



E PRIME LAYER - GEOGRAPHY

News: *Earth core's mysterious new layer formed due to surface water diving deep: Study*

What's in the news?

- Recently, a study by an international team of researchers revealed the formation of a new enigmatic layer – E prime layer at the outermost part of Earth's core.

E Prime Layer:

- The E prime layer is a distinct layer formed at the **outermost part of Earth's core**.
- This layer is formed by **surface water penetrating deep into the planet** over billions of years.

Composition:

- It is a **hydrogen-rich and silica-depleted** layer.

Formation of E Prime Layer:

- Over billions of years, surface water has been transported deep into the Earth by descending tectonic plates.
- Upon reaching the core-mantle boundary about 1,800 miles below the surface, this **water chemically reacts with core materials**.
- This reaction leads to the formation of a hydrogen-rich, silicon-depleted layer at the outer core, resembling a film-like structure. This is known as the E prime layer.
- The reaction also generates silica crystals which rise and integrate into the mantle, impacting the overall composition.

Significance of the Study:

- These findings also have **significant implications in understanding Earth's internal processes, heat generation and plate tectonics**.
- These findings point to a dynamic core-mantle interaction, suggesting substantial material exchange.
- It also indicates a more extensive global water cycle than previously acknowledged.

Go back to basics:

Various Layers in Earth's Interior:

- **Conrad Discontinuity** - Upper crust and lower crust.
- **Mohorovicic Discontinuity** - Crust and Mantle.
- **Repetti Discontinuity** - Outer mantle and Inner mantle.



- **Gutenberg Discontinuity** - Mantle and Core.
- **Lehmann Discontinuity** - Outer core and Inner core.

