

**GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
LOK SABHA
UNSTARRED QUESTION NO. 5090
TO BE ANSWERED ON WEDNESDAY, 2ND APRIL, 2025**

IMPACT OF LA NIÑA ON CLIMATE PATTERNS

5090. SHRI SALENG A SANGMA:

Will the Minister of EARTH SCIENCES be pleased to state:

- (a) whether the Government has taken note of the recent report of Copernicus Climate Change Service stating that January 2025 was the hottest on record despite the development of La Niña conditions and if so, the Government's assessment of this phenomenon;
- (b) the expected impact of La Niña on the Indian monsoon, agriculture and overall climate patterns in 2025;
- (c) whether the Government has initiated any measures to mitigate the adverse effects of extreme climate variations caused by El Niño and La Niña particularly in sectors such as agriculture and disaster management; and
- (d) the steps being taken to strengthen climate prediction models and early warning systems to enhance preparedness for La Niña-related weather variations?

ANSWER

THE MINISTER OF STATE (INDEPENDENT CHARGE) FOR
MINISTRY OF SCIENCE AND TECHNOLOGY
AND EARTH SCIENCES
(DR. JITENDRA SINGH)

- (a) Yes. The Copernicus Climate Change Service report states that the global average surface air temperature during January 2025 was the hottest on record (0.79°C warmer than the 1991-2020) despite the development of La Niña conditions. However, the average temperature in the Indian region was the second highest since 1901 (0.98°C warmer than 1991-2020). The main reason for higher temperatures is global warming, which is closely linked to climate change. Global warming refers to the long-term increase in Earth's average surface temperature due to human activities, primarily burning fossil fuels like coal, oil, and natural gas. This process releases greenhouse gases such as carbon dioxide (CO₂) and other greenhouse gases into the atmosphere, which trap heat and cause the planet to warm up.
- (b) In general, during the La Niña years, the Indian summer monsoon experiences above-average rainfall, which is beneficial for better crop production. However, currently, neutral El Niño-Southern Oscillation (ENSO) is prevailing over the equatorial Pacific Ocean with above-average sea surface temperatures (SSTs) in the eastern and far western Pacific Ocean and below-average SSTs in the central Pacific Ocean. The latest Monsoon Mission Climate Forecasting System (MMCFS) and other global model forecasts indicate that neutral ENSO conditions are likely to continue during the southwest monsoon season of 2025. Thus, no La Niña impact is expected on the Indian monsoon during 2025. IMD will issue the first stage of the seasonal forecast for the 2025 Southwest monsoon seasonal rainfall by mid-April.

(c)-(d) Yes. Various organisations under the Ministry of Earth Sciences (MoES) have been conducting regular studies on monsoons and associated rainfall and temperature patterns in the country, including those during the El Niño and La Niña periods. The India Meteorological Department continuously monitors the Sea Surface Temperature (SST) changes globally, especially in the Pacific and Indian Oceans, which have a significant impact on the Indian climate. The India Meteorological Department (IMD) also prepares forecasts based on the Monsoon Mission Climate Forecasting System (MMCFS) and issues the El Niño–Southern Oscillation (ENSO)/Indian Ocean Dipole (IOD) bulletin every month (<https://www.imdpune.gov.in/cmpg/Product/Enso.php>). IMD also issues monthly and seasonal outlooks for rainfall and temperature with monthly updates, which helps to prepare for the impact of El Niño/La Niña-related weather variations. These forecasts are complimented by the extended range forecasts updated every week for the next four weeks. Additionally, the IMD issues agriculture-specific advisories to help farmers prepare for extreme weather events associated with El Niño and La Niña, such as heavy rains or droughts. These advisories are helpful for decision-making in various agriculture operations, such as crop selection, irrigation practices, pest and disease warnings, disaster management, preparedness, etc.
