


What caused early national coverage by monsoon this year?

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Commuters amid rainfall in New Delhi on Sunday. (Photo: PTI)

The southwest monsoon covered the entire country on June 29, nine days ahead of its normal schedule of July 8. Since 1960, this was only the tenth occasion when the monsoon completed the national coverage in June.

What led to the monsoon's rapid progress?

This year, the monsoon onset was early as well. It arrived in Kerala on May 24, eight days before the usual date schedule of June 1. This happened due to a range of different reasons including the active phase of the Madden-Julian Oscillation (MJO) — a moving system of wind, cloud and pressure that brings rain as it circles around the equator — in mid-May.

After the onset, the monsoon progress largely remained ahead of its normal schedule over south peninsular, east and northeast India, and near normal over the northwest. However, it was slightly delayed over the central India region.

According to the India Meteorological Department, the monsoon's rapid progress was driven by:

LOW PRESSURE SYSTEMS: India witnessed the development of five low pressure systems over different regions in June. These systems are essentially areas where the atmospheric pressure is lower than the surrounding regions. Given that winds travel from high pressure to low pressure areas, these systems act like a magnet, pulling in moisture-laden winds, helping trigger rainfall, and pushing the monsoon inland.

ACTIVE PHASE OF MJO: Like in May, June also witnessed an active phase of the MJO. In this phase, the MJO brings more clouds to south of India, which are then carried northwards by the monsoon winds, leading to enhanced rainfall.

MONSOON TROUGH'S POSITION: A monsoon trough is an elongated low pressure area stretching from northwest India to the Bay of Bengal, whose position affects the monsoon conditions over the country. In June, as it remained largely to the south of its normal, it drew moisture-laden air, bringing in the monsoon early over the entire country.

NEUTRAL PHASE OF ENSO & IOD: The southwest monsoon is affected by two other factors, El Niño-Southern Oscillation (ENSO) and Indian Ocean Dipole (IOD). ENSO — a climate phenomenon characterised by changes in sea temperatures along the central and eastern tropical Pacific Ocean, accompanied by fluctuations in the atmosphere overhead — has three phases, El Niño, La

Niña, and neutral. While El Niño suppresses monsoon, La Niña and neutral lead to stronger and normal rainfall respectively. In June, ENSO was in the neutral phase.

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IOD, which is the difference in sea surface temperatures (SSTs) between the eastern and western regions of the Indian Ocean, also has three phases, positive, negative, and neutral. While a positive IOD leads to more rainfall, a negative phase results in less rainfall. A neutral IOD has minimal impact. In June, IOD was in a neutral phase.

How was the rainfall performance in June?

In June, the all-India average rainfall stood at 180 mm, which was quantitatively 9% above normal, according to the IMD. This year, the deficit rainfall trend observed during June since 2022 was discontinued.

Over central India, June's average rainfall was 24.8% above normal — a trend which was seen for the first time since 2022. The region received 212.6 mm of rainfall.

However, east and northeast India continued to suffer a rainfall deficiency for the third consecutive year. It recorded 272.9 mm of rainfall, which was 16.9% below normal.

No significant rainfall trend was observed over the peninsular and northwest India regions for June.

State-wise rainfall figures suggested that, for the first time since 2019 and 2020, Manipur (242.7 mm) and Mizoram (466.9 mm) respectively recorded normal rainfall this June. However, the month ended with below normal rainfall across Arunachal Pradesh, Assam, Meghalaya, Sikkim, Bihar, [Delhi](#), Chhattisgarh, Andhra Pradesh, Telangana and Lakshadweep.

More than 80% of meteorological subdivisions received normal or above normal rainfall in June, including those which were significant for kharif sowing.

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