

Indian Ocean Dipole (IOD)

Prelims: Current events of national and international importance | Geography

Why in News?

Recently, Scientists have observed that ongoing El Nino is intensifying into [Super El Nino](#), while the IOD remains negative, these conditions raise concerns of monsoon deficit and drought risk in India.

Indian Ocean Dipole (IOD)

- It is a climate pattern in the Indian Ocean.
- It refers to the difference in ***sea surface temperatures*** between the western and eastern parts of the ocean.
- **Positive Phase** - Western Indian Ocean warms, eastern cools.
- **Negative Phase** - Eastern Indian Ocean warms, western cools.
- **Neutral Phase** - Temperatures remain near average.

Positive Phase (Indian Nino)

- **Temperature** - Western Indian Ocean (near Africa) abnormally warm; eastern ocean (near Indonesia/Australia) cooler.
- **Winds** - Usual westerly winds weaken or reverse.
- **Impacts** -
 - **India** - Above-average rainfall, stronger monsoon.
 - **Africa** - Heavy rains, flooding.
 - **Australia and Indonesia** - Severe droughts, bushfires.

Negative Phase

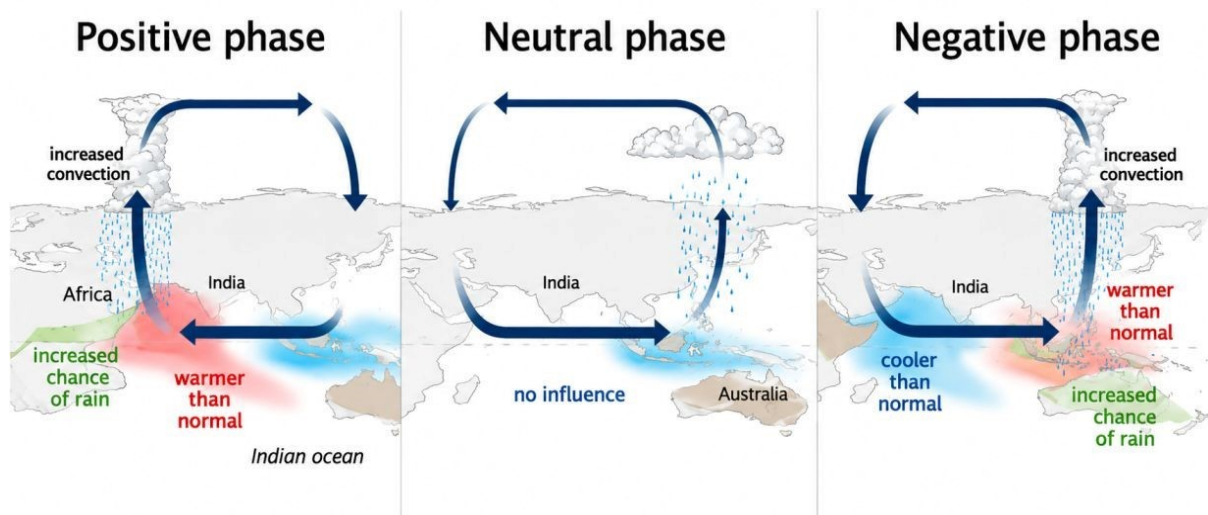
- **Temperature** - Eastern Indian Ocean abnormally warm; western ocean cools.
- **Winds** - Equatorial westerly winds intensify.
- **Impacts** -
 - **India** - Weaker monsoon, below-average rainfall.

- **Australia and Indonesia** - Higher humidity, more rainfall, coastal flooding.
- **Africa** - Drier, drought-like conditions.

Neutral Phase

- **Conditions** - Sea temperatures close to average.
- **Moisture Circulation** - Normal rainfall distribution, balanced weather.
- **Significance**
 - Directly influences Indian monsoon variability.
 - Alters rainfall in Africa, Australia, Indonesia.
 - Associated sea-level changes can increase risks of coastal flooding

INDIAN OCEAN DIPOLE



References

1. [The Hindu | Super El Nino](#)
2. [NASA | IOD](#)