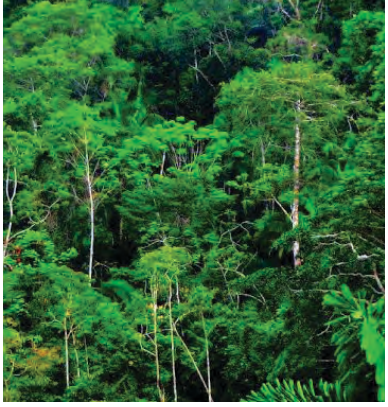
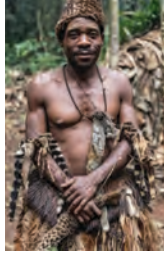
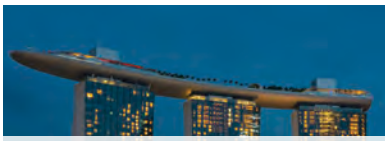








3 From The Rainy Forests to The Land of Permafrost

It was yesterday that I arrived here in Naryanmar from St. Petersburg. This town, located on the banks of River Pechora, attracts many tourists like me. The objective of the expedition team, including myself, is to understand the characteristic features of the Tundra region on foot. The Tundra, covered by snow throughout the year, reveals a world of wonders, especially for someone from Kasai Province of Congo. For someone like me, living in the equatorial region, which receives maximum insolation, it is beyond words to describe the astonishment of reaching and viewing a region so close to the pole. The diversity of flora and fauna, along with the stark contrast in human life between these two regions, are experiences that must be encountered firsthand. In the Tundra, the temperature during July, the hottest month, remains below 10 degrees Celsius, while in winter, it drops to as low as -50 degrees Celsius. Then, I just thought of my home country, where high temperature prevails throughout the year. After putting on thick woollen clothes and caps, we got ready to explore the Tundra. Along with our breakfast, we had pelmeni, an indigenous dish made with fish. In Congo, cassava is an integral part of almost every dish. Kwanga, cooked cassava served in banana leaves; Fufu, made from pounded cassava; and Sombe, made from cooked cassava leaves, are the prominent cassava dishes. Curiosity stirred in my mind as I compared the food habits of my home country with those of the Tundra…

Visuals from the Tundra Region
Fig 3.1

Visuals from the Equatorial Rain Forest

Fig 3.2

The excerpt you have read is part of the description of a Tundra expedition carried out by a traveller from Kasai Province of the Republic of Congo, located in the equatorial region.

You have understood from the previous chapter that different climatic regions exist on Earth. Haven't you noticed that someone who has been living in a place located in the equatorial climatic region wrote in his travelogue that entirely different conditions exist in Tundra, another climatic region he visited?

Let's explore the characteristic features of these two regions.

With the help of an atlas, find the locations of Congo and Naryanmar Town, and identify the climatic regions they belong to.

You have identified that Congo belongs to the Equatorial Climatic Region?

Now, Let's discuss the features of the same.

The map given below (fig 3.3) illustrates places that belong to the equatorial climatic region. With the help of an atlas answer the questions based on the map provided.

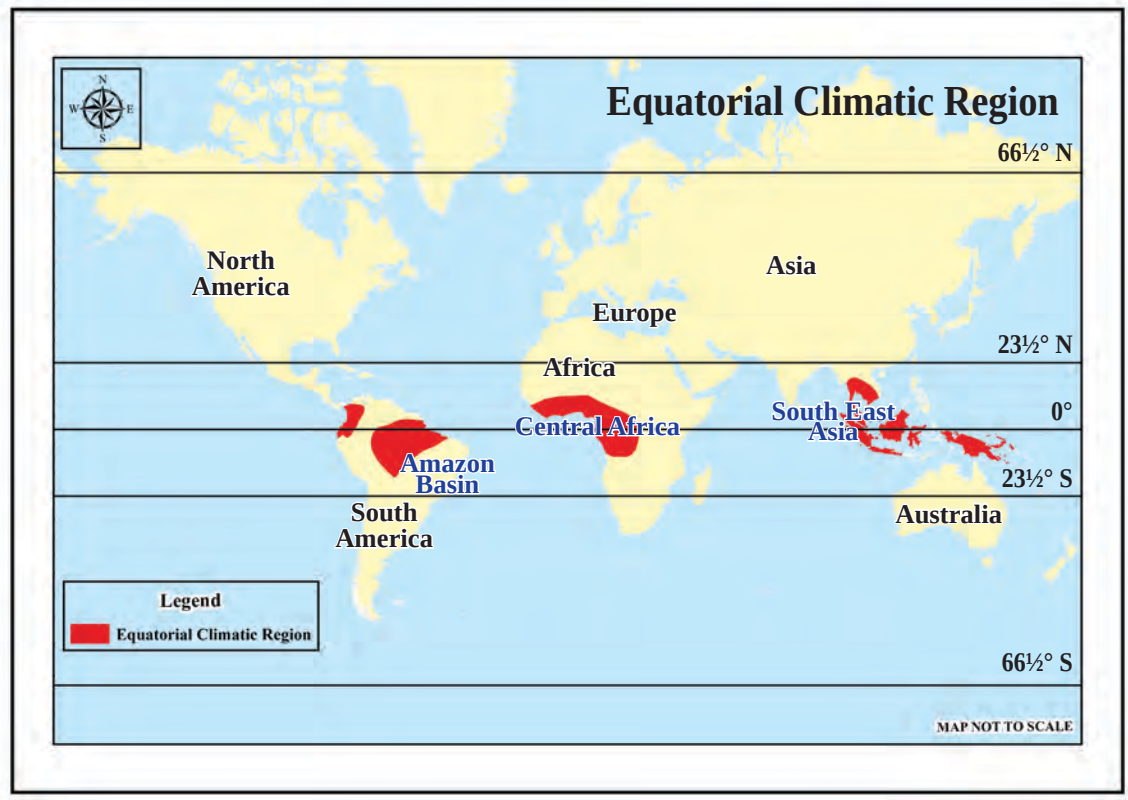


Fig 3.3

- Which continents does the Equatorial climatic region spread across?
- Identify the places that belong to this climatic region.
- To which heat zone does this climatic region belong?
- Identify the countries that are included in the equatorial climatic regions of continents like Asia, Africa, and South America, and complete the table provided.

Continents	Countries
Asia	• Indonesia • • •
Africa	• Democratic Republic of Congo • • •
South America	• Brazil • • •

Mark the places that belong to the equatorial region on the outline map of the world and include it in My Own Atlas.

Why is this climatic region called the equatorial climatic region?

You might have acquired a basic understanding of the latitudinal extension of the equatorial region and the places that belong to this region. Now, let's examine the features of the climate that prevail over this region. One of the salient features of the equatorial climate is that the temperature remains more or less the same throughout the year. In the equatorial region, there is no significant variation in the annual and diurnal ranges of temperature. The mean monthly temperature and the mean annual temperature are both around 27 degrees Celsius.

There is no winter in the equatorial climatic region. Do you know why this peculiar type of climate is experienced here? You have understood that the equatorial region receives vertical solar rays throughout the year. The high rate of insolation received here causes consistently high temperature. Because of this, the region does not experience winter.

The mornings experience moderate temperature but as the day progresses, it increases considerably. This significant rise in temperature causes a high rate of evaporation, followed by heavy downpours of convectional rain in the afternoons.

Haven't you learned about the convectional rainfall in the previous chapter?

How does convectional rainfall occur? What are the features of convectional rainfall? Discuss in the classroom and prepare a note.

Does Kerala experience convectional rainfall, and in which months does this rainfall occur in Kerala?

The equatorial climatic region is the region where the rainfall is heavy and well-distributed throughout the year. The annual rainfall in this region is between 175 cm and 250 cm. High temperature and high rate of evaporation are the reasons for the heavy rainfall. Along with convectional rainfall, orographic rainfall is also received in certain places. It is the mountainous areas of Indonesia and Africa where orographic rainfall is experienced.

The atmospheric disturbances caused by the convergence of air currents in the Doldrums occasionally lead to intermittent rainfall of cyclonic origin.

Unlike in the monsoon climate or the savanna region, there is no distinct dry season in the equatorial climatic region. This is due to the abundant rainfall received in the equatorial region throughout the year.

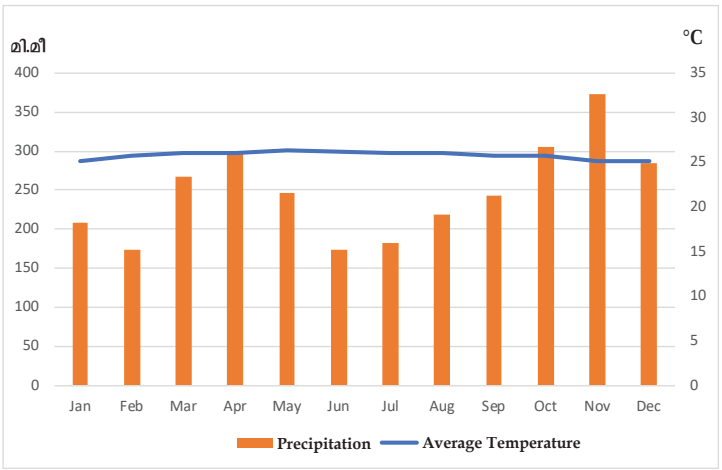
Doldrums

The equatorial region receives a high rate of insolation throughout the year. As a result, a low-pressure region develops along the equator. Horizontal movement of air is minimal in this region. This region is called the doldrums. It is also where the trade winds from both hemispheres converge.

The following diagrams represent the distribution of annual rainfall and temperature recorded in two different places of the equatorial climatic region. Analyse the diagrams and answer the questions that follow.

Month	Precipitation (mm)	Average Temperature (°C)
January	209	25.1
February	174	25.7
March	268	26
April	300	26.1
May	246	26.3
June	174	26.2
July	183	26.1
August	219	26
September	243	25.8
October	305	25.7
November	373	25.2
December	284	25.1

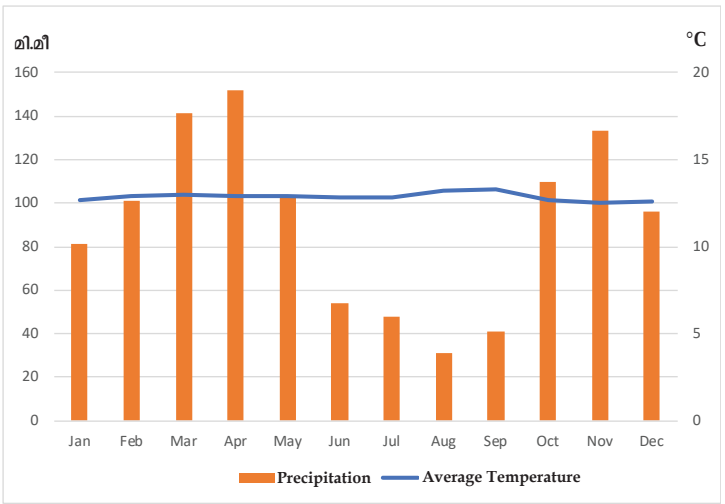
Source: Certificate Physical and Human Geography - Goh Chengleong



Kuala Lampur
Fig 3.4

Month	Precipitation (mm)	Average Temperature (°C)
January	81	12.7
February	101	12.9
March	141	13
April	152	12.9
May	103	12.9
June	54	12.8
July	48	12.8
August	31	13.2
September	41	13.3
October	110	12.7
November	133	12.5
December	96	12.6

Source: Certificate Physical and Human Geography - Goh Chengleong



Bogota
Fig 3.5

- Find the highest and the lowest mean monthly temperatures for each place.
- What is the annual range of temperature at each place?
- Is there any month that does not receive rainfall?

Haven't you understood that the equatorial climatic region generally receives high temperature and abundant rainfall throughout the year?

In spite of being situated in the equatorial climatic region, Kilimanjaro, the highest mountain peak in Africa is snow-covered throughout the year.

Why is Kilimanjaro snow-covered throughout the year?

Kilimanjaro
Fig 3.6

Excessive humidity, high rates of insolation and intense heat make the days in the equatorial climatic region quite oppressive. However, the moderating effect of winds blowing from the sea brings some relief along the coastal areas. As a result, coastal regions tend to be more populated.

Do you know?

The local wind called Harmattan blowing along the Guinea coast during the night reduces the temperature of that region.

Conduct a classroom discussion to compare the climatic conditions experienced in the equatorial climatic region and Kerala. Have you understood how the climate in the equatorial region differs from the climate of Kerala? The significant features of the equatorial climatic region include consistently high temperature and heavy rainfall throughout the year.

The high temperature and abundant rainfall in this region pave the way for luxuriant vegetation growth. Let's explore the diverse natural vegetation found in the equatorial climatic region, which plays a significant role in maintaining the global ecological balance.

Natural Vegetation

Luxuriant forests, called tropical rainforests, are one of the salient features of this climatic region. These forests spread over the Amazon Basin in South America, West-Central Africa, Indonesia, the Malay Peninsula, and New Guinea.

Rainforest in Congo basin
Fig 3.7

Rainforest in Amazon basin
Fig 3.8

The rainforest found in the Amazon Basin is called Selvas. In this climatic region, there is no particular season for seeding, flowering, fruiting, and shedding leaves. As these processes occur year round in the tropical rainforest, they remain evergreen throughout the year. Hence, these rainforests are also called equatorial evergreen forests.

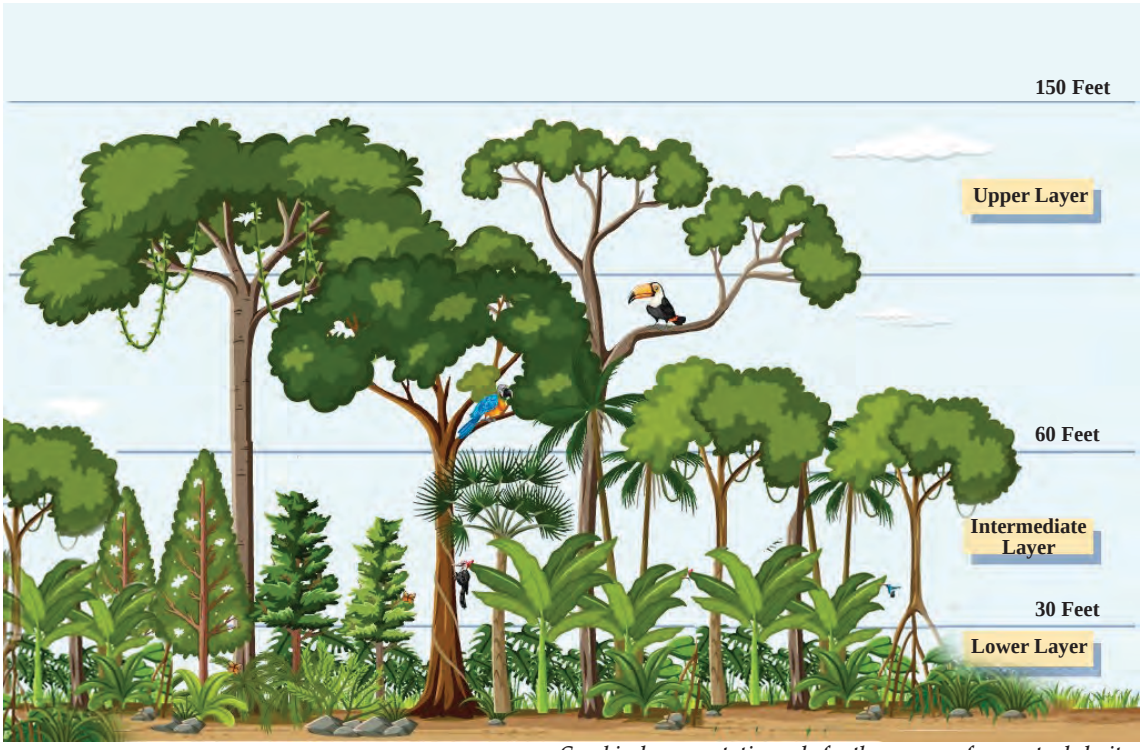
Let's explore the important features of the equatorial evergreen forests.

A wide variety of evergreen trees, including ebony, mahogany, cinchona, rosewood, and others are seen abundantly in these forests.

Besides large trees, smaller palms, climbing plants like lianas, epiphytes like orchids, numerous parasitic plants, ferns, and grasses like lalang grow luxuriantly here.

Another significant feature of these rainy forests is that multiple species co-exist in a particular area. It has been estimated that in the Malaysian rainforests, as many as 200 species of plants may be found in an acre of forest.

Plants grow to varying heights depending on the availability of sunlight. Trees form canopies at different levels, according to their heights. Observe the diagram (fig 3.9) given below and identify the distinct canopy layers formed by trees at different heights.



Graphical representation only for the purpose of conceptual clarity

The distinct canopy layers formed by plants at different heights
Fig 3.9

These evergreen rainforests absorb carbon dioxide and produce oxygen at a massive rate. As a result, these forests are often referred to as the 'Lungs of the World'.

In equatorial rainforests, the forest is cleared at certain places for shifting cultivation. When these clearings are abandoned after cultivation, less luxuriant secondary forests spring up. Such secondary forests are called 'belukar' in Malaysia. In the coastal areas and brackish swamps, mangrove forests thrive.

Haven't you identified the characteristic features of the flora in the equatorial climatic region? Now, let's discuss the diversity of fauna in this region.

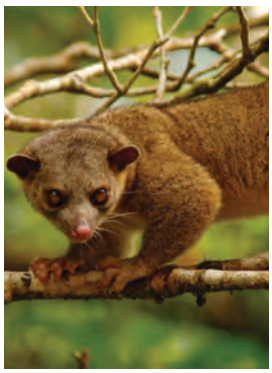
The equatorial climatic region is rich in the diversity of wildlife. Because of the climatic characteristics of this region, most of the wildlife thrive in trees. The animals which spend most of their lives in trees are called arboreal animals.

Since sufficient sunlight does not penetrate to the floor in these dense forests, undergrowth is absent. As a result, herbivores that feed on this undergrowth are not commonly seen. Consequently, carnivores that prey on them are also negligible in number.


Orangutan


Howler Monkey


Emerald Tree Boa


Kinkajou


Lemurs

Arboreal animals
Fig 3.10

Wildlife in this region includes lemurs, chimpanzees, orangutans, tree-dwelling reptiles, hippopotamuses, alligators, and many birds such as parrots, toucan and hornbills.


Alligator


Hippopotamus


Anaconda


Macaw

Fig 3.11

With the help of information technology create a digital album containing the pictures of fauna in the equatorial climatic region.

You have understood the physical features of the equatorial climatic region. Now, let's discuss human life in this region. The relationship between humans and their environment plays a

crucial role in shaping human life. Due to the physical conditions prevalent in the equatorial climatic region, this area is sparsely populated.

The Pygmies of Africa, the Indian tribes of the Amazon Basin, and the Orang Asli of Malaysia are some of the important native groups of this region.

The Indigenous people of Equatorial Rain forests
Fig 3.12

Pygmies

Pygmies are the indigenous people found in different parts of Africa, especially in the Congo Basin. They are comparatively short-statured. Traditionally, they live by hunting and heavily depend on the forest for subsistence. They also gather fruits, pulses, honey and other forest resources for food. Their diet includes meat, fish, roots and fruits. They follow a nomadic lifestyle and often live in small temporary huts made of leaves and branches. Pygmies live in groups. Decisions are also made collectively. They follow their traditional rituals strictly. Their rituals and beliefs are closely related to the environment. Indigenous musical instruments, music and dance are important parts of their culture.

The tribes living in these rainforests sustain themselves by hunting animals, gathering nuts and fruits, and fishing. The traditional method of cultivation practiced here is shifting cultivation, also known as slash-and-burn agriculture. Crops are grown after clearing a forest area by cutting and burning the trees. Cultivation continues until the land loses its fertility. Once the soil becomes infertile, the tribes move to another forest area, leaving the previous clearings behind, and

Burning forest for slash-and-burn agriculture
Fig 3.13

Cocoa Plantation in West Africa
Fig 3.14

Oil Palm Plantation in Indonesia
Fig 3.15

repeat the same process. Crops such as manioc (tapioca), yam, maize, bananas, and groundnuts are primarily grown through shifting cultivation.

With the arrival of Europeans, plantation agriculture was started extensively. The prevailing climate in this region has proven to be highly favourable for the cultivation of certain crops that are highly significant for industrial purposes. An important crop among them is rubber. Malaysia and Indonesia are the leading rubber-producing countries in the world.

Another plantation crop widely cultivated in the equatorial climatic region is cocoa.

Other major plantation crops extensively grown here include oil palm, coconuts, sugarcane, coffee, tea, bananas, and pineapples.

With the help of information technology, prepare a table containing a list of major plantation crops in the equatorial climatic region and the corresponding areas where they are grown.

Most of the natives in the equatorial climatic region are nomads. Most houses are built with locally available resources.

Pictures of houses seen in different places of the equatorial climatic region are given below; have a look at them.

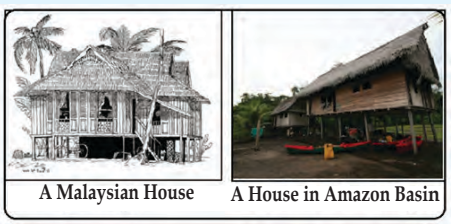
Fig 3.16

We should never assume that most of the people living in the equatorial climatic region are either primitive tribes or nomads, residing in houses built with wood and stones. On the contrary, there are many beautiful tourist destinations and modern cities here. Cities like Equitas, Quito Bogotá, Singapore, Jakarta, and Manaus and Belem cities of Amazon basin are a few examples. In Malaysia, Singapore, and Eastern Brazil, significant development has also been made through systematic planning and hard work.

With the help of information technology, find out the major cities in the equatorial climatic region. Locate them on an outline map of the world and include it in 'My Own Atlas'.

Shelters in the Amazon and Malaysian Equatorial Region

In the Amazon Basin, people live in a distinct type of house called Maloca. Malocas have steep-sided slanting roofs. Houses thatched with coconut leaves are also seen here. Villages in the equatorial regions of Malaysia are called Kampongs. Houses are mainly made of wood here. As the houses are constructed with wood, bamboo, and leaves, extreme heat is not felt inside these houses.



A Malaysian House | A House in Amazon Basin

Equitas
Fig 3.17

Bogota
Fig 3.18

Amazon Forest and Manaus City
Fig 3.19

Singapore
Fig 3.20

Sleeping Sickness

Sleeping sickness is a type of disease found in equatorial rainforests. It is spread through Tse Tse flies. Another fatal disease in the equatorial rainforests is yellow fever, caused by mosquitoes.

Though the equatorial climatic region is blessed with rich forests, numerous rivers, abundant water, and scenic beauty, it encounters many challenges. Let's glance at them.

We know that the hot and wet equatorial climate is highly supportive of plant growth. At the same time, it also encourages the spread of insects and pests. As germs and bacteria are more easily transmitted through moist air, this leads to a widespread occurrence of diseases in the region. The spread of insects and pests is also harmful to crops.

Unlike in modern cities, most of the equatorial climatic region is devoid of basic amenities. The thick, luxuriant forest hinders the development of this region. It is too difficult and expensive to construct and maintain roads and railway lines through these dense forests and over swamps. Lalang (tall grasses) and thick undergrowth spring up as soon as the trees are cut. It often adversely affects the cultivation of crops too. Wild animals, disease-spreading insects, and poisonous creatures pose a threat to the lives of those engaged in construction work in these forest areas. Many remote parts of the Amazon Basin, the Congo, and Borneo lack modern communication systems even today. The rivers form the only natural highways.

Lalang
Fig 3.21

Although equatorial climatic regions are blessed with thick forests, commercial extraction remains challenging. The density of forest and the difficulty of transporting logs hinder commercial lumbering. Additionally, the hardwoods are too heavy to be floated down the streams.

Livestock rearing is not a primary subsistence activity in most parts of this climatic region due to the absence of grazing land as well as insect attacks on the animals.

The equatorial rainforests play a crucial role in making the world's climate sustainable. About one-third of the world's total forests are located in three regions: the Amazon Basin, the Congo Basin, and Southeast Asia. These forests, which play a significant role in influencing the world's climate, face numerous threats of deforestation in many ways.

Haven't you heard of forest fires in the Amazon forests?

Forest fire in Brazilian Rainforests
Fig 3.22

By utilizing the possibilities of information technology, collect news on forest fires in the Amazon forests from the media and prepare a note on it. Present the same in your classroom.

Another issue encountered by this region is human-induced forest deterioration. Human activities such as agriculture, construction, urbanization, and mining are alarmingly destroying these forests.

Use information technology to gather details on the challenges faced by equatorial rainforests. Lead a discussion on the topic.

So far, we have discussed the characteristic features of the climate, the diversity of flora and fauna, and human life in the equatorial climatic region. Now, let's explore the geographic features of another climatic region, which has entirely different conditions from those of the equatorial climatic region.

Longyearbyen Town
Fig 3.23

Northern Lights
Fig 3.24

Read the travel diary given below.

My intense longing for many years to see the northernmost town in the world has finally brought me to Longyearbyen, a town in the Svalbard Islands located north of Norway in the Arctic Sea. The Svalbard Islands, covered by snow throughout the year, are part of Norway. This mining town, inhabited by more than a thousand people, is considered the northernmost settlement in the world.

The conditions in this region and the way people live here will generate both astonishment and curiosity in anyone. Is it necessary to specify how amazing the experiences in this part of the world are for someone like me, especially coming from the equatorial region? The day I arrived, there was heavy snowfall. Every year, from mid-November to January, this town experiences seemingly everlasting nights. Those living here must adjust their lives during this period, known as the polar night. When they go out for work during the day, they must wear reflective clothing over their usual woollen clothes to be recognized in the darkness. One of nature's wonders that can be witnessed here is the Northern Lights. As I gazed at the multi-coloured sky and the snow-covered mountains reflecting the same sky, I stood still, forgetting everything around me.

The extract you have read is a travel memoir by a traveller with an Arctic expedition, who visited the northernmost human settlement of Longyearbyen.

What features have you noticed here that are different from those in the equatorial region?

- Snow fall
-

By using an atlas, find the location of the town of Longyearbyen and identify the climatic region to which this town belongs.

Examine the map given below and write down the regions marked on the map.

- Ice cap
-

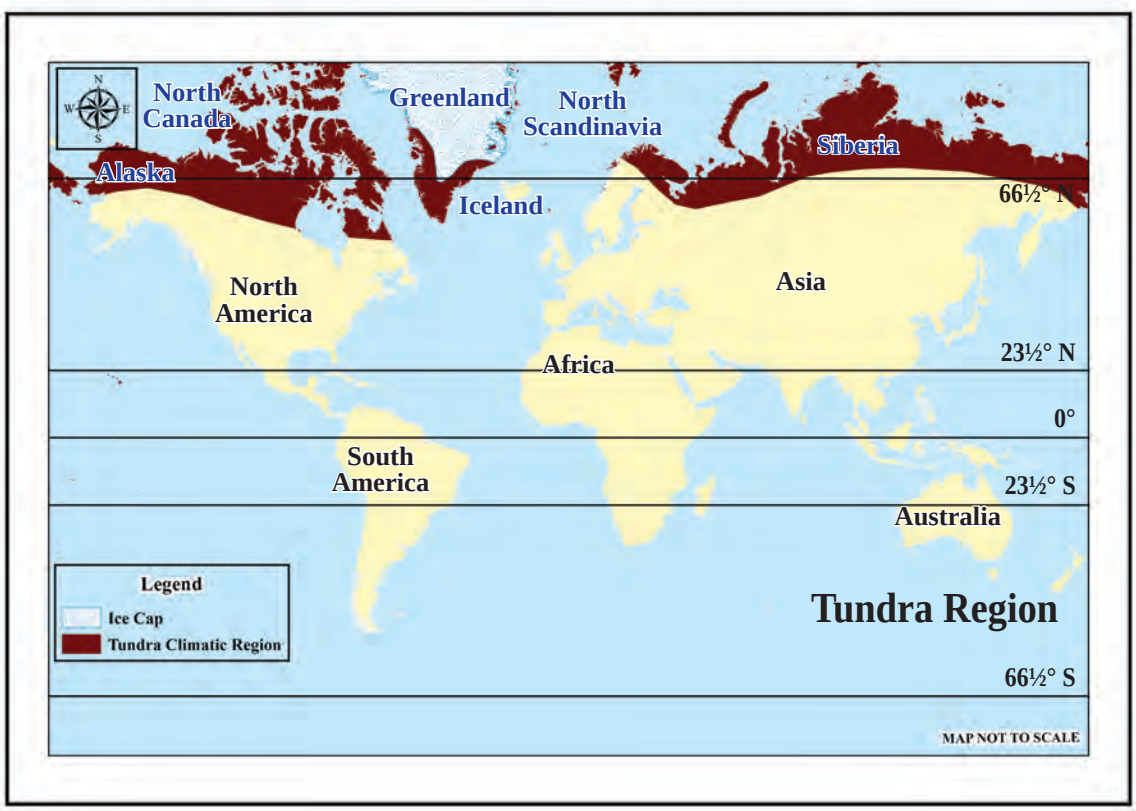


Fig 3.25

Have you identified the location of the Tundra region? Now, find the continents over which the Tundra region spreads. Complete the table given below.

Places	Continents
• Siberia • Greenland • Iceland • North Scandinavia • North Canada • Alaska	

The Tundra region is located to the north of the Taiga region. It spreads along the Arctic coasts of North America and Eurasia, and that of Greenland.

The Tundra region can be categorized into Arctic Tundra and Alpine Tundra. Identify from the table below the regions to which each type of Tundra belongs.

Arctic Tundra	Alpine Tundra
• In parts located to the north of Taiga in Alaska, Northern Canada, Siberia, Greenland, Iceland, Scandinavia	• In high mountainous regions

Fig 3.26

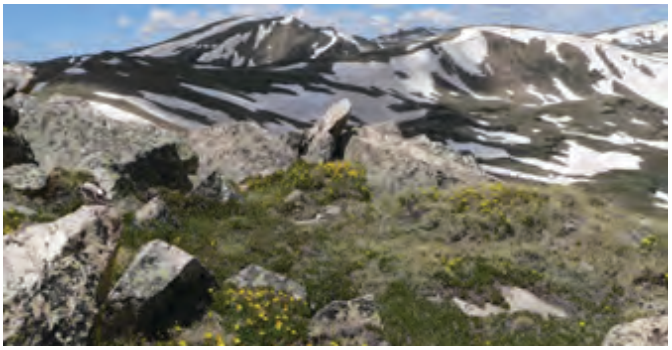


Fig 3.27

With the help of an atlas, identify the location of the Tundra region and mark it on the outline map of the world. Include the map in My Own Atlas.

The Tundra climatic region is also called the Arctic or Polar Climate. The polar climate is characterized by short summers and long winters. Let's explore the features of the climate prevailing here.

The climate of the Tundra is characterized by a very low mean annual temperature. In mid-winter, temperature falls between -25 and -35 degrees Celsius and the temperature in the interior parts of the Tundra falls still lower. Summers are short here during which, a few weeks have the temperature rising above 0 degrees Celsius. The sun never sets for weeks in the area between the Arctic Circle and the Pole. Likewise, the sun never rises for weeks in this area either. Don't you remember the polar night mentioned in the travelogue by the traveller who visited Longyearbyen, which lies beyond the Arctic Circle?

Haven't you learned in your lower classes why long nights and days occur in the area that lies north of the Arctic Circle?

One of the features of this region is that during the period when the sun's apparent position is in the Northern Hemisphere, the North Pole experiences day for around six months. In contrast, during the period when the sun's apparent position is in the Southern Hemisphere, the North Pole experiences night for around six months.

- In which months is the apparent position of the sun in the Northern Hemisphere?
- In which months is the apparent position of the sun in the Southern Hemisphere?
- How long are the nights and days during these periods at the Poles?

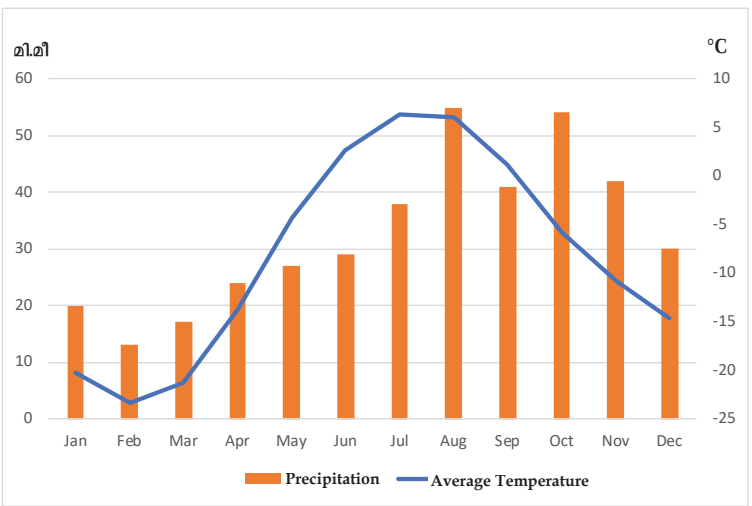
Snowfall in the Tundra Region
Fig 3.28

During winter the precipitation is in the form of snow. The coastal areas where cyclones are strong have much heavier rainfall. The strong snowstorms that blow over this region are called blizzards. They often cause heavier snowfall.

The following diagram represents the average annual temperature and rainfall recorded at a place in the Tundra region. Analyze the diagram using the indicators given below.

Month	Precipitation (mm)	Average Temperature (°C)
January	20	-20.2
February	13	-23.4
March	17	-21.3
April	24	-13.7
May	27	-4.3
June	29	2.6
July	38	6.4
August	55	6
September	41	1.2
October	54	-5.7
November	42	-10.8
December	30	-14.6

Source: Certificate Physical and Human Geography - Goh Chengleong



Upernavik in Greenland
Fig 3.29

Indicators

- Month that receives the maximum rainfall
- Month that receives the minimum rainfall
- Month in which the maximum average temperature is recorded
- Month in which the minimum average temperature is recorded

- The maximum average temperature and the minimum average temperature
- The Annual range of temperature

Haven't you explored the characteristic features of the climate experienced in the Tundra region? We know that the diversity of flora and fauna in any region depends on the climatic features of that region. The natural vegetation is scanty in this region due to insufficient in sunlight and long winters. The diversity of fauna is also scanty here.

Lichens
Fig 3.30

Let's take a look at the significant features of the natural vegetation and wildlife of this region.

Trees are normally absent in the Tundra region due to the challenges posed by the climate. Mosses, lichens, sedges, and bushes are commonly found here. Dwarf willows and stunted birches withstand the harsh climatic conditions and survive in certain places.

Some hardy grasses grow in the coastal lowlands where favourable conditions prevail. Herbivores like reindeer make survival possible here only by depending on these pastures.

Hardy Grasses
Fig 3.31

Bushes
Fig 3.32

Dwarf willows
Fig 3.33

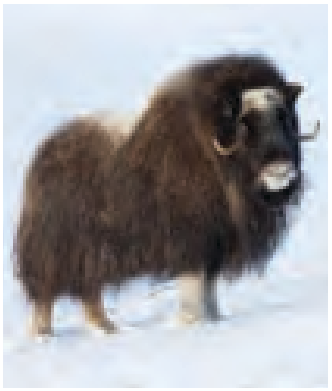
Even though summer is very short in the Tundra, which is covered by snow throughout the year, this region becomes active with the onset of summer. In brief summer, as the snow melts, bushes start bearing berries and flowers begin to bloom. Birds migrate to the Tundra during this period from

the south to prey on insects that come out at this time. Arctic foxes, wolves, polar bears, musk-oxen, and arctic hares are the other animals found here.

Polar Bears
Fig 3.34

Arctic Fox
Fig 3.35

Arctic Hare
Fig 3.36



Musk-Ox
Fig 3.37

With the help of information technology, create a digital picture album of animals found in the Tundra region.

Human life in the Tundra

Normally, the Tundra is a sparsely populated region. Human life in this region is largely confined to the coast.

Plateaus and mountains are permanently snow-covered, making them uninhabitable. The Tundra is mainly inhabited by some nomadic tribes.

Examine the table given below. Identify the different tribes in the tundra and the regions they belong to.

Greenland, North Canada, Alaska	Eskimos or Inuit
North Finland, Scandinavia	Lapps
Siberia	Samoyeds
Lena Basin	Yakuts
North- Eastern Asia	Koryaks, Chuckchi

With the help of an atlas, identify the regions where each tribal group lives in Tundra and mark these regions on an outline map of the world. Write the name of each tribal group appropriately on the map. Include this map in My Own Atlas.

Hunting and fishing are the major activities for subsistence by the people of the Tundra. Whales, seals, caribou, various kinds of fish, birds, and fur-bearing animals provide them with everything they need for food and clothing. Their bones and other parts are used as weapons, tools, and even utensils. The Polar Eskimos of Greenland still lead a primitive lifestyle, not very much different from their forefathers. During winter, they live in houses called igloos and in summer, they migrate to other places for hunting and fishing. During the summer season, they live by the side of streams in portable tents made of animal skin. There are Eskimos who hunt and feed on even polar bears.

Alaskan Eskimo
Fig 3.38

Koryaks of North- Eastern Asia
Fig 3.39

Samoyeds of Siberia
Fig 3.40

In the last sixty years, the way of life of the Eskimos has undergone tremendous changes through their contact with Europeans. In coastal villages, Eskimos live in houses with modern amenities. They now use speedboats for fishing instead of small rowing boats called kayaks.

Reindeer Farm in Siberia
Fig 3.41

Modern Agriculture in the Tundra Region
Fig 3.42

Fur-bearing animals are being reared on a commercial scale. In some areas of the Tundra in Canada and Alaska, schools have been established for Eskimo children to enable them to live a modern life.

In the Eurasian Tundra, most of the tribal groups lead a nomadic life, wandering with their herds of reindeer in search of pastures. In the Siberian Tundra, large farms have been established for rearing fur-bearing animals, including reindeer, on a commercial scale.

Mining in the Tundra region results in the development of new settlements. In certain areas of the Southern Tundra where favourable conditions exist, cereals with short growing season are also cultivated.

Igloo

The dome-shaped, temporary shelters made out of blocks of snow by Eskimos in the Tundra region.

Sledges

In some areas of the Tundra, a distinct type of vehicle called sledge, which slides over snow, is used for transportation. Dogs are usually used to pull these vehicles.

The Tundra and the Climate Change

You have learned from the previous chapter that climate change occurs globally. The Tundra is one of the places that is adversely affected by climate change.

Due to global warming, the permafrost in the Tundra melts considerably. This adversely affects the ecosystem and environmental equilibrium of the region.

With the help of information technology, prepare a note on the topic 'The Challenges Posed by Climate Change in the Tundra Region'. Present it in the classroom.

We have, so far, discussed the geographical features of two regions with distinctly different climatic conditions. Haven't you read the imaginary travel memoirs included in the chapter? Imagine that you are the expeditioner travelling from the Equatorial region to the Tundra.

Prepare a travelogue comparing these two regions based on the indicators given below. Make it attractive by including appropriate pictures.

- Climate
- Flora and Fauna
- Human Life
- Challenges faced by each region

We have gone through the characteristics of two regions: the Equatorial climatic region which experiences high temperatures throughout the year and the Tundra climatic region which experiences extreme cold year-round. The place we live in is entirely different from these two regions, isn't it? How diverse our Earth is! We have seen how some people, flora, and fauna make life possible by adapting to the unique conditions of their respective regions. Our duty is to live in harmony with the environment by internalizing and respecting all these diversities.

Extended Activities

1. Conduct a seminar in your class on the topic "Human Life in the Equatorial Climatic Region and the Tundra Region."
2. With the help of information technology, create a digital album containing pictures that illustrate the lifestyles of tribes in the Equatorial Climatic Region and the Tundra Region. Make a comparative study of their lifestyles.
3. Prepare a note comparing the climate of both the Equatorial Climatic Region and the Tundra Region.
4. Prepare a pictorial description of the Northern Lights after collecting more information about it. Present it in the classroom.
5. Conduct a debate on the topic 'The Challenges faced by the Equatorial Rainforests'.