

Northeast Monsoon in India: Causes, Importance and UPSC Relevance

The **Northeast Monsoon (NEM)** is an important component of India's climate system, particularly for **Tamil Nadu, coastal Andhra Pradesh, Rayalaseema, Kerala and South Interior Karnataka**. It occurs mainly during **October-December** and is also associated with the retreating phase of the Southwest Monsoon.

For UPSC aspirants, the Northeast Monsoon is an important topic under **Indian Geography, climatology, agriculture, disaster management and climate variability**.

What is the Northeast Monsoon?

The Northeast Monsoon refers to the seasonal reversal of winds following the withdrawal of the Southwest Monsoon.

During this period, winds generally blow from the **northeast towards the southwest**. As these winds travel across the **Bay of Bengal**, they acquire moisture and bring rainfall to parts of southern peninsular India.

The Northeast Monsoon season is generally considered the **October-December** period.

Why Does the Northeast Monsoon Occur?

The process is closely associated with the withdrawal of the Southwest Monsoon.

As the Sun's apparent position moves southward, the **Inter-Tropical Convergence Zone (ITCZ)** also shifts towards lower latitudes. Atmospheric pressure patterns change, resulting in a reversal of the prevailing wind system.

The broad sequence is:

Withdrawal of Southwest Monsoon → Southward shift of ITCZ → Reversal of winds → Northeasterly winds → Moisture pickup from Bay of Bengal → Rainfall over southern India

Why Does Tamil Nadu Receive Heavy Northeast Monsoon Rain?

Tamil Nadu lies largely on the **rain-shadow side of the Western Ghats during the Southwest Monsoon**. Consequently, the Northeast Monsoon becomes its principal rainy season.

According to IMD, Tamil Nadu receives around **48% of its annual rainfall during October-December**, making the performance of the Northeast Monsoon particularly important for the state's agriculture and water resources.

The east coast also receives rainfall from **Bay of Bengal weather systems**, including low-pressure areas and cyclonic systems.

Areas Benefiting from the Northeast Monsoon

The principal Indian meteorological subdivisions receiving Northeast Monsoon rainfall are:

- **Tamil Nadu, Puducherry & Karaikal**
- **Coastal Andhra Pradesh & Yanam**
- **Rayalaseema**
- **South Interior Karnataka**
- **Kerala & Mahe**

The rainfall pattern is not uniform across these regions.

Northeast Monsoon and Cyclones

The Bay of Bengal becomes an important source of weather systems during the post-monsoon season.

Low-pressure systems and tropical cyclones can bring **very heavy rainfall, strong winds, storm surges and flooding** to coastal areas.

Therefore, Northeast Monsoon rainfall is important not only for agriculture but also for **disaster preparedness and coastal management**.

Importance for Agriculture and Water Security

The Northeast Monsoon plays a major role in:

- **Rabi agriculture**
- Reservoir replenishment
- Groundwater recharge

- Drinking-water availability
- Irrigation
- Ecosystem maintenance

For Tamil Nadu in particular, a deficient Northeast Monsoon can have significant consequences for **agriculture and water resources**.

Northeast Monsoon and El Niño

An important UPSC concept is the relationship between **El Niño and the Northeast Monsoon**.

Unlike the Southwest Monsoon, where El Niño is generally associated with weaker rainfall over India, **El Niño events have often been associated with enhanced Northeast Monsoon rainfall**, although the relationship is not absolute. IMD research notes that El Niño generally enhances Northeast Monsoon rainfall, while La Niña tends to be associated with deficient rainfall, with exceptions.

This is a useful example of why **ENSO does not affect all components of India's monsoon system in the same way**.

Northeast Monsoon vs Southwest Monsoon

Feature	Southwest Monsoon	Northeast Monsoon
Main period	June–September	October–December
Dominant winds	Southwesterly	Northeasterly
Major moisture source	Arabian Sea & Bay of Bengal	Mainly Bay of Bengal
Major beneficiaries	Most of India	Southern Peninsular India
Important for Tamil Nadu	Relatively less	Principal rainy season
Associated weather systems	Monsoon depressions, low-pressure systems	Bay of Bengal lows and cyclones

2026 UPSC Current Affairs Context

The Northeast Monsoon becomes particularly relevant during the **October–December period**, when the Southwest Monsoon withdraws and rainfall activity shifts towards southern peninsular India.

The IMD describes the Northeast Monsoon as the **retreating phase of the Southwest Monsoon**, characterised by a reversal of the surface and lower-tropospheric wind regime.

UPSC Relevance Prelims

Focus on:

- Northeast Monsoon period
- Wind reversal
- ITCZ migration
- Bay of Bengal
- Tamil Nadu's rainfall pattern
- El Niño and La Niña
- Post-monsoon cyclones

GS Paper I - Geography

The topic can be linked with:

- Indian monsoon system
- Seasonal reversal of winds
- ITCZ
- Tropical cyclones
- Regional rainfall distribution
- Climate variability

GS Paper III - Environment & Disaster Management

It can be connected with:

- Floods
- Cyclones
- Drought
- Agricultural vulnerability
- Water security

- Early warning systems

Possible UPSC Mains Question

“The Northeast Monsoon is particularly important for the water security and agriculture of southern peninsular India. Explain its mechanism and discuss the factors influencing its variability.”

Conclusion

The **Northeast Monsoon is a vital component of India's climate system**, particularly for southern peninsular states. Its interaction with the Bay of Bengal, tropical cyclones, ENSO and regional geography makes it an important topic for understanding India's rainfall variability.

For UPSC preparation, study the Northeast Monsoon through the integrated framework of **monsoon reversal + ITCZ + Bay of Bengal + Tamil Nadu rainfall + ENSO + cyclones + agriculture and disaster management**.

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