

1. Earth's Energy Imbalance- Geography

Scientists change how El Niño is labelled to keep up with temperature spikes. A recent study published in Nature Geoscience (2026) has provided a comprehensive explanation for the unprecedented surge in global temperatures observed since 2023. The findings highlight a "perfect storm" of long-term human-induced climate change, a massive shift in the Earth's Energy Imbalance (EEI), and a dramatic transition from a multi-year cooling phase to a warming phase.

1. Earth's Energy Imbalance (EEI)

Earth's Energy Imbalance refers to the difference between the amount of solar energy absorbed by the planet and the amount of heat energy radiated back into space.

Heat Trapping- An increase in EEI means more heat is being trapped within the Earth's system (oceans, land, and atmosphere), leading to higher global temperatures.

Accelerated Warming- Around 75% of the recent spike in EEI is attributed to the combined effect of long-term greenhouse gas emissions and the specific transition from a 3-year La Niña to an El Niño.

Monthly Temperature Jumps- Earth's average monthly temperatures broke from long-term trends in early 2023, with the accelerated increase continuing through 2025.

2. The "Triple Dip" La Niña (2020–2023)

A "Triple Dip" occurs when La Niña conditions persist for three consecutive years without an intervening El Niño.

Energy Storage- During La Niña, warm water is pushed to deeper ocean layers, keeping the surface cooler. This cooler surface emits less heat to space, effectively acting like a "lid" that traps energy in the deep ocean.

The 23% Factor- Roughly 23% of the recent increase in EEI is directly linked to this unusually prolonged 3-year cooling phase.

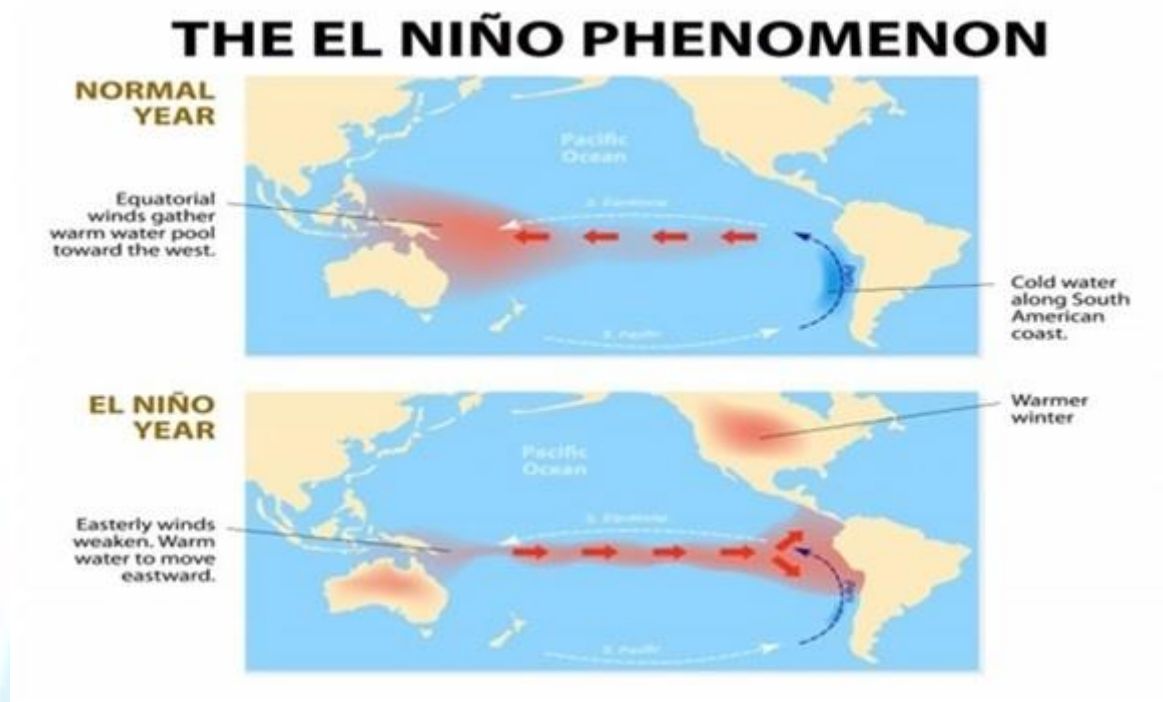
Release of Energy- When the triple-dip ended in early 2023, the trapped energy was released rapidly as the system transitioned into El Niño, contributing to the record-breaking warmth of 2023–2025.

3. Revised El Niño–La Niña Classification (2026)

Due to rapid global warming, the National Oceanic and Atmospheric Administration (NOAA) has updated how it identifies these phases.

Baseline Shift- As the entire tropical Pacific warms, the old 30-year average used to define "normal" temperatures has become outdated.

Relative Oceanic Niño Index (RONI)- NOAA now uses RONI, which compares temperatures in the central



Pacific to the average temperature of the *entire* global tropics, rather than a fixed historical average.

Impact on Labelling- Under this new method, more events may be classified as La Niña (because they are cooler relative to the now-warmer surroundings), while fewer may qualify as El Niño despite the water being objectively hot.

4. Comparative Dynamics- El Niño vs. La Niña

Feature	El Niño ("Little Boy")	La Niña ("Little Girl")
Ocean Surface	Abnormal warming of central/east Pacific.	Abnormal cooling of central/east Pacific.
Trade Winds	Weaken or reverse (Westerly bursts).	Strengthen (Stronger Easterlies).
Impact on India	Often suppresses Monsoon rainfall (risk of drought).	Generally aids Monsoon rainfall (risk of floods).
Global Temp	Temporary increase in global average.	Temporary decrease in global average.
History	Identified in the 1920s.	Identified in the 1980s.

5. Key Causes of the Energy Imbalance

The study quantifies the primary drivers behind why the planet is retaining more heat-

Greenhouse Gases (>50%)- More than half of the imbalance is caused by CO2 and methane from fossil fuel combustion (coal, oil, and gas).

ENSO Transition (23%)- The shift from the 3-year "energy-storing" La Niña to the "energy-releasing" El Niño.

Solar Reflectivity- A decrease in the Earth's "albedo" (reflectivity)—partly due to melting ice and changing cloud patterns—has allowed the planet to absorb more sunlight.

Source- <https://www.thehindu.com/sci-tech/energy-and-environment/scientists-change-how-el-nino-is-labelled-to-keep-up-with-temperature-spikes/article70674906.ece>