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The most consequential ethical decision for geoscience

Emlyn Koster¹ and Philip Gibbard²

¹Royal Tyrrell Museum of Palaeontology, Director Emeritus, Raleigh, Canada (koster.emlyn@gmail.com)

²Emeritus Professor, Quaternary Palaeoenvironments, University of Cambridge, UK (plg1@cam.ac.uk)

A geological definition of the Anthropocene, shorthand for humanity's cumulative disruption of the Earth-Human Ecosystem, looms as the planet-and-people focused UN approaches its *Summit of the Future* in New York City on 22-23 September 2024. The International Union of Geological Sciences (IUGS) "aims to promote development of the Earth sciences through the support of broad-based scientific studies relevant to the entire Earth system". With the UN recently declaring that the planet is in peril and in need of a rescue plan, Anthropocene considerations with a geoethical lens are urgently needed.

Each potential new interval in the Geological Time Scale begins with a working group mandated by the International Stratigraphic Commission (ICS), in the case of the Anthropocene also by its Subcommittee on Quaternary Stratigraphy (SQS). The Anthropocene Working Group (AWG) was formed in 2009. In 2010, its first chair Jan Zalasiewicz with co-authors Mark Williams, Will Steffen and Paul Crutzen recognized that "the Anthropocene represents a new phase in both humankind and of the Earth, when natural forces and human forces become intertwined, so that the future of one determines the fate of the other". In 2015, the AWG's second and current chair Colin Waters with ten co-authors posed the question "Can nuclear weapons fallout mark the beginning of the Anthropocene Epoch?" in the *Bulletin of the Atomic Scientists*. This was affirmed in 2019 and the AWG presented its recommendation to the SQS in early 2024. The remaining review and decision steps are the ICS and IUGS. Reflecting concerns of other geoscience scholars as well as of other professions and an anxious public, an opposing mindset advocates for an Anthropocene event that spans the cumulative and ongoing environmental impacts of *Homo sapiens*. It views Geological Time Scale protocols as unsuitable for archaeological and contemporary developments, regards unemotive references to humanity's most abhorrent invention as distasteful, and visualizes the Anthropocene Event as valuably informing a new zeitgeist for our troubled world.

In 1950 astronomer Fred Hoyle anticipated that humanity's first view of the Earth from space would revolutionize the course of history. Insofar as a 'giant leap of mankind' did not result from NASA's *Apollo* 1969 lunar mission with its estimated 600 million viewers, the Anthropocene Event fuels an opportunity for geoscience to inform a realistic outlook during NASA's upcoming *Artemis* lunar mission. With unique knowledge of once pristine environments, current climate change and incipient sea level rise, ongoing biodiversity loss and ecosystem disruption, finite energy and mineral resources, the geoscience profession should arguably have already become a crucial asset in this troubled world.

