



LA NINA: GEOGRAPHY

NEWS: How does La Niña affect India's climate?

WHAT'S IN THE NEWS?

La Niña, a cooler Pacific Ocean phase, influences global weather, including stronger monsoons and colder winters in India. Despite predictions, it has not formed in 2024, highlighting evolving climate patterns influenced by ENSO and climate change.

1. What is La Niña?

- La Niña is a climate phenomenon linked to the **El Niño Southern Oscillation (ENSO)**.
- It occurs when **sea surface temperatures in the central and eastern Pacific Ocean are cooler than normal**.
- It is the opposite phase of **El Niño**, which is marked by warmer-than-normal temperatures in the same region.

2. Impacts of La Niña and El Niño:

- **La Niña:**
 - Brings **normal or above-normal rainfall to India**, often resulting in strong monsoons.
 - Can cause **drought conditions in parts of Africa**.
 - Leads to **increased Atlantic hurricane activity**.
- **El Niño:**
 - Causes **droughts and extreme summers in India**, disrupting monsoons.
 - Brings **higher rainfall to the southern United States**.

3. Current Status of La Niña (2024):

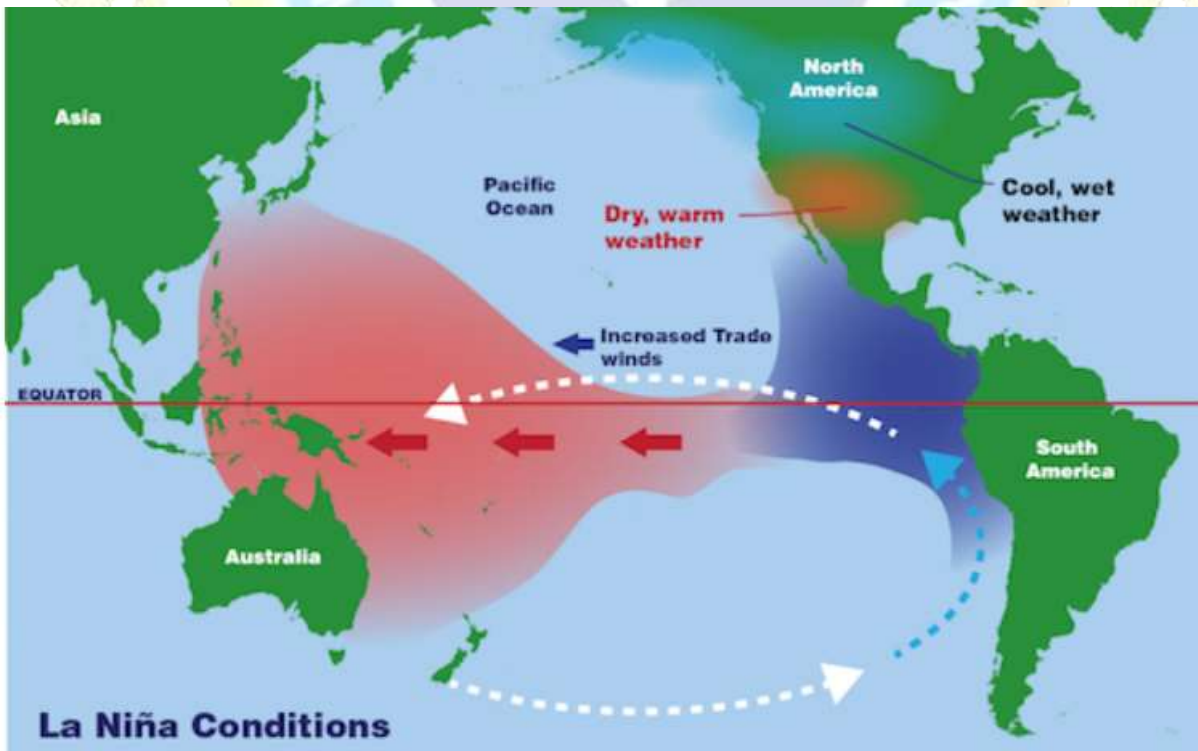
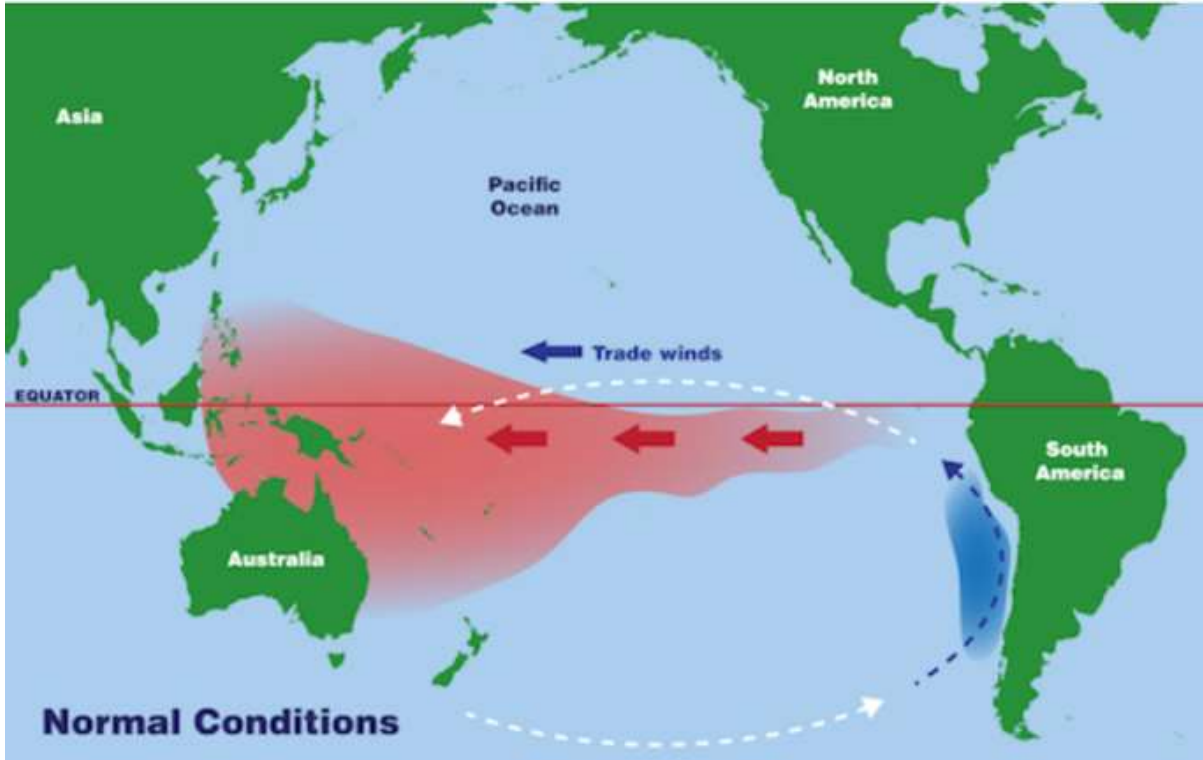
- La Niña was **expected to emerge by July 2024**, but it hasn't formed yet.
- As of **December 2024**, there is only a **57% probability** of its emergence.
- Even if it occurs, it is expected to remain **weak**.
- Confirmation of La Niña requires:
 - Oceanic Niño Index (ONI) values below **-0.5°C**.



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- These values must persist for at least **five consecutive three-month periods**.





4. Meteorological Effects of La Niña:

- **Southern India:**
 - Cities like Bengaluru and Hyderabad are experiencing **colder winters** due to La Niña-like conditions.
- **Northern India:**
 - Winters are **delayed and warmer** compared to typical La Niña winters.
- Typical La Niña winters include:
 - **Colder nights but higher daytime temperatures.**
 - **Faster wind speeds** that can help disperse pollutants.
 - A **lower planetary boundary layer height (PBLH)**, which traps pollutants closer to the ground and may worsen air quality.

5. Impact on Monsoons and Heatwaves:

- **Monsoons:**
 - El Niño disrupts monsoons, leading to **below-average rainfall** in India.
 - La Niña supports **robust monsoons**, such as the above-normal rainfall seen during **2020-2022**.
- **Heatwaves:**
 - If La Niña persists into **2025**, it is expected to **reduce heatwaves** and contribute to **improved monsoon performance**.

Source : <https://www.thehindu.com/sci-tech/energy-and-environment/how-does-la-ni%C3%B1a-affect-indias-climate-explained/article68993281.ece#:~:text=Both%20north%20and%20south%20India,2020%2C%202021%2C%20and%202022.>