Early Monsoon in 2025

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Early Monsoon in 2025: What Triggered the Rapid Progression?

Context

The **southwest monsoon** plays a vital role in India's agriculture, water security, and overall economy. Any shift in its timing or intensity significantly affects **crop output, inflation**, and **rural livelihoods**. In 2025, the monsoon has shown **unusual early onset and rapid progression**, driven by multiple favourable climatic factors.

Early Nationwide Coverage

- The **monsoon covered the entire country by June 29**, which is **9 days earlier** than the normal date of **July 8**.
- This is **only the 10th instance since 1960** where India witnessed complete monsoon coverage in **June**.

Early Onset in Kerala Set the Pace

- **Kerala received the monsoon on May 24**, **8 days ahead** of its usual date (June 1).
- This advancement was triggered by an **active Madden-Julian Oscillation (MJO)** phase in mid-May.
- The early onset in Kerala laid the foundation for **faster monsoon progression** across the country.

Regional Monsoon Progress

- **South, East, and Northeast India**: Monsoon arrived **ahead of schedule**.
- **Northwest India**: On **normal timeline**.
- **Central India**: Experienced **slight delays**.

Key Drivers of Rapid Monsoon Advancement

1. Low-Pressure Systems in June

- India recorded **5 low-pressure systems** in June.
- These systems acted as **moisture attractors**, pulling rain-bearing winds inland and **speeding up monsoon movement**.

2. Active Madden-Julian Oscillation (MJO)

- MJO is an **eastward-moving system** of clouds, rainfall, and winds near the equator.
- When active near India, it enhances monsoon by **increasing moisture and cloud cover**.
- In June 2025, MJO remained active, aiding in **intense rainfall and northward monsoon spread**.

3. Favourable Monsoon Trough Position

- The **monsoon trough** is a low-pressure belt stretching from **northwest India to the Bay of Bengal**.
- It was positioned **south of normal**, helping pull in **moisture-laden winds** from oceans.
- This supported **intensified rainfall** across **central and northern regions**.

4. Neutral ENSO Conditions

- ENSO (El Niño–Southern Oscillation) influences monsoon via **Pacific Ocean temperature changes**.
- A **neutral phase** (neither El Niño nor La Niña) means **sea surface temperatures are average**, supporting **stable and widespread rainfall**.
- ENSO remained **neutral during June 2025**, aiding normal monsoon progress.

5. Neutral Indian Ocean Dipole (IOD)

- IOD indicates **temperature differences** between the western and eastern Indian Ocean.
- A **neutral IOD phase** exerts **minimal influence** on the monsoon.
- In 2025, IOD remained neutral, allowing other favourable drivers like **MJO and low-pressure systems** to dominate.

Conclusion

The 2025 monsoon has been marked by **early onset**, **rapid advancement**, and **regional weather extremes**. While the initial progress appears promising, it remains to be seen whether this pattern will **stabilise or lead to further variability** in the coming months. Monitoring ENSO, IOD, and MJO in the following weeks will be crucial for **forecasting rainfall distribution** and **agricultural planning**.