



## **Stratigraphic characterization of the Anthropocene: a progress report**

Jan Zalasiewicz

Department of Geology, University of Leicester, Leister LE1 7RH, UK (jaz1@le.ac.uk)

Rapid and large-scale anthropogenic changes have led to the concept that we are now living through the beginning of the Anthropocene Epoch - an interval of geological time dominated by human influence. The term was proposed little more than a decade ago by Paul Crutzen, the Nobel Prize-winning atmospheric chemist, and has since been widely used – and sharply debated.

Its stratigraphic analysis needs considering the various kinds of historical and environmental change in terms of geological - or more precisely stratigraphic - change. Lithostratigraphic change, for instance, is strikingly represented by the spread of the 'urban stratum', the refashioning of sand, clay and limestone into our buildings, foundations and transport systems. Biostratigraphic changes include the ongoing mass extinction event and the effect of invasive species (while deep human-made bioturbation is a novel aspect the fossil record). Chemostratigraphic changes include the reshaping of the Earth's natural carbon, phosphorus and nitrogen cycles.

As regards the potential formalizing of the Anthropocene, one question to be pursued relates to the chronostratigraphic definition of the phenomena involved: that is, given that many of these transformations are diachronous on human timescales, can an Anthropocene Series, with a synchronous time boundary, be characterized and mapped across the Earth's surface? Efforts to answer this question (Williams et al. 2011; Waters et al., in press) should help in the understanding of the Anthropocene within its geological context, and also in exploring the stratigraphic relation between time and rock generally at very fine stratigraphic timescales.

Waters, C.W., Zalasiewicz, J.A., Williams, M., Ellis, M. & Snelling, A. In press. A Stratigraphical Basis for the Anthropocene. Geological Society of London, Special Publication.

Williams, M., Zalasiewicz, J., Haywood, A. & Ellis M. (eds) 2011. The Anthropocene: a new epoch of geological time? *Philosophical Transactions of the Royal Society* 369A, 833-1112.