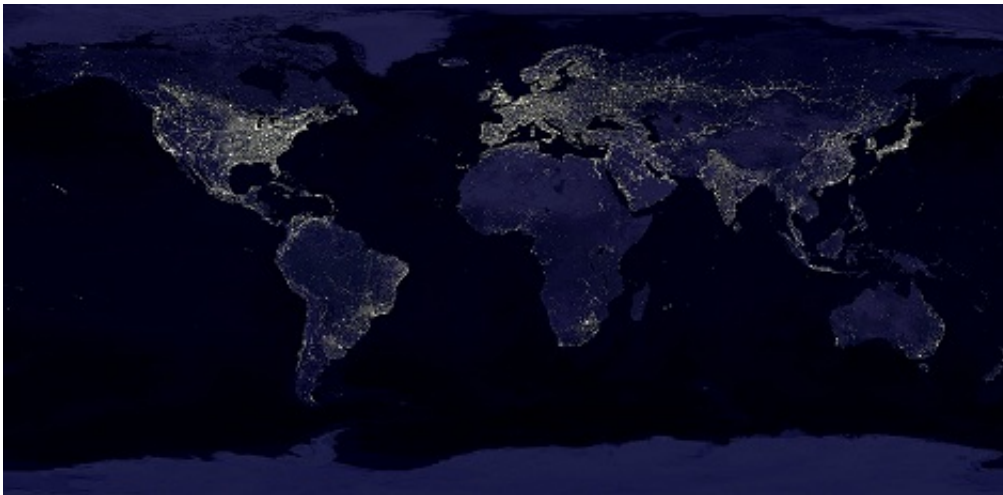


# Scientists put mankind's technological impact on the planet to the test

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The Earth at night, a composited night-time image of the world during the anthropocene. Credit: Wikipedia

From threatened coral reefs and oxygen-starved seas to the industrial wastes around our cities and the subway systems beneath them, humans have clearly left their mark on the planet – and now a team of geologists from the University of Leicester has examined evidence from around the world to see exactly how global geology is changing due to human hands.

The findings of these studies have been presented in a new volume entitled 'A Stratigraphical Basis for the Anthropocene' published by The Geological Society and edited by Dr Jan Zalasiewicz and Professor Mark Williams from the University of Leicester's Department of Geology in

collaboration with colleagues from the British Geological Survey. They examine the evidence to suggest that we now live in a new epoch - the Anthropocene, in which humans have changed the global landscape in which we live.

Dr Zalasiewicz explained: "Among the evidence is the suggestion that modern humans have created a new sphere - the technosphere - that drives global change. If we look at the world, we can see that the detectable imprint of humans spreads widely. But have we really changed our planet forever?"

"Since the Nobel Prize-winning scientist Paul Crutzen suggested that collective human actions have pushed the Earth into a new epoch, the Anthropocene, the concept has escaped from the narrow confines of geological study to become one of the hottest topics throughout both the sciences and the humanities. It's a hugely important phenomenon – but can it go as far as altering the Earth's time scale?"

"The new volume analyses the hurdles the Anthropocene will need to overcome if it is to be formalized by the geological establishment. There is genuine controversy here - for geologists to change the Geological Time Scale is a very, very big step. This [time scale](#), over 4.5 billion years long, is the backbone of the science. The Anthropocene is counted in decades and centuries, not millions of years. So we're asking the difficult question: does it really measure up, seen against the giant backcloth of Earth history?"

While the ruins of ancient cities show that human traces go back millennia, the extraordinary post-war 'Great Acceleration' of planet-scale human impact suggests that the Anthropocene may have begun not more than 70 years ago. The challenge now rests with the scientific community to show if this sudden acceleration in global development equates to living in a new epoch, or is simply a continuation of the

constantly evolving Holocene.

The volume describes a range of evidence that may help to define this potential Anthropocene and details key signatures that could be used in its definition. These signatures include changes to the physical nature of strata, with novel rock types and minerals and magnetic patterns; biological changes that will become the transformed fossil record of the future; the many chemical changes being written in modern-day strata, including those of the polar ice layers and cave deposits; and the role of natural phenomena such as volcanic eruptions.

Professor Williams added: "The human footprint is clearly deep, and is now indelible. At the heart of the Anthropocene – for now – is the human phenomenon that is now driving Earth's geology, and so the new volume also puts humanity and its inventions under the spotlight. Is the technology that supports our lives now an Earth system in its own right – a planetary technosphere – and is it escaping our control?"

"Whichever way the Anthropocene controversy will go, our planet is clearly now moving into uncharted territory. By whatever name, it will never be the same again."

**More information:** 'A Stratigraphical Basis for the Anthropocene' was published on Wednesday 4 June 2014 by The Geological Society and is available here: [www.geolsoc.org.uk/sp395](http://www.geolsoc.org.uk/sp395)

Provided by University of Leicester

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