

# 3

## Weather and Climate

### In this lesson, we will learn about :

- ◆ Difference between weather and climate.
- ◆ Factors affecting the climate of the world.
- ◆ Heat zones of the Earth.

People living in the different parts of the world have different lifestyles. They live in different types of houses, eat a variety of food and wear different kinds of clothes. This difference in lifestyle is due to the different climatic conditions in various parts of the world. Even in our country there is a diversity in the lifestyle which is due to different climatic conditions within the country.

### Weather and Climate

Many times the terms weather and climate are used interchangeably. But the fact is that these two are not the same.

**Weather** is the condition of the atmosphere at a given time and place. It may not remain constant even for a single day. That is why we often describe weather as sunny, warm, cloudy, rainy or cold. The basic factors that determine weather are :

- Temperature of air
- Precipitation
- Wind
- Atmospheric pressure
- Cloudiness
- Humidity

### Do You Know?

People who study weather conditions are called meteorologists.

### Climate

Climate of a place is the average weather conditions over a long period of time. Different places in the world experience different types of climate. Some regions are hot and dry. In some areas, the climate is cold and the land is covered by snow and ice. In some parts of the world, the climate is neither hot nor cold and there is moderate rainfall.

On the basis of climatic conditions, we divide the Earth into different climatic regions.

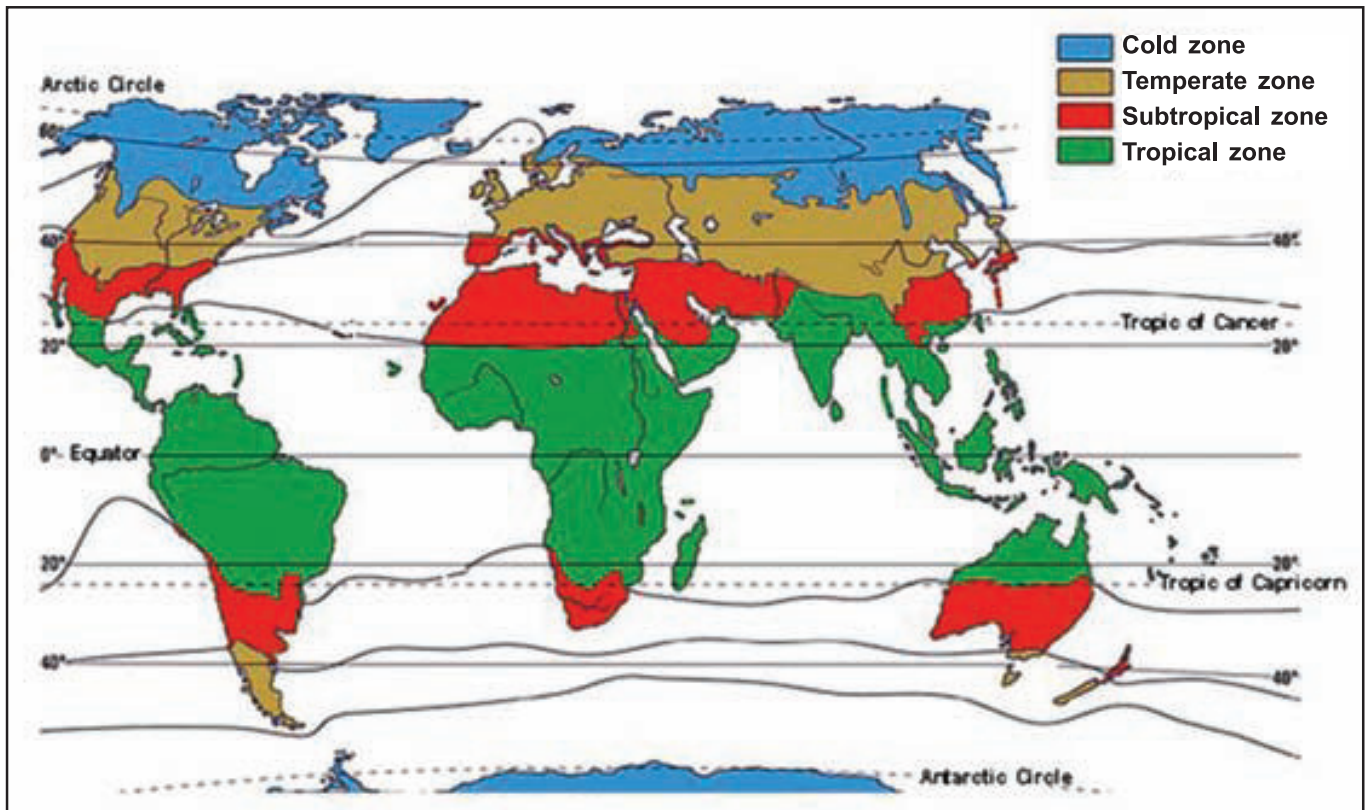
The factors that determine the climate of a place are :

- Latitude
- Altitude
- Winds
- Distance from the sea
- Humidity
- Ocean Currents

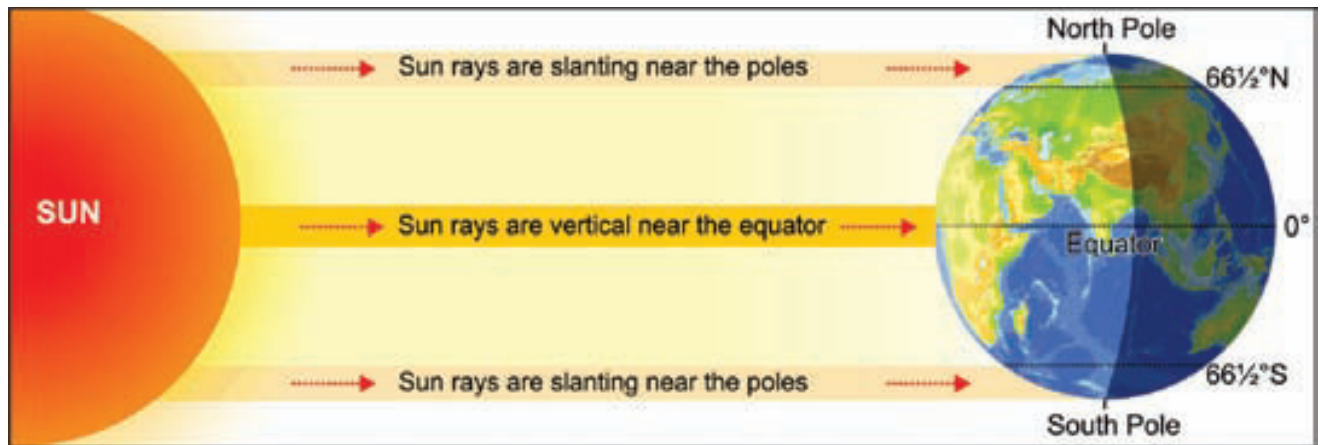
### Latitude (Distance from the Equator)

Places near the Equator are hotter than places far from the Equator. Do you know the reason?

## WORLD CLIMATIC ZONES



Map of the World showing Climatic Zones



Inclination of the Sun's Rays

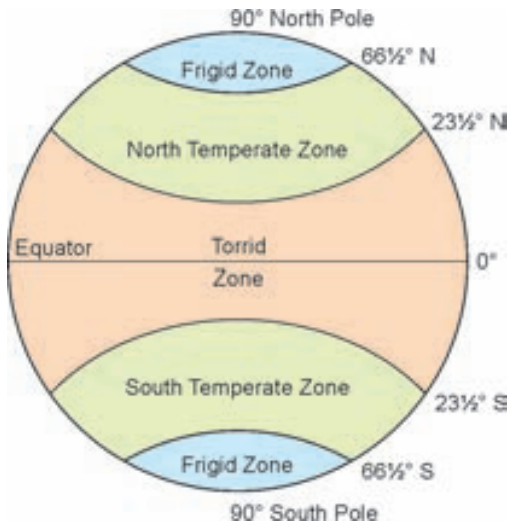
Look at the figure. It shows that the sun rays are falling vertically over the Equator. They are spread over a small area. In the polar regions,

the sun rays are slanting. They are spread on a larger area. Hence, places near the Equator receive more heat and are hotter.

## Do You Know?

People who study climate are called climatologists.

Depending upon the amount of heat received, there are three heat zones.



Heat Zones of the Earth

**1. Torrid Zone :** On both sides of the Equator, the region lying between the Tropic of Cancer and the Tropic of Capricorn is called the Torrid Zone.

This zone gets the direct rays of the sun all the year round. Hence, the climate is hot and humid.

**2. Temperate Zone :** This region is neither hot nor very cold. It lies between the Torrid Zone and the Frigid Zone in both the hemispheres.

**3. Frigid Zone :** The region lying between the Arctic Circle and North Pole and between the Antarctic Circle and South Pole is called the Frigid Zone. It receives very slanting rays of the sun and is therefore very cold.

## Altitude or Height above the sea level

Do you know why people go to hill stations in summer?



Hill stations are cooler because they are located high above the sea level.

The higher we go, the cooler it becomes. It is because temperature falls with height gained. It is cold in the high mountains because mountains are located at a high altitude.

Ludhiana and Shimla are at the same distance from the Equator. But Shimla is cold while Ludhiana is hot in summers. Can you tell the reason? Shimla is located 2150 metres above the sea level, whereas Ludhiana is only 250 metres above the sea level.

## Wind

Winds affect the climate of the place they blow to. Winds coming from the hot areas increase the temperature of the place they blow to, while winds coming from the cold areas lower the temperature of the place they blow to.

## Distance from the sea

Places situated near the coasts are neither too hot nor too cold. They have a moderate climate. It is called Equable Climate. What is the reason for this? This is because of the land and sea breezes. In the day-time, the sun heats both the land and the sea. Land heats up more quickly than the water. Hence, it is hotter than the sea. As you know, hot air is lighter than the cold air. Therefore, warm air above the land rises. The cool air from the sea comes in to take its place. This is known as **sea breeze**. It cools the land near the coast.

At night, the opposite happens. The land cools down more quickly than the sea. The sea cools down slowly. The air above the sea is warmer and rises. The cooler air from the land blows towards to the sea. This is called the **land breeze**.

Due to land and sea breezes, the weather near the sea is pleasant.



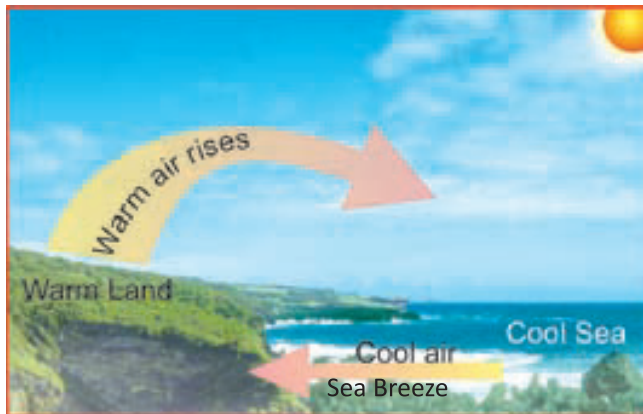
Land Breeze (Night)

## Humidity

The amount of water vapour in the air is called humidity. Humidity affects the climate of a place. The winds blowing from sea to land bring a lot of moisture with them. They make the climate in the coastal areas very humid.

## Ocean currents

Oceans have warm and cold currents. These currents affect the climate of the coastal areas. Warm ocean currents make the coastal areas warmer whereas cold oceans currents make the coastal areas cool.



Sea Breeze (Day)



## KEY WORDS

Weather	— The sum total of the atmospheric conditions at a given time and place.
Climate	— The average weather conditions of a place over a long period of time.
Altitude	— Height above the sea level.
Equable climate	— Neither too hot nor too cold.
Land breeze	— A wind blowing from land to sea at night.
Sea breeze	— A wind blowing from sea to land during afternoon.
Humidity	— The amount of water vapour present per unit of air.



## THINGS I HAVE LEARNT

1. The difference in the lifestyle of people varies according to the difference in the climate.
2. Weather is the condition of the atmosphere at a given time and place.

3. Climate is the weather conditions of a place over a long period of time.
4. There are many factors that affect the climate of a place.
5. The temperature decreases as we move from the Equator towards the poles.
6. Places higher than the sea level have a cool climate.
7. Winds modify the climate of a place.
8. The amount of moisture present in the air affects the climate of a place.
9. The Earth is divided into three heat zones — Torrid, Temperate and Frigid.



**A. Tick (✓) the correct answers.**

1. People who study weather conditions are called  
(a) Meteorologists            (b) Archaeologists            (c) Philanthropists
2. Which of the following factors does not determine the climate of a place?  
(a) Latitude                      (b) Altitude                      (c) Longitude
3. The Torrid zone lies between  
(a) Tropic of Cancer and Tropic of Capricorn  
(b) Tropic of Cancer and North pole  
(c) Tropic of Capricorn and South pole
4. Places situated near the coasts have  
(a) Extreme climate            (b) Equable climate            (c) Hot and humid climate
5. Which of the following statements is true?  
(a) Land breeze blows during the day  
(b) Sea breeze blows during the day  
(c) Both land and sea breezes blow during the night

**B. Match the following.**

- |                   |                                    |
|-------------------|------------------------------------|
| 1. Torrid zone    | (a) Very cold                      |
| 2. Temperate zone | (b) Night                          |
| 3. Frigid zone    | (c) Day                            |
| 4. Land breeze    | (d) Very hot                       |
| 5. Sea breeze     | (e) Neither very hot nor very cold |

**C. Write T for the true and F for the false statements.**

1. The rays of the Sun fall vertically near the Equator.
2. The temperature increases with decrease in height.
3. Winds coming from hot areas bring hot weather.
4. Coastal areas have humid climate.
5. The Torrid Zone is the hottest zone.
6. The Temperate Zone has a moderate climate.
7. The Frigid Zones have extremely hot climate.

**D. Fill in the blanks. Choose words from the box.**

Arctic permanent down hot Antarctic humid

1. The climate unlike weather is of \_\_\_\_\_ nature.
2. Cold winds bring the temperature \_\_\_\_\_.
3. The Torrid Zones have \_\_\_\_\_ and \_\_\_\_\_ climate.
4. Frigid Zone lies between \_\_\_\_\_ Circle and the North Pole and between \_\_\_\_\_ Circle and the South Pole.

**E. Answer these questions.**

1. What is the difference between weather and climate?
2. Mention the factors which influence the weather of a place.
3. How does the climate of a region affect the lifestyle of the people?

[VALUE BASED QUESTION]

4. How does the distance from the Equator influence the climate of a place?
5. Why is Shimla cooler than Ludhiana?
6. How do winds influence the climate of a place?
7. Name the three heat zones of the Earth.
8. Differentiate between the climates of Delhi and Mumbai. Mention the factors responsible for the difference.

[HOTS]



- F. On an outline map of the world locate, label and shade the following climatic zones:**  
Cold zone, Temperate zone and Tropical zone.



- G. Draw a diagram of the earth. Mark, label and shade all the three Heat zones.**  
**H. Study the weather report of your town/city from newspaper, daily. Collect data for the month. Draw conclusions.**



[http://www.ecn.ac.uk/Education/factors\\_affecting\\_climate.htm](http://www.ecn.ac.uk/Education/factors_affecting_climate.htm).  
[freepedia.in/factors\\_affecting\\_temperature](http://freepedia.in/factors_affecting_temperature).  
[http://en\\_wikipedia.org/wiki/oceancurrent](http://en_wikipedia.org/wiki/oceancurrent).



You might have seen a colourful bow across the sky, called 'rainbow' during the rainy season. Study the causes behind formation of a rainbow. Name the various colours in it. Explain its aesthetic significance.