


[Home](#) [About the EoE](#) [Add a Resource](#) [Help](#)

Anthropocene

Published: September 10, 2008, 1:47 pm

Edited: September 22, 2010, 8:58 am

Lead Author: [Erle Ellis](#)

Topics: [Anthropogenic Ecosystems](#), [Natural Sciences](#), [Industrial Ecology](#), [Land-use & Land-cover Change](#), [Greenhouse Gases](#), [Globalization](#), [Ecology](#), [Geology](#), [Environmental Impact Assessment](#), [Environmental Futures](#), [Climate Change](#), [Biogeochemistry](#), [Food](#)

Rate: Average: 2/5

This article has been reviewed by the following Topic Editor: [Jay Gulledge](#)

Introduction

The Anthropocene defines Earth's most recent [geologic time period](#) as being human-influenced, or anthropogenic, based on overwhelming global evidence that atmospheric, geologic, hydrologic, biospheric and other earth system processes are now altered by humans. The word combines the root "anthropo", meaning "human" with the root "-cene", the standard suffix for "epoch" in [geologic time](#). The Anthropocene is distinguished as a new period either after or within the "Holocene", the current [epoch](#), which began approximately 10,000 years ago (about 8000 BC) with the end of the last glacial period.

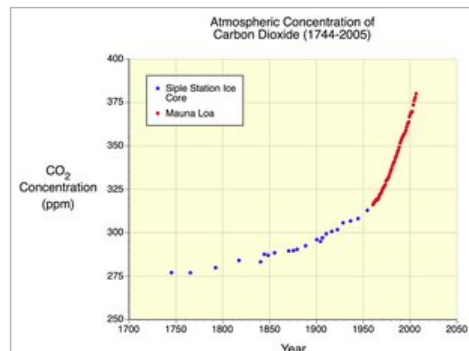


The Earth at night, demonstrating the global extent of human influence.

Origins of the term

Anthropocene is a new term, proposed in 2000 by Nobel Prize winning scientist [Paul Crutzen](#). A similar term, "Anthrocene", was coined by Andrew Revkin in his 1992 book "Global Warming: Understanding the Forecast", but was not adopted by scientists. Crutzen noted that the term originated in 2000 at "a conference where someone said something about the Holocene. I suddenly thought this was wrong. The world has changed too much. So I said: 'No, we are in the Anthropocene.' I just made up the word on the spur of the moment. Everyone was shocked. But it seems to have stuck."^[1] Crutzen then proceeded to use the term in print in 2000^[2]. In 2008, Zalasiewicz and colleagues published the first proposal for the formal adoption of the Anthropocene epoch by geologists, and this adoption is now pending ^[3].

Evidence for the Anthropocene

Figure 1: Increase in atmospheric carbon dioxide, 1744 to 2005. (Source: [PhysicalGeography.net](#))

[Geologic epochs](#) are distinguished from one another based on geological observations, such as the composition of sediment layers and other tools of paleoclimatology. To justify the identification of a new Anthropocene epoch, it must therefore be demonstrated that evidence of anthropogenic global change is present at such a level that it can be distinguished using geologic indicators despite natural variability in these across the Holocene.

The most commonly cited and readily measured global change associated with humans is the rise of [greenhouse gases](#), especially carbon dioxide and methane, around the beginning of the [Industrial Revolution](#), together with the associated rise in global [temperatures](#) and sea level caused by this [global warming](#). Other key indicators include massive global increases in [soil erosion](#) caused by [land clearing](#) and [soil](#) tillage for [agriculture](#) and massive extinctions of species caused by hunting and the widespread destruction of natural [habitats](#).

When did the Anthropocene begin?

The originator of the Anthropocene terminology, [Paul Crutzen](#), clearly favors the beginning of the [Industrial Revolution](#) as the starting point for the Anthropocene. In a 2002 paper in the journal *Nature* he stated: "The Anthropocene could be said to have started in the late eighteenth century, when analyses of air trapped in polar ice showed the beginning of growing global concentrations of carbon dioxide and methane."^[4]

Zalasiewicz et al. are in general agreement with Crutzen that the Anthropocene is best identified at the beginning of the Industrial Revolution, though they also propose the beginning of the nuclear era in the 1960s as a useful date, due to the global presence of radioactive [isotopes](#) in sediments at this time.

However, as yet, there is no official start date for the Anthropocene. Moreover, William Ruddiman proposes that globally significant human alteration of [greenhouse gas](#) concentrations and associated [climate change](#), extensive [land clearing](#) and [soil erosion](#), and mass species extinctions actually began approximately 8,000 years ago with the rise of [farming](#) and the global spread of human populations in the latter stages of the first Agricultural Revolution. For this reason, the Anthropocene might be considered to begin 8,000 years ago. On the other hand, this "Early Anthropocene" definition is difficult to differentiate from the Holocene epoch which began only 2,000 years earlier.

See also

- [Geologic time](#)
- [Land-use and land-cover change](#)
- [Anthropogenic biomes](#)

Notes

1. [^] Fred Pearce, F. 2007. With Speed and Violence. Page 21. ISBN: [0807085774](#).
2. [^] Crutzen, P. J., and E. F. Stoermer. 2000. The "Anthropocene". "Global Change Newsletter". 41: 17-18.
3. [^] Zalasiewicz, J., M. Williams, A. Smith, T. L. Barry, A. L. Coe, P. R. Bown, P. Brenchley, D. Cantrill, A. Gale, P. Gibbard, F. J. Gregory, M. W. Hounslow, A. C. Kerr, P. Pearson, R. Knox, J. Powell, C. Waters, J. Marshall, M. Oates, P. Rawson, and P. Stone. 2008. Are we now living in the Anthropocene? GSA Today 18:4-8.
4. [^] Crutzen, P. J. 2002. Geology of mankind. Nature 415:23-23.



Human alteration of land surfaces.

Further Reading

- Crutzen, P. J. 2002. Geology of mankind. Nature 415:23-23.
- Ruddiman, W. F. 2003. The anthropogenic greenhouse era began thousands of years ago. Climatic Change 61:261-293.
- Ruddiman, W. F. 2007. The early anthropogenic hypothesis: Challenges and responses. Reviews of Geophysics 45:RG4001.
- Ruddiman, W. E. 2005. Plows, Plagues, and Petroleum: How Humans Took Control of Climate. Princeton University Press. ISBN: [0691133980](#).
- De Vries, B. and J. Goudsblom. 2002. Mappae Mundi: Humans and their Habitats in a Long-term Socio-ecological Perspective: Myths, Maps and Models. Amsterdam University Press. ISBN: [9053566554](#).
- Zalasiewicz, J., M. Williams, A. Smith, T. L. Barry, A. L. Coe, P. R. Bown, P. Brenchley, D. Cantrill, A. Gale, P. Gibbard, F. J. Gregory, M. W. Hounslow, A. C. Kerr, P. Pearson, R. Knox, J. Powell, C. Waters, J. Marshall, M. Oates, P. Rawson, and P. Stone. 2008. Are we now living in the Anthropocene? GSA Today 18:4-8.

External links

- [copy of IGBP "The Anthropocene](#). Article from Crutzen's website.
- [Videos of a Radcliffe conference on "Biodiversity in the Anthropocene"](#) March 10, 2006.
- [Debate over the Early Anthropogenic Hypothesis](#). 5 December 5 2005.
- Berardelli, Phil. "Human-Driven Planet: Time to Make It Official?". *ScienceNOW* Daily News. 24 January 2008.

Citation

Erle Ellis (Lead Author);**Jay Gulledge** (Topic Editor) "Anthropocene". In: Encyclopedia of Earth. Eds. Cutler J. Cleveland (Washington, D.C.: Environmental Information Coalition, National Council for Science and the Environment). [First published in the Encyclopedia of Earth September 10, 2008; Last revised Date September 22, 2010; Retrieved May 20, 2011 <<http://www.eoearth.org/article/Anthropocene>>

The Author



Dr. Erle Ellis is Associate Professor of Geography and Environmental Systems at the University of Maryland, Baltimore County, where he teaches Environmental Science, Landscape Ecology and Biogeochemistry. His research focuses on ecological processes in anthropogenic landscapes at local, regional and global scales, and their transformation by population growth and industrially-based technologies. He has studied long-term changes in nitrogen balance in village ecosystems of China's Tai Lake Re ... ([Full Bio](#))

[ADD COMMENT](#)

Comments

There are no comments.

Add Comment

You must be logged in to post a comment. Click here to [login](#).



Unless otherwise noted, all text is available under the terms of the [Creative Commons Attribution-Share Alike license](#),
[Privacy Policy](#) | [Neutrality Policy](#)
Supported by the [Environmental Information Coalition](#) and the [National Council for Science and the Environment](#).

