

Research Paper

STUDY ON POST-MONSOON IN TAMIL NADU

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During the North-East-monsoon months of October to December, a different monsoon cycle, the northeast (or "retreating") monsoon, brings dry, cool, and dense Central Asian air masses to large parts of India. Winds spill across the Himalayas and flow to the south-west across the country, resulting in clear, sunny skies. Though the India Meteorological Department (IMD) and other sources refers to this period as a fourth ("post-monsoon") season, other sources designate only three seasons. Depending on location, this period lasts from October to November, after the south-west monsoon has peaked. Less and less precipitation falls, and vegetation begins to dry out. In most parts of India, this period marks the transition from wet to dry seasonal conditions. Average daily maximum temperatures range between 28 and 34°C (82 and 93°F). The north-east monsoon, which begins in September, lasts through the post-monsoon seasons, and only ends in March, carries winds that have already lost their moisture while crossing central Asia and the vast rain shadow region lying north of the Himalayas. They cross India diagonally from north-east to southwest. However, the large indentation made by the Bay of Bengal into India's eastern coast means that the flows are humidified before reaching Cape Comorin and rest of Tamil Nadu, meaning that the state, and also some parts of Kerala, experience significant precipitation in the post-monsoon and winter periods. However, parts of West Bengal, Orissa, Andhra Pradesh, Karnataka and North-East India also receive minor precipitation from the north-east monsoon.

Keywords: Peninsula, Seasonal Transition, Onset, Monsoon

INTRODUCTION

The south-west monsoon has to withdraw fully to create enabling conditions for the onset of the monsoon in reverse (or north-east monsoon). The ongoing disturbed weather activity over the Mumbai latitude would only prolong the sway of westerlies over large parts of the peninsula. The westerlies would have to

ultimately yield place for monsoon easterlies. This can take time, and is not expected to happen until the disturbed weather activity migrates to the Chennai latitude. The spinning up of a fresh 'low' over East-central Bay of Bengal on Tuesday may have only compounded matters. Normal date of onset is October 20 (Wednesday) but ongoing

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cyclonic disturbances in the Arabian Sea and the Bay of Bengal are seen fending off monsoon easterlies from establishing over the southeast Coast. Onset of the north-east monsoon over Tamil Nadu and the rest of the peninsula could be delayed by as much as a week, according to experts.

ONSET CONDITIONS

According to IMD specifications, commencement of north-east monsoon assumes withdrawal of southwest monsoon up to 15° latitude, onset of persistent surface easterlies over Tamil Nadu coast to required depth, fairly widespread rainfall over coastal Tamil Nadu, South Coastal Andhra Pradesh and adjoining areas. These conditions are likely to be met as the week progresses, with surface easterlies notching up cruising speed by Friday. Rainfall would also have become more widespread over the peninsula by then.

WEATHER WARNING

A weather warning valid for Monday said that isolated heavy rainfall would occur over Coastal Andhra Pradesh and South Coastal Orissa. The causative upper air cyclonic circulation over West-central Bay of Bengal and adjoining Coastal Andhra Pradesh has been persisting over the past couple of days. This system could be the fulcrum around which the seasonal transition of weather would come about over Peninsular India with westerlies getting increasingly replaced by north easterlies to monsoon easterlies. Additionally, the IMD has picked the crucial “shear zone” formation along the 15° latitude, which defines the playground for northeast monsoon weather systems. The shear line is a line or narrow zone across which

there is an abrupt change in the horizontal wind component; a line of maximum horizontal wind shear.

CONVECTIVE CLOUDS

Scattered rain or thundershowers have been forecast for Rayalaseema, remaining parts of Orissa, Konkan and Goa. Satellite cloud imagery on Monday revealed the presence of convective clouds over parts of Coastal Andhra Pradesh and West-central Bay of Bengal. International Research Institute (IRI) for Climate and Society at Columbia University has indicated wetter than average weather for Rayalaseema, parts of Telangana, North and South Interior Karnataka and parts of North and Interior Tamil Nadu during the six days ending Friday. Other international models signalled to the setting up of a strong “pulse” entering the Bay of Bengal from upstream South China Sea later in the week. They also indicated that, onset of northeast monsoon during the week may not have the back-up of a wet phase of the periodic Madden-Julian Oscillation (MJO) wave as forecast earlier. The onset, if at all, would happen on the monsoon’s own inherent strength and dynamics. The MJO wave is now forecast to settle over Equatorial Indian Ocean and adjoining peninsular seas around November 7. Transiting the upper levels of the atmosphere, the wave has been known to set up monsoon onsets, low-pressure areas, depressions and even cyclones. Given this, the northeast monsoon could likely see a pick up after November 7, according to as per various MJO models surveyed. The wave, which has implications for ground weather, is seen particularly strong during November 12 and 16. Two days into its onset, the north-east monsoon

has been steadily consolidating its presence along the country's south-east coast. The seasonal weather system has been riding piggyback on an upper level cyclonic circulation, which has since moved southward along the Tamil Nadu coast to a perch over South-west Bay of Bengal.

RAIN ALERT

According to the UK Met Office weather model, the system was expected to cross land and the South Peninsula towards Coastal Karnataka over the next few days. A weather warning issued by India Meteorological Department (IMD) on Sunday said that isolated heavy to very heavy rainfall would occur over Coastal Andhra Pradesh during the next two days. It would be isolated heavy over Tamil Nadu, Interior Andhra Pradesh, South Coastal Orissa and Kerala during this period. The 24 hours ending Sunday morning said that widespread rainfall was reported from Coastal Orissa and Andhra Pradesh while it was fairly widespread over the rest of South Peninsular India.

'LOW' BREWING

The IMD said that the first full-fledged low-pressure area of the season may emerge over South Andaman Sea by Wednesday. This would be remnant of a tropical depression located across India's territorial waters in the Gulf of Thailand on Sunday. It was headed in a west-northwest direction to move for its onward hop into the South Andaman Sea. A number of weather models surveyed—including Canadian Meteorological Centre, US National Centres for Environment Prediction/ Global Forecast System and European Centre for medium-Range Weather Forecasts—

indicated its generally west-northwest track and intensification into a likely depression.

DIFFERING VIEWS

The models differed in their outlook for its landfall, positing it along the Southeast Coast at any point from Central coastal Tamil Nadu to the Coastal Andhra Pradesh. The US Navy's NGP proved the odd model out by suggesting that the system might track straight to the west, cross northern Sri Lanka and weaken but proceed to curl into extreme South Indian Peninsula. The International Research Institute (IRI) for Climate and Society at Columbia University said in its six-day outlook ending Thursday that very heavy recorded rainfall is likely over South Coastal Andhra Pradesh, Central Tamil Nadu coast and adjoining interior.

ABOVE NORMAL

The region around Chennai and South Coastal Andhra Pradesh may receive up to 60% above the normal rainfall during this six-day period, it said. 'Wetter than normal conditions' have been forecast for North Coastal and Interior Tamil Nadu. But the Climate Prediction Centre of the US National Weather Services indicated that monsoon north easterlies and easterlies over the Bay of Bengal would give way to a burst of westerlies turning south easterlies from Friday. This might rob the Tamil Nadu coast some of the rains, though they are expected to fall over Kerala as the south easterlies mop up moisture from the Bay and blow in as westerlies to north westerlies to complete the circulation in the larger trough.

CLOUD IMAGERY

On Sunday, satellite imagery showed convective clouds over parts of West-central,

Northeast and Southwest Bay, South Andaman Sea, Southeast Arabian Sea, Orissa, South Chhattisgarh, Andhra Pradesh, Kerala and Tamil Nadu. This is expected to trigger widespread rain or thundershowers over Coastal Andhra Pradesh. It would be fairly widespread over Tamil Nadu, Andhra Pradesh, Kerala, Coastal Orissa, South Chhattisgarh and Andaman and Nicobar Islands. Scattered rain or thundershowers would occur over South Karnataka and Lakshadweep on Monday and increase thereafter. Isolated rain or thundershowers would also occur over the Northeastern States on Monday and increase thereafter. An extended forecast until Friday said that fairly widespread rainfall activity would occur over Andhra Pradesh, Karnataka, Tamil Nadu, Kerala and Andaman and Nicobar Islands.

CONCLUSION

Depending on location, this period lasts from October to November, after the southwest monsoon has peaked. Less and less precipitation falls, and vegetation begins to dry

out. In most parts of India, this period marks the transition from wet to dry seasonal conditions. Average daily maximum temperatures range between 28 and 34°C (82 and 93°F). The northeast monsoon, which begins in September, lasts through the post-monsoon seasons, and only ends in March, carries winds that have already lost their moisture while crossing central Asia and the vast rain shadow region lying north of the Himalayas.

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