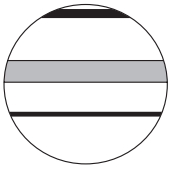

Forum Article

The Global Humanization Event (GHE)

The Holocene
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Abstract

The recent rejection of the "Anthropocene Series/Epoch," as proposed by the Anthropocene Working Group (AWG), by the International Commission on Stratigraphy (ICS) and the International Union of Geological Sciences (IUGS), has reopened discussion about the Anthropocene as a geological event. This event has been referred to as the "Anthropocene Event" (AE) or the "Anthropogenic Modification Episode" (AME). This essay briefly discusses these terms and concepts, and proposed to use new terms such as "Earth System Humanization Event" (ESHE) or "Global Humanization Event" (GHE), which are more specific and terminologically more consistent with the already defined geological events.

Keywords

Anthropocene, anthropogenic, event, episode, Earth System, humanization

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Introduction

In recent years, a debate has emerged over whether the Anthropocene should be considered a formal series/epoch on the International Chronostratigraphic Chart/Geological Time Scale (ICC/GTS) or a geological event. Recently, the Anthropocene Working Group (AWG) submitted a proposal to formalize the Anthropocene Series/Epoch, suggesting a global starting point at the mid-20th century (1952 CE), coinciding with the Great Acceleration (Waters et al., 2024). This proposal was rejected by the International Commission on Stratigraphy (ICS) and the International Union of Geological Sciences (IUGS), thereby reopening discussion about the Anthropocene as a geological event, as proposed by Gibbard et al. (2022a, 2022b). According to these authors, the "Anthropocene Event" (AE) may have begun tens of millennia ago, with the first significant anthropogenic modifications of the planet, possibly the Late Pleistocene megafauna extinctions (Barnosky et al., 2011; Lewis and Maslin, 2015). This commentary briefly discusses the concept of the AE, sensu Gibbard et al. (2022a, 2022b), and the response from the AWG members (Waters et al., 2022), proposing an alternative that is more specific and consistent with the already defined geological events. The idea of the Anthropocene as a formal ICC/GTS unit is beyond the scope of this discussion.

The "Anthropocene Event"

According to Gibbard et al. (2022a, 2022b), geological events are characterized by their time-transgressive and multi-temporal nature, ranging from seconds to millions of years and from local to global scales. Such events do not require a globally synchronous datum or a formalization protocol for their definition, as is the case of series/epochs, and can cause significant disruptions in the Earth System. For instance, the Paleoproterozoic Great Oxidation Event (GOE), which lasted 4 billion years (2.4–2.0 Ga), fundamentally altered life on Earth by introducing an aerobic atmosphere, thus facilitating aerial life. Other notable events include the Great Ordovician Biodiversity Event (GOBE; 485–455 Ma) and the Middle-Late Devonian forestation of continents (DeFE; 390–360 Ma).

This notion of the AE has been considered the most suitable to encompass the full range of anthropogenic cultural and environmental effects on Earth, which are characteristically heterogeneous in time and space (Walker et al., 2024). The AE has been defined as a progressive transformation of Earth by humans since the Late Pleistocene (beginning with megefauna extinctions) and is not considered a unit of time duration (Gibbard et al., 2022a, 2022b; Walker et al., 2024). However, there is a terminological issue. The termination "-cene" was initially chosen by Crutzen and Stoermer (2000) because it is reserved for epochs of the Cenozoic Era (i.e. Paleocene, Eocene, Oligocene, Miocene, Pliocene, Pleistocene, Holocene). Therefore, referring to the Anthropocene as a geological event could be misleading and terminologically incorrect (Head et al., 2023).

The "Anthropogenic Modification Episode"

Waters et al. (2022) analyzed the concept of geological events and episodes in detail and distinguished three main categories. Short-lived events last from days to thousand years and may either be global, changing one or more subsystems of the Earth System in a prolonged or permanent fashion (Type1), or be local to global in

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extent with no significant influence on the Earth System (Type 2). An example of Type 1 event is the Cretaceous-Paleogene (K-Pg) impact, whereas the Late Pleistocene and Holocene climatic events are examples of Type 2 events. Type 3 episodes are global and time-transgressive, capable of changing the functioning of the Earth System as a whole, and last from tens of thousands to millions of years. The aforementioned GOE and GOBE belong to this type of episodes and can change the Earth System permanently (Type 3a), whereas others, such as the Paleocene-Eocene Thermal Maximum (PETM) or the Middle Miocene Climatic Optimum (MMCO) are reversible (Type 3b).

Type 3 episodes are considered by Waters et al. (2022) as informal units, defined by the North American Stratigraphic Code (NASC) as units of highest rank and greatest scope, used to compare the spans of time represented by stratigraphic units with diachronic boundaries at different localities. In this way, the GOE, the GOBE and the global but transient climatic changes of the Eocene and the Miocene may be termed "episodes" rather than "events."

In this framework, Waters et al. (2022) defined the informal "Anthropogenic Modification Episode" (AME), encompassing the time frame during which humans have been modifying the planet, with a duration of at least ~50 ka. The Great Acceleration was considered a set of synchronous events (Great Acceleration Event Array; GAEA) within the AME. The GAEA is considered by these authors as the onset of the "Anthropocene Epoch" that has been recently rejected by the ICS/IUGS. In summary, the AME could be considered a better suited term for the AE concept, as it is free from terminological issues.

The "Humanized Earth System" and a new proposal

Several years ago, the term "Humanized Earth System" (HES) was proposed to describe the new physical and functional state of the planet under global human influence (Rull, 2016). This term, devoid of chronostratigraphic meaning, underscores that human impact has extended beyond local and regional scales to affect the components of the Earth System and their global interactions. Combining this concept with the aforementioned observations, the idea behind the AE and the AME could be described as the "Earth-System Humanization Event" (ESHE), or the Global Humanization Event (GHE), aligning with the current terminology for other events such as the aforementioned GOE, GOBE, and DeFE, among others.

The term "humanized" is preferred over the prefix "anthropo-" because the latter simply refers to the human presence, while the former emphasizes the impact of humans on the planet. The prefix "anthropo-" had already been used in the late 18th century by Stoppani (1873) to define the prospective "Anthropozoic Era," characterized by the occurrence of human fossils and objects linked to human presence and activity. Stoppani did not consider modern human ancestors such as *Australopithecus* and the extinct *Homo* species – he was a priest and, as such, did not believe in evolution – and was unable to date the beginning of this purported human era. Modern evolutionary knowledge and current dating methods show that Stoppani's "Anthropozoic" coincided almost perfectly with the current Quaternary Period, which began approximately 2.6 million years ago (Rull, 2021). However, human influence on the Earth System – which is the focus of the "Anthropocene" concept, whether it refers to an epoch or an event – is much more recent and restricted to the last tens of thousands of years, at most.

Final remarks

The terms ESHE and GHA emphasize the global character of human modifications at the Earth-System level, which is what Crutzen and Stoermer (2000) wanted to emphasize in their original definition of the "Anthropocene Epoch", as is repeatedly advocated by AWG members in their publications (e.g. Zalasiewicz et al., 2019). Also, the term "humanized" seems more specific about the intensity of human impact than the prefix "anthropo-," which is more suitable to designate human presence, regardless the magnitude of the impact. The term "event" is provisionally retained because we are still unaware of the duration and eventual reversibility of the ESHE/GHA.

Author contributions

Valentí Rull: Conceptualization; Data curation; Formal analysis; Funding acquisition; Investigation; Methodology; Project administration; Resources; Software; Supervision; Validation; Visualization; Writing – original draft; Writing – review & editing.

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