Advancement of the Southwest Monsoon in India

Source: TH

The **Southwest Monsoon** has set in over Kerala and advanced into **most parts of Northeast India**, indicating the onset and progress of the crucial rainy season in the subcontinent.

- There are several theories explaining the monsoon, such as the **Thermal Theory (Edmund Halley), Dynamic Theory,** Jet Stream **Theory,** ITCZ **Theory, and** Indian Ocean Dipole **Theory.** The simplest way to understand the process of the monsoon is through the Thermal Theory, which is provided below.
- The tropical **monsoon climate is primarily caused by the differential heating and cooling rates of land and sea.**
    - **During the summer, when the sun is overhead at the Tropic of Cancer**, large land masses in the northern hemisphere (Central Asia), heat up significantly, **creating intense low-pressure areas.**
        - Meanwhile, the surrounding seas, which warm up more slowly, remain relatively cool.
        - This pressure difference causes winds from the high-pressure region in the Southern Hemisphere (Australia) **to blow towards the low-pressure areas, crossing the equator and transforming into the Southwest Monsoon** as they reach the Indian subcontinent.
    - **In winter, the situation reverses as the sun shifts to the Tropic of Capricorn.** Central Asia cools rapidly, forming high-pressure areas, and winds blow outwards as the Northeast Monsoon.
        - These **winds cross the equator and become the Northwest Monsoon** in northern Australia. This **seasonal reversal of wind directions characterises** the tropical monsoon climate, **resulting in distinct wet and dry seasons.**

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