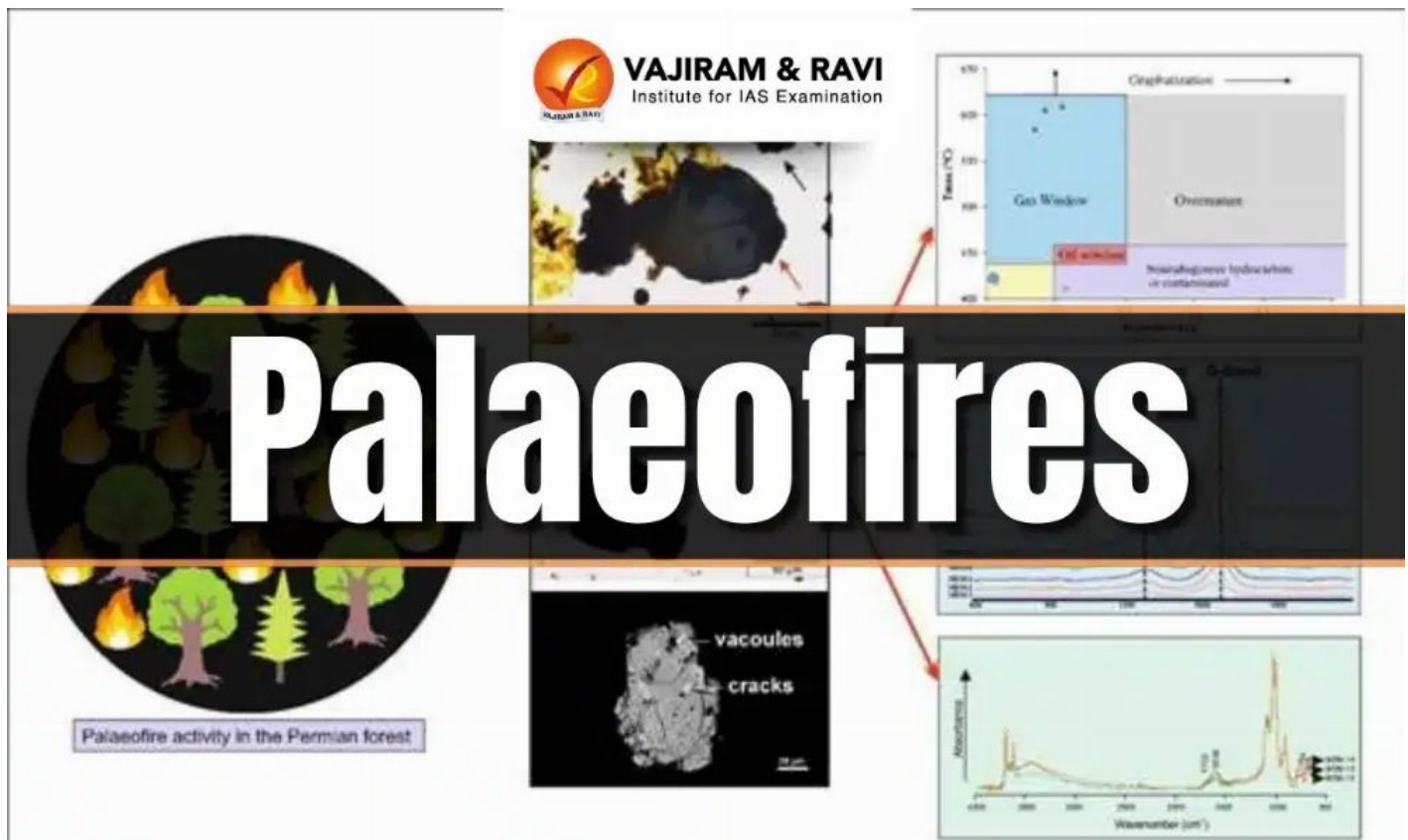


Palaeofires

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Palaeofires Latest News

Recently, Scientists have traced evidence of palaeofires (ancient wildfires) from the Permian Period (~250 million years ago) in the Godavari Basin.

About Palaeofires and Key Findings

- **Palaeofires refer to wildfire events preserved in geological records**, which play a crucial role in understanding Earth's **past vegetation, climate evolution, and coal formation**.
- The **study spanned geological periods** from the **Late Silurian (443.8-419.2 million years ago)** to the **Quaternary (from 2.58 million years ago to present)**, highlighting how wildfires **have historically shaped landscapes, vegetation patterns, and coal formation**.
- **The research combined advanced techniques** like **Palynofacies analysis, Raman Spectroscopy, Rock-Eval Pyrolysis, and FTIR Spectroscopy** to examine microscopic organic matter and **fossil charcoal** in ancient sedimentary rocks.

- **Palynofacies analysis** revealed three main types of organic particles:
 - **Translucent Organic Matter (TrOM)** – includes pollen and plant debris.
 - **Palaeofire Charcoal (PAL-CH)** – direct evidence of vegetation burning.
 - **Oxidised Charcoal (OX-CH)** – possibly reworked or transported post-burning.
- **Key discovery:** The team successfully **distinguished between in situ (on-site) and ex situ (transported) charcoal**, helping resolve a long-standing debate in geology regarding the origin of charcoal found in coal-bearing formations.
- **Stratigraphic patterns** (rock layering) revealed that:
 - During **regressive phases (sea-level drop)**, **well-preserved, concentrated fire residues** were found.
 - During **transgressive phases (sea-level rise)**, charcoal was more **oxidised and dispersed**, indicating environmental mixing and transport.
- **High atmospheric oxygen levels in the Permian Period** likely made the Earth more fire-prone, intensifying wildfire frequency and scale.
- The **Raniganj Coalfield** was one of the earliest Indian sites where **macroscopic charcoal in coal seams** suggested the presence of palaeofires in ancient peat-forming environments (**palaeomires**).
- These findings help understand how **wildfires influence carbon cycling and long-term carbon sequestration**—important for modern **climate change mitigation strategies**.

Palaeofires FAQs

Q1. What are palaeofires?

Ans. Palaeofires are ancient wildfires that occurred naturally in Earth's geological past, identified through charcoal deposits, sediment records, and tree rings.

Q2. How are palaeofires studied?

Ans. Through palaeoecological and geological evidence, especially charcoal analysis in lake beds, peat, and ice cores.

Source: [PIB](#)

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Beta feature

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