UPSC Geography revision · Mechanism, onset, withdrawal, El Niño and the IOD

Monsoon in India



Monsoon in India

Teacher notes

Ask aspirants: on what date does the monsoon normally reach Kerala? Most will say 1 June; tell them we will also learn the dates for Mumbai, Delhi and the whole country. Remind them that UPSC tests both mechanisms and exact facts.

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By the end of this session you can

Teacher notes

Read the objectives aloud. Suggest that aspirants keep a blank outline map of India to mark the branches and onset dates as we go.

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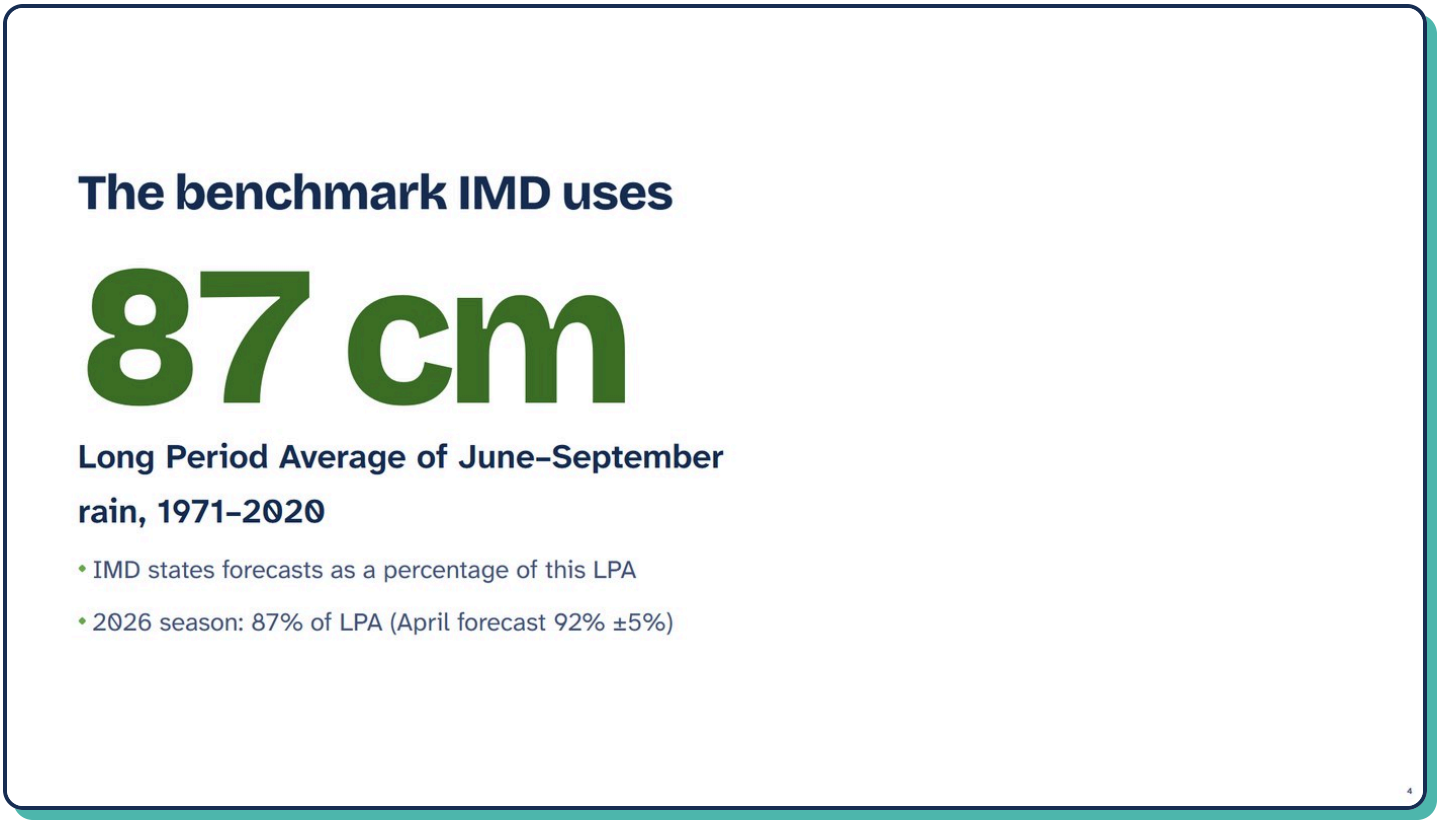


Why the monsoon matters

Teacher notes

The 70–90% figure comes from IMD's 2020 report on normal onset dates. The 116 cm is IMD's 1971–2020 all-India average; the NCERT Class XI book gives an older round figure of about 125 cm, so name your source if you quote one. Ask: which crops depend most on monsoon timing? Kharif crops such as rice. A common misconception is that the monsoon is just heavy rain; it is a seasonal reversal of winds.

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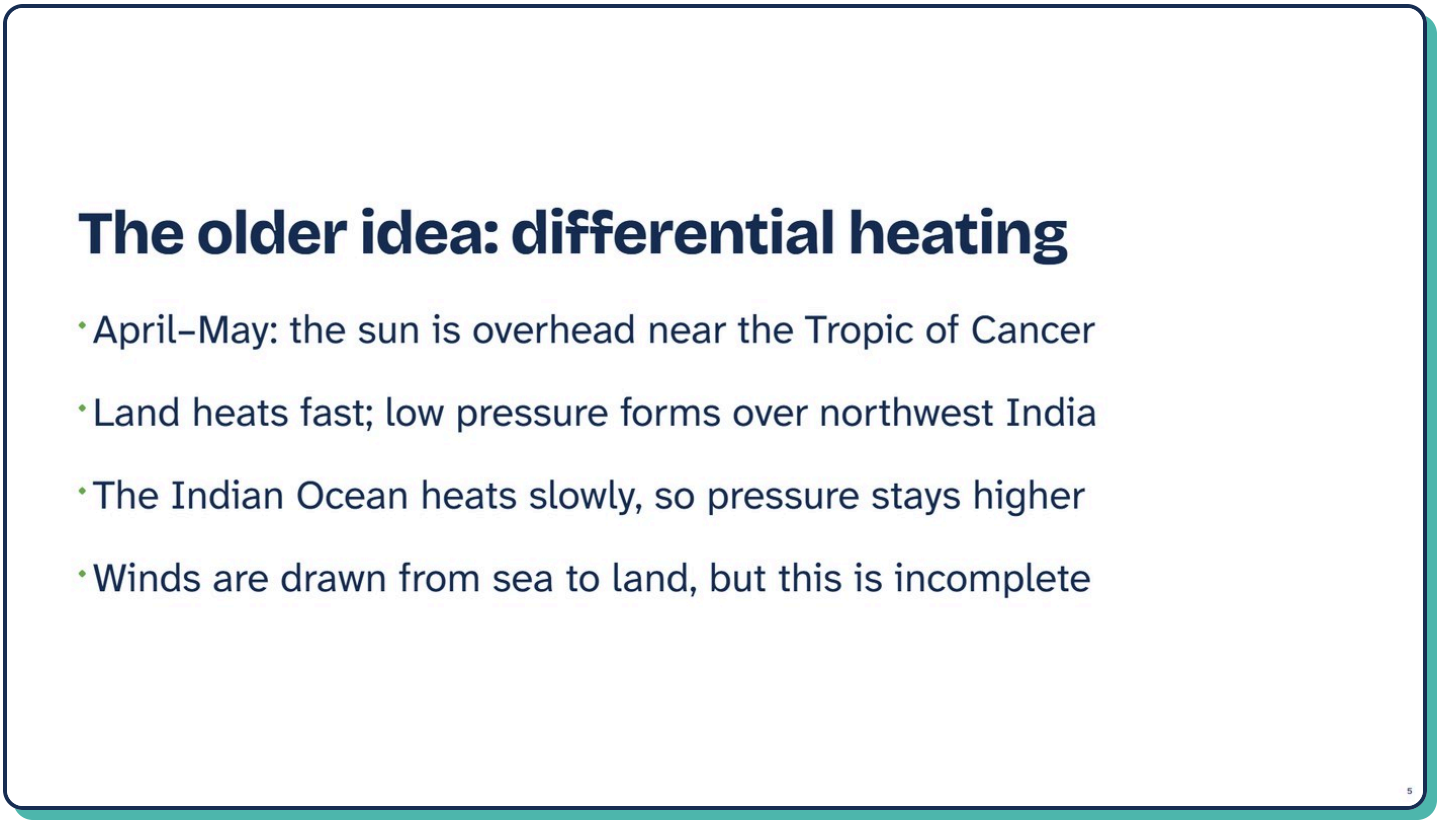


The benchmark IMD uses

Teacher notes

Explain that the LPA is the all-India seasonal average. IMD reported on 30 September 2026 that the 2026 season, an El Niño year, ended at 87% of LPA (759.4 mm), the fourth lowest since 2001. Ask: if a season gets 87% of LPA, roughly how many centimetres is that? About 76 cm. Stress that an all-India figure can hide big regional differences: the South Peninsula got 76% and East and Northeast India 74% of their own averages.

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The older idea: differential heating

Teacher notes

NCERT says this was the accepted view towards the end of the nineteenth century. Ask: what does this simple model leave out? Upper-air winds and the global circulation, which the next slides add.

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The ITCZ and the monsoon trough

Teacher notes

Sketch the equator, the ITCZ in July and the curving trade winds. Ask: why do the winds bend to the right after crossing the equator? The Coriolis force deflects moving air to the right in the northern hemisphere.

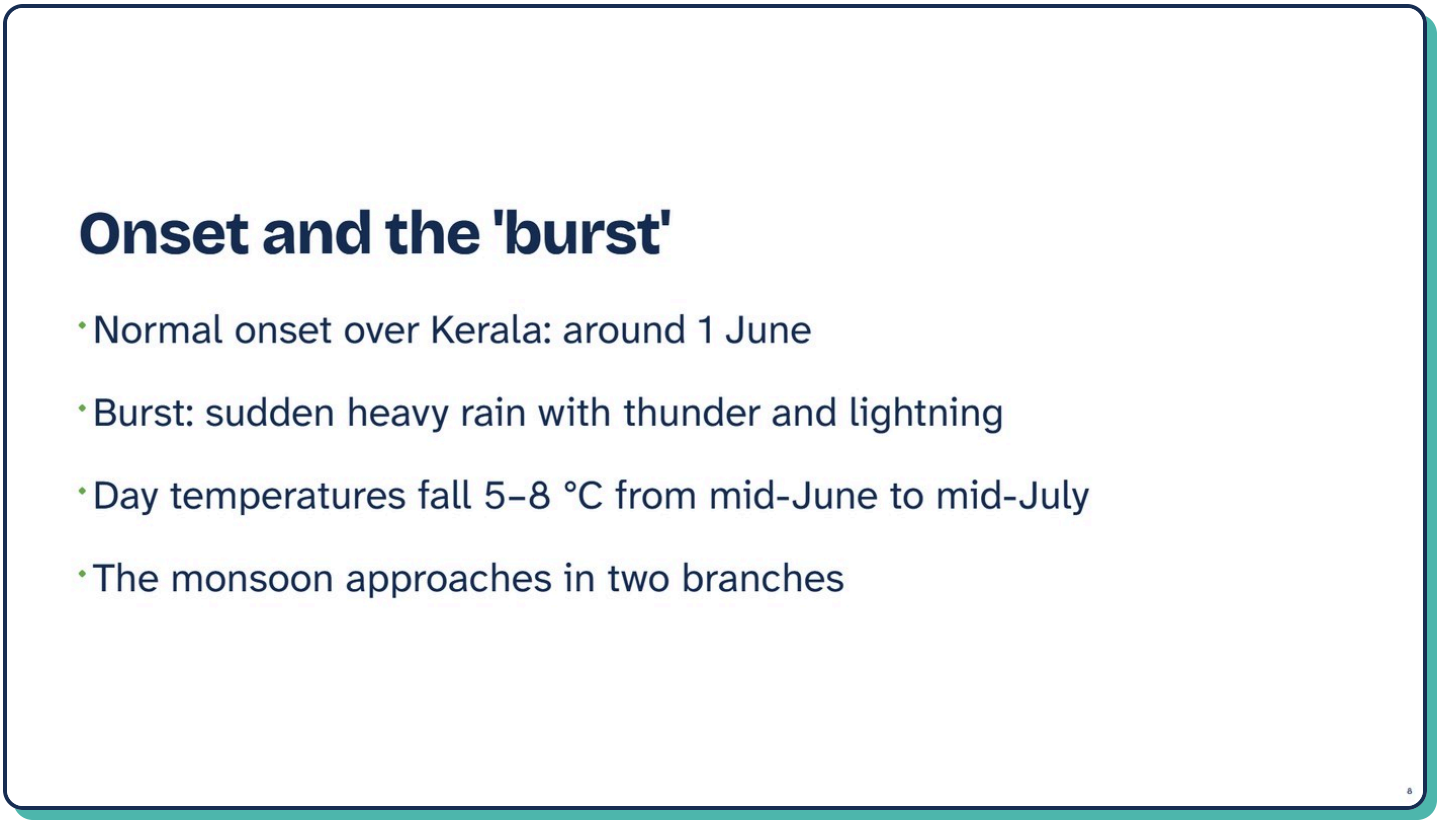


Jet streams and the onset

Teacher notes

This follows the NCERT Class 11 explanation. Ask: what has to happen first, the westerly jet leaving or the easterly jet arriving? The westerly jet must withdraw first. Many aspirants mix up which jet causes the burst.

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Onset and the 'burst'

Teacher notes

Onset over Kerala is the first official milestone every year, and IMD declares it using rainfall, wind and cloud criteria. Ask: why does the first rain bring such a big drop in temperature? Cloud cover and evaporation cool the land.

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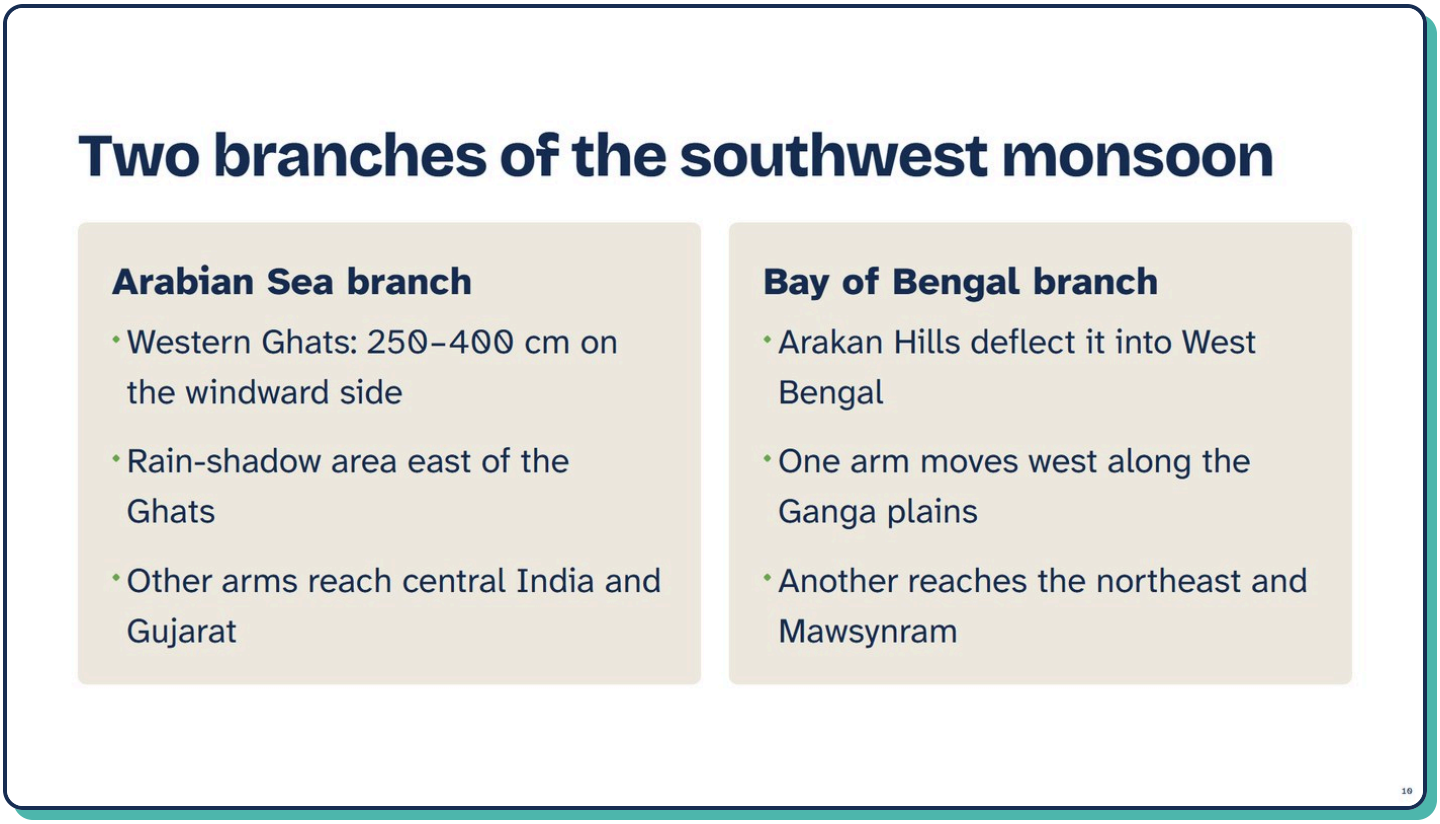


The monsoon's march north

Teacher notes

These are IMD's new normal dates, published in 2020 from 1961–2019 data; in any single year actual dates vary. Ask: how many days does the monsoon take from Kerala to Delhi? About four weeks. The old normal for full coverage was 15 July.

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Two branches of the southwest monsoon

Teacher notes

Ask aspirants to compare Mangaluru with Bengaluru to see the rain-shadow effect. NCERT says Mawsynram, on the crest of the Khasi hills, receives the highest average annual rainfall in the world; use that in the exam, but know the record is disputed: rain gauges on Colombia's Pacific coast, such as Lloró and Puerto López (López de Micay), have reported higher averages.

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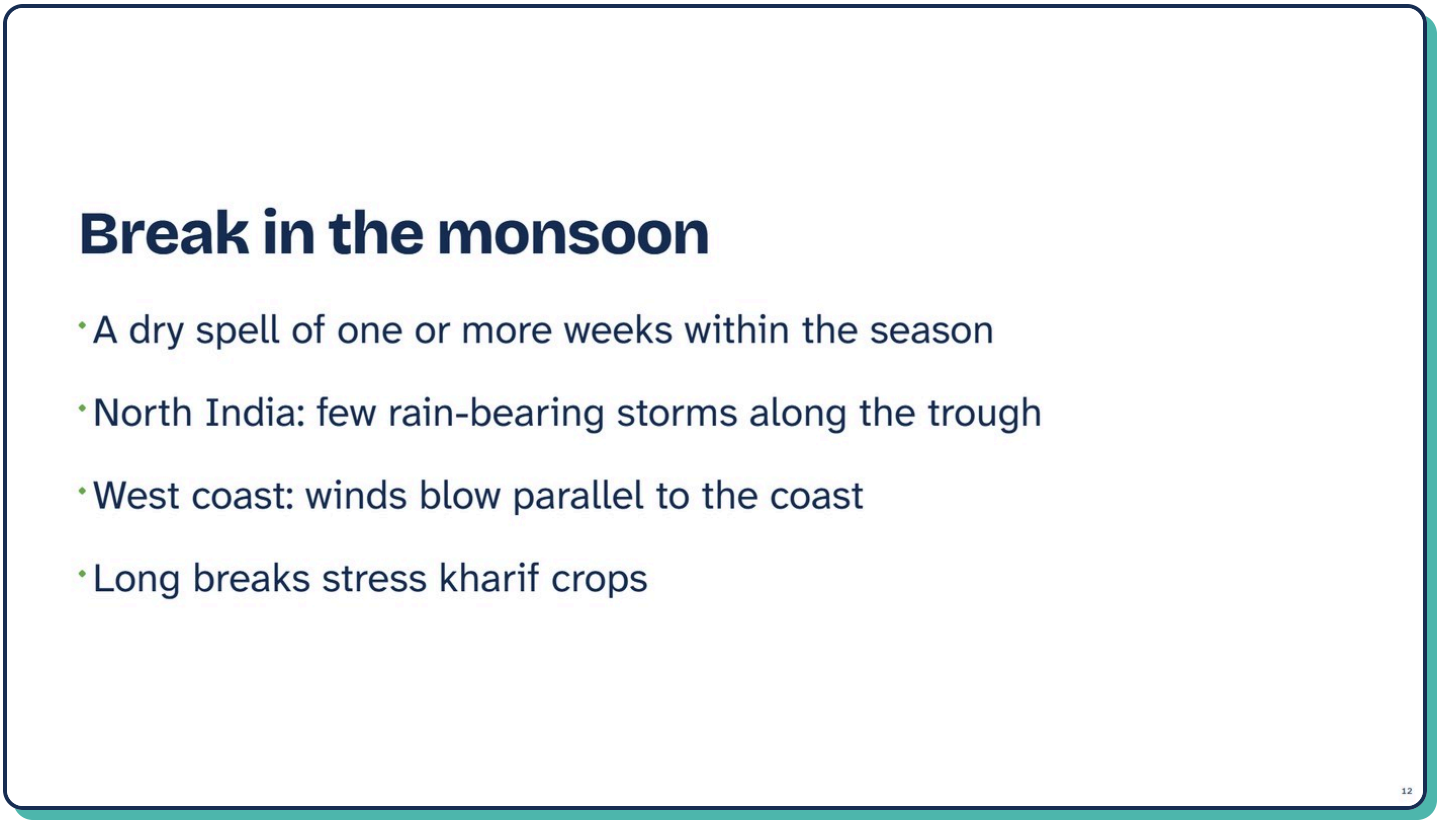


Why Tamil Nadu stays dry in summer

Teacher notes

This is a favourite Prelims statement question. Ask: which two reasons does NCERT give? Parallel coastline and rain shadow. A common error is to blame the Eastern Ghats alone.

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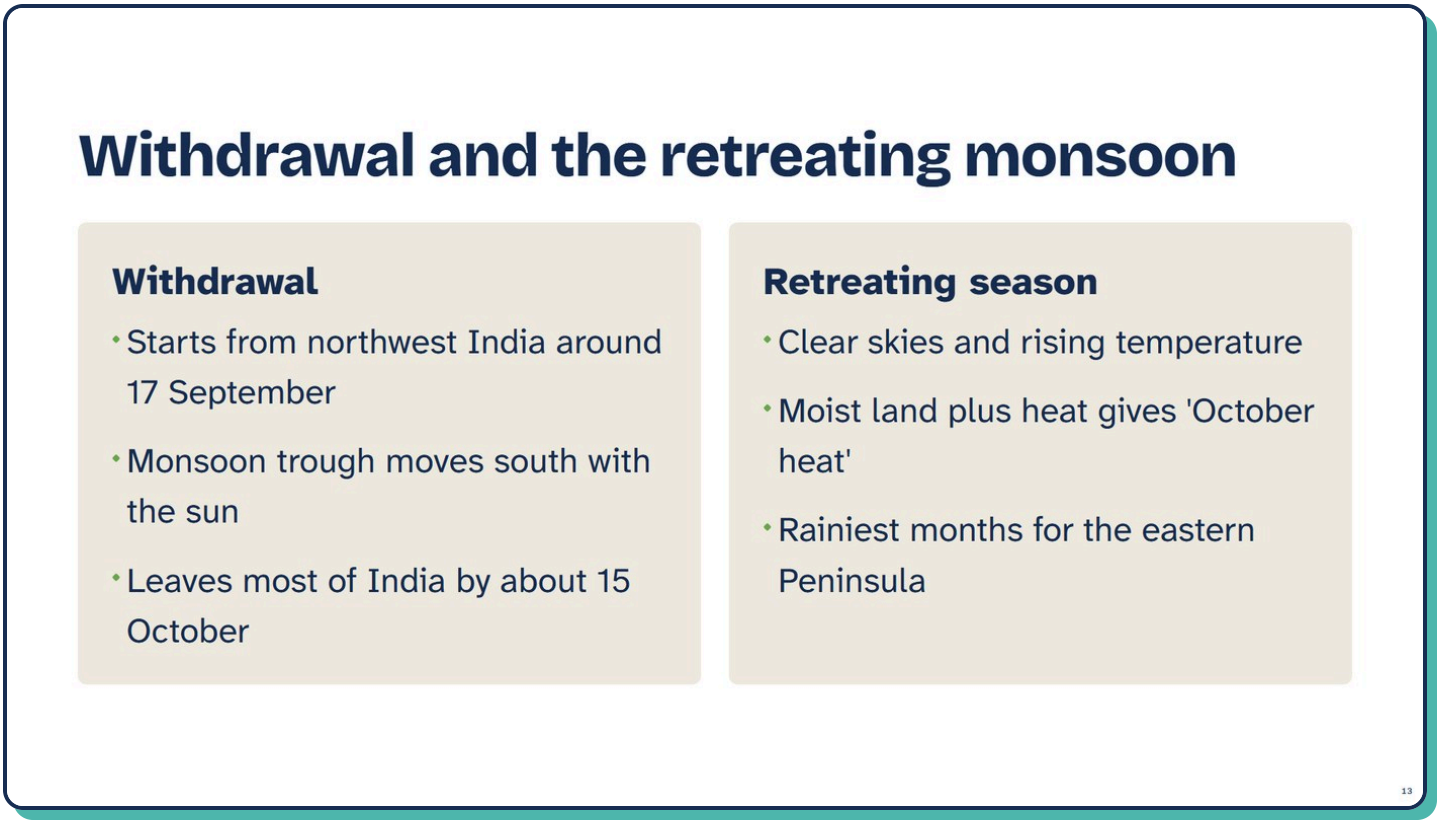


Break in the monsoon

Teacher notes

Stress that breaks are normal, not a failure of the monsoon. Ask: why would a two-week break in July worry a rice farmer? Transplanted seedlings need standing water.

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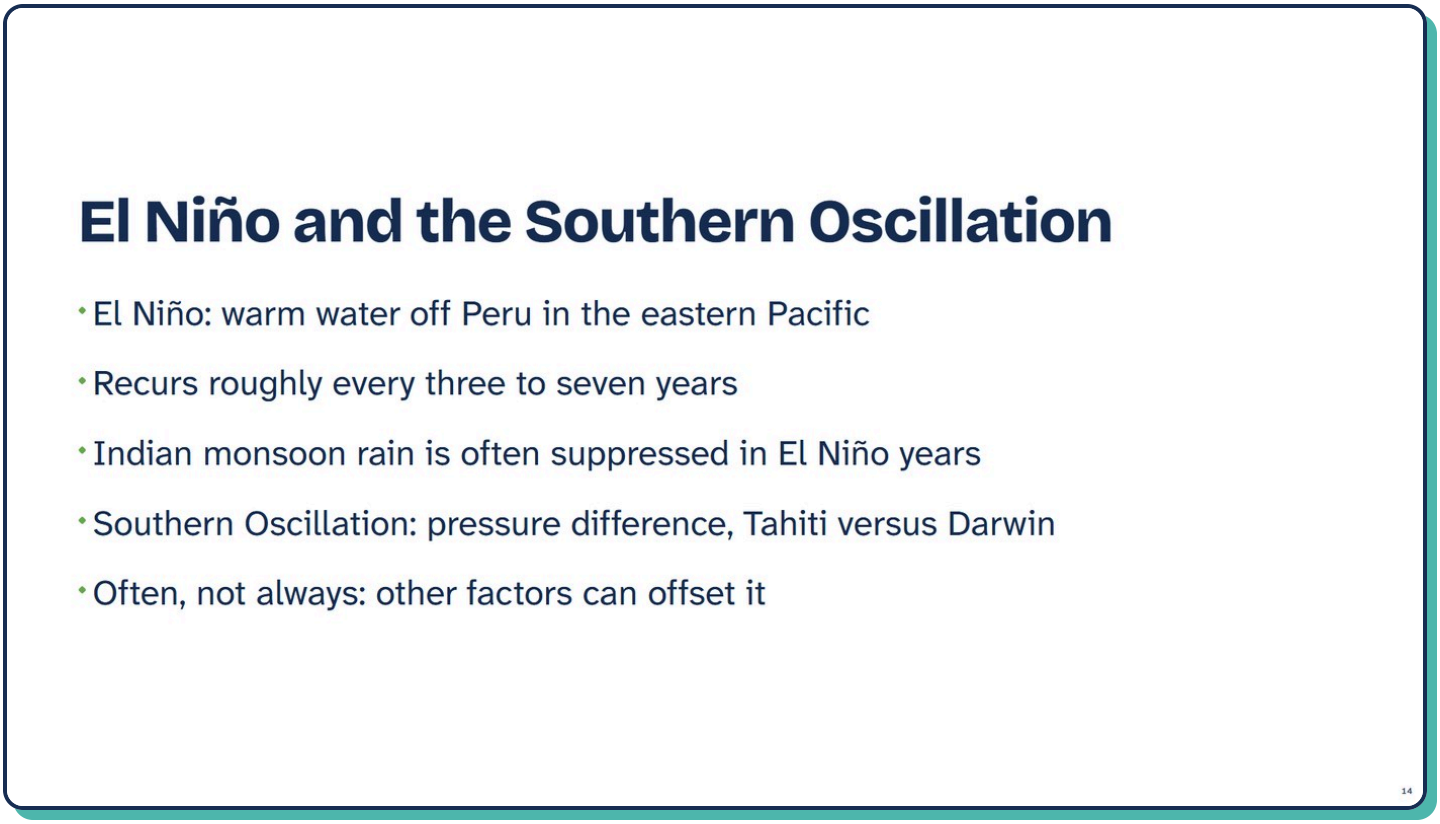


Withdrawal and the retreating monsoon

Teacher notes

IMD moved the normal start of withdrawal from 1 September to about 17 September in 2020. Ask: why is October heat so uncomfortable? High temperature and high humidity together. Withdrawal is gradual, unlike the sudden onset.

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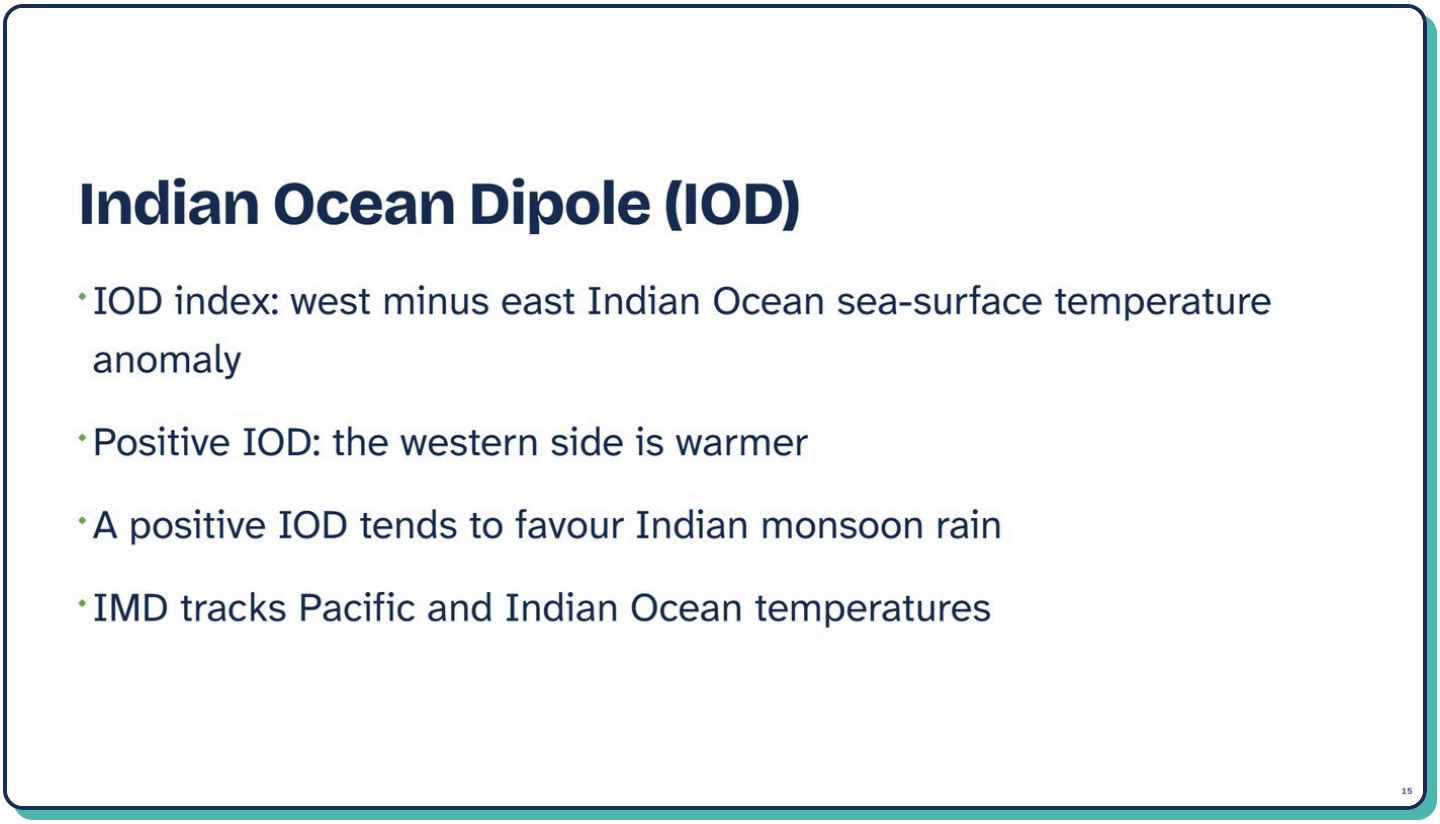


El Niño and the Southern Oscillation

Teacher notes

NCERT notes that El Niño is used in India for long-range monsoon forecasting. Ask: does every El Niño year bring drought in India? No, which is why the Indian Ocean Dipole matters too.

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Indian Ocean Dipole (IOD)

Teacher notes

Researchers define the IOD index as the sea surface temperature difference between a western and an eastern box of the tropical Indian Ocean. Ask: how could a positive IOD help in an El Niño year? It can partly offset the drying effect.

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Prelims practice

Teacher notes

Answer: B, a positive Indian Ocean Dipole. El Niño often suppresses rainfall, the westerly jet must withdraw before the burst, and parallel winds cause breaks on the west coast.

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Revision takeaways

Teacher notes

Ask aspirants to mark the onset dates and both branches on their outline map. Then take the five-question quiz on the page and revise the NCERT Class 11 chapter on climate alongside these slides.

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