

# WHAT IS MONSOON?

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**Monsoon**, a **major wind system** that seasonally reverses its direction—such as one that blows for approximately six months from the northeast and six months from the southwest.

The **most prominent monsoons** occur in **South Asia, Africa, Australia, and the Pacific coast of Central America**. **Monsoonal tendencies also** are apparent along the **Gulf Coast of the United States and in central Europe**; however, **true monsoons do not occur** in those regions.



The **primary cause** of monsoons lies in **different warming trends over land and sea**, though other factors may be involved. Seasonal changes in temperature are large over land but small over ocean waters, and monsoons blow from atmospheric heat sinks (that is, cold regions with high atmospheric pressure) toward heat sources (warm regions characterized by low atmospheric pressure). Consequently, monsoon winds typically travel from sea to land in summer and from land to sea in winter.



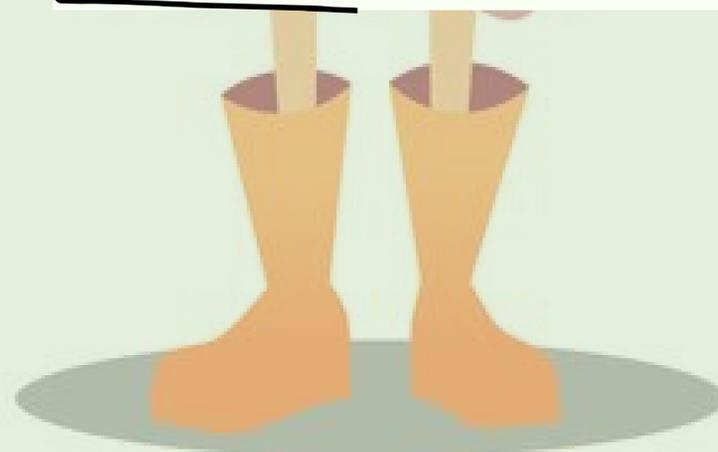
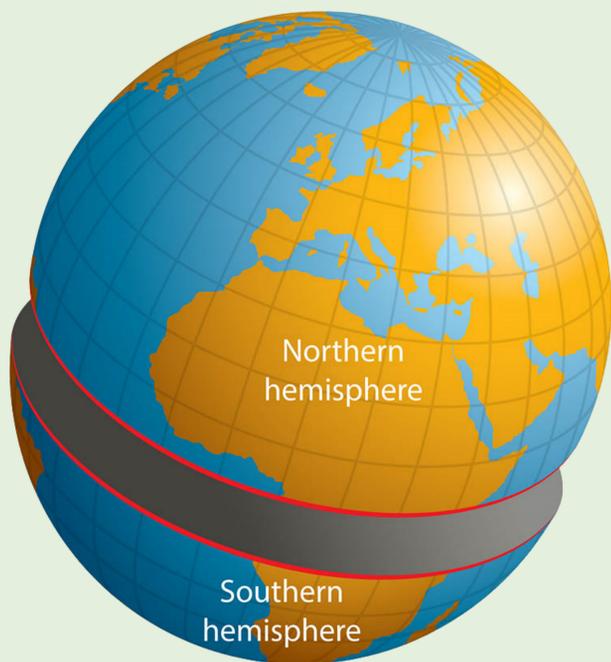
## WHY IN NEWS:

A new study has tried to map climatic variations using leaf fossils.



## HOW IT HAPPENED

About 180 million years ago, India separated from the ancient supercontinent Gondwana and took a long northward journey of about 9,000 km to join Eurasia. During this journey, the subcontinent moved from the southern hemisphere, crossed the Equator to reach its current position in the northern hemisphere.



- Due to these changing latitudes, it **experienced different climatic conditions**, and the new study has tried to map these climatic variations using leaf fossils.

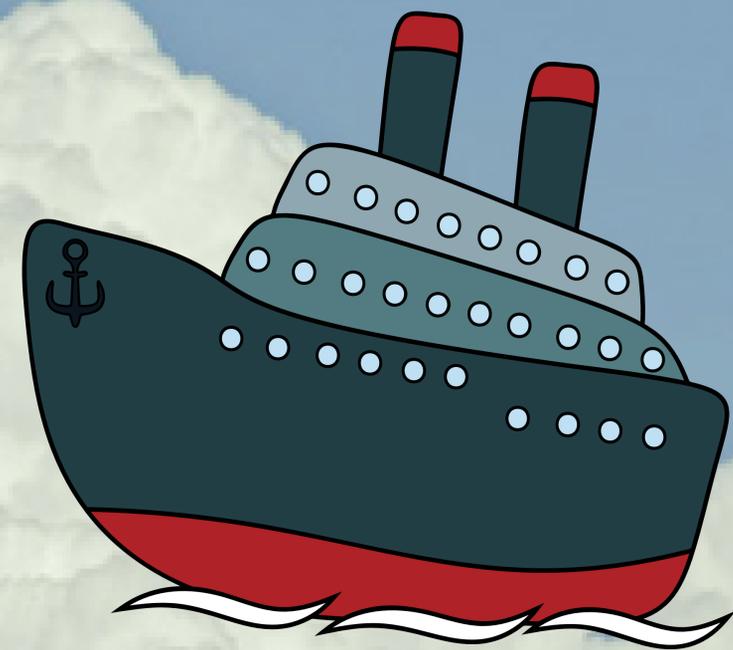


The evolution of the monsoonal climate in India is still debatable and not fully understood. Though recent data indicates that the monsoon system we experience now dates back to about 25 million years, it is still unclear how the climate was during its long voyage.



# WHAT THE RESEARCHERS FOUND?

The team **analysed** the **morphological characters of fossil leaves** collected from Deccan Volcanic Province, East Garo Hills of Meghalaya, Gurha mine in Rajasthan and Makum Coalfield in Assam.

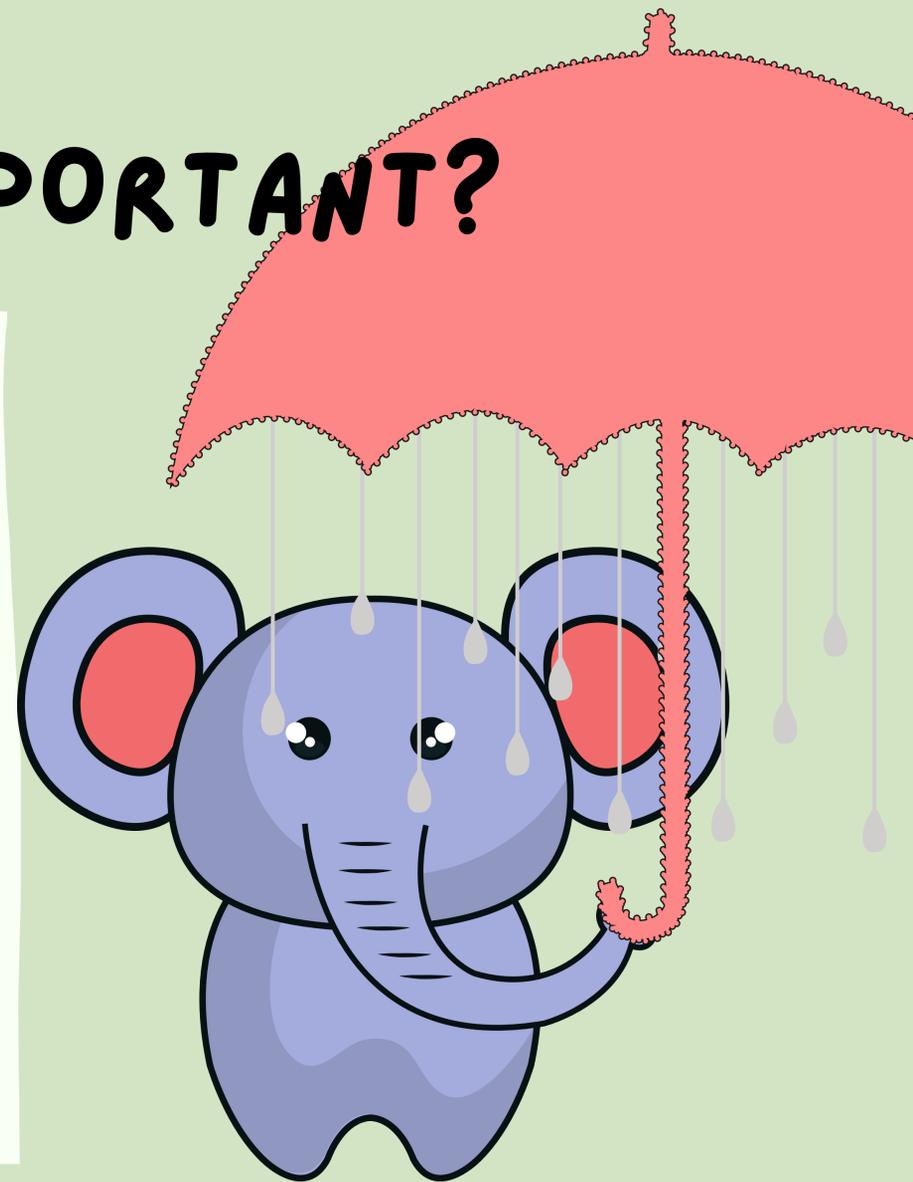


The four fossil assemblages were found to be from four different geological ages and **helped** to study the **climate** during **65, 57, 54, and 25 million years ago** respectively.



# WHY IS THIS DISCOVERY IMPORTANT?

**India** was the **only subcontinent** to have **crossed** from the **southern hemisphere** to the **northern hemisphere**, it is a **laboratory to study bio-geo changes** and **understand** how the **flora and fauna** changed accordingly.



We can **understand** the **evolutionary history of Indian monsoon** and its role in the evolution of **biodiversity** hot spots in South and Southeast Asia. This will help in the **conservation of modern biodiversity hotspots**. Understanding the past dynamics of Indian monsoon will also help in climate modelling for future monsoon prediction

