

Chapter II: Ecosystems in the World

The biosphere literally means the sphere of life, that is, the part of our planet where life developed. The biosphere encompasses three major “compartments”: water (**hydrosphere**), air (**atmosphere**), and soil (**lithosphere**).

- **the lithosphere (the soil):** represents the most superficial layers of the Earth's crust (solid medium consisting of all the continents + the various geological constituents of the solid substrate of the oceans). The top layer of the Earth's crust is called “soil”.
- **The hydrosphere (water):** the oceans occupy 70% of the Earth's surface, which has earned the Earth the nickname the blue planet.
- **The atmosphere (air):** homogeneous gaseous layer, constitutes the most peripheral area of our planet and envelops the two previous media. It is composed of 78% nitrogen, 21% oxygen, the rest being water vapour, carbon dioxide, ozone and rare gases (argon, neon, helium, etc.).

Within these three large compartments there are many ecosystems of varying size:

1- **Terrestrial or continental ecosystems:** associated with emergent continents that can be subdivided into:

- ❖ **Forest ecosystems** (tropical, temperate, boreal or Mediterranean forests).
- ❖ **Agroecosystems** (grasslands, steppes, savannahs).
- ❖ **Desert ecosystems**
- ❖ **Mountain ecosystems** (low mountain, middle mountain, high mountain)
- ❖ **Underground ecosystems** (caves, karst plateaus)
- ❖ **Coastal ecosystems** (dune ridges, rocky coasts)

2- **Inland water ecosystems (wetlands):**

- ❖ **Lentic Ecosystems** (lakes and ponds).
- ❖ **Lotic ecosystems:** (rivers and streams).

3- **Ocean ecosystems:** (seas and oceans).

I. Terrestrial or continental ecosystems:

I.1-Forest ecosystems:

Definition:

"The forest is a land with a tree cover of density greater than 10%, an area greater than 0.5 ha and the trees must reach a minimum height of 5 m at maturity" The forest has multiple facies according to: latitude - altitude - nature of the soil - climate...etc. Whether tropical, temperate, boreal or Mediterranean.

Temperate Forests

They characterize mid-latitude regions in the northern hemisphere and covered central Europe, eastern Asia and the eastern United States. They are characterized by the presence of hardwood trees. Their composition varies from one part of the world to another: Oak, Beech ...

Tropical Forests

Rainforest grows in the regions near the equator (abundant rainfall), it is where the greatest biological diversity (plant and animal) can be found. Up to 300 species of trees can be counted in a hectare, some of which reach 50 to 60m in height.

-Boreal forests (Taiga or coniferous forests):

They cover a wide band that extends into the snow-cold regions of North America, Europe and Asia to the southern limit of the Arctic Tundra. Characterized by coniferous stands in particular (pines and fir trees).

- Mediterranean forests:

They are found in the Mediterranean region as well as along the coasts of California, Chile, South West Africa and South West Australia. The Mediterranean forest consists of dense stands of evergreen shrubs and is suitable for periodic fires.

I.2-Agro ecosystems:

Definition:

"The agro-ecosystem is a product of the modification of the ecosystem by man and constitutes a space of interaction between man, his knowledge and practices and the diversity of natural resources".

The agroecosystem is therefore an association comprising crops, livestock, fauna and flora, soil and water in interaction with human uses.

These include:

- Grasslands:** land covered with grasses or fodder plants intended for livestock feed.
- Steppes:** herbaceous formations, the grass of which is in very spaced clumps.
- Savannahs:** from terrestrial plant formations to warm regions dominated by herbaceous plants.

I.3-Desert ecosystems:

Definition:

"A desert is an area of land that is barren and not conducive to life". There are two types of desert ecosystems:

- Cold deserts.
- Hot deserts.

Deserts cover a large area on our planet. These ecosystems are home to only a very small number of species because of: extreme temperatures, strong sunshine and low amounts of water.

I.4-Mountain ecosystems:

There are 3 major types related to altitude:

Low mountain – middle mountain – high mountain.

They are home to many animal and plant species and play an important role in regulating natural hazards (erosion).

I.5- Underground ecosystems:

They include:

- **Caves:** made up of large cavities and galleries that can be penetrated by humans.
- Karst plateaus (limestone relief):** all the limestone massifs eroded by water and which contain underground systems formed by cracks, cavities, galleries and caves.



I.6-Coastal ecosystems:

They extend from the inner boundary of the coastal zone and they can be divided into: Dune cords and rocky coasts.

II. Inland water ecosystems (wetlands):

II.1-Lens Ecosystems: refers to standing (calm) water ecosystems. They are subdivided into (lakes, ponds, marshes)

II.2-Lotic ecosystems: these are the ecosystems of running waters (rivers and streams).

III. Ocean ecosystems (marine ecosystems):

They constitute the largest ecosystems on the planet and include the (seas and oceans).