Teghaza 001 Reveals Ancient Water History of Mars

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Why in News?

Teghaza 001 is a rare, rose-colored Martian meteorite—weighing about 800 grams and recovered from the Sahara Desert in Mali in 2022—that proves liquid water actively altered the Martian crust at least 4.1 billion years ago.

- **Discoveries from Teghaza 001**
- **Age and Origin-** Dated to over 4.1 billion years old using uranium-lead and rubidium-strontium dating on its zircon crystals, it is among the oldest Martian meteorites ever found on Earth. It formed as a coarse-grained gabbro rock deep in the Martian mantle before cooling in the crust.
- **Water-Rock Interaction-** Chemical analysis shows the mineral grains were altered by water while crystallizing underground, offering a snapshot of a dynamic, wet water cycle during the Noachian period.
- **Unique Composition-** Unlike other Martian samples (such as the SNC meteorite groups), Teghaza 001 features a distinct calcium-rich mineral makeup and unusual oxygen isotopes.
- **Potential Habitability-** The evidence of warm, water-rich conditions on early Mars strengthens the theory that the planet could have supported primordial or microbial life during its infancy.
- **Geographic Match-** Researchers used its chemical profile to trace its likely launch site back to 13 specific locations within Mars's cratered southern highlands.



Reference

[The times of India| Teghaza 001]

