

Biosphere

The biosphere, (from Greek bios = life, sphaira, sphere) is the layer of the planet Earth where life exists. This layer ranges from heights of up to ten kilometers above sea level, used by some birds in flight, to depths of the ocean such as the Puerto Rico trench, at more than 8 kilometers deep. These are the extremes; however, in general the layer of the Earth containing life is thin: the upper atmosphere has little oxygen and very low temperatures, while ocean depths greater than 1000 m are dark and cold. In fact, it has been said that the biosphere is like the peel in relation to the size of an apple.

The biosphere is unique. There has been no existence of life elsewhere in the universe except, earth. Life on Earth depends on the sun. Energy, provided as sun light, is captured by plants, some bacteria and protists, in the marvellous phenomenon of photosynthesis. The captured energy transforms carbon dioxide into organic compounds such as sugars and produces oxygen. The vast majority of species of animals, fungi, parasitic plants and many bacteria depend directly or indirectly on photosynthesis.

Atmosphere: The air is a mixture of several gases and it encompasses the earth from all sides. The air surrounding the earth is called the atmosphere.

- Atmosphere is the air surrounding the earth.
- The atmosphere is a mixture of different gases. It contains life-giving gases like Oxygen for humans and animals and carbon dioxide for plants.
- It envelops the earth all round and is held in place by the gravity of the earth.
- It helps in stopping the ultraviolet rays harmful to the life and maintains the suitable temperature necessary for life.
- Generally, atmosphere extends up to about 1600 km from the earth's surface. However, 99 % of the total mass of the atmosphere is confined to the height of 32 km from the earth's surface.

Lithosphere: A lithosphere is the rigid, outermost shell on Earth. It is composed of the crust and the portion of the upper mantle that behaves elastically on time scales of thousands of years or greater. The outermost shell of a rocky planet, the crust, is defined on the basis of its chemistry and mineralogy.

- This includes the crust and the uppermost mantle, which constitute the hard and rigid outer layer of the Earth. The uppermost part of the lithosphere that chemically reacts to the atmosphere, **hydrosphere** and biosphere through the soil forming process is called the **pedosphere**.

Hydrosphere is the total amount of water on a planet. The hydrosphere includes water that is on the surface of the planet, underground, and in the air. On Earth, liquid water exists on the surface in the form of oceans, lakes and rivers. It also exists below ground-as groundwater, in wells and aquifers. Water vapor is most visible as clouds and fog.

- The frozen part of Earth's hydrosphere is made of ice: glaciers, ice caps and icebergs. The frozen part of the hydrosphere has its own name, **the cryosphere**. Water moves through the hydrosphere in a cycle. Water collects in clouds, then falls to Earth in the form of rain or snow. This water collects in rivers, lakes and oceans. Then it evaporates into the atmosphere to start the cycle all over again. This is called the water cycle.
- Thus biosphere (sphere of life) is the narrow contact zone of atmosphere, lithosphere and hydrosphere. Life is not possible everywhere without Oxygen, CO_2 (atmosphere), water (hydrosphere) and land (lithosphere).

