

Grade 6

Geography Term 3 2018

Climate and Vegetation around the World

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CLIMATE AROUND THE WORLD

New words

Current condition – The way things are right now.

Average – The way things mostly are.

Global Warming – This is the increase in the earth's surface temperature. Global warming is linked to weather conditions around the world.

Moderate – another word for mild. It means not too hot or not too cold.

Temperate – This is the same as moderate. It describes places with a moderate climate.

The maps below show you the temperatures in January and temperatures in July cross the world.

The difference between weather and climate

Weather is the condition in the air or atmosphere in the present, or right now. We call this the **current condition**. When we use the word 'weather' we talk about temperature, clouds, wind and rainfall. Weather can remain the same, or it can change quickly.

For example, in Gauteng and the Free State, summer days are often hot and clear without any clouds in the sky. Then, in the afternoons, thunderclouds form and the day ends with a huge thunderstorm.

We use the word **climate** when we talk about the weather in general. Climate is the **average** of temperature, clouds, wind and rainfall conditions worked out over a minimum of 20 years. Climate allows us to have a good idea of what the weather conditions will probably be like during a whole year. We can then say what we expect the temperature, winds and rainfall to be at a place in summer and in winter. This does not mean it will always be like that. Sometimes a place will get hotter or colder temperatures than normal or more rainfall or less rainfall.

Over the last few years, scientists have noticed that the world's climate is changing. Some places have been having more droughts than usual, while other places have more floods. Some places are experiencing hotter temperatures, while others have cooler temperatures. This change in the world's climate is linked to **global warming**. This is often talked about in the newspapers and on television.



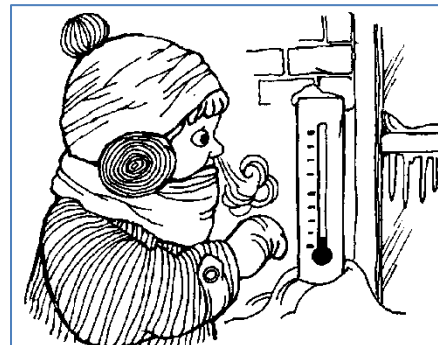
Flooding



Drought



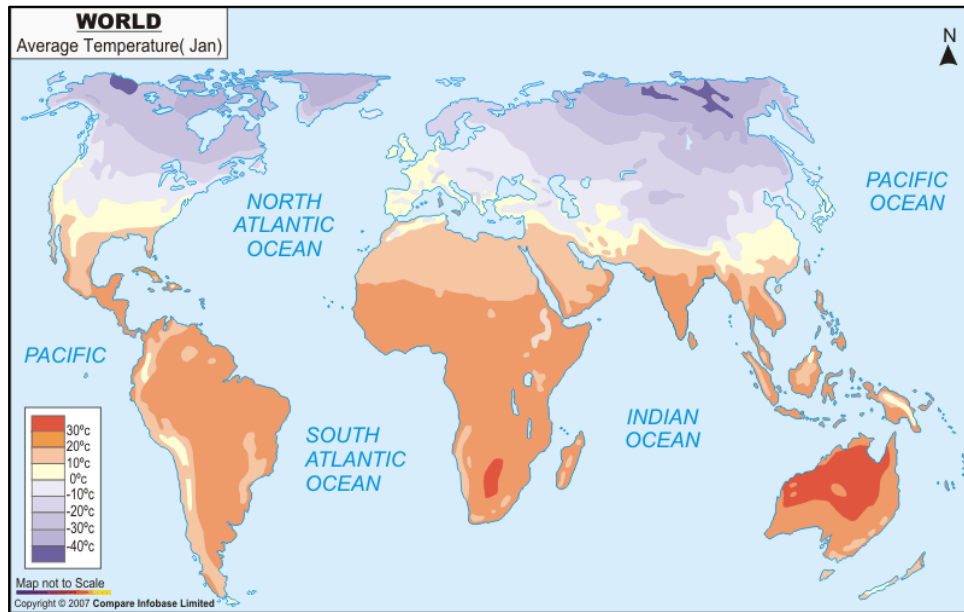
Heat



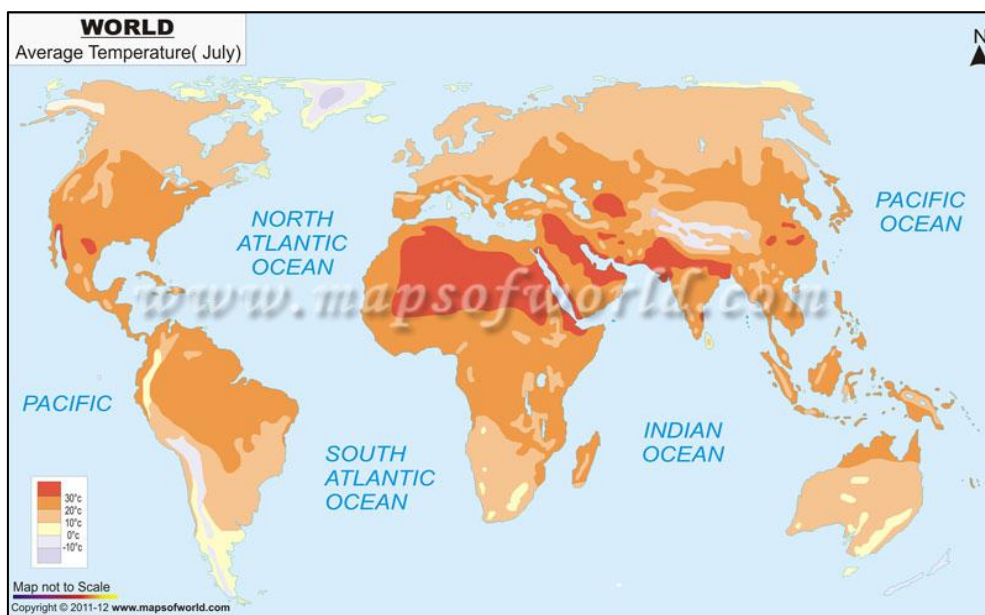
Cold

Hot, mild and cold climates of the world

The coldest parts of the world are at the North and South Poles. The hottest places are found along the equator. The height above sea level also affects temperature. This is because the higher up one goes the colder it gets. Places near the sea have a **moderate** or **temperate** climate. This is because the sea will cool the land in summer and warm the land in winter. Places next to the sea will not be too cold or too hot.



Map A: January temperatures of the world



Map B: July temperatures of the world

Did you know?

The hot deserts can have very cold temperatures at night. During the day the temperature can be 40°C in a desert and this can drop to below 0°C during the night.

Activity 1: Decide where the coldest and warmest climates are.

Study the January and July temperature maps and then answer these questions:

1. Which map shows summer temperatures for South Africa?
2. Which hemisphere has the hottest temperature? (North, South, West or East?)
3. What temperatures does South Africa experience in winter?
4. Look at the hottest and coldest temperatures in the world again and then compare South Africa's temperatures to these. Would you say South Africa has mild temperatures? Explain your answer.

Hot dry climates have temperatures which can rise to over 50°C in summer. This is too hot to be outside. Cold climates have temperatures which drop below - 40°C in winter. This is too cold to be outside. Most people in South Africa live in a mild climate. We do not get too hot or too cold.

The wet and dry areas of the world

Do you remember that the moisture in clouds comes from the sea? The wet areas of the world are found near warm oceans. Warm oceans are found in the areas around the equator. Wet areas along the equator get about 2 600mm of rainfall a year. This is five times more than the average rainfall for South Africa.

Dry areas are found inland, far away from the oceans. This is because winds that bring rainfall do not reach there. Dry areas are also found next to cold oceans. Cold oceans do not give the air enough moisture. Dry areas get between 25mm and 250mm of rainfall a year.

Activity 2:

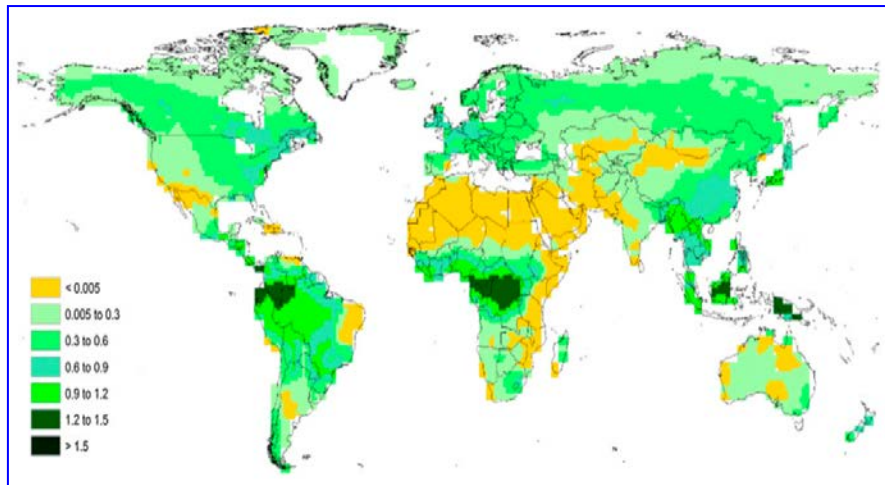
Study the map of the world's annual rainfall.

Is area A a wet or dry region?

Is area B a wet or dry region?

Is area C a wet or dry region?

Which continent has the most annual rainfall?



Annual rainfall of the world

Tropical Rainforests

New words

Adapted– Get used to or fit into the conditions.

Evergreen trees – These trees have leaves all the time. They do not lose their leaves in the winter season.

Endangered – when the number of animals or plants become very small – too small to reproduce enough to grow the numbers. This means they could die out and be lost forever.

Deforestation: This means cutting down forests so that the trees will not grow again. The forest land is used for other things such as farming, mining or towns.

Indigenous: Plants, animals or groups of people that live naturally in an area.

Tropical rainforests are forests that are warm and wet. There is very little change in the temperature - it is always hot. It rains all year round. Tropical rainforests are called the 'jewels of the earth' because half of the world's plant and animal species live in these forests. There are still some plants and animals in these forests that we know very little about.



Rainforests absorb 4.8 billion tons of carbon dioxide every year. This makes them very important for the survival of the world. One of the most well-known rainforests is the Amazon forest.

Did you know?

Humans need more oxygen than carbon dioxide. When we breathe we use up oxygen and breathe out carbon dioxide. Trees are very important because they turn carbon dioxide into oxygen. They also store carbon dioxide in their leaves and branches.

The location of rain forests of the world

Tropical rainforests are found along the low-lying areas of the equator. This is why they are warm and wet. These areas have very high rainfall, warm temperatures throughout the year and high **humidity**. **Humidity** is the amount of water vapour in the air. Humidity makes the air feel sticky.



Location of tropical rainforests of the world

The climate (temperature and rainfall) of tropical rainforests

Tropical rainforests have a very high annual rainfall. It is between 1 500mm and 3 500mm per year. The forests are very humid. The humidity is about 80% which means that almost all the air is filled with moisture. Because of this, the air feels sticky.

The forests have a very warm temperature of about 28°C all year around. There is also very little change in the temperature between day and night. This means the forests are hot and wet all the time.

The vegetation and wildlife of tropical Rain Forests

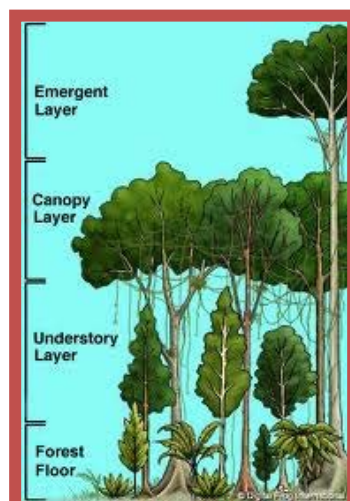
Tropical rainforests are the perfect living area for many different kinds of living things. This is because there is so much rain and it is warm all the time.

The warm temperatures and good rainfall mean the vegetation grows easily. The wide variety and large numbers of trees and plants provide food, lots of fruit and seeds. The vegetation also provides safety and places for different creatures to make their homes and nests. This is why there is so much wildlife in rainforests.

It is estimated that almost half of the world's plant and animal species are found in the rainforests of the world. Two-thirds of all flowering plants can be found in these rainforests. The wildlife and vegetation has **adapted** to the hot, humid and wet conditions. The forests are made up of many different types of trees and plants. The trees are called evergreen trees. These are trees that do not lose their leaves in winter.

The Vegetation of a Rainforest

The trees and other vegetation all grow to different heights. This creates layers in the forests. Different animals, birds and insects live in the different layers. The tall trees get a lot of sunlight and the short trees and vegetation are in the shade most of the time.



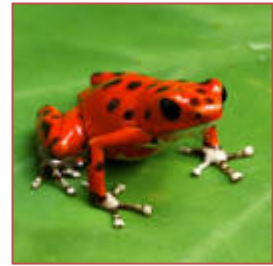
The following pictures show some of the unusual and exotic animals and birds that live in the tropical rainforests of the world.



Jaguar



Parrot



Poison dart frog



Toucan



Morpho butterfly



Anaconda



Tiger



Tapir



Flying squirrel



Tamarin monkey

Natural vegetation and wildlife in a tropical rainforest

Plants need sunlight and water to grow. The equator gets a lot of sunlight throughout the year and is also very wet. The natural vegetation grows easily and are mostly large forests of tall trees growing closely together.



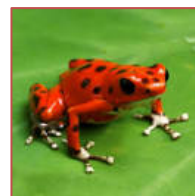
The canopy is the layer of leaves and branches formed by the trees that are really close together. The canopy can be 30m high. Plants and animals live in the canopy because it provides food and shelter.

The word biodiversity describes all the plants and animals living in an area. If there are many different plants and animals, then the area has a high biodiversity. The tropical rainforest has a very high biodiversity because the climate and vegetation is able to provide water, food and shelter for many different species. Scientists think the tropical rainforest has half of all the plants and animals found on Earth.

In 10km² area of a tropical rainforest there are:

- Over 750 species of trees;
- 1 500 different kinds of flowering plants;
- 125 species of mammals;
- 400 species of birds;
- 100 types of reptile.

Some tropical rainforest areas have over 500 species of frogs.



Orang-utans live in tropical rainforests. They spend most of their time in the trees. Their arms are very long so they can swing from the trees and branches. They have special hands and feet so they can climb and hang easily in the trees. During the night they make beds in the trees. This protects them from enemies such as tigers. Orang-utans are **endangered**.



Orang-utan

Did you know?

Orang-utans are becoming endangered at a very fast rate. This is because the tropical forests in which they live are being destroyed. People also hunt the orang-utans for food.

Toucans are one of the many types of birds that live in tropical rainforests. Toucans have small wings so they can fly through the forest easily. Their toes allow them to grip onto branches easily. They have very strong beaks which are used to break open fruit and nuts. They are very colourful and so are difficult to see in the trees. They blend into the flowers and shadow of the trees so their enemies cannot see them.



The deforestation of tropical rain forests

Tropical rainforests are very important to the health of our planet. This is because they absorb so much carbon dioxide. They are also precious because of all the natural plant and animal life.

It is very sad that these rainforests are being cut down very quickly by humans. This leads to deforestation. Every minute of every day large areas of the world's tropical forest are being cut down.



The reason for this is that the land is being used to grow crops and graze cattle. The wood from the trees is also used to make furniture and is also used in building and mining industries. The forest land is also used for other things such as farming, mining or building towns.

Did you know?

40% of the world's oxygen is made by the tropical rain forests.

Destruction of rainforests

It is not only the plant life that is destroyed. The thousands of animals, insects and birds that live in these areas are killed or die because their homes and nests are no longer there.

Did you know?

Some scientists have worked out that within the next 40 to 50 years all the Rainforests will be cut down if we do not do something to stop it.

What is deforestation?

About 1 hectare of forest is destroyed every second – that's the same as two soccer fields. Every year, an area of tropical rainforest the size of the Free State is cut down. This is called **deforestation**.

Why are people cutting down the tropical rainforests?

- The wood is valuable for making furniture, paper and for firewood.
- People want more cleared land for farming cattle.
- The forests are cleared to make way for roads and highways.
- The land is cleared to mine minerals, gas and oil.

Why are rainforests important?

- They have many different species of plants and animals.
- Trees take in carbon dioxide and produce oxygen. This keeps the climate healthy and stable.
- Plants can provide cures for cancer and other diseases.

What happens because of deforestation?

- Plants and animals lose their habitats (place to live) and food. Some species die out completely.
- There is flooding and soil erosion because there are no plants left to hold the soil together.
- The world's climate is affected in a negative (bad) way.
- People who live in, and depend on the forests, are forced to move elsewhere.

The Tropical Forest Action Plan

The Tropical Forest Action Plan (TFAP) has been developed to try and stop the destruction of tropical forests. The plan wants to do the following:

- To look after the people who live in the tropical forests.
- To make areas of tropical rainforest reserves so that the forest cannot be cut down.
- To plant back indigenous trees in places where forests have been cut down.
- To make people understand why tropical forests are so important to all the worlds' people.

The TFAP can only be successful if all the countries, where the rainforests are found, want to protect the forests. The big problem is that wood provides lots of money, and people

need land to farm and places to live. So, it is difficult to stop people from cutting down forests. Governments must find ways of making money from the forests without cutting them down. Organisations are working with other organisations to help governments protect their forests.



The Forestry Stewardship Council is an organisation that tries to help governments protect their rainforests.

Activity 3:

Discuss these questions with your partner and then write the answers into your work books. Talk about these answers with the rest of the class.

1. Why are tropical rainforests important for our planet?
2. Why do people keep destroying these forests?
3. Do you think these people are right or wrong?
4. What are some possible solutions to the forests being destroyed?

Deforestation in Brazil

- Between August 2009 and July 2011, a total of 6 450km² of forest underwent deforestation.
- 27% of deforestation in the world takes place in Brazil.
- 60 – 70% of deforestation in Brazil is because of clearing for cattle ranches. The rest is largely the result of clearing for small subsistence farming.



Case Study: Deforestation in Ivory Coast

Ivory Coast used to be covered in tropical rainforests. In only 25 years 12 million hectares of forest has shrunk to 4 million hectares. Now there are hardly any trees left. Forestry companies cut down more and more trees but did not replace them. Farmers cleared land for crops like coffee and cocoa.



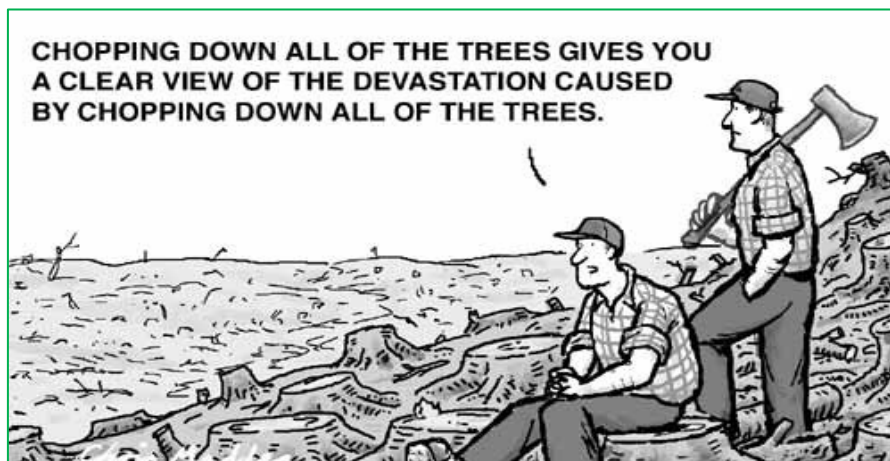
Losing their forests has affected the economy, the climate and the soil of the Ivory Coast.

- The fall in timber sales caused the country to get less money from exports.
- In the timber industry 30 000 workers have lost their jobs.
- As the forest was cleared, the rainwater either dried in the hot sun or ran off the land instead of seeping into the soil.
- There was no longer a carpet of leaves rotting to form compost so the soil became infertile.
- The drier savannah vegetation took over from the forest.

Activity 4:

Answer the questions about the case study.

1. What is deforestation?
2. Give two reasons why the trees are being cut down.
3. What happens to the animals when the trees are cut down?
4. What happens to the soil after the forest is cut down?
5. How does the natural vegetation change after the forest is cut down?
6. How has the Ivory Coast's economy suffered as a result of deforestation?



Hot Deserts

A desert is a region that receives an extremely low amount of rain or any other form of moisture. There is too little water for most plants to grow. It is difficult to live there.

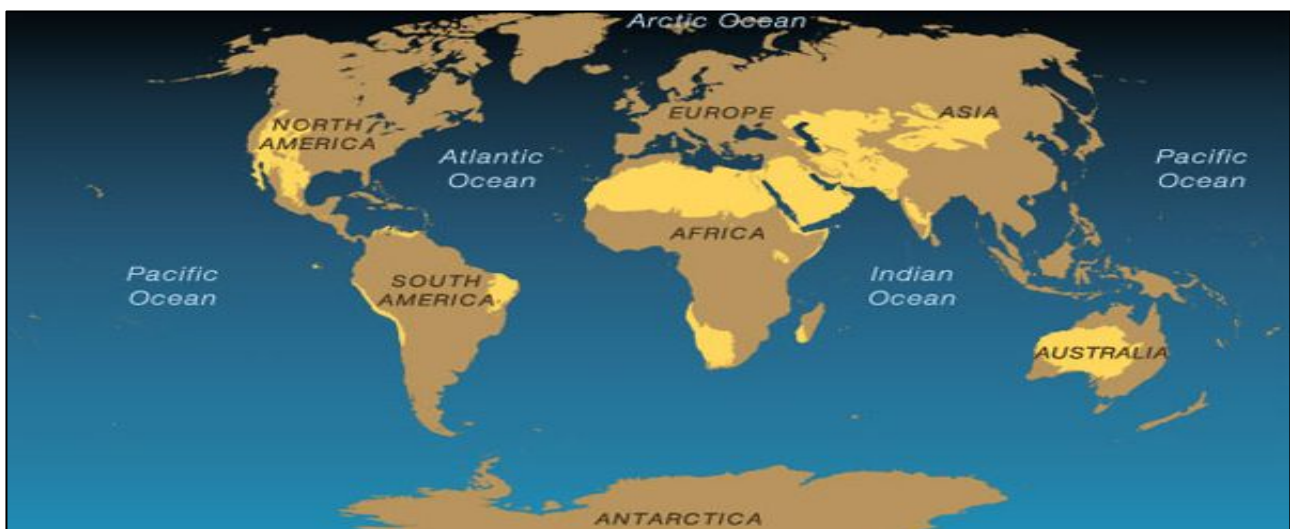


Did you know?

The largest desert is the Sahara Desert in North Africa.

The driest desert is the Atacama Desert in Chile.

The oldest desert is the Namib in Namibia.



The location of hot deserts of the world

Climate (temperature and rainfall) of hot deserts

Hot deserts are very hot. The average day time temperatures are above 30°C but it can get a lot hotter in a desert to above 50°C. Hot deserts are found in areas that have very low rainfall. This means only between 10mm and 200mm of rain falls on average in a year.

Think about this:

Even though it is so difficult, some plants and animals have adapted to live in very hot deserts. Think of what you do to stay cool when it is very hot. You wear a hat, cotton clothes and may put up an umbrella to give you shade. Or you stay indoors and don't do too much activity. This is how many plants and animals live in the hot deserts.

In reality quite a few animals have worked out how to live in deserts. They remain hidden during daylight hours to control body temperature. By being still they will also need less water. They get moisture from the prey they eat. Lizards and scorpions are particularly well adapted to desert life.



Scorpion



Lizard

How people live in hot deserts

Deserts are well known for their lack of water but some groups of people have adapted ways to find water in this harsh environment. For example, the Bedouin people turn over half-buried stones just before dawn, so dew forms on them.

Did you know?

The camel is called the ship of the desert. Camels are ideally suited to Deserts because they can walk for three days without having a drink.

The Bedouin Lifestyle

Most of the people living in the Sahara Desert today are nomads who move from one area to another. This means there are many different nationalities and languages in the region but most people speak Arabic.

A group of people called Bedouins live in tents which are cool and shady in the hot desert. An ***oasis*** is a water source in the desert that provides water for humans and animals.



The Bedouins use camels to carry their belongings across the desert.

The Nomads and Bedouins transported salt, spices, gold and ivory between the east and the west through the desert using camels. Timbuktu is a famous trading town, in the Sahara Desert, in the country of Mali.

Traditionally people have been able to live in deserts by hunting and gathering. The Khoisan and the Aborigines of the Australia deserts are such people. Settlements in deserts are found next to permanent water sources such as rivers and oases. The city of Cairo is on the Nile River which flows through the Sahara Desert.



Activity 5: Think about and research how people live in hot deserts.

1. Think about living in a hot desert.
2. Think of things you would like about living in a desert.
3. Think of things you would not like about living in a desert.

Case Study: The San of the Kalahari Desert

The San are hunter gatherers. They gather fruits from baobab and morula trees and find berries and roots to eat. They hunt buck with bows and arrows. They make the poison for their arrows from beetles, snakes, scorpions and spiders.

The San know how to survive on very little water. Water is very hard to find so it is precious. They suck water from underground through reeds. They store water in ostrich egg shells. They also get moisture from tsamma melons and sometimes drink water from the stomachs of buck. Sadly, many San have left the desert and moved into town.

**Case Study: The Taureg of the Sahara**

The Taureg are nomads who live in the Sahara Desert. They keep herds of cattle, goats and sheep. They use donkeys and camels to carry their goods and themselves through the desert. They travel from one water source to the next.

Their water sources are deep under the ground. They have dug wells to reach the water. Some of these wells are 60 metres deep. They get the water to the surface in a leather bag.

The Taureg get food from their animals. They drink their milk and kill a sheep or goat to eat on special occasions. They also use their animals to make all the goods they need. They

sew together the skins to make their tents and carry their water in leather bags. When they reach a town they trade animals for rice, tea, sugar and salt.



Activity 6: Use case studies to compare the San and the Taureg in table format.

1. Compare how the San and the Taureg get their water.
2. Compare how the San and Taureg store their water.
3. Compare what the San and Taureg eat.
4. Compare how the San and Taureg travel from place to place.



Did you know?

The annual rainfall in the Sahara Desert is below 25mm per year. Even in the Sahara's wettest areas it may rain twice in one week and then not rain again for years.

The average annual temperature for the Sahara

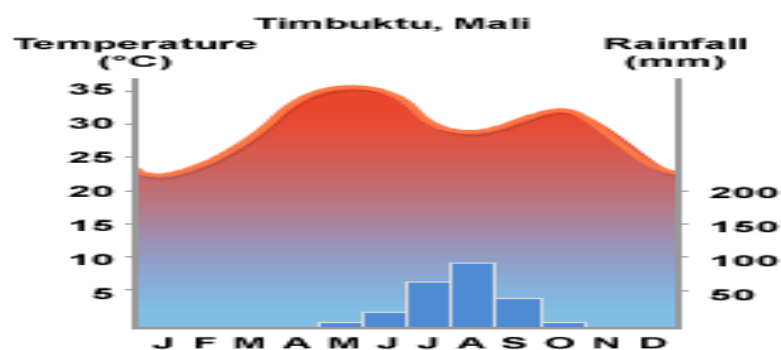
Desert is 30° C but during the hottest months' temperatures can go over 50°C. Timbuktu is a city in Mali on the edge of the Sahara Desert.

Living in Timbuktu

People first settled in Timbuktu over 1000 years ago. It was a major centre on the caravan routes between north and south Sahara. Irrigation projects allow farmers to grow crops here.



Houses are built out of natural materials and can withstand the desert heat



Activity 7

Find Timbuktu in the atlas. Look at the rainfall and temperature graph for Timbuktu. Then, answer these questions:

1. Describe the geographical position of Timbuktu: It is (north/south) of the equator in the (western/eastern) side of (name the continent)? It is on the (southern/northern) edge of the Sahara Desert?
2. What is the highest temperature and in which month does it occur?
3. What is the lowest temperature and in which month does it occur?
4. What is the temperature range?
5. What is the highest rainfall month?

6. Calculate the average annual rainfall for Timbuktu.
7. Can you explain why the average rainfall is much higher than the average for the Sahara Desert?
8. Complete the summary about Timbuktu.
9. Timbuktu is situated in the _____ nature region. This natural region has (high/low) rainfall throughout the year. The temperatures are (below 25°C) for the year. The temperature range is _____ °C.

Natural vegetation and wildlife in a desert

Because of the high temperatures and arid (dry) conditions of the Sahara Desert, the plant life is sparse and includes only around 500 species. These are mainly types of plant that are drought and heat resistant.

Plants have adapted to the heat and dryness by:

- Growing long roots.
- Having few leaves; and
- Storing water in leaves and stems.



The harsh conditions and dust storms in the Sahara Desert affect what types of animals are able to survive there. In the central driest part of the desert, there are only about 70 different animal species.

Animals have adapted to the desert by:

- Hunting at night when it is cool;
- Living underground by day;
- Reducing the amount of water, they lose from their bodies

- Having large ears with lots of tiny blood vessels - heat escapes from the blood vessels.
- This helps cool their bodies. Panting also helps them to lose body heat.



Activity 8

Study the bar graph and answer the following questions:

1. What is the hottest month of a temperate coniferous forest? What is the temperature?
2. In which month does it rain the most?
3. What is the average temperature for the year?

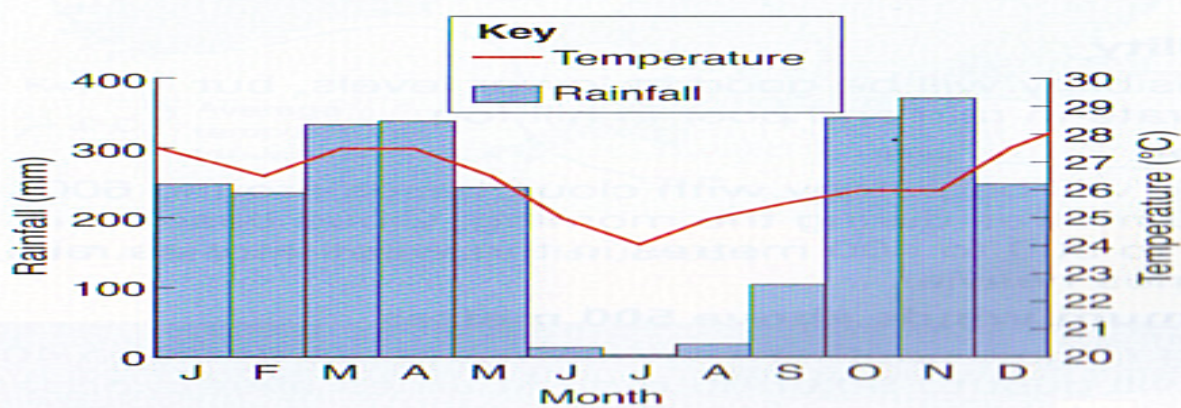


Figure 4 Climate graph for Gabon, equatorial Africa

Temperate coniferous forests

New words

Acidic: When the soil turns sour.

Conifer: A conifer is a type of tree that produces cones and evergreen needles.

Coniferous: Having many conifer trees.

Evergreen: A plant that does not lose its leaves in winter.

Temperate coniferous forest regions have warm summers, cool winters and low rainfall. This means that most trees are evergreen, so they can produce food whenever there is enough sunlight. The plants in a coniferous forest are adapted to a short growing season.



Natural vegetation and wildlife of temperate coniferous forests

There is more wildlife found in the temperate coniferous forests than the hot deserts but not as much as in the tropical rain forests. The forest vegetation and mosses provide food and shelter for animals, birds and insects. There are fewer reptiles as it is very cold in winter.

The vegetation of temperate coniferous forests has to cope with the long cold winters and the thin poor soils. The trees are **evergreen** and the most common are the fir and the pine tree.

The fir tree, which is a common tree in coniferous forests, is shaped like a pyramid so that snow will not collect and break the branches.

The leaves are thin and needle-like so the leaves lower down can get sunlight in winter and snow will slide off the leaves. The leaves are not nutritious so they are not eaten by the animals. The leaves are covered in wax so they do not lose too much water and protects them from the cold.



Did you know?

Pine needles are very acidic. When they fall on the ground they make the soil acidic. That is why so few plants can grow under pine trees.



Lynxes live off small animals and birds found in the forests. They have long legs and fur on the soles of their feet so they can hunt in the snow. They have a thick light brown fur to keep them warm in winter and help hide away in the shadows of the forests. They have a short tail so they don't lose too much heat.

Human Activities

- The forest soil is poor so it is no good for farming. Instead, large areas of temperate coniferous forest regions have been cleared by logging. Logs are floated down rivers to saw mills. The soft wood is good for making paper, matches, furniture and houses. This is the most important way people make a living from the forests.
- A large number of forests are plantations. In plantation forests, areas are planted with a single tree species. These trees grow straight and quickly which means they can be logged sooner.
- Many coniferous forests are located near large industrial centres and urban areas where lots of people live. Forests are also destroyed by pollution in the air from these industries and from heavy traffic.
- Population growth and the expansion of cities mean many forests are being cleared to make way for roads, towns and cities.
- Mining is another reason why forests are cut down.
- People gather berries, nuts and fruit in summer and fish and hunt animals.
- People ski on the snow slopes in winter.

Bibliography: K Angier, D Carr, J Cockburn, J Wallace