

## **Anthropocene: its stratigraphic basis**

As officers of the Anthropocene Working Group (AWG; J.Z. and C.W.) and chair of the Subcommittee on Quaternary Stratigraphy (SQS; M.J.H.) of the International Commission on Stratigraphy (ICS), we note that the AWG has less power than Erle Ellis and colleagues imply (Nature 540, 192–193; 2016). Its role is merely advisory — to evaluate the Anthropocene as a formal unit in the geological timescale. Proposals must pass scrutiny by the AWG, the SQS and the ICS before being ratified by the Executive Committee of the International Union of Geological Sciences.

The geological Anthropocene is not defined by holistic analysis of all human impacts on Earth, but by whether those impacts have produced suitable signals in the stratal record. Requirements include uniqueness, global extent, preservation potential and a synchronous base. A putative geological Anthropocene epoch would be nested within the Quaternary period, Cenozoic era and Phanerozoic eon. Myriad near-synchronous geological signatures in the stratigraphic record place its logical beginning in the mid-twentieth century, during the ‘Great Acceleration’ that marked a global increase in population, industrial activity and energy use.

The ‘anthropogenic’ epoch of Ellis et al. is different, and obscures this major Earth system and stratigraphic change. By including all human impacts across the world over millennia, their Anthropocene extends diachronously through the Late Pleistocene and Holocene to the present day. This overlap makes it meaningless as a geological timescale unit. The rich archaeological record, furthermore, is a characteristic of the Holocene epoch.

The AWG is interdisciplinary, with representatives from geology, archaeology, history, soil science, ecology, oceanography, polar science, atmospheric chemistry and international law. It works with physical scientists, social scientists, humanists and artists. It publicizes its activities through open meetings and peer-reviewed literature, and invites feedback. Ongoing work to conceptualize the geological Anthropocene must nonetheless remain within the ICS mandate.