UNIT 2

THE EARTH, OUR HOME

Unit Outcomes

After studying this unit, you will be able to:

- **Identify the continents, water bodies of the world and compare and contrast fresh water with marine water**
- **Describe the land features of Eastern Africa**
- **Identify the layers of the atmosphere and describe the components of lower layer of the atmosphere**
- **Sketch a map and use colors, signs and symbols to indicate different land features.**

Do you remember that in Unit One you have learnt about the location, settlement and people of Eastern Africa. In this unit you are going to learn about the Earth, our home.

2.1 Lesson

The Surface of the Earth

Competencies: After studying this lesson, you will be able to:

- List the continents of the world.
- Name the oceans of the world.

Key Terms

- Continent
- Fresh water
- Marine water

The Continents

- What does a continent mean?
- On which continent do you live?
- How many continents are there in the world?
- List the continents according to their size, largest first and smallest last.

Now relate your answers to the above questions with the information you have on Table 2.1. See how varied the continents are in size with regard to their area in square kilometers.

A continent may mean a very large extent of land. Its land masses are interconnected and have varied land features. There are seven continents in the world. Some continents are found separately while others are interconnected. Some continents are larger in extent while others are limited in size.

Table 2.1 The Seven continents of the world ordered by size

Rank	Continent	Square Kilometers
1	Asia	44,391,162
2	Africa	30,244,049
3	North America	24,247,039
4	South America	17,821,029
5	Antarctica	14,245,000
6	Europe	10,354,636
7	Australia	7,686,850

Lesson 2.1 Review

Activity

A. Questions based on Facts:

Individual Work:

- Compare the continents of the world in terms of size?
  - a) Which continent is the smallest?
  - b) Which continent is the largest?

B. Things to do:

- Trace the outline map of the world and show the following continents (Refer to Fig.2.5).
  - Africa
  - Europe
  - South America
  - Asia
  - North America
- Draw the sketch map of Africa and show countries of Eastern Africa.

Water Bodies

- Mention some examples of water bodies.
- What sorts of water bodies are found in your surroundings?
- What is the difference between fresh water and marine water?
- Mention some uses of water?

Water is the most abundant compound on the Earth's surface. It constitutes about 70 percent of the earth's surface. In nature, it exists in liquid, solid, and gaseous states.

Table 2.2 Major water bodies of the world by area, maximum depth or length

Water body	Type	Surface area (in km^2)	Max. depth (in meters)	Length (kms)
Nile	River	2,800,000	-	6,695
Amazon	River	7, 000, 000	90	6, 400
Congo	River	4,100,000	230	4,324
Mississippi	River	2,979,000	-	3,730
Victoria	Lake	68,800	84	-
Malawi	Lake	29,600	706	
Tanganyika	Lake	32,900	1470	
Tana	Lake	3,600	9	-
Red sea	Sea	438,000	3,040	2,250
Mediterranean sea	Sea	2,512,000	5,150	-
Indian ocean	Ocean	73,556,000	8,047	-
Pacific Ocean	Ocean	169,200,000	10,911	-
Atlantic Ocean	Ocean	106,400,000	8,605	-

Water bodies are found in different places of the world. They occupy or cover different extent of land. These water bodies are oceans, seas, lakes, rivers, streams, ponds, and springs.

Water bodies are usually divided into two categories, namely **fresh water** and **marine water (salty water)**. This division is based on the salt content of the water bodies.

Table 2.3 Example of fresh and marine water bodies

Fresh water	Marine water
Lakes	Seas
Ponds	Oceans
Streams	
Rivers	

Fresh Water

- What does fresh water mean?
- Give some examples of fresh water in your locality.
- What advantages does fresh water have in your surroundings?
- Suggest what problem would confront your locality had it been deprived of fresh water.

Fresh water is a naturally occurring water on the Earth's surface. It is found in swamps, ponds, lakes, rivers, streams, and groundwater. Fresh water is characterized by having a low salt concentration-usually less than 1 percent. Plants and animals in fresh water bodies are adjusted to the low salt content. There are different types of fresh water bodies. They include:

- Lakes and ponds
- Streams and rivers

◈ Lakes and Ponds

Lakes:

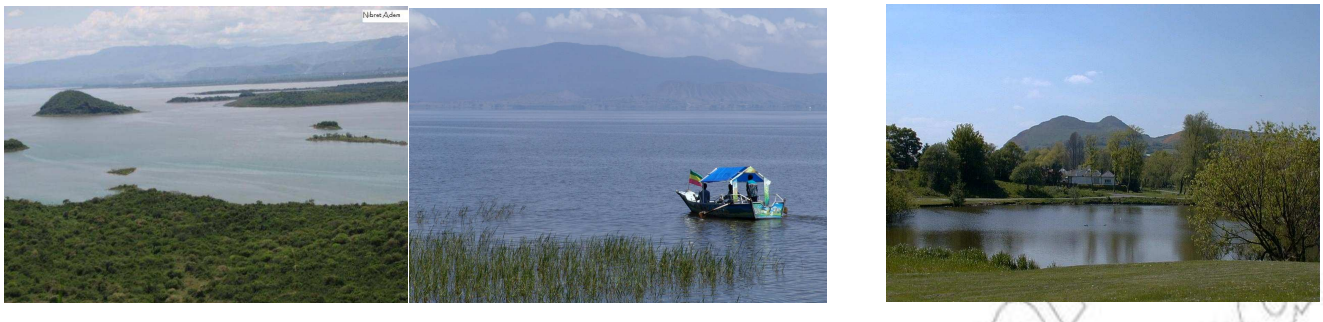
- What are lakes?
- Name the largest lake in Africa.
- What is the largest lake in Ethiopia?

A lake is a body of fresh water, surrounded by land. On Earth a body of water is considered to be a lake when it is inland.

Pond

- What sort of water body is a pond?
- How are ponds formed?
- Are there ponds in your locality? If yes, how are they formed?

A Pond is a body of water surrounded by land. It is formed naturally or created artificially. A lake is larger and deeper than a pond.



a) Lakes b) Pond

Fig. 2.1 Lakes and Pond

Lake Victoria

- **Where is Lake Victoria found?**
- **Name the countries that the lake touches.**
- **From where does the lake get its water resource?**

Lake Victoria is one of the African Great Lakes (See Fig.2.2). The lake was named after the United Kingdom's Queen Victoria, by John Hanning Speke, the first European to visit the lake.

The lake receives most of its water from direct rainfall. Its largest influent is the Kagera River. Kagera's mouth lies on the lake's western shore. The only river that leaves the lake is the White Nile .
The White Nile is known as the "Victoria Nile" as it leaves the lake. It leaves the lake at Jinja, Uganda, on the lake's northern shore.

Lake Victoria occupies a low lying area in the East African Plateau. It has an average depth of 20 meters. The lake is divided between three countries, namely Kenya (6% or 4,100 km^2), Uganda (45% or 31,000 km^2) and Tanzania (49% or 33,700 km^2).

Fig. 2.2 Lake Victoria and Its Environs

Streams and Rivers

- What are streams and rivers?
- What significant difference is there between streams and rivers?
- Name some examples of streams and rivers in your locality.
- Explain the contribution streams and rivers provide to your surroundings.

Streams and rivers are bodies of flowing water in one direction. The two are the same in nature, but they differ in size. Streams are smaller compared with rivers. Streams and rivers are fresh water bodies.

a) Stream b) River

Fig. 2.3 Running water ecosystem

River Nile

- Is there any river in Ethiopia that is related to River Nile? What is its name?
- What is the direction of flow of River Nile?
- Discuss the contributions of River Nile for the countries it drains.

Case Study

The Nile is one of the renowned rivers in Africa, particularly in Eastern Africa. It travels a long way from Lake Victoria to the Mediterranean Sea covering a distance of 6,695 kilometers.

The Nile gets its name from the Greek word "Nelios", meaning River valley. The two major rivers of the Nile Basin are the White Nile and the Blue Nile. The White Nile starts from Lake Victoria, Uganda. The influent Blue Nile starts from Lake Tana, Ethiopia (See Fig 2.4).

The Nile and its tributaries flow through 11 countries, namely Uganda, Northern Sudan, Southern Sudan, Egypt, Ethiopia, Eritrea, the Democratic Republic of Congo, Kenya, Tanzania, Rwanda, and Burundi.

The major cities that are located on the edge of the Nile are: Cairo, Gondokoro, Khartoum, Aswan, Thebes/ Luxor, Karnak, and the town of Alexandria, which lies near the Rozeta branch. The major dams on the Nile are Roseires Dam, Sennar Dam, Aswan High Dam, and Owen Falls Dam (See fig 2.4).

Fig. 2.4 The Nile River and Its Environs

Lesson 2.1 Review

Activity B

A. Questions based on facts:

Individual Work:

- What is the difference between a pond and a lake?
- Discuss the difference between streams and rivers.

Pair work:

- Name some examples of fresh water and marine water.
- Name the longest river in the world.

B. Things to do:

Group work:

Draw the sketch map of Eastern Africa and locate:

- Lake Victoria
- Lake Tana
- River Nile

Marine or Sea Water

- What is marine water and sea water?
- What makes marine water different from other water bodies?

Ocean is a large expanse of salt water. Oceans occupy huge regions of the Earth's surface. Their boundaries are usually established by continental land masses (See fig. 2.5).

Sea water is water from sea or ocean. The vast majority of sea water is salty (saline). However, sea water is not uniformly saline throughout the world. Where mixing occurs with fresh water runoff from river mouths or near melting glaciers, sea water can be substantially less saline.

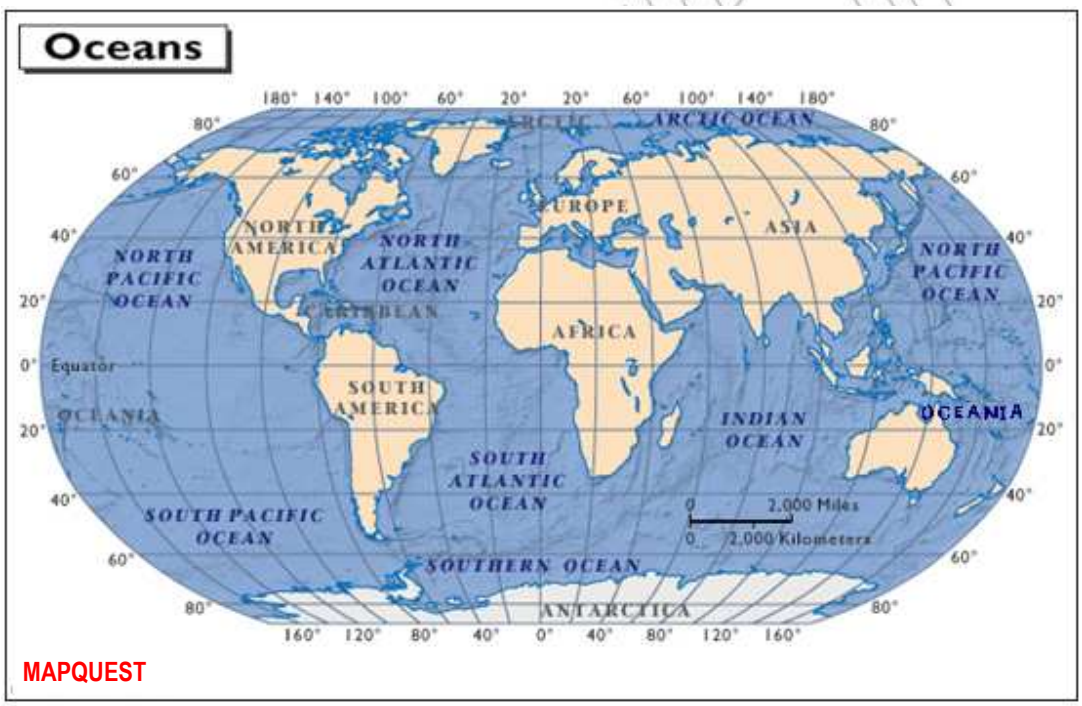


Fig. 2.5 Oceans of the World

The Dead Sea

- Where do you find Dead Sea?
- Why is it called Dead Sea?
- What particularities does Dead Sea have?

Case Study

Dead Sea is a salt lake in Middle East Asia. It is bounded on the west by Israel and the West Bank and on the east by Jordan. The Dead Sea forms part of the Israeli-Jordanian border. The surface of the Dead Sea is 418 m below sea level. This proves that the Dead Sea has the lowest water surface on earth. The sea is 80 km long and has a maximum width of 18 km. Its area is 1,020 sq km. The Dead Sea occupies the northern portion of the Great Rift Valley. By nature Dead Sea is a lake.

The Dead Sea is fed mainly by the Jordan River, which enters the lake from the north. Several smaller streams also enter the sea, chiefly from the east. The lake has no outlet, and the heavy inflow of fresh water is carried off solely by evaporation. Because evaporation is rapid in the hot desert climate.

Dead Sea is nearly nine times as salty as the ocean. The Dead Sea contains, at a depth of 305 m, some 27 percent solid substances. These substances include sodium chloride (common salt), magnesium chloride, calcium chloride, potassium chloride, magnesium bromide, and many other substances.

Fig 2.6 Dead sea

(Discuss these substances with your science teacher). Because of the density of solids in the water, the human body easily floats on the surface. The sea contains no life of any sort except microbes, because of the chemical substances found inside the sea.

The Dead Sea is economically important as a source of potash, bromine, gypsum, salt, and other chemical products, which are extracted inexpensively. The shores of the Dead Sea are of growing importance as a winter health resort.

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Lesson 2.1 Review

Activity C

A. Questions based on facts:

Individual Work:

- What is an ocean?
- What makes oceans different from seas?

Pair Work:

- Is there any similarity beween oceans and seas? If yes, what is it?
- Compare and contrast Indian and Pacific Oceans.

B. Things to do:

Group Work:

- Look for a globe or map of the world and identify the locations of Pacific and Idian Oceans.
- Indicate the continents that surround these two oceans.

2.2 Lesson

Major Land Forms of Eastern Africa

Competencies: After studying this lesson, you will be able to:

- Identify the major physical features of Eastern Africa
- State the significance of the Great Rift Valley.

Key Terms

- Physical feature
- Rift valley

Physical Features of Eastern Africa

- What does physical feature mean?
- State the different physical features that you know.
- Discuss the physical features of Eastern Africa.

Eastern Africa is the eastern most region of the African continent. It extends from Eritrea in the north east to Mozambique in the south east.

Eastern Africa includes many countries and islands of the Indian Ocean. The biggest island in this region is Madagascar. Look at the position of Madagascar carefully. The islands in Eastern Africa include Comoros, Mauritius and Seychelles. Reunion and Mayotte-French overseas territories are also considered part of Eastern Africa.

Generally, physical features include the ups and downs of the surface of the Earth. These include hills, ridges, mountains, and valleys, plains and undulating lands. In most cases, Eastern Africa is mountainous region. The mountains of Eastern Africa are given in Table 2.4.

Table 2.4 Major mountains of East Africa

Name	Height (in meters)	Location
Kilimangaro	5, 895	Tanzania
Mt Kenya	5,199	Kenya
Margherita	5,109	Uganda and Democratic Republic of Congo (DRC)
Ras Dejen	4,620	Northern Ethiopia
Mt Meru	4,565	Close to Kilimanjaro in Tanzanica
Mt Elgon	4, 321	Uganda and Kenya frontier
Mt Ruwenzori	5,119	Uganda

All mountains mentioned in Table 2.4 are volcanic except Ruwenzori which is a block mountain. Volcanic mountains are formed due to the eruption of volcanoes. Block Mountains are the results of the formation of rift valleys which are created because of faulting. Furthermore, discuss with your teacher how a block mountain is formed.

A low lying land feature in Eastern Africa is found in Ethiopia. This area is known as the Danakil plain. It is found in the Afar region of Ethiopia. In this plain there is a depression known as the Kobar Sink. It drops as low as 120 meters below sea level.

Fig. 2.7 Kobar Sink

The Great East African Rift Valley

- **Define a rift valley.**
- **What is the extent of the Great East African Rift Valley?**
- **Explain the countries that the Great East African Rift Valley touches.**

Rift valley is a valley which has been formed by the sinking of land between two roughly parallel faults (cracks). Such a valley is long in proportion to its width.

◈ What is the East African Rift System?

The oldest and well defined rift occurs in the Afar region of Ethiopia. This rift is usually referred to as the Ethiopian Rift. Further to the South, a series of rifts occur which include a Western branch, containing the East African Great Lakes. There is also an Eastern branch that roughly bisects Kenya north-to-south on a line slightly west of Nairobi (See Fig.2.8). These two branches together have been termed the East African Rift, while parts of the Eastern branch have been termed the Kenya Rift or the Gregory Rift. The two branches are often grouped with the Ethiopian Rift to form the East African Rift System. The complete rift system extends thousands of kilometers in Africa alone and several thousands

more if we include the Red Sea and the Gulf of Aden as extensions. Thus, the rift valley extends from Syria in the Middle East to Mozambique in Eastern Africa covering a distance of 7200 kilometers. The biggest portion (some 5,600km) of the world's Great Rift Valley system is found within Eastern Africa.

- **How was the Rift valley formed?**

The rift valley was formed by the sinking of land between two roughly parallel faults or cracks; such a valley is long in proportion to its width.
The lateral movements of the crust of the earth in the opposite directions were responsible for the formation of the rift valley.

- **When was the Rift valley formed?**

The rift valley was formed many million of years ago. The Great Rift valley of East Africa is potentially important source of valuable natural resources. It is full of geyzers, tremors, active volcanoes, fumaroles and attractive lakes. These features have economic contributions as they attract tourists, scientists and investors.

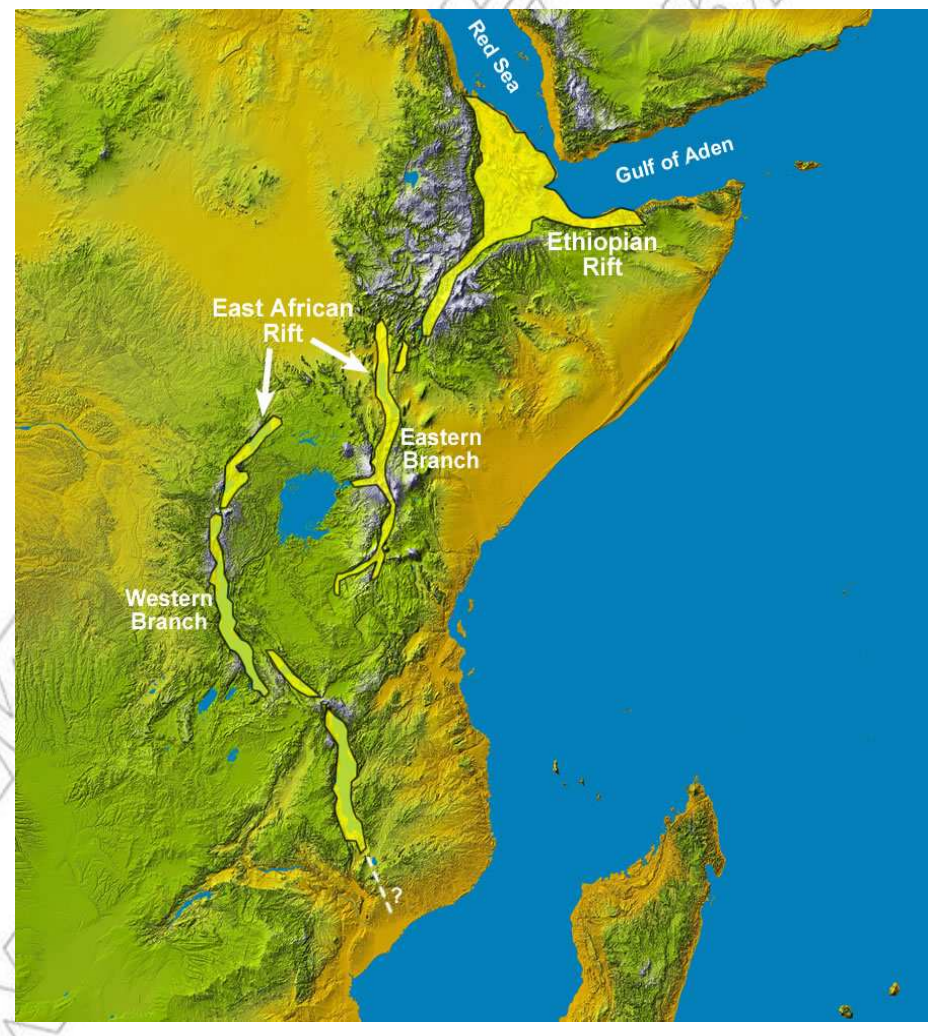


Fig. 2.8 The Great East African Rift Valley

Case Study

Erta Ale

There are a number of active volcanoes in the Great East African Rift Valley. The famous Erta Ale (Afar-smoking mountain) (See Fig. 2.9) is found in the Afar regional state of Ethiopia.

Fig. 2.9 Erta Ale Active Volcano

Erta Ale is an isolated basaltic shield volcano. It is the most active volcano in Ethiopia. It is a 50 km wide volcano and sinks more than 600 m from below sea level in the barren Danakil depression. Erta Ale is the most prominent feature of the Erta Ale Range. The 613 m high volcano contains a summit crater. Another larger depression elongated parallel to the trend of the Erta Ale range is located to the South East of the summit. The summit caldera is renowned for one, or sometimes two long-term lava lakes that have been active since at least, 1967, or possibly since 1906. Recent fissure eruptions have occurred on the northern flank of Erta Ale.

Lesson 2.2 Review

Activity

A. Questions based on facts:

Individual work:

- How long is the Great East African Valley in Africa?
- Name the branches of the Great East African Rift valley.

Pair work:

- Discuss the formation of the Great East African Rift valley
- What is the name of the lake that is found between the two branches of the Great East African Rift Valley?

B. Things to do:

Group work:

- Write down the names of countries that are found within the proximity of the rift system (use Fig. 2.8).

2.3 Lesson

Water Resources in Eastern Africa

Competencies: After studying this lesson, you will be able to:

- Name the rivers, lakes and sea of Eastern Africa.
- Compare and contrast the properties of marine and fresh water.

Key Terms

- Water resource
- Property
- Maximum

◈ Lakes, Rivers and Seas of Eastern Africa

Eastern Africa has numerous lakes and rivers, while the number of seas in this region is highly limited. The most famous countries with water resources are Ethiopia, Kenya, Uganda and Tanzania.

Most of the lakes in Africa are found in Eastern Africa. These lakes are particularly known as the rift valley lakes. They include lakes Tanganyika, Malawi, Kivu, Edward, Albert, Turkana, Meru and the rift valley lakes of Ethiopia.

In terms of size from Table 2.2 you observe that **Victoria, Tanganyika** and **Malawi** stand first, second and third respectively. In respect to maximum depth, Lake Tanganyika is the leading followed by Malawi and Victoria. Lake Tana is the shallowest lake in Eastern Africa with a maximum depth of 9 meters.

In Ethiopia, there are numerous lakes. They are usually divided as rift valley lakes, crater lakes and highland lakes. As mentioned earlier, the biggest lake is Lake Tana which is well known as a highland lake.

The biggest lake, Lake Victoria, is found to the south of Ethiopia between the eastern and western branches of the Great East African Rift Valley. This lake is divided among three countries of East Africa, namely Uganda, Kenya and Tanzania. There are other smaller lakes in this part of the region. Lake Tanganyika, Meru, Albert, etc. are some of them.

The marine waters of the Region are Red sea and Indian ocean. The Indian Ocean occupies a large extent of the land on the eastern fringe of Eastern Africa.

◈ Fresh and Salty Water

In Eastern Africa, fresh water resources include rivers and lakes. These water bodies are composed of less salt content as compared to seas and oceans. Thus, rivers are used as the sources of water for home consumption in every part of Eastern Africa.

Lesson 2.3 Review

Activity

A. Questions based on Facts:

Individual work:

- **Name the largest lake in Eastern Africa.**

Pair work:

- **List Lakes of Eastern Africa according to their depth, i.e from the shallowest to the deepest.**

B. Things to do:

Group work:

- **Draw the sketch map of Ethiopia and show:**
  - **Lake Tana and**
  - **Rift valley lakes**

2.4 Lesson

Water and Its Economic Use in Eastern Africa

Competencies: After studying this lesson, you will be able to:

- Explain economic uses of water in Eastern Africa.
- Discuss the strategic importance of water.

Key Terms

- Navigation
- Rapids
- Braided channels
- Water falls
- Meanders
- Deep gorges

Water bodies and their economic uses

Economic uses

- Mention some home uses of water in your localities.
- Single out any river in your area which is used for irrigational purpose.
- What other contributions do water bodies have?
- Mention the name of a river used to generate hydroelectric power in your area or in Ethiopia.
- Mention some important aspects of water bodies in reference to agricultural activities.
- Discuss the contributions of water bodies in detail.

Water bodies have different economic advantages. Oceans, seas, lakes and rivers may be important for fishing, transportation and for generating power. Particularly, oceans, seas and lakes have massive service for promoting fishery. However, there are some rivers which are dependable sources of fish. Thus, such rivers encourage fishery. However, Fisheries on lakes and rivers may be more suitable for local consumption.

Oceans, lakes and seas are used for transportation. Seas and lakes may provide transportation services for relatively localized environments. Thus, some lakes are important for inland water way. For example Victoria serves this purpose in the lakes region of Eastern Africa. In Ethiopia, Lake Tana provides boat transport for more than seventy kilometers between Bahir Dar and Gorgora, Delghi, etc. Lakes are also important tourist attractions. On the other hand, oceans cover large areas and thus they provide intercontinental transportation services.

Almost all lakes in the world have the potential for fishing. Though there is unwise exploitation of fish, lakes are good sources of fish. For example, in Africa, Lake Victoria is known for its fish reserves.

Rivers that emerge from the foot hills of highlands are swift. They may have rapids and cataracts. These characteristics make the rivers fit to generate hydroelectric power. In Ethiopia, Awash, Fincha,

Wabeshebelle, Ghibe, Tekezze and Abay at Tis Isat are good examples for generating hydroelectric power.

Some rivers are used for fishing and transportation. Rivers used for transportation should be free from rapids, cataracts or waterfalls. All over the world there are big rivers that are used for transportation.

Rivers are also important for promoting irrigation agriculture. In many parts of Ethiopia, irrigation agriculture is possible because of water obtained from perennial rivers.

Eastern African Rivers are very important natural resources for the development of socio-economic and cultural activities in the continent. Some of their general uses are given below briefly:

◈ Irrigation Schemes

Eastern Africa has tremendous potential for the development of large-scale irrigation schemes. Several big dams have been built across the major rivers of the region for irrigational (plantation agriculture) purposes. For example, Koka dam, in Ethiopia, is designed primarily for generating hydroelectric power along Awash River. However, it is used for enhancing irrigation at the lower valley of river Awash.

◈ Hydroelectric Power Generation

Many rivers, in Eastern Africa, are used for generating hydroelectric power. For example, in Uganda along the Owen Falls near the city of Jinja, a dam has been built to generate hydroelectric power. In Ethiopia, there are many rivers along which dams have been built to facilitate the provision of hydroelectric power. Rivers Awash (Koka), Wabishebelle (Melka Wakena), Ghilgel Ghibe, Tekezze, and Abay (Tis Isat falls) are the leading examples.

(a) Tekezze

(b) Awash

Fig 2.10 Hydroelectric Power Station

◈ Navigation (Inland water way)

Rivers may be suitable for navigation if they are free from cataracts, rapids, and waterfalls. Some rivers are navigable in Eastern Africa, river Baro (Ethiopia) and river Tana (Kenya). Navigation services on lakes Victoria, Malawi, and Tanganyika are important today. The large artificial lakes of the continent, such as Kariba are navigable almost all the year round. However, most of Eastern African rivers are not navigable because of:

- the presence of waterfalls, rapids, meanders and braided channels;
- deltaic mouths and mangrove swamps;
- seasonal flow fluctuation; narrow and deep gorges;

Some rivers are transboundary (cross countries) in Eastern Africa. Because of this, countries which share the rivers usually reach a bilateral or multilateral agreement as to how to use the waters of the rivers fairly and equitably. Blue Nile is a good example in this aspect. Recently, countries along the Nile have agreed to have the Nile initiative agreement.

Case Study

Fishing in Djibouti

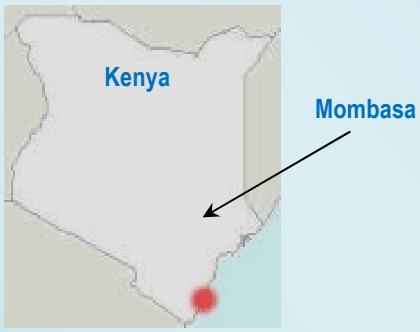
Fishing is conducted at small scale in Djibouti. The main objective of Djibouti fishery policy is to develop the resources and manpower of the country to promote the sustainable utilization of local fish stocks. Along with this aim the government provides support and development of infrastructure such as ports, cold storage and training facilities for fishermen. Most landings are made in Djibouti city and Tadjoura with smaller quantities landed at Khor Angar. More reef and demersal species tend to be landed at Tadjoura, where there are well developed reef structures offshore. However, fishing contributes only 2 percent share to the GDP of Djibouti.

Fig 2.11 Djibouti

Cargo Ship in Mombasa

Mombasa is Kenya's second biggest city. Many cargo ships and a few passenger liners call in at Mombasa. Mombasa is one of the most important ports on the east coast of Africa North of Durban (South Africa). It has its own international airport operating flights from Europe and Asia as well as the rest of Africa.

Originally, Mombasa was built on an Island. Now, it is connected to the main land by a causeway, three bridges and two main ferries.



(a) Location of Mombasa

(b) Cargo ship

The most famous land mark of modern Mombasa, on Moi Avenue, is an arch of oversized (metal) elephant tusks. It was erected in 1956 for a royal visit of princess Margaret, Queen Elizabeth II's sister.

(b) Oversized Elephant Tusks

Fig 2.12 Mombasa

Lesson 2.4 Review

Activity

A. Questions based on Facts:

Individual work:

- What are rivers used for?
- List names of rivers used for hydroelectric power in Ethiopia.

Pair work:

- List some uses of water bodies in Eastern Africa.

B. Things to do:

Group work:

- Look at the physical map of Eastern Africa and identify the water bodies you have learnt that may be used for irrigation, transportation and recreation. (Complete the given table).

Water body	Irrigation	Transportation	Recreation

2.5 Lesson

The Atmosphere

Competencies: After studying this lesson, you will be able to:

- Identify the layers of the atmosphere.
- Describe the components of the lower layer of the atmosphere.
- Draw and label the atmospheric layers.

Key Terms

- Atmosphere
- Troposphere

Atmosphere

- What is atmosphere?
- What are the components of the Atmosphere?
- Discuss, at length, the contributions of the earth's atmosphere.

Atmosphere is the air which surrounds the earth. It consists of a mixture of gases, mainly oxygen, nitrogen and carbondioxide in very much varied proportion. There are other gases such as Argon, Helium and rare gases.

Layers of the Atmosphere

- In general, how many distinct layers does the atmosphere have?
- Mention the two lower layers?

The atmosphere of the Earth may be divided into four distinct layers (See Fig.2.13). Each layer has its own distinguishing characteristics.

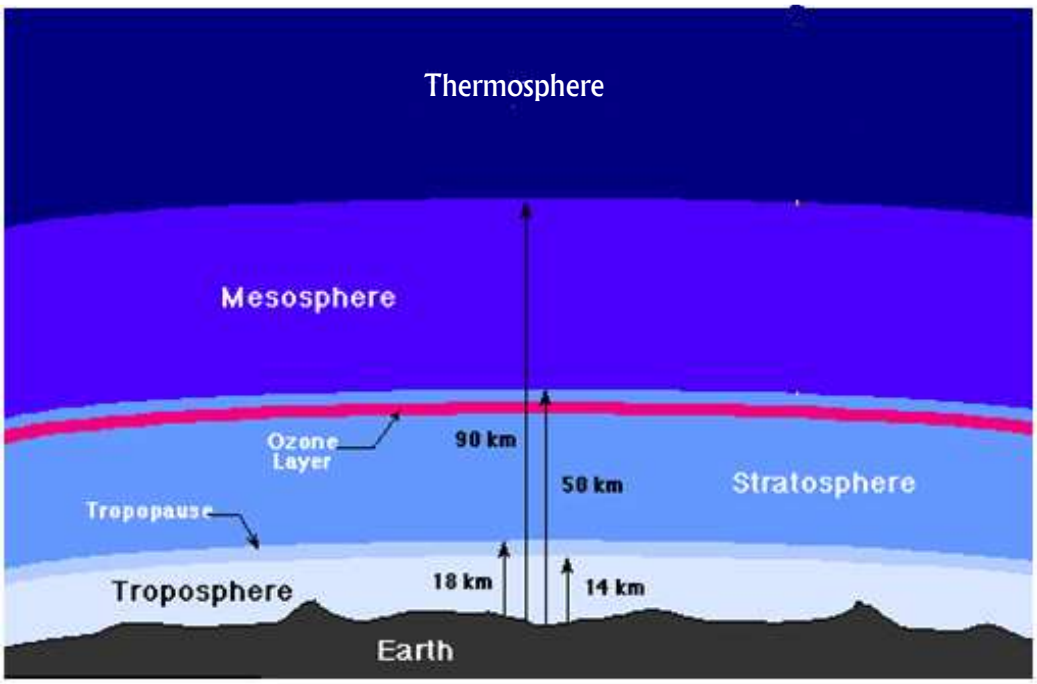


Fig. 2.13 The four Layers of the Earth's atmosphere

◈ Troposphere and its components

The troposphere is the lower portion of the atmosphere. It extends up to about 8 kilometers at the poles and 16 kilometers at the equator. It contains three-fourths of the atmospheric mass. It is the layer where clouds and storms form. In the troposphere there is a fairly uniform decrease of temperature with an increase in altitude. The zone marking the end of this temperature decrease is known as the tropopause. Moreover, the troposphere is a turbulent, dusty zone. It consists of gases, much water vapour and clouds. Some of the principal gases of the dry air in the lower atmosphere are: Nitrogen, Oxygen Carbondioxide.

Lesson 2.5 Review

Activity

A. Questions based on facts:

Pair work:

- **List the layers of the atmosphere?**
- **Explain the components of the Troposphere**

B. Things to do:

Group work:

- **Draw a diagram of the earth's shape showing the layers of the troposphere, stratosphere, mesosphere and thermosphere.**

2.6 Lesson

Conventional Signs and Symbols

Competencies: After studying this lesson, you will be able to:

- Appreciate the significance of color on a map.
- Identify the major conventional signs and symbols used on a map.
- Use conventional signs and symbols to represent information on a sketch map.
- Make a simple map key.

Key Terms

- Color
- Signs and symbols
- key

The Use of Color on Maps

- Discuss what features are shown on maps by colors.

Map makers utilize color on a map to represent certain features. Color use is often consistent across different types of maps by different map makers or publishers. Map colors are always consistent on a single map.

Many colors used on maps have a relationship to the object or feature on the ground. For example:

- **Blue** - lakes, rivers, streams, oceans
- **Red** - major highways, roads, urban areas, airports, military sites, place names, buildings, borders
- **Green** - parks, forest
- **Brown** – relief features
- **Black** - roads, railroads, highways, bridges, place names, buildings, borders
- **Purple** – highways

As you can see, different maps can use colors in a variety of ways. It is important to look at the map key or map legend for the map you are using to become familiar with the color scheme.

If you take as an example a map with the scale of 1:50,000, the colors used on the map to indicate different human made or natural features may be explained as in Table 2.6:

Table 2.6 Colors of a map

Color	Feature
Green	Vegetation
Blue	Water body
Brown	Highland
Yellow	Lower plateaus
White	Highest Peaks
Red	Main roads

Major Signs and Symbols

- What are signs and symbols?
- Discuss the advantages of signs and symbols on physical maps.
- How are signs and symbols readable on maps with legends?

Sign and symbol mean the same. Each may mean a thing representing something else.

A map uses its own language. Map language is expressed with conventional signs and symbols. A map symbol is a diagram, sign, letter or abbreviation. Each symbol is explained using a key. A map key is also known as map legend. Thus, whenever you want to read a map, you have to refer to the key or legend. Unless you use the legend, you cannot read and understand the idea conveyed by the map.

You can also make a sketch map of your own area or school compound. When you make your own sketch map, you can use your own symbols. But meanings of the symbols used should be specified in the legend.

Symbols used should satisfy the following requirements:

- Each symbol should be uniform throughout the map;
- Symbols should be easy to read and understand;
- Space occupied, orientation and size of the symbols should be constant.

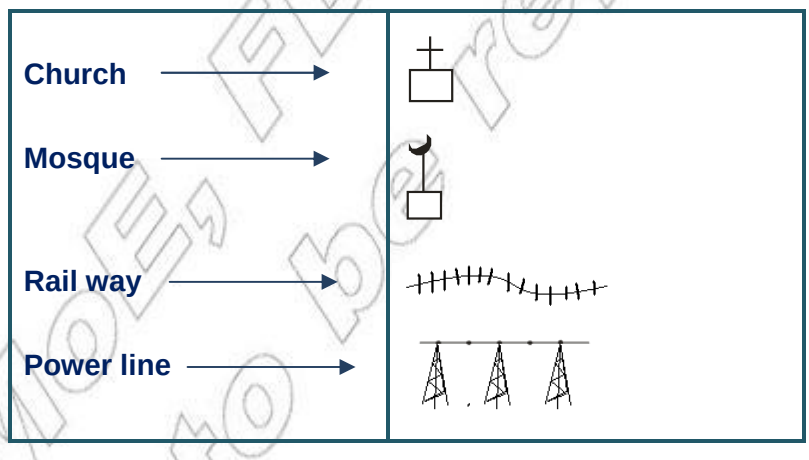


Fig. 2.14 Some signs and symbols used on maps.

Signs and symbols could be fixed for different features on maps.
Ranges of colors and various types of signs and symbols are used on maps to represent reality. The real thing on the ground cannot be depicted on a map as it is. Some sort of selection and reduction is necessary. To reduce the size, scale is employed. To make these effective, colors, signs and symbols are used on maps.

Lesson 2.6 Review

Activity

A. Questions based on Facts:

Individual work:

- Why are signs and symbols used on maps?

Pair work:

- Discuss why colors are used on maps.

B. Things to do:

Group work:

- Draw the sketch map of your area and indicate important places using colors, symbols and legend.

Summary

- A continent is a very large extent of land whose landmasses are interconnected.
- There are seven continents in the world.
- Water bodies of the world may be divided into two, namely fresh water and salty water.
- Lakes, ponds, rivers and streams are fresh water resources while seas and oceans are salty water resources.
- Salty water is also known as marine or sea water.
- Water from different sources may have various economic advantages.
- Ocean, sea, lake, and river water may be used for fishing, and transportation. Rivers may be more suitable for promoting irrigation agriculture and generating electric power.
- Eastern Africa is found in the eastern fringes of the African continent lying from north east to south east occupying the north east and south east border line of the continent.
- Eastern Africa contains the highest mountains.
- The Great East African Rift Valley extends from Syria in the Middle East to Mozambique in Eastern Africa.
- Water resources in Eastern Africa have various contributions, such as for home consumption, irrigation, fishing and generating hydroelectric power.
- Atmosphere is the gaseous envelope that covers the earth. It is composed of layers with transitional zones.
- Conventional signs and symbols are important while making sketch of maps or conventional maps.

Glossary

- ***Atmosphere:*** the air that covers the earth
- ***Braided channels:*** *water ways with branched grooves*
- ***Continent:*** a large extent of land
- ***Color:*** a visible quality that objects have, produced by the way they produce light.
- ***Deep gorges:*** narrow valleys with steep sides
- ***Fresh water:*** water with little or no salt content
- ***Influent:*** in flowing river; tributary
- ***Key:*** an explanation of the symbols used on a map
- ***Lakes:*** water bodies surrounded by land
- ***Marine water:*** salty water
- ***Maximum:*** the greatest amount, size, intensity, etc.
- ***Meanders:*** a curve in the course of a river which continually swings from side to side
- ***Navigation:*** the action process or art of finding the position and direct the course of a ship, an air craft, a car etc.
- ***Physical feature:*** natural feature or landscape
- ***Property:*** a thing or things owned; quality or characteristics something has.
- ***Rapids:*** parts of a river where the water flows very fast, usually over rocks.
- ***Rift valley:*** land feature which is the result of faulting
- ***Rivers:*** flowing water bodies
- ***Seas:*** one of the smaller divisions of the oceans, especially if partially enclosed by land, e.g. Mediterranean Sea; a large expanse of inland salt water, even if completely landlocked, Caspian Sea: the name is also loosely applied to the great mass of salt water which covers much of the earth's surface.
- ***Signs and symbols:*** marks an image that reprsent somethings.
- ***Troposphere:*** the lower layer of the atmosphere
- ***Water resource:*** water available in given natural environment.
- ***Waterfalls:*** sudden falls of water, usually caused by beds of hard rocks in rivers' courses.

UNIT 2

Review Questions

I. Write "True" for correct statements or write "False" for incorrect statements.

1. Water is the most abundant compound on the Earth's surface.
2. Marine water is fresh water.
3. Rivers are bigger than streams.
4. Lake Tanganyika is the largest lake in Africa.
5. Blue Nile, being the prominent tributary of the Nile, provides it with the largest amount of water and fertile soil.

II. Match the items under column 'B' with the corresponding explanations under column'A'.

Column 'A'	Column 'B'
_____6. enters the Mediterranean Sea	A. River Amazon
_____7. water from a sea or ocean	B. River Congo
_____8. has a length of about 6,400 km	C. River Nile
_____9. has a length of about 3,730km	D. River Mississippi
_____10. has the second largest flow next to Amazon in the world	E. Salt water
	F. Stream
	G. River Awash
	H. Fresh water
	I. River Tekeze

III. Choose the correct answer and write the letter of your choice on the space provided.

_____11. The largest of the following African lakes is:
a) Tanganyika b) Meru c) Victoria d) Turkana

_____12. Which one is the world's largest fresh water lake?
a) Lake Superior c) Bering Sea
b) Lake Victoria d) Caspian Sea

_____13. Salt lake in South Western Asia:
a) Jordan river c) Dead sea
b) Great Rift Valley lake d) West bank

_____14. One of the following is a large body of salt water:
a) Sea b) Lake c) Pond d) a and b

_____15. Which one of the following is different from the others in its formation
a) Kilimanjaro b) Ruwenzori c) Ras Dejen d) Mt.Elgon

IV. Give short answers to the following questions:

1. What does atmosphere mean?
2. In which layer of the atmosphere do you find the ozone layer?
3. What color do map makers use to show water bodies on maps?
4. What are map languages?

Check List

Put a tick (✓) mark in each of the boxes for activities you can perform

I can:

1. List the continents of the world. ☐
2. Name the oceans of the world. ☐
3. Identify the major physical features of Eastern Africa. ☐
4. State the significance of the Great Rift valley. ☐
5. Name the rivers, lakes and sea of Eastern Africa. ☐
6. Compare and contrast the properties of marine and fresh water. ☐
7. Explain some economic uses of water in Eastern Africa. ☐
8. Discuss the strategic importance of water. ☐
9. Identify the layers of the atmosphere. ☐
10. Describe the components of the lower layer of the atmosphere. ☐
11. Draw and label the atmospheric layers. ☐
12. Appreciate the significance of color on map. ☐
13. Identify the major conventional signs and symbols used on a map. ☐
14. Use conventional signs and symbols to represent information on a sketch map. ☐
15. Make a simple map key. ☐