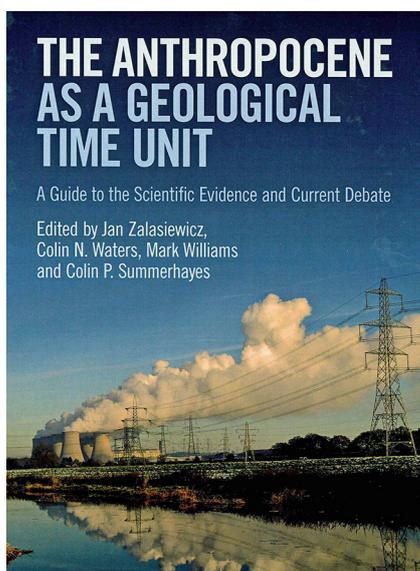


The Anthropocene as a geological time unit: a guide to the scientific evidence and current debate, by J. Zalasiewicz, C.N. Waters, M. Williams & C.P. Summerhayes, 2019. Cambridge University Press, Cambridge, UK. 361 pages. Hardback: price £44.99, ISBN 9781108475235.



The term Anthropocene has been widely used in scientific literature and public debate alike since Paul Crutzen and Eugene Stoermer published their seminal work “The Anthropocene” in IGBP Global Change Newsletter in the year 2000. The “Anthropocene” is defined as the time period in which human impact has become a dominant factor in the functioning of our environment on a global scale. The effects of this impact are observed with unprecedented range and intensity, surpassing natural processes for the first time in the Earth history. The overall goal of the present book is to provide a comprehensive overview of scientific data supporting the theory of the Anthropocene. The editors are well-known veterans of the Anthropocene Working Group (AWG), which has been working under the umbrella of the International Commission on Stratigraphy (ICS) since 2009. Subchapters have been contributed by a high-profile international team of scientists (38 co-authors), all of them leaders in environmental sciences in a range of countries.

The volume is subdivided into seven major chapters. Chapter 1 serves as an introduction and

provides a broad overview of the history and development of the Anthropocene concept. The authors also explain why the acceptance of the Anthropocene as a formal stratigraphical unit is important. The following four chapters (2–5) present scientific evidence behind the Anthropocene. First, the authors document the stratigraphical signatures of the Anthropocene, i.e., a large number of mineral-like compounds, anthropogenic rock types, and other novel materials introduced into the environment by humans. Their numbers are astonishing: it seems that we are experiencing the greatest change in the Earth’s mineral evolution. The widespread distribution of anthropogenic minerals and rocks provides a recognisable lithostratigraphical signal. The third chapter discusses the biostratigraphical signature of the Anthropocene. Major issues described are the increasing extinction rates which lead to a loss of biodiversity and simultaneous development of invasive neobiota which may become extremely abundant and preserved as good biostratigraphical signatures in sedimentary rocks. The fourth chapter explains the original concept of “technosphere”, which is understood as a combination of technological and human systems and structures. Technosphere is defined here as a new “sphere” comparable to atmosphere, hydrosphere, etc. The most prominent effect of technosphere is the worldwide distribution of technofossils, e.g., plastics, which are a physical record of the Anthropocene. The next chapter illustrates the chemostratigraphical records of human activity. Modifications to the carbon cycle, excesses of nitrogen and phosphorus from agricultural fertilisers, increase in atmospheric sulphur, pollution with toxic metals, organic compounds and radionuclides are all shown to be relevant chemostratigraphical proxies of the Anthropocene. The sixth chapter “Climate Change and the Anthropocene” presents the links between anthropogenic greenhouse gas emissions and increasing air temperature, sea level rise and an increasing loss of ice. Finally, the seventh chapter summarises the whole

body of scientific evidence to set up the stratigraphical lower boundary of the Anthropocene. According to the authors, the huge amount of data provide sufficient evidence for the formalisation of the Anthropocene as a distinct chronostratigraphical unit. The major question tackled here is what could be the “golden spike”? Among many possible candidates, the authors locate the beginning of the Anthropocene in the mid-twentieth century, which corresponds to a rapid increase in human activity referred to as the Great Acceleration. Worldwide this is indicated by the global dispersion of radionuclides caused by nuclear bomb testing. The book concludes with an extensive reference list that covers nearly 70 pages.

In short, this volume present a summary of more than a decade of research within the framework of AWG and contains an impressive load of knowledge. The content is well illustrated by figures of excellent quality. This is an in-depth overview of the Anthropocene, aimed at academic researchers across different fields of science, including also social sciences and humanities. Whether you are a supporter of the Anthropocene concept or not, the topic is relevant, timely and extremely important. Beyond doubt, a must-read book for everyone interested in the future of our planet and ourselves.

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