

DECCAN VOLCANISM: GEOGRAPHY

NEWS: *Tropical Flora showed significant resilience during the Deccan Volcanism on Indian Plate*

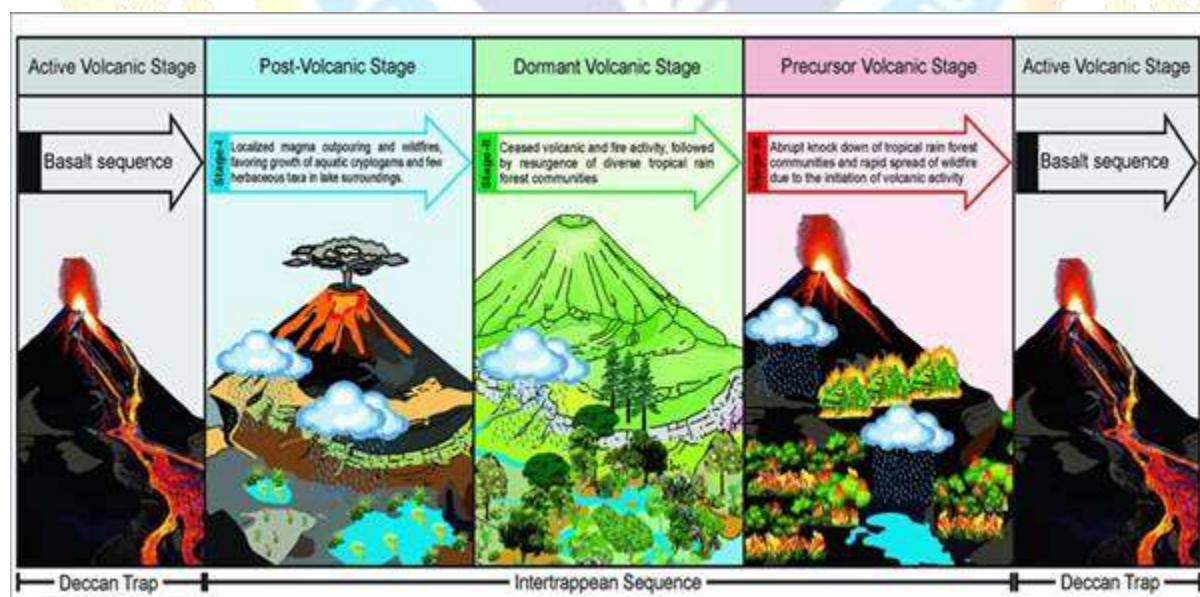
WHAT'S IN THE NEWS?

Recent studies show that Deccan Volcanism, while responsible for the extinction of terrestrial fauna like dinosaurs, had only a regional and short-term impact on tropical flora. The volcanic activity caused a shift in the Indian Plate's position within the Inter-Tropical Convergence Zone (ITCZ), fostering humid conditions that aided rainforest development.

Insights on Deccan Volcanism and its Impacts

1. Impact on Terrestrial Fauna and Tropical Flora:

- Terrestrial Fauna Extinction:**
 The Deccan Volcanism, primarily during the **Cretaceous-Paleogene** transition, released massive amounts of gases, including carbon dioxide, which led to global warming, acid rain, and climatic upheaval. These conditions were likely a significant factor in the mass extinction event that wiped out the non-avian dinosaurs and other species.
- Tropical Flora Resilience:**
 Unlike the catastrophic effects on fauna, the volcanic activity did not cause the extinction of tropical flora. **Instead, during dormant volcanic phases, the region witnessed a humid climate conducive to the rapid development of tropical rainforests, fostering their diversification rather than destruction.** This highlights the resilience of tropical ecosystems in recovering under favorable conditions.





2. Latitudinal Shift and ITCZ Influence:

- **Latitudinal Shift of the Indian Plate:**

The volcanic activity is believed to have caused a latitudinal shift of the Indian Plate within the Inter-Tropical Convergence Zone (ITCZ). The ITCZ, a belt of low pressure around the equator, is crucial for rainfall and climatic patterns in tropical regions. The volcanic events may have shifted the region's position, leading to changes in the local climate and enhanced precipitation in certain phases.

- **Impact on Rainfall and Climate:**

This latitudinal shift contributed to the development of a more humid environment during certain dormant volcanic periods, providing favorable conditions for tropical rainforests to thrive, rather than resulting in their collapse. The increased moisture and favorable climate likely played a role in supporting biodiversity in these ecosystems.

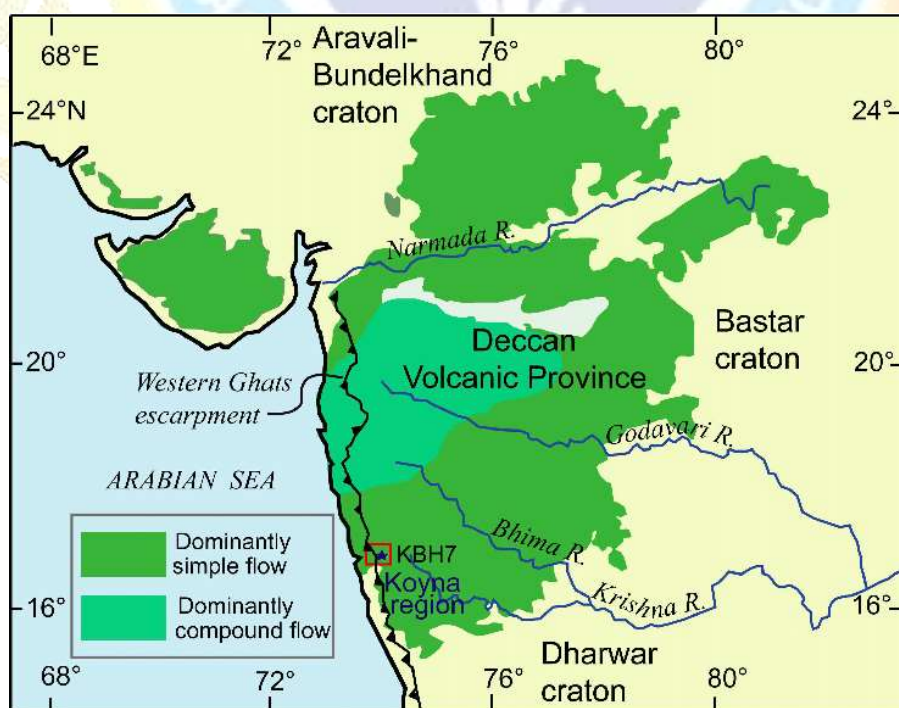
3. Recovery Potential of Tropical Rainforests:

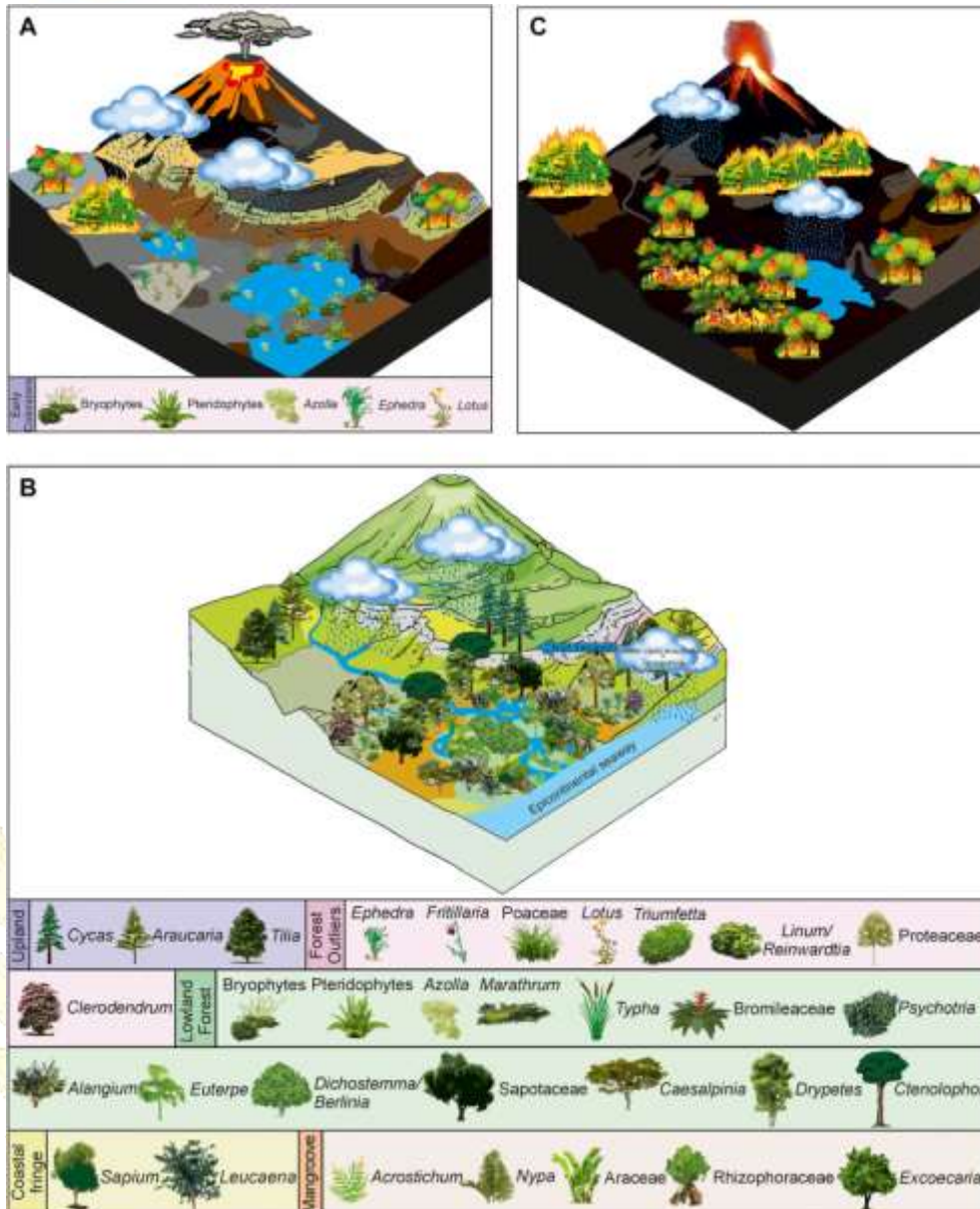
- **Rapid Recovery:**

The study emphasizes that tropical rainforests, despite experiencing temporary setbacks during volcanic eruptions, demonstrated a remarkable capacity for rapid recovery during periods of favorable climatic conditions. This suggests that such ecosystems can quickly rebound from disruptions when environmental conditions support their growth.

- **Significance for Biodiversity Conservation:**

This recovery potential offers hope for the resilience of tropical rainforests in the face of modern-day environmental challenges like climate change. If protected from further human-induced disturbances, these ecosystems can continue to recover and support diverse species.





4. Deccan Volcanism and Global Climate Changes:

- **Role in Climate Shifts:**

The Deccan Volcanism played a critical role in altering the Earth's climate. The eruptions released large amounts of greenhouse gases like carbon dioxide, as well as sulfur aerosols that contributed to global warming and acid rain. These atmospheric changes are believed to have created an inhospitable environment for many species, including the non-avian dinosaurs, which contributed to their extinction.

- **Impact on Atmospheric and Oceanic Conditions:**

The climatic changes likely led to reduced sunlight, altered precipitation patterns, and disturbed ecological balance globally, further exacerbating the extinction events. The cooling effect from sulfur aerosols also likely contributed to ecosystem disruptions across the globe.



5. Formation and Extent of the Deccan Traps:

- **Deccan Traps Formation:**

The Deccan Traps, formed by extensive volcanic eruptions, are one of the largest volcanic features on Earth. These basalt formations cover over 500,000 square kilometers across central and western India, with layers of lava flows that can be as thick as 2,000 meters in some places.

- **Extent and Significance:**

The Deccan Traps represent some of the longest lava flows on Earth, stretching 1500 km across India and extending into the Gulf of Bengal. Their formation had profound geological and environmental effects, reshaping large portions of the Indian subcontinent during the late Cretaceous and early Paleogene periods.

Source:

<https://pib.gov.in/PressReleaseIframePage.aspx?PRID=2092533#:~:text=Rather%20the%20Deccan%20Volcanism%20indirectly,humid%20climate%20state%20ideal%20for>

