

Rare Ureilite Meteorite formed Dhala structure in Madhya Pradesh

By IASToppers | 2023-08-01 16:20:00



Rare Ureilite Meteorite formed Dhala structure in Madhya Pradesh

Scientists recently discovered that **the Dhala structure** was formed by a ureilite meteorite between 2500 and 1700 million years ago.

IT IAS Toppers



[Ref- jsj geology]

What is the discovery about?

- This made it the world's seventh-oldest impact structure.
- The structure was found in Shivpuri district of Madhya Pradesh.
- It is the largest confirmed impact structure reported between Mediterranean and Southeast Asia.
- It is believed that a meteorite measuring **about 1 km in diameter**, impacted on the granitoid rocks of the Bundelkhand craton at the speed of **more than 15 km/second**.
- The identification of projectile type for the Dhala impact structure argues for a diverse source of the objects that collided with the **Earth over its geological history.**
- It would uncover more details about nature and potential implications for understanding the early solar system.

About Dhala Crater:

- Dhala impact structure is a **national geological monument** that is close to historic and cultural heritage cities **Jhansi and Khajuraho**.
- It shows diagnostic evidence of impact shock metamorphism with multiple sets of planar deformation features in minerals clasts of Ballen quartz and feldspar with granular zircon.
- It is entirely confined within the archaean crystalline basement of the Bundelkhand craton.
- The eroded remnant has a minimum diameter of about 11 km.

What are Ureilites?



- Ureilites are a unique class of **primitive achondrites**, comprising only a tiny fraction of all known meteorites on Earth.
- It is composed of **olivine**, **pyroxene**, and a small amount (less than 10%) of interstitial materials like **carbon (diamond and other polymorphs)**, **metal sulfides and fine-grained silicate**.
- The **ordinary chondrites** (the most abundant meteorite class) dominate the current collection of meteorites on Earth (85% of meteorite falls).
- The Earth has been continuously bombarded since its formation by **asteroids**, **comets and meteorites with varied intensity**.
- But scientists are **unsure about the types of impactors** and their **origin** (from the Solar System or beyond).