

New group seeks to timeline the Anthropocene—when humans became the dominant force on Earth

April 3 2015, by Bob Yirka



Clouds over Australia are shown. Credit: NASA

(Phys.org)—A team of four scientists has published a Perspectives piece in the journal *Science* outlining their arguments for reaching back further in time than others have suggested for the beginning of the Anthropocene—a geologic epoch defined by the impact of homo sapiens on planet Earth. William Ruddiman, Erle Ellis, Jed Kaplan and Dorian Fuller suggest that current arguments that point to modern exploits overlook the huge impact of forest clearing and farming many thousands

of years ago.

Humans have had a major impact on planet Earth, there is no debating that. But have our efforts resulted in an un-reversible geologic impact? And if so, when exactly did it happen? That is what climatologists, geologists and other scientists have been debating for the past several years. Back in 2000 Paul Crutzen and Eugene Stoermer published a paper igniting the debate by coining the word Anthropocene to describe what they felt was the current epoch—where humans are the driving force, instead of nature. They suggested its start was the 1700's because that was when the industrial revolution got going.

Over the past fifteen years, many others have published papers offering their ideas on when the Anthropocene got its start, with some debating whether it ever really did. In this new paper, the authors suggest that if a start date is to be identified it should take into account the massive changes wrought by cutting down forests and the start of agriculture, which they say pushes the date back 11,000 years, or perhaps to the time when humans began wiping out other large animals such as the woolly mammoth, around 50,000 years ago.

The thing that is making it difficult to settle the matter is the absence of a clearly identifiable marker, known as a golden spike, e.g., the comet that killed off the dinosaurs. Some have suggested that scientists finding traces of radiation worldwide from nuclear tests is such a marker, while others point to the finding of carbon ash (due to burning coal) in soils.

Official designations are carried out by the International Union of Geological Sciences, which has not changed its stance that we are still living in the Holocene epoch, which began 11,700 years ago—after the last ice age receded. Debate on the topic will likely proceed and there is no guarantee that a consensus will be reached, and that is why the authors of this new paper suggest that perhaps the word Anthropocene

be changed to [anthropocene](#) (lower case) and be used to designate an idea rather than a formal epoch.

More information: Defining the epoch we live in, *Science* 3 April 2015: Vol. 348 no. 6230 pp. 38-39 [DOI: 10.1126/science.aaa7297](https://doi.org/10.1126/science.aaa7297)

Abstract

Human alterations of Earth's environments are pervasive. Visible changes include the built environment, conversion of forests and grasslands to agriculture, algal blooms, smog, and the siltation of dams and estuaries. Less obvious transformations include increases in ozone, carbon dioxide (CO₂), and methane (CH₄) in the atmosphere, and ocean acidification. Motivated by the pervasiveness of these alterations, Crutzen and Stoermer argued in 2000 that we live in the "Anthropocene," a time in which humans have replaced nature as the dominant environmental force on Earth (1). Many of these wide-ranging changes first emerged during the past 200 years and accelerated rapidly in the 20th century (2). Yet, a focus on the most recent changes risks overlooking pervasive human transformations of Earth's surface for thousands of years, with profound effects on the atmosphere, climate, and biodiversity.

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