



Climate of India



“Weather is the momentary state of the atmosphere while climate refers to the average of the weather conditions over a longer period of time”

India has hot monsoonal climate which is the prevalent climate in South and South-East Asia. India has many regional variations based on pattern of winds, temperature and rainfall, rhythm of seasons and degree of wetness or dryness.

Examples of regional variations in India

- In summers, temperature in Churu, Rajasthan goes up to 50°C while it hardly touches 19°C in Tawang in Arunachal Pradesh
- On a December night, temperature in Drass, J&K may drop down to -45°C while Chennai on the same night records 20°C

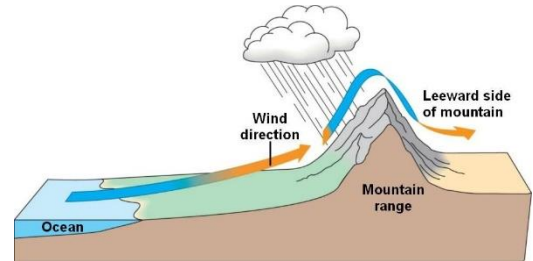
Factors determining the climate of India

- **Latitude**
 - Northern India lies in Sub-Tropical and temperate zones and the part lying South of Tropic of Cancer lies in Tropical zone.
 - Tropical zone being nearer to the equator experiences high temperature throughout the year
 - Area away from equator experiences extreme climate with high daily and annual range.
- **Himalayan Mountains**
 - Mountains in North protect the Indian subcontinent from cold and chilly northern winds originating from Arctic circle.
 - The Himalayas trap the monsoon winds and force them to shed their moisture.
- **Distribution of Land and Water**
 - India is bordered by Indian Ocean on three sides and by high mountains in the North.
 - As compared to landmass, water heats up or cools down slowly
 - This differential heating creates different air pressure zones in different seasons
- **Distance from the Sea**
 - Areas away from the influence of sea face extreme climatic conditions. For ex – Delhi, Kanpur, Amritsar etc.
- **Altitude**
 - Temperature decreases with height.
 - Due to thin air, mountain regions are cooler than that of plains.

- **Physiography**

- The windward sides of Western Ghats and Assam receive high rainfall while the Southern plateau remains dry due to its leeward position.

❖ **Leeward Side** – The side of the mountain which does not face the moisture burden is called leeward side. It generally remains dry.



Annual Cycle of Seasons in India

The Cold Weather Season

- The cold weather season sets in by mid-November. December and January are the coldest months.

Temperature

- **North India** – The mean daily temperature remains below 21°C over Northern India. Northern India faces extreme cold due to following reasons –
 - Being far away from sea influence, states like Punjab, Haryana experience continental climate
 - Snowfall in Himalayas creates cold wave situation
 - Cold winds coming from Caspian Sea and Turkmenistan bring cold wave with frost and fog in the month of February
- **South India** – Because of influence of the sea and proximity to equator, this region does not have any well-defined cold weather season.

Pressure and Winds

- Due to movement of Sun towards Tropic of Capricorn, Northern India experiences high-pressure. Southern parts of India have slightly lower pressure.
- Due to pressure difference wind starts blowing from North-Western high-pressure zone to low pressure zone over the Indian Ocean.

Rainfall

- **North India**
 - In North-West India, some weak cyclones coming from Mediterranean Sea cause rainfall. This rainfall is highly beneficial for Rabi crops.

- In lower Himalayas, precipitation is in the form of snow which sustains the flow of water in Himalayan rivers during summers.

- **South India**

- In October and November, North-East monsoon while crossing over Bay of Bengal collects moisture and causes rainfall over southern parts of India.

The Hot Weather Season

Temperature

- **North India**

- Due to movement of Sun towards Tropic of Cancer, temperature starts rising in Northern India. In May, heat belt moves further North and North-western parts of India, temperature rises to up to 48°C

- **South India**

- Summers are mild and not so intense in South India.
- Moderating effect of ocean keeps the lower than that prevailing in North India
- Due to altitude, temperature in hills of western ghats remain below 25°C

Pressure and Winds

- In Summers, the pressure over North India falls resulting in dry and hot winds in North-west part, known as “Loo”
- Dust storms are common in May in Punjab, Haryana, Eastern Rajasthan and UP

Local Storms in India in Hot Weather Season



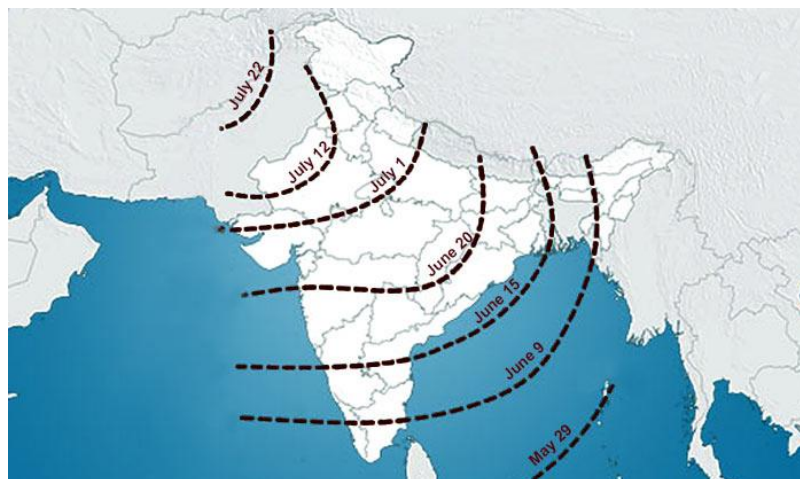
Mango Shower – Towards the end of summer, there are pre-monsoon showers. It is a common phenomenon in Kerala and Coastal areas of Karnataka. They are known as Mango showers because they help in early ripening of mangoes.

Blossom Shower – It is observed in Kerala and nearby areas. With this shower, coffee flowers blossom.

Nor Westers – These are evening thunderstorms in Bengal and Assam. In Bengal, these are known as “Kalbaisakhi” and in Assam, these are known as “Bardoli Cheerha”. These showers are helpful for tea, jute and rice cultivation.

Loo – These are hot, dry and oppressing winds blowing in northern plains from Punjab to Bihar.

The Southwest Monsoon Season



- With rapid increase of temperature in May in northwestern plains, low pressure conditions get further intensified.
- They become enough powerful to attract the trade winds of southern hemisphere coming from the Indian Ocean. These southeast trade winds cross the equator and enter Bay of Bengal and Arabian Sea and collect moisture.
- After crossing the equator, they follow a southwesterly direction and hence are known as southwest monsoons.
- Monsoon bursts in first week of June in coastal areas of Kerala, Karnataka, Goa and Maharashtra.

The southwest monsoon approaches landmass in two branches –

The Arabian Sea Branch

This branch originates over the Arabian Sea and further splits into 3 branches –

- One branch is obstructed by Western Ghats. Soon, the winds become cool and windward side of Sahyadris and Western coastal plain receive heavy rainfall.
- Another branch strikes the coast North of Mumbai. After shedding rains in Chhotanagpur plateau, this branch mingles with Bay of Bengal Branch
- Third branch strikes the Saurashtra and Kuchchh. It passes over western Rajasthan and along the Aravalis. It also joins the Bay of Bengal branch.

The Bay of Bengal Branch

- This branch strikes the coast of Myanmar and Southeast Bangladesh.
- Arakan hills along the coast of Myanmar deflect a portion of this branch towards Indian subcontinent.
- Hence, monsoon enters West Bengal from South-Eastern direction.

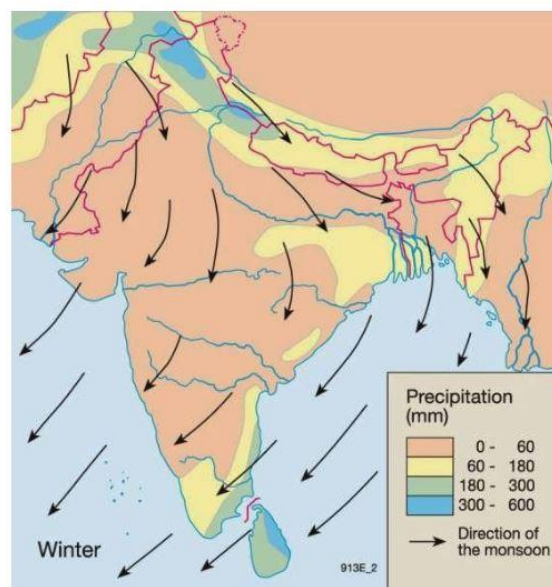


Point to be Noted – Tamil Nadu coast remains dry during Southwest monsoon season. But why?

This is because of two reasons –

- Tamil Nadu coast is situated parallel to the Bay of Bengal branch.
- Tamil Nadu lies in the rain shadow area of Arabian Sea branch.

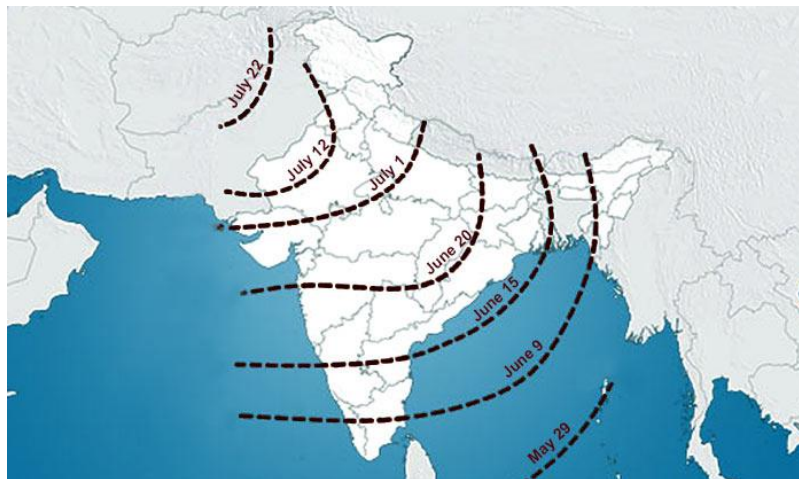
The Retreating Monsoon Season



- By the end of September, the Southwest monsoon becomes weak as the low - pressure trough starts moving southwards. This is due to southward movement of the Sun.
- This season is marked by clear skies and high temperature. Owing to high temperature and humidity, the weather becomes oppressive. This is known as “October Heat”
- In this season, weather in Northern India is dry but it rains over the eastern part of Peninsula.
- This rain in peninsula is associated with the passage of cyclonic depression which originate over Andaman Sea. These tropical cyclones are destructive and every year they bring disaster.

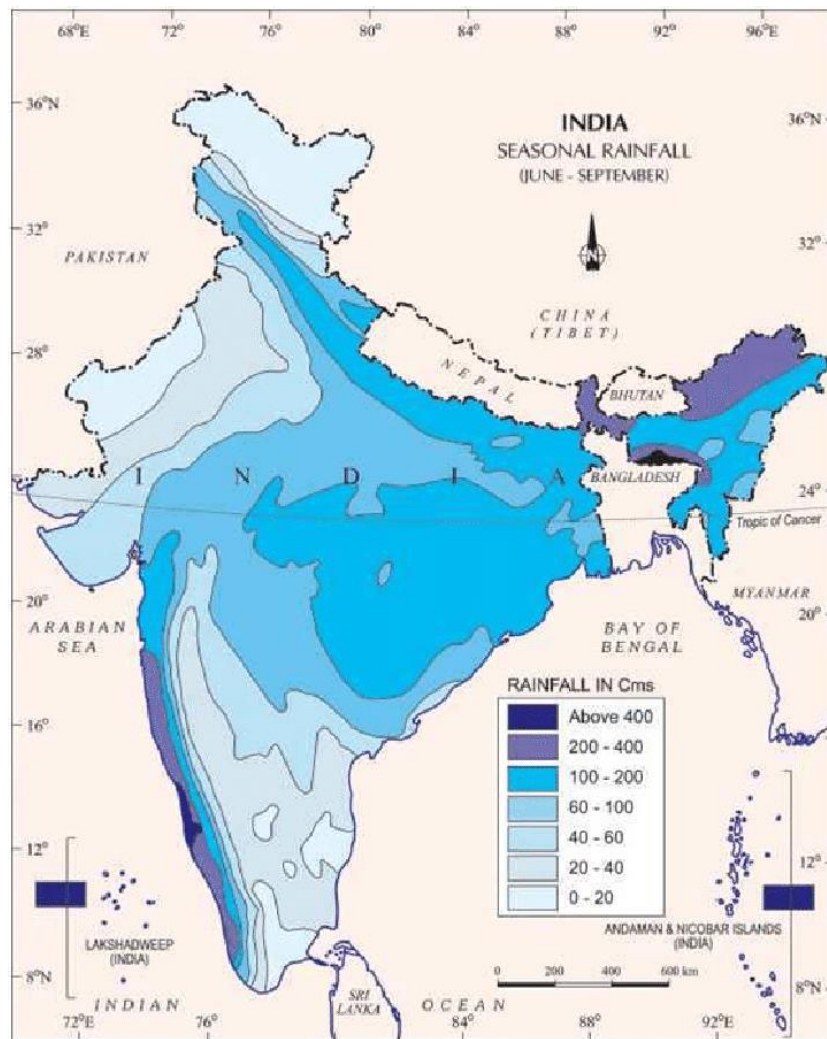
The Nature of Indian Monsoon

Onset of the Monsoon



- In summers, the Sun shines vertically over tropic of cancer resulting in intense low pressure in Northwestern part of the subcontinent.
- Since the pressure in Indian ocean is high, low-pressure cell attracts the southeast trades across the equator.
- These trades move towards Indian subcontinent and meets Indian landmass from Southwest direction. Hence, these are known as southwest monsoon winds.
- The southwest monsoon sets in over Kerala coast by 1st June.

Rain Bearing Systems and Rainfall Distribution



- There are two rain bearing systems in India –
 - First originate in Bay of Bengal region causing rainfall over Northern plains
 - Second is Arabian sea current of Southwest monsoon which brings rain to west coast of India.

Break in the Monsoon

- During the southwest monsoon period after having rains for a few days, if rain fails to occur for one or more weeks, it is known as break in monsoon.
- The break in monsoon is due to the following reasons –
 - In northern India, rains are likely to fail if the rain bearing storms are not very frequent along the monsoon trough.
 - Over the west coast, when wind starts blowing parallel to the coast, it results in failure of rains.

Climatic Regions of India

India has a monsoon type of climate. However, there are regional variations based on temperature and rainfall. Koeppen classified climatic regions on the basis of monthly value of temperature and rainfall. As per Koeppen's classification major climatic types of India are –

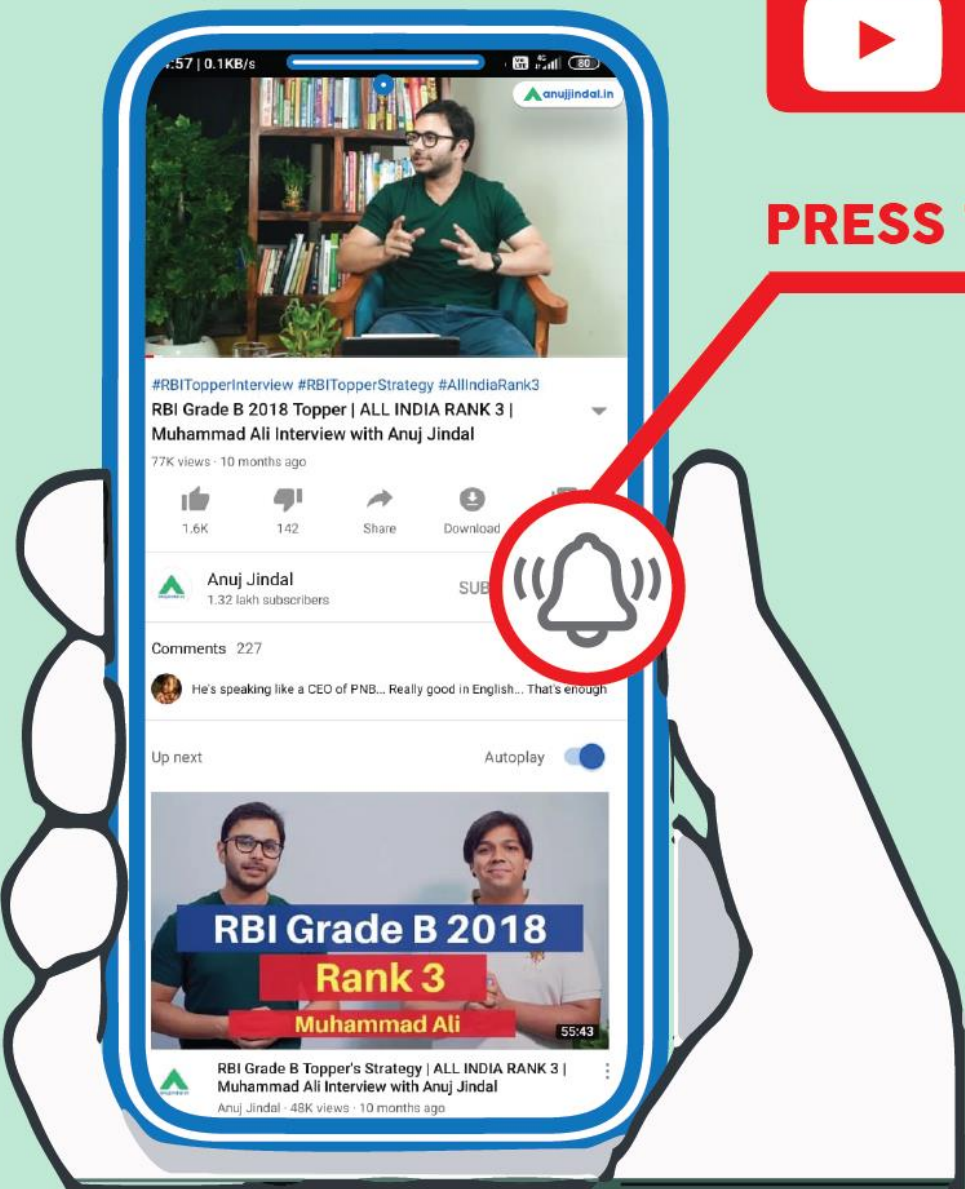
Type of Climate	Areas
Monsoon with short dry season	West coast of India, Southern Goa
Monsoon with dry summer	Coromandel coast
Tropical savannah	Peninsular plateau, south of tropic of cancer
Semi-Arid steppe climate	Northwest Gujarat, western Rajasthan and Punjab
Hot desert	Western most Rajasthan
Monsoon with dry winter	Ganga plains, Eastern Rajasthan, northern MP
Cold humid winter with short summer	Arunachal Pradesh
Polar type	J&K, Himachal Pradesh and Uttarakhand



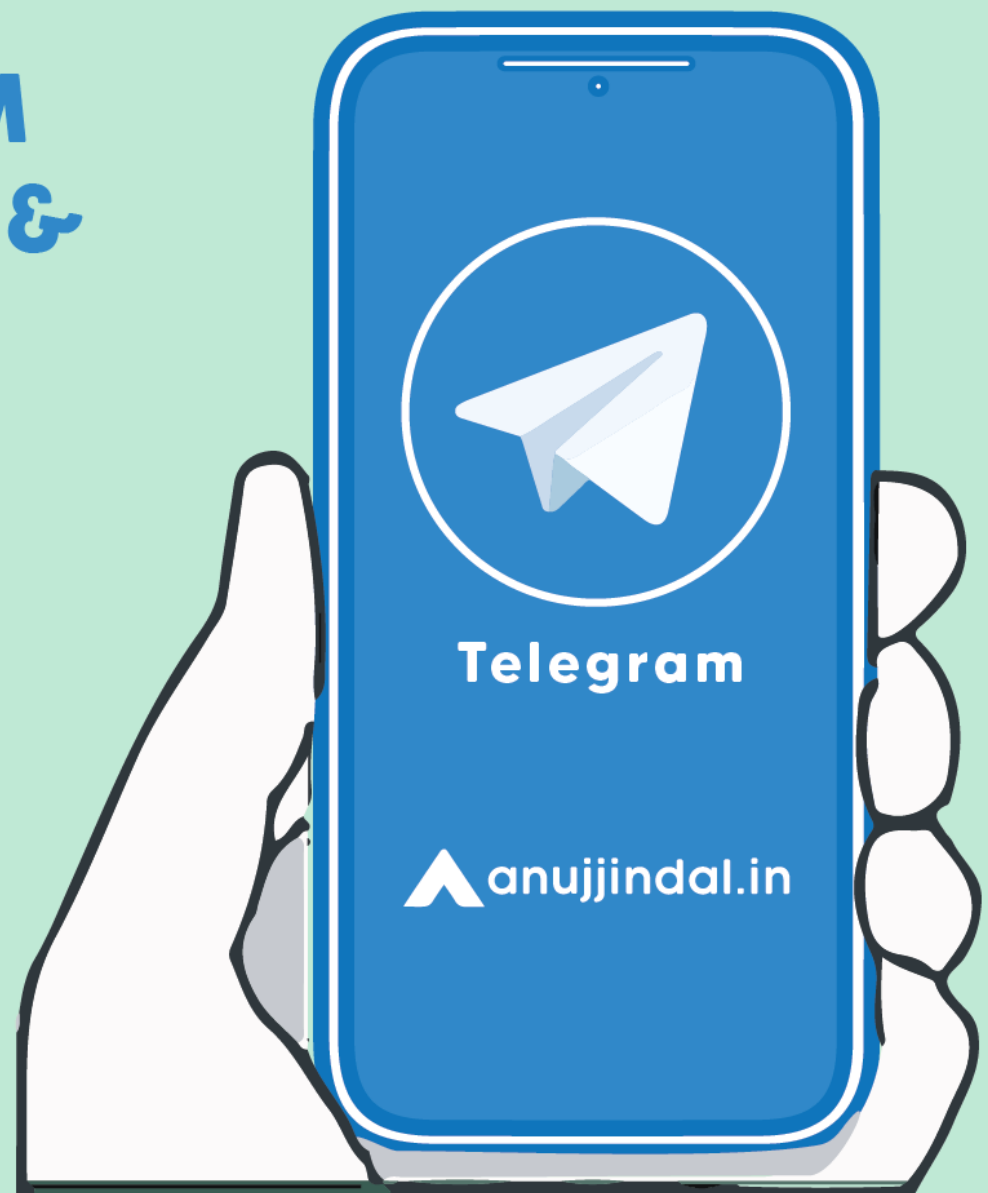
SUBSCRIBE



PRESS THE "BELL ICON" !



Join our
TELEGRAM
CHANNEL &
GROUP





HALL OF FAME



All Indian Rank 01

Rajendran S

SEBI



All India Rank 03

Ali

RBI



All India Rank 06

Aditya Sood

RBI



All India Rank 10

Sameer

RBI



All India Rank 11

Abhishek

RBI



Cleared RBI Grade B

Sanskar Vijay



Cleared RBI Grade B

Sanjay Meena



Cleared RBI Grade B

Yash Gupta



Cleared RBI Grade B

Ila Sahu



Cleared RBI Grade B

Argha Banerjee



Cleared RBI Grade B

Suchana Ghosh



Cleared NABARD

Vinay Verma



Cleared NABARD

Lal Chand Kumar



Cleared NABARD

Krishna Kumar Singh



Cleared NABARD

Anshu Goel



Cleared NABARD

Jatin Kumar



Cleared NABARD

Atul Yadav



Cleared SEBI

Abhishek Kumar



Cleared SEBI

Vishwanidh Singh



Cleared SEBI

Gopika Jayan



Cleared SEBI

Vasant Kesari



Cleared SEBI

Swetha Bodagala



NET with 98 Percentile

Anushka Keshri



JRF with 96.92 Percentile

Vaishali Jadon



NET with 89.27 Percentile

Srishti Gupta



JRF with 72 Percentage

Abhishek Mohanty



NET with 68 Percentage

Dinesh Mohan



JRF with 64.66 Percentage

Adhwaresh Pandey

ENROLL NOW !

 youtube.com/anujjindal

 anujjindal.in

Call us at : +91 9999466225