

Fossil Corals from Galápagos

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Why in News?

A landmark paleoclimatological study by researchers from the University of Michigan has analyzed a 1,000-year archive preserved in fossil corals from the Galápagos Islands.

Key Highlights of the Study

- Researchers sampled core records from 13 coral colonies including living structures and ancient fossilized coral boulders in the Galápagos archipelago to reconstruct ocean temperature variations.
- The study revealed that El Niño events have intensified by nearly **36% over the past 40 years** compared to pre-industrial baselines (~1850).
- El Niño events over the past 4 decades (including major events in 1982-83 and 1997-98) are roughly 36% stronger than during the **pre-industrial era**, exceeding any natural variability seen over the last 1,000 years.
- The data demonstrates that the strength of El Niño events changes in direct parallel with rising global surface temperatures.
- Climate model simulations revealed that natural internal climate processes alone could not account for such a massive shift in intensity during the recent 40-year window.

Scientific Context

- **Corals as Natural Thermometers**- Massive corals grow by 1 to 2 centimetres annually by secreting layers of calcium carbonate (CaCO_3).
- The chemical composition of these layers preserves an accurate record of seawater temperature and salinity at the time of growth.
- **Galápagos as Ground Zero** - The Galápagos Islands are located in the eastern tropical Pacific Ocean, where El Niño's sea surface temperature (SST) anomalies and upwelling disruptions exert their maximum physical impact.
- **ENSO Disruption** - Under normal conditions, equatorial trade winds push warm surface waters westward toward Australia.
- During El Niño, these trade winds weaken, causing warm water to shift back eastward toward South America, altering global atmospheric circulation and driving extreme weather worldwide.



Reference

[Down To Earth | Climate change is strengthening El Niño](#)

