The Anthropocene Is Here: Humanity Has Pushed Earth Into a New Epoch

“We have had an incredible impact on the environment of our planet,” says Colin Waters, principal geologist at the British Geological Survey. (Photo: Kevin Gill/flickr/cc)

By Deirdre Fulton | Common Dreams

The Anthropocene Epoch has begun, according to a group of experts assembled at the International Geological Congress in Cape Town, South Africa this week.

After seven years of deliberation, members of an international working group votedunanimously on Monday to acknowledge that the Anthropocene—a geologic time interval so-dubbed by chemists Paul Crutzen and Eugene Stoermer in 2000—is real.

The epoch is thought to have begun in the 1950s, when human activity, namely rapid industrialization and nuclear activity,

set global systems on a different trajectory. And there's evidence in the geographic record. Indeed, scientists say that nuclear bomb testing, industrial agriculture, human-caused global warming, and the proliferation of plastic across the globe have so profoundly altered the planet that it is time to declare the 11,700-year Holocene over.

As the working group articulated in a media note on Monday:

Changes to the Earth system that characterize the potential Anthropocene Epoch include marked acceleration to rates of erosion and sedimentation; large-scale chemical perturbations to the cycles of carbon, nitrogen, phosphorus, and other elements; the inception of significant change to global climate and sea level; and biotic changes such as unprecedented levels of species invasions across the Earth. Many of these changes are geologically long-lasting, and some are effectively irreversible.

These and related processes have left an array of signals in recent strata, including plastic, aluminium and concrete particles, artificial radionuclides, changes to carbon and nitrogen isotope patterns, fly ash particles, and a variety of fossilizable biological remains. Many of these signals will leave a permanent record in the Earth's strata.

"Being able to pinpoint an interval of time is saying something about how we have had an incredible impact on the environment of our planet," said Colin Waters, principal geologist at the British Geological Survey and secretary for the working group. "The concept of the Anthropocene manages to pull all these ideas of environmental change together."

Indeed, the *Guardian* compiled more "evidence of the Anthropocene," saying humanity has:

- Pushed extinction rates of animals and plants far above the long-term average. The Earth is now on course to see 75 percent of species become extinct in the next few

centuries if current trends continue.

- Increased levels of climate-warming CO2 in the atmosphere at the fastest rate for 66m years, with fossil-fuel burning pushing levels from 280 parts per million before the industrial revolution to 400ppm and rising today.
- Put so much plastic in our waterways and oceans that microplastic particles are now virtually ubiquitous, and plastics will likely leave identifiable fossil records for future generations to discover.
- Doubled the nitrogen and phosphorous in our soils in the past century with our fertilizer use. This is likely to be the largest impact on the nitrogen cycle in 2.5bn years.
- Left a permanent layer of airborne particulates in sediment and glacial ice such as black carbon from fossil fuel burning.

Now, scientists must commence their search for the "golden spike"—explained in the*Telegraph* as "a physical reference point that can be dated and taken as a representative starting point for the Anthropocene epoch." This could be found in anything from layers of sediment in a peat bog to a coral reef to tree rings.

"A river bed in Scotland, for example, is taken to be the representative starting point for the Holocene epoch," the *Telegraph* reports.

The *Guardian* points out: "For the Anthropocene, the best candidate for such a golden spike are radioactive elements from nuclear bomb tests, which were blown into the stratosphere before settling down to Earth."

However, Jan Zalasiewicz, a geologist at the University of Leicester and chair of the working group, told the paper that while "the radionuclides are probably the sharpest—they really come on with a bang," humanity has left no shortage of

signatures.

“We are spoiled for choice,” he said. “There are so many signals.”

According to the *Telegraph*, once one or more golden spike sites have been selected, a proposal for the formal recognition of an Anthropocene epoch will be made to a series of commissions, culminating at the International Union of Geological Sciences. The process is likely to take at least three years.

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