

Discovery of the Azerbaijan Continental Magmatic Arc

Prelims: Current events of national and international importance | Geography

Why in News?

Recently, an international research team led by Istanbul Technical University (ITU) published a study, discovering remnants of a previously unrecognized 100-million-year-old continental magmatic arc in northwestern Iran.

- **Named as - Azerbaijan Continental Magmatic Arc.**
- This long-lost volcanic system dates back to the **Late Cretaceous period (101 to 97 million years ago)**.
- It fills a critical missing link in the tectonic closure of the ancient **Neo-Tethys Ocean**.

Key Research Discoveries

Parameter	Scientific Insights
Geological Identity	Azerbaijan Continental Magmatic Arc (located in NW Iran within the broader Arabia-Eurasia collision zone).
Geochronological Age	Active between 101 million and 97 million years ago (Late Cretaceous epoch).
Analytical Methodology	Identified using zircon U-Pb geochronology, hafnium (Hf) isotopic signatures , and whole-rock geochemical profiling.
Why It Remained Hidden	Severe post-Cretaceous structural deformation, intense erosion, continental collision burial, and subsequent widespread Eocene magmatic activity obscured the original rock units.

Strategic Significance

- **Solving a Tectonic Puzzle**
 - Traditional reconstructions of Iran's magmatic evolution focused almost exclusively on two major structures
 - The **Sananda-Sirjan Magmatic Arc** and
 - The **Urumieh-Dokhtar Magmatic Arc (UDMA)**.
 - Discovering this distinct Late Cretaceous system in northwestern Iran resolves a long-standing spatial and temporal gap in the magmatic arc history of the Neo-Tethyan belt.
- **Reconstructing Ocean Basin Closures**
 - The Arc offers critical evidence regarding plate velocity shifts, subduction rollbacks, and the step-by-step assembly of modern Eurasia from the Eastern Mediterranean across to Western Asia.



NEO-TETHYS CLOSURE & THE ARABIA-EURASIA COLLISION



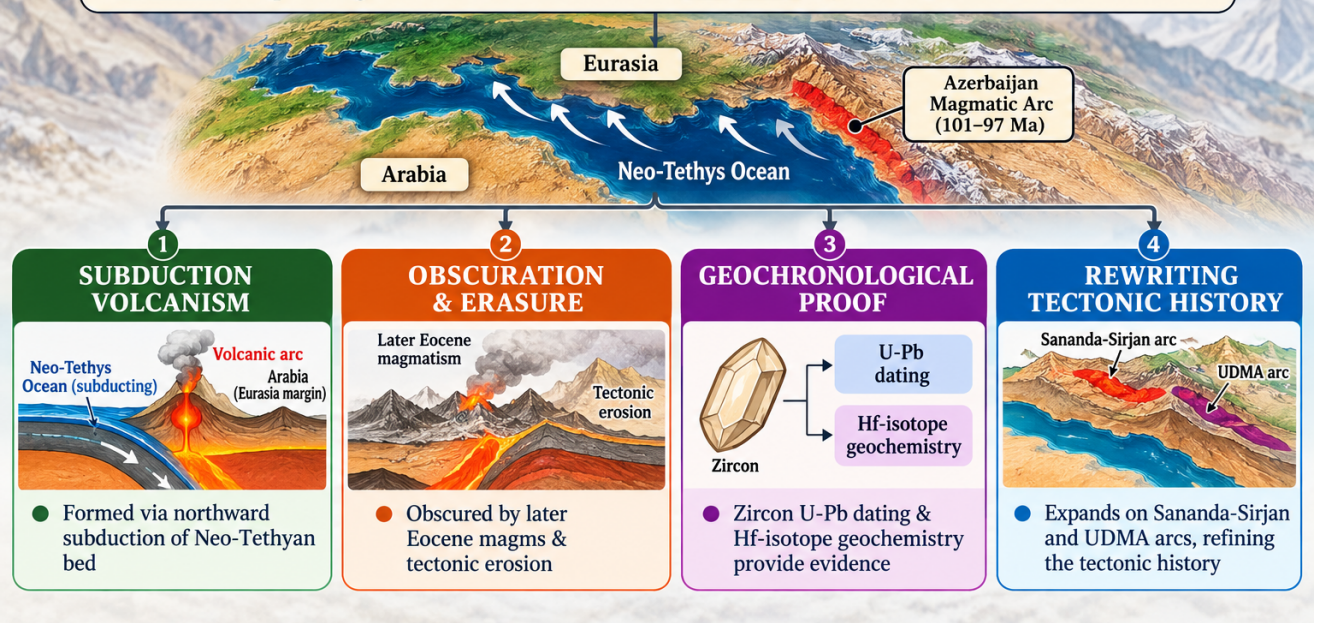
OCEAN

Ancient Neo-Tethys Ocean separating Arabia & Eurasia



DISCOVERY

Azerbaijan Continental Magmatic Arc (NW Iran, 101–97 Ma)



Reference

[Science Daily | 100-million-year-old volcanic system](#)

