

4. Climate



Study figure 4.1 and 4.2 and answer the following questions:

- Considering the isotherms of Brazil, what is the average range of temperature in Brazil?
- In which area does it rain more?

- From which directions are winds flowing towards Brazil?
- What could be the reason behind that?
- What could be the obstruction in the way of these winds?
- Which type of rainfall will occur because of these winds?



Figure 4.1

- Correlate these winds and rainfall.
- In which part of Brazil are the average temperatures low?
- Identify the rain-shadow area in Brazil. Describe its climatic characteristics.
- In which region do you find a higher temperature?
- Considering the latitudinal extent of Brazil, where will you find temperate climate in Brazil?
- Describe the winds blowing between 0° to 5° N and S zones.
- Which method has been used to show distribution in this map?

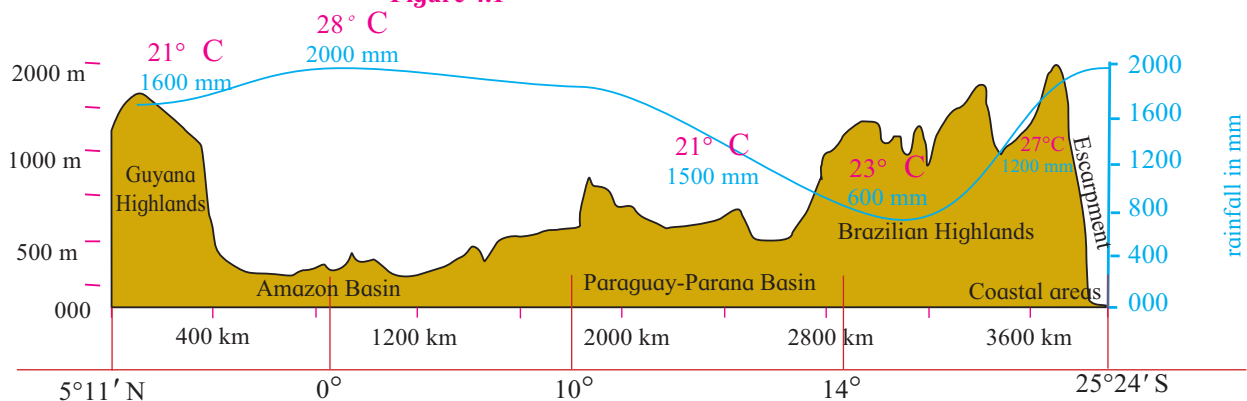


Figure 4.2 : Cross-section of Brazil's physiography

— Annual Average Rainfall



INDIA:

Observe Fig 4.3 and write the answers.

- Which region gets more than 4000mm of rainfall?
- Identify the regions with maximum and minimum temperatures?
- In which direction is the temperature increasing?
- Identify the direction of the winds shown. What are they known as?
- Which winds are responsible for the rainfall in India?
- Some part of Rajasthan is under desert? What could be the reason for it?
- Draw the main parallel of latitude passing through India which affects its climate. (Refer to. Fig. 2.1)
- In which part of Peninsular India are semi-arid climatic conditions found and why?



Make friends with maps!

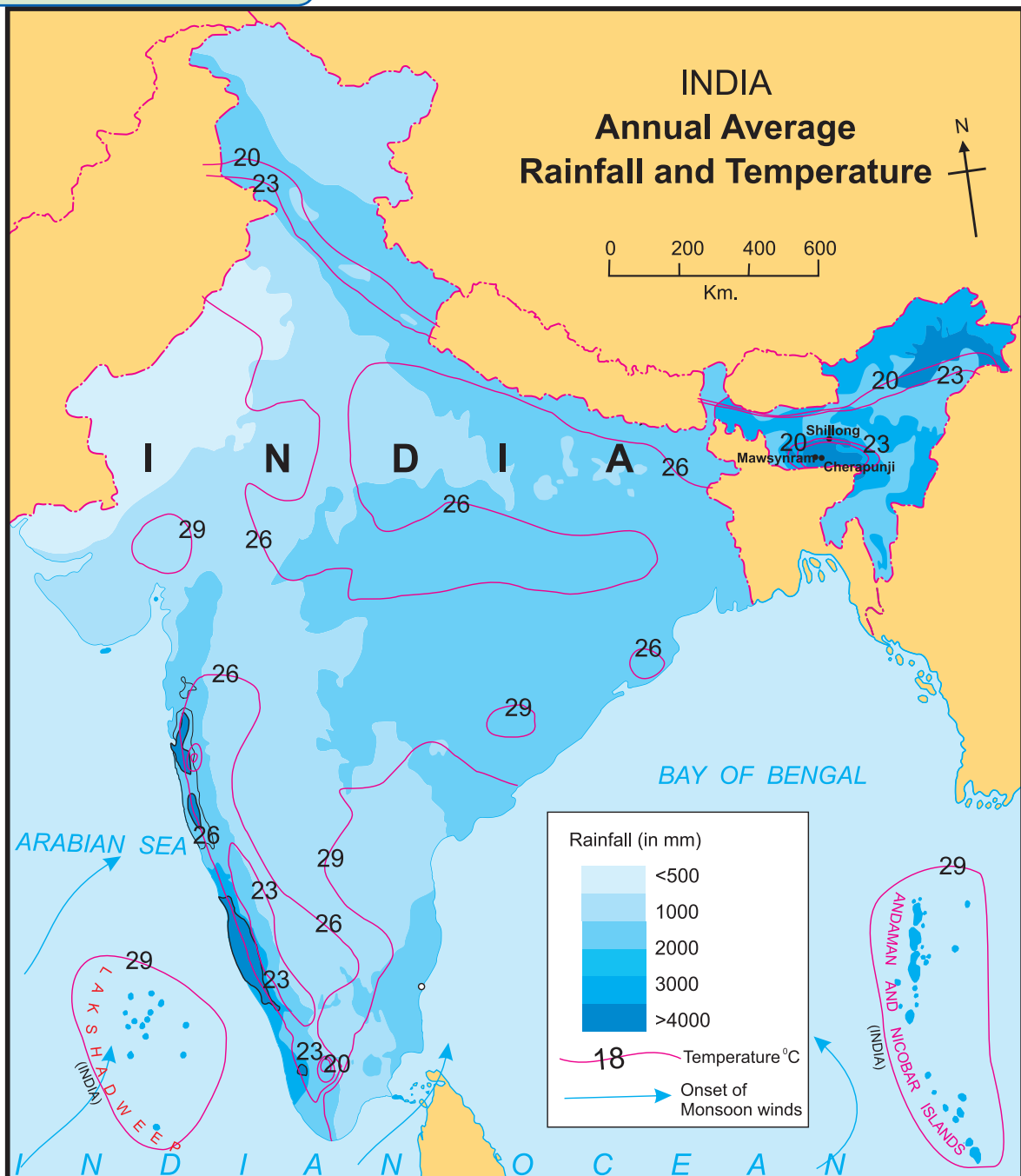


Figure 4.3



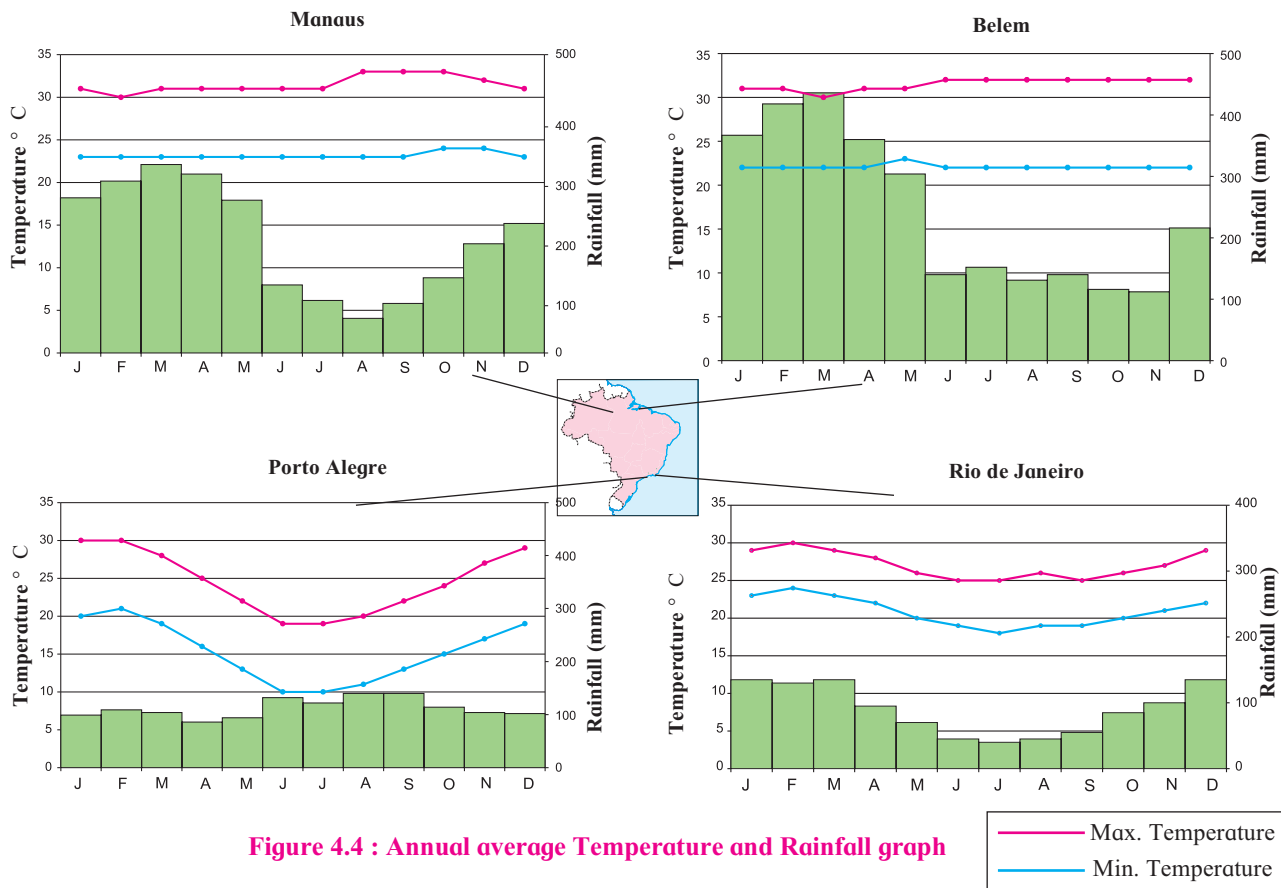


Figure 4.4 : Annual average Temperature and Rainfall graph



Can you tell ?

Study the graphs given in fig 4.4 and answer the following questions.

- In which month is the highest temperature found in all the four cities?
- In which month does it rain the most in the given cities ?
- When does Brazil have its rainy season ?
- Which city has the maximum range of temperature? How much is it?
- What type of climate will be found in Rio De Janerio ?

Geographical explanation

BRAZIL:

Because of the vast latitudinal extent of Brazil, it experiences wide range of climatic variations in climate. For example near equator it is hot while temperate type of climate is found near Tropic of Capricorn. Brazil gets rainfall from the South-East Trade winds and the North-east Trade Winds.

Parts of the Brazilian highlands extend upto the northern coast. The escarpments act as an obstruction to the winds blowing from the sea and cause orographic type of rainfall in the coastal region. Beyond the highlands, the effect of these winds gets reduced. As a result, the rainfall is minimal. This region is a rainshadow region. This region is called 'Drought Quadrilateral'. Considering the temperatures in Brazil, the northern part of Brazil is hot while the

Give it a try.

Considering the various factors affecting Brazil's climate, complete the adjoining table.

Regions	Climatic characteristics
Amazon Valley	
Highlands	
Pantanal	
Northern Coastal region	
Southern Coastal region	
Southernmost region of Brazil	



temperatures in the southern part are comparatively lower. Seasonal variations are found in this pattern. Near the equator at Brazilian coast, temperature does not vary much.

In the coastal regions near the equator in Brazil, differences in temperatures are negligible. The winds move in the vertical direction in this region. Similarly, the convergence zone of the trade winds is weak here. As a result, cyclones are not formed. That is why tropical cyclones rarely visit the coasts of Brazil.

Most of the part of this country lies in the tropical zone. The equator passes through the northern part of the country. The temperature is more in this region. The average temperature in the Amazon valley is $25^{\circ} - 28^{\circ}\text{C}$. The climate is cooler in the Highlands. Because of the proximity to the sea, the coast experience mild and humid climate. The Amazon valley receives around 2000 mm of rainfall, while the north-eastern coast receives 1000 to 1200 mm of rainfall.



Can you tell?

Study the graphs given in figure 4.5 and answer the following questions:

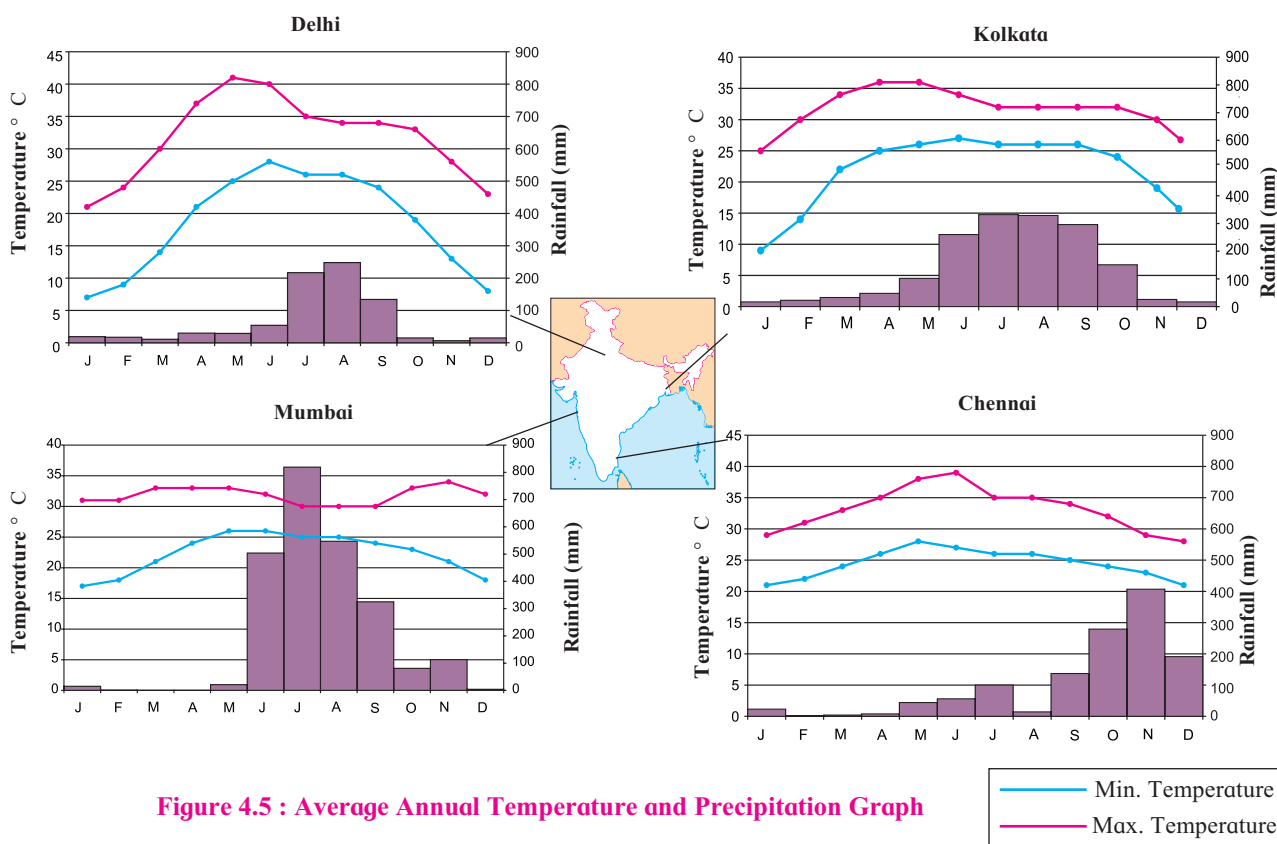


Figure 4.5 : Average Annual Temperature and Precipitation Graph

- What difference do you find in the rainy seasons of Chennai and other cities of India? Why?
- What similarity do you see in the temperature curves of Delhi and Kolkata?
- Calculate the average range of minimum and maximum temperatures of all the four cities.
- In which city is the range minimum? What can you infer from this?
- In which city is the range maximum? What can you infer from this about its climate?
- Based on the temperature and rainfall of Mumbai, comment upon its climate.
- Classify the cities as cities with equable and extreme climates.

Geographical explanation

INDIA :

India's climate is 'monsoon' type. The sunrays are perpendicular upto the Tropic of Cancer, which passes through the middle of the country. As a result, average temperatures are higher throughout the year. Also, temperatures



increase towards the south. In winters, the temperatures drop to -40° Celsius in Jammu and Kashmir and parts of mountainous regions of Himalayas.

The diversity in climatic conditions of India is due to the latitudinal location and altitude of the place. The Indian Ocean and the Himalayan ranges exert a great influence on the climate of India and the origin of Monsoons.

Very cold winds blowing from the north are obstructed by the Himalayas. Similarly, the South-West Monsoons retreat from the Shiwalik and Himachal ranges of the Himalayas. Because of high temperatures in summers, low pressure area develop in Punjab plains and the Thar desert of Rajasthan. This attracts winds blows from the high pressure region in the Indian Ocean which start blowing towards the mainland of India. These moisture-laden winds bring rainfall. Because of the obstruction caused by the Eastern and Western Ghats, it rains more in the coastal areas. The rainfall reduces in the leeward side of the hills. These winds blow parallel to the Aravalis. As a result, rainfall is low in parts of Gujarat and Rajasthan. Later, these winds move towards the Himalayas. Their moisture-carrying capacity increases. Orographic type of rainfall occurs because of the natural obstruction of the Himalayas. These winds return from the Himalayan ranges and their retreating journey starts. While blowing from the north-east towards the Indian Ocean, these winds bring rainfall again to some parts of the Peninsula. This is the Retreating Monsoon season in India. In general, the climate of India is hot throughout the year.

As the Tropic of Cancer passes through the middle of India, India is considered to be in the tropical region. India faces natural disasters like erratic rainfall, droughts, cyclones, floods, etc. frequently.

There are four seasons as per the Indian Meteorological Department.

- The hot weather season
- The season of rainfall (Monsoon)
- The season of Retreating Monsoon
- The cold weather season



Use your brain power!

- 👉 Group the months into seasons for a whole year according to the charts given.
- 👉 Find out more about different ways of classification and the seasons. For example, what is summer?



Colours of Both

Considering the location extent and climatic conditions of both the countries, write months as per in the seasons.

Seasons /	India	Brazil
Summer		
Winter		

Observe the pictures given below from figure 4.6 to 4.13 and write a brief description about them.



Figure 4.6 (a) : Traffic Jam Due to Rainfall (Brazil)



Figure 4.6 (b) : Traffic Jam Due to Rainfall (India)





Figure 4.7 : Dry land in drought affected region (India)



Figure 4.8 : Snowfall (India)



Figure 4.9 : Rainfall (Brazil)



Figure 4.10 : Deforestation (Brazil)



Figure 4.11 : Well- A source of water (India)



Figure 4.12 : Drought Quadrilateral region (Brazil)



Figure 4.13 : Paddy farming (India)



Do you know ?

- Temperature in Ganganagar in Rajasthan soars to 50°C in June.
- Kargil town often experiences temperatures as low as -48°C in winter.
- Mawsynram (11,872 mm) and Cherrapunji (11,777 mm) in East Khasi Hill district of Meghalaya are the wettest places not only in India but also in the world.
- The Jaisalmer in Western Rajasthan is driest part of India. It receives less than 120mm of rainfall annually.
- Tamil Nadu receives maximum rainfall during the retreating monsoon season.





Find out.

Cherrapunji and Mawsynram receive more than 11000 mm of rainfall. Shillong located very near to these places receives only 1000mm of rainfall. What could be the reason?



Give it a try.

Considering the location, extent of Brazil and India, look for the differences in the elements of climate like temperature and rainfall as per direction. Write a short note on it.



Do you know ?

- Brazil is a tropical country. It normally does not receive snowfall. But in exceptional conditions, southern polar air masses reach the southern part of Brazil. This causes snowfall here. Snowfall has been recorded in 1879, 1957 and 1985.



Give it a try.

In which part of India are three crops grown in a year? How is this related to the rainfall over there?



Exercise

Q. 1. Write the names of the States/Regions in appropriate columns :

Bihar, Tocantins, Pernambuco, Alagoas, Eastern Maharastra, Western part of Rajasthan, Gujarat, Rio Grande Do Norte, Paraiba, Western Ghats, Eastern Himalayas, Western Andhra Pradesh, Roroima, Amazonas, West Bengal, Roraima, Rio Grande do Sul, Santa Catarina, Goa

States /Regions	India	Brazil
High rainfall		
Moderate rainfall		
Low rainfall		

(Note: Can you think of an easier method of answering this question?)

Q. 2. State whether right or wrong. Rewrite the wrong sentences.

- The fact that Brazil lies on the equator affects its climate in a big way.
- India and Brazil have the same seasons at the same time.
- India faces tropical cyclones frequently.
- Brazil gets a lot of rainfall because of the southwest monsoon winds.

Q. 3. Give geographical reasons:

- The northeastern part of Brazilian Highlands receives very less rainfall.
- Snowfall doesn't always occur in Brazil.

- Convectional type of rainfall is not prominent in India.
- Tropical cyclones occur rarely in Brazil.
- There is not much difference in the range of temperature in Manaus.
- India receives precipitation from the North-East Monsoon winds too.

Q. 4. Answer the following questions:

- Describe in brief the changes occurring in the climatic conditions of India while going from south to north.
- Explain the importance of the Himalayas and the Indian Ocean with respect to the climate of India.
- Discuss the factors affecting climate of Brazil.
- Compare the climates of Brazil and India.

Q. 5. With the help of the internet, obtain information regarding annual average temperatures of the continental location of Brasilia and Bhopal and explain it with the help of a graph.

