Collapse*. But reading it carefully suggested that numerous societies had actually survived remarkably in the face of environmental adversity,” said Simon Dalby, a professor of political economy at the Balsillie School of International Affairs who mostly disputes a climate-conflict connection. The next few centuries “are likely to be much less conducive to human flourishing than the last few centuries, but humanity will survive unless some major disease event transpires.”

We want to hear what you think about this article. [Submit a letter](#) to the editor or write to letters@theatlantic.com.

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