



## **Government of Tamilnadu**

### **Department of Employment and Training**

Course : TNPSC Group I Mains Material  
Subject : Environment, Biodiversity and Disaster Management  
Topic : Changes in monsoon pattern in Tamil Nadu and India

#### **© Copyright**

The Department of Employment and Training has prepared the TNPSC Group-I Preliminary and Main Exam study material in the form of e-content for the benefit of Competitive Exam aspirants and it is being uploaded in this Virtual Learning Portal. This e-content study material is the sole property of the Department of Employment and Training. No one (either an individual or an institution) is allowed to make copy or reproduce the matter in any form. The trespassers will be prosecuted under the Indian Copyright Act.

It is a cost-free service provided to the job seekers who are preparing for the Competitive Exams.

**Commissioner,**

**Department of Employment and Training.**



# CHANGES IN MONSOON PATTERN IN TAMILNADU AND INDIA

## CHANGES IN MONSOON PATTERN IN TAMILNADU AND INDIA:

### MONSOON

The word 'monsoon' has been derived from the Arabic word 'Mausim' which means 'season'. Originally, the word 'monsoon' was used by Arab navigators several centuries ago, to describe a system of seasonal reversal of winds along the shores of the Indian Ocean, especially over the Arabian Sea. It blows from the south-west to north-east during summer and from the north-east to south-west during winter.

According to the Dynamic concept, Monsoon wind originates due to the seasonal migration of planetary winds and pressure belts following the position of the sun. During summer solstice, the sun's rays fall vertically over the Tropic of cancer. Therefore, all the pressure and wind belts of the globe shift northwards. At this time, Inter -Tropical Convergence Zone (ITCZ) also moves northward, and a major part of Indian landmass comes under the influence of southeast trade winds. While crossing equator this wind gets deflected and takes the direction of southwest and becomes southwest monsoon. During the winter season, the pressure and wind belts shift southward, thereby establishing the north-east monsoon (trade winds) over this region. Such systematic change in the direction of planetary winds is known as monsoon.

### The Factors Affecting the Climate

Climate of India is affected by the factors of latitude, distance from the seas, monsoon wind, relief features and jet stream.

#### 1.Latitude

Latitudinally, India lies between 8°4'N and 37°6'N latitudes. The Tropic of cancer divides the country into two equal halves. The area located to the south of Tropic of cancer experiences high temperature and no severe cold season throughout the year

.....●  
whereas, the areas to the north of this parallel enjoys subtropical climate. Here, summer temperature may rise above 40°C and it is close to freezing point during winter.

## **2.Altitude**

When the altitude increases, the temperatures Decreases. Temperature decreases at the rate of 6.5°C for every 1000 metres of ascent. It is called normal lapse rate. Hence, places in the mountains are cooler than the places on the plains. That is why the places located at higher altitudes even in south India have cool climate. Ooty and several other hill stations of south India and of the Himalayan ranges like Mussourie, Shimla etc., are much cooler than the places located on the Great Plains.

## **3.Distance from The Sea**

Distance from the sea does not cause only temperature and pressure variations but also affects the amount of rainfall. A large area of India, especially the peninsular region, is not very far from the sea and this entire area has a clear maritime influence on climate. This part of the country does not have a very clearly marked winter and the temperature is equable almost throughout the year. Areas of central and north India experience much seasonal variation in temperature due to the absence of influence of seas. Here, summers are hot and winters are cold. The annual temperature at Kochi does not exceed 30°C as its location is on the coast while it is as high as 40°C at Delhi, since it is located in the interior part. Air near the coast has more moisture and greater potential to produce precipitation. Due to this fact, the amount of rainfall at Kolkata located near the coast is 119 cm and it decreases to just 24 cm at Bikaner which is located in the interior part.

## **4.Monsoon Wind**

The most dominant factor which affects the climate of India is the monsoon winds. These are seasonal reversal winds and India remains in the influence of these winds for a considerable part of a year. Though, the sun's rays are vertical over the central part of India during the mid-June, the summer season ends in India by the end of May. It is because the onset of southwest monsoon brings down the temperature of the entire India and causes moderate to heavy rainfall in many parts of the country. Similarly, the climate of southeast India is also influenced by northeast monsoon.

## 5. Relief

Relief of India has a great bearing on major elements of climate such as temperature, atmospheric pressure, direction of winds and the amount of rainfall. The Himalayas acts as a barrier to the freezing cold wind blows from central Asia and keep the Indian subcontinent warm. As such the north India experiences tropical climate even during winter. During southwest monsoon, areas on the western slope of the Western Ghats receive heavy rainfall. On the contrary, vast areas of Maharashtra, Karnataka, Telangana, Andhra Pradesh and Tamilnadu lie in rain shadow or leeward side of the Western Ghats receive very little rainfall. During this season, Mangalore, located on the coast gets the rainfall of about 280 cm whereas the Bengaluru located on the leeward side receives only about 50 cm rainfall.

## 6. Jet Streams

Jet streams are the fastmoving winds blowing in a narrow zone in the upper atmosphere. According to the Jet stream theory, the onset of southwest monsoon is driven by the shift of the subtropical westerly jet from the plains of India towards the Tibetan plateau. The easterly jet streams cause tropical depressions both during southwest monsoon and retreating monsoon.

The onset of the monsoon has been delayed almost every year since 1976, when there was a regime shift in climate around the world - from a weak to a strong El Nino period. Since this time, monsoons have also been ending sooner- almost a week from the end of September; so, the length of the rainy season has been compressed.

In India, one of the nations most-highly affected by monsoons, as well as neighboring countries, 75% of annual rainfall is supplied during the monsoons. This means drinking water, bathing water, water for crops and food preparation, hydroelectric power, and the countless other necessary uses of water. The monsoon season is, for many regions and communities, a lifeline and a necessity for agriculture, livelihood, and basic survival. The deep dependence on monsoons means that even a slight shift in timing or amount of rainfall can be chaotic and lethal.

●.....●

## **CHANGES IN INDIA:**

Monsoons are triggered by a contrast in temperature between land masses and oceans, which triggers a Reversal of wind patterns, causing an increase in precipitation, which we call a monsoon. As temperatures increase as a result of climate change, monsoons are altered, and levels of rainfall are skewed. Monsoons are becoming more unpredictable and irregular, entering periods of reduced rainfall in certain regions, specifically southern Asian regions, is projected to worsen in the future. The primary issue is the increasing irregularity of monsoons, with periods of intense dry spells, sometimes followed by an unpredictably intense monsoon season.

### **Measures:**

To strongly promote water management and conservation measures such as

1. reusing treated wastewater,
2. rainwater harvesting,
3. monitoring water in-flow through real-time gauging, and
4. moving towards honest pricing.

### **Question:**

1. Explain the factors that affect climate change and write about the causes of climate change in India and Tamilnadu.