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## Mains Practice Questions

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**Q.** Indian Monsoon remains one of the most complex geophysical phenomena. In light of the statement explain the mechanism of the onset of the Indian monsoon.

27 Apr, 2021 GS Paper 1 Geography

### **Approach**

- Start the answer by briefly describing the phenomenon of Indian monsoon.
- Explain the mechanism of the onset of the Indian monsoon.
- Conclude suitably.

### **Introduction**

Indian Monsoon can be best described as the seasonal reversal of winds. In the Indian monsoon winds flow from sea to land during the summer and from land to sea during winter.

The mechanism of the Indian monsoon can be understood in two phases namely, the onset of the South-West Monsoon and retreating monsoon season.

### **Body**

#### **The onset of the South-West Monsoon:**

- **Differential Heating:** The differential heating and cooling of land and water create a low pressure on the landmass of India and high pressure on the Indian ocean area.
- **Shifting of ITCZ:** This leads to the shifting of the position of the Inter-Tropical Convergence Zone (ITCZ) in summer, over the Ganga plain. The ITCZ in this position is often called the Monsoon Trough.
- **Bending of Winds:** The southeast trade winds of the southern hemisphere cross the equator and start blowing in the southwest to the northeast direction under the influence of Coriolis force.

As these winds blow over the warm Indian ocean, they collect moisture.

- **Withdrawal of Westerly Jet Stream:** The shift in the position of the ITCZ is also related to the phenomenon of the withdrawal of the westerly jet stream from its position over the north Indian plain, south of the Himalayas.
- **Onset of Easterly Jet Stream:** The easterly Jet Stream (Somali Jet) sets in along 15°N latitude only after the western jet stream has withdrawn itself from the region.

This easterly jet stream is held responsible for the burst of the monsoon in India. As these winds approach the land, their southwesterly direction is modified by the relief and thermal low pressure over northwest India.

- **Dividing Monsoon into Branches:** The monsoon approaches the Indian landmass in two branches:
  - The Arabian Sea branch: The monsoon winds originating over the Arabian Sea.
  - The Bay of Bengal branch: The Arakan Hills along the coast of Myanmar deflect a big portion of this branch towards the Indian subcontinent.

### **Conclusion**

The monsoon, therefore, enters West Bengal and Bangladesh from the south and southeast instead of from the southwesterly direction. It plays a big role in India and has social, political, as well as economic implications.