



Meghalayan Age

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Why in news?

- Geologists have decided to classify the past 4,200 years as the Meghalayan Age.
- It is the most recent unit of the Geologic Time Scale in the 4.6 billion-year history of the Earth.
- Following this, the International Chronostratigraphic Chart, which depicts the timeline for Earth's history will be updated.

What is Meghalayan Age?

- The “Meghalayan Age” began 4,200 years ago and experienced an abrupt mega-drought and cooling around the globe.
- The drought and the cooling lasted two centuries and severely impacted agricultural-based societies that developed in several regions after the end of the last Ice Age.
- It resulted in the collapse of civilisations in Egypt, Greece, Syria, Palestine, Mesopotamia, the Indus Valley, and the Yangtze River Valley.
- Evidence of the 4,200-year climatic event has been found on all seven continents.
- This age is considered unique as this was the only age which began with a global cultural event produced by a global climatic event.
- Geologists have also introduced two other age classifications:
 1. Greenlandian Age (11,700 - 8,326 years ago) - began when the last ice age ended and the world began to warm up.
 2. Northgrippian Age (8,326 – 4,200 years ago) – began after an abrupt global cooling started following the Greenlandian Age.
- Together, these three stages stretch across the Holocene Epoch, which is the current geological time unit - having started 11,700 years ago.
- The Holocene epoch falls under Cenozoic Era and is the time after Ice Age.

Methods of Classification

- Each subdivision of the Holocene Epoch is marked out by sediments accumulated on sea floors, lake bottoms, glacial ice and in stalactites and stalagmites across the world.

- Clues to the Greenlandian and Northgrippian stages were available at specific levels in Greenland’s ice cores (snow turns into ice, and preserves a record of the climate each year).
- But this method did not work as well for the younger (newer) part of the Holocene as it did for the older (early) part.
- Therefore, the younger (newer) part of the Holocene, i.e. Meghalayan Age division was marked out by a deviation in the types, or isotopes, of oxygen atoms present in the layers of stalagmite rocks of Mawmluh Cave in Meghalaya.
- Both the ice cores and the stalagmite are now defined as “international geostandards.”
- The stalagmite has also been tagged a Global Boundary Stratotype Section and Points (GSSP), the first formally ratified marker of a geological time period change in India.
- Scientists used the geological age dating method to study the rock’s age.

Classification



- 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.
- 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.

International Commission on Stratigraphy (ICS)

- The International Commission on Stratigraphy (ICS) is the largest and oldest scientific body in the International Union of Geological Sciences (IUGS).
- It is the official keeper of geologic time, i.e. it precisely defines units (periods, epochs, and age) of the Geologic Time Scale.

Mawmluh Cave, Meghalaya

- Located at an elevation of 1,290 metres, Mawmluh cave is one of the longest and deepest caves in India.

- The caves provide important record of Holocene palaeoclimate and palaeomonsoon since they are not subjected to diagenesis, erosion and terrestrial deposits.
- The conditions here were suitable for preserving chemical signs of oxygen transition in ages.

For Mind Map