



Anthropocene Epoch

For Prelims: Anthropocene Epoch, Anthropocene Working Group, GSSP, [Holocene Era](#), Geological Timescale.

For Mains: Anthropocene Epoch.

Source: DTE

Why in News?

Recently, the Anthropocene Working Group (AWG) has proposed that the **Anthropocene**, a new geological epoch characterized by significant human impact on Earth's systems, **began in 1950**.

- The AWG is an interdisciplinary research group dedicated to the investigation of the Anthropocene.
- If the proposal wins the necessary majority support, the **International Union of Geological Sciences** could officially ratify the new **Global boundary Stratotype Section and Point (GSSP) in August 2024**.

Note: The GSSP is a designated geological reference point that marks the boundary between **two geological time units**. It serves as an internationally agreed-upon standard for defining and **correlating different periods in Earth's history**. GSSPs are crucial for establishing the boundaries of epochs, ages, and other divisions within the geologic time scale.

What is the Background?

- The starting date of Anthropocene is supported by evidence **from Crawford Lake near Toronto, Canada**, which contains traces of the **radioactive element plutonium**.
- Around the year 1950, there was a **notable increase in the concentration of plutonium particles**. This significant change serves as a **clear indication of human impact and**, consequently, provides **evidence of the Anthropocene era**.
- The research findings of Crawford Lake provided strong evidence for the AWG's hypothesis that the unprecedented increase in industrial and socioeconomic activity of the Great Acceleration around the mid-twentieth century **has caused alterations to the Earth System on a scale that terminated ~11,700 years** of largely stable **Holocene conditions** and marks the beginning of a new Earth epoch.

What is the Anthropocene?

- The Anthropocene epoch as a term was first **coined by Nobel Prize-winning chemist Paul Crutzen** and biology **professor Eugene Stoermer in 2000** to denote the present geological time interval, in which the **Earth's ecosystem has gone through radical changes** due to

human impact, especially since the onset of the **Industrial Revolution**.

- There are numerous phenomena associated with this epoch, such as **Global Warming**, **Sea-Level Rise**, **Ocean Acidification**, mass-scale soil erosion, the advent of deadly **Heat Waves**, deterioration of the biosphere and other detrimental changes in the environment.

What is the Holocene Epoch?

- The Holocene is the **current geological epoch, which began approximately 11,700** years ago at the end of the last major ice age.
- It is characterized by a relatively **stable and warm climate**, as well as the development of human civilization.
- The Holocene follows the **Pleistocene epoch and is part of the larger Quaternary period**.
- During the Holocene, Earth's climate experienced fluctuations, but overall, it has been a period of **relatively milder and more stable conditions compared** to the preceding ice age. The retreat of glaciers and the rise in global temperatures allowed for the expansion of forests, grasslands, and diverse ecosystems.

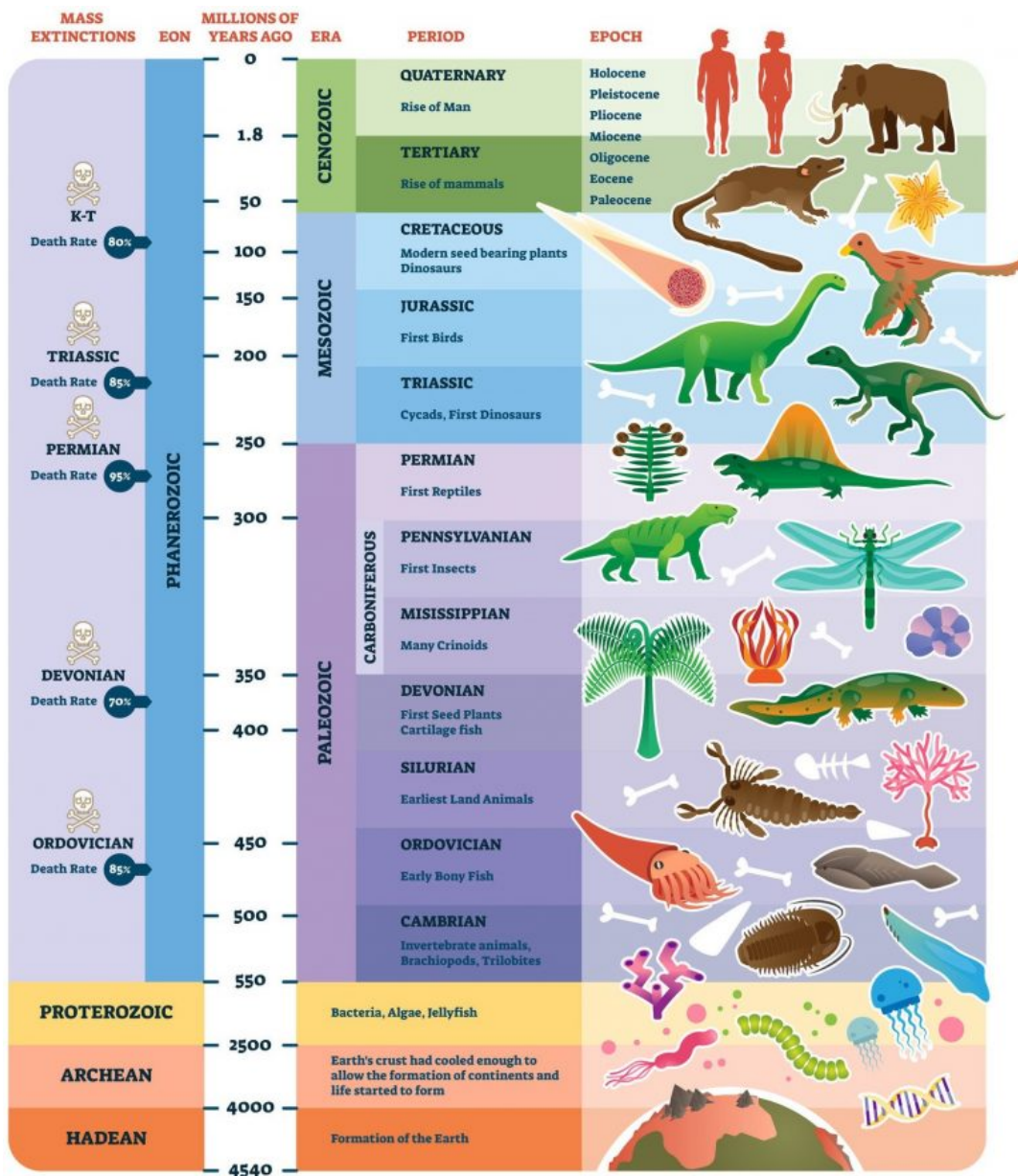
What is the Geological Time Scale?

- Geologists divide the **4.6-billion-year existence of Earth into slices of time** such as Eon, Era, System/Period, Series/Epoch, and Stage/Age.
- Eons are divided into **Eras, Eras into Periods, Periods into Epochs, and Epochs into Ages**.

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- Each slice corresponds to **significant happenings** - such as the break-up of continents, dramatic shifts in climate, and even the emergence of particular types of animals and plant life.



What is the International Union of Geological Science?

- The International Union of Geological Sciences (IUGS) is a global non-governmental organization that **aims to promote and advance the Earth sciences**. It serves as the international coordinating body for professional geological research and education.
- The IUGS was founded in **1961 and is a member of the International Science Council (ISC)**.