

Chapter 7

Weather, Climate and Adaptations of Animals To Climate

Weather

- Weather is the day-to-day condition of a place with respect to the temperature, humidity, rainfall, wind speed, etc.
- The various factors which decide the weather of a particular place are called elements of the weather.
- Weather is never constant, it changes day after day and week after week.

◆ Sun:

All changes in the weather are caused by Sun. The energy of the Sun is the ultimate source of light and heat on the Earth. Energy absorbed and reflected by the Earth's surface, oceans, and the atmosphere play an important role in determining the weather at any particular place.

◆ Maximum and Minimum Temperature:

The highest and the lowest temperature during the day are called maximum and minimum temperatures. The maximum temperature of the day occurs in the afternoon and the minimum temperature of the day occurs in the early morning.

◆ Humidity:

The measure of water vapour in the air is humidity. The humidity of air is expressed as a percentage (%). If the humidity of an area is high, the air feels moist (or damp). Under these conditions, the sweat from our body does not evaporate readily. If the humidity of an area is low, the air feels dry. Under these conditions, the sweat from our body evaporates readily.

Weather forecasting

Prediction of weather in advance is called weather forecasting. By monitoring the atmospheric conditions such as temperature, pressure, humidity, wind speed, wind direction, sunshine, cloud formations, rainfall, etc., it is possible to predict the coming weather in advance.

Daily weather report carries information about temperature, rainfall and humidity during the past 24 hours. It also gives the timings of sunrise, sunset, moonrise and moonset.

Climate

- The average weather pattern taken over a long period of time (25 years) is called the climate of the place.
- There are 4 major types of climate in the world:

(a) Polar climate:

The polar climate is extremely cold and dry. Polar region have the coldest climate in the world.

(b) Temperate climate:

The temperate climate is neither very hot in summer nor very cold in winter. In a temperate climate, there is moderate rain and snowfall. Jammu and Kashmir have moderately hot and wet climates (temperate climate).

(c) Tropical climate:

The tropical climate is very hot and humid. Kerala has a tropical climate.

(d) Desert climate:

The desert climate is very hot and dry with very little rain. The climate of Rajasthan is hot and dry.

* Note: The weather of a place changes frequently. Whereas the climate of a place does not change frequently rather it remains more or less constant.

Adaptation of Animals in Polar Region

Polar Region:

- Polar regions of the Earth are situated near the poles i.e., North pole and South pole, and have an extremely cold climate.
- In winter the temperature is as low as -37°C .
- In the polar region sun does not rise for six months and does not set for another six months.
- For example, Greenland, Finland, Norway, Iceland, Sweden, Canada, Alaska in the USA, and the Siberian region of Russia.

♦ Adaptation in Polar bear:



(a) Thick white fur:

Polar bears have white fur so that they are not easily visible in the snowy white background. It protects them from their predators and helps them to catch their prey. They have a thick layer of fur which keeps them warm in cold weather.

(b) Layer of fat under the skin:

Polar bears have layers of fat under their skin which insulates their body and keeps it warm. That is why they move slowly and rest often to avoid getting overheated.

(c) Long, curved and sharp claws:

Polar bears have long curved and sharp claws which help them to walk.

(d) Big and wide paws:

The polar bear has wide and big paws which help in swimming. It can close its nostrils during swimming and can stay in water for a long time.

* Tip: Polar bears move slowly and rest often because they have thick fur which insulates their body from cold. So, they move slowly and rest very often to prevent their body from getting overheated.

◆ Adaptation in Penguins:



(a) Black and white body of penguins merges well in the white background of snow.

(b) Penguins have thick skin and a layer of fat under their skin which protects them from cold.

(c) Penguins are good swimmers like a polar bears. They have streamlined bodies and webbed feet which make them a good swimmer.

(d) Penguins huddle (live) together to keep their body warm.

Migration is the process in which bird or animal moves from one place to another in one season and return again in a different season is called migration. Fish can remain under cold water for long but birds must remain warm to survive. They migrate to warmer regions when winter sets in and come back after winter is over.

Example: **Siberian crane** comes from Siberia to Bharatpur in Rajasthan, Sultanpur in Haryana and some other parts of India for few months. They fly back to Siberia when the winter ends.

Adaptation of Animals in Tropical Rainforests

The Tropical Rainforests:

- The tropical region is located around (both sides) the equator.
- The climate in this region is very hot and humid with high rainfall.
- The countries in which tropical rainforests are found are India, Malaysia, Indonesia, Brazil, the Republic of Congo, Kenya, Uganda, and Nigeria.
- Animals in tropical rainforests are lions, tigers, monkeys, apes, gorillas, elephants, leopards, lizards, snakes, birds, and insects.
- Due to the hot climate and heavy rain, tropical rainforests support a wide variety of plants and animals. Since the numbers are large, there is intense competition for food and shelter. Many animals are adapted to live on trees.

♦ Adaptation in Monkey:



- They are expert climbers – their hands and feet are adapted in such a way that they can easily hold on to the branches of trees.
- They have long and strong gripping tails which help them in grasping branches of trees.
- They have very good eyesight which helps them in leaping between the branches to escape from their predators.

◆ Adaptation in Red-Eyed Frog:



Red-eyed frog has developed sticky pads on their feet to help them climb trees on which they live.

◆ Adaptation in Toucan:



The bird Toucan possesses a long, large beak that helps them to reach the fruits on branches that are very thin and weak to support its weight.

◆ Adaptation in Big Cats:



- Lions and tigers are called big cats.
- They have sensitive hearing and a highly developed sense of smell helps them to locate their prey.
- They have eyes in front of their head which gives them the exact location of their prey.
- They have strong and sharp claws to catch prey.
- Yellow-brown skin color camouflage (blend with the surroundings) and helps the big cats in catching their prey.

◆ Adaptation in Lion-tailed macaque:



It is also called beard ape. The most outstanding feature of lion-tailed macaque is its silver-white mane, which surrounds the head from the cheeks down to its chin. It is a good climber and spends a major part of its life on trees. It feeds mainly on fruits, seeds, leaves, stems, flowers, and buds. Since they get sufficient food on the trees, they rarely come down on the ground.

◆ Adaptation in Elephant:



- It has a huge trunk which is used as the nose and for picking up food.
- It has a strong sense of smell due to the huge trunk.
- Tusk (big and long pointed teeth which come out from the closed mouth) are modified teeth of elephants. It helps to tear off the bark of trees that elephants love to eat.
- It has large ears which can hear small sounds. The large ears also help the elephant to remain cool in the hot and humid climate of the rainforest.