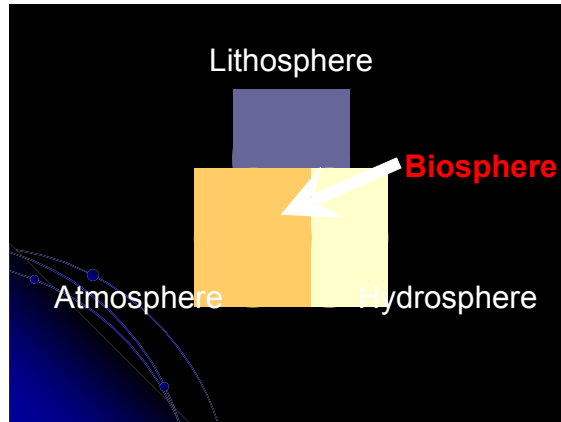


## Components of the Environment: (four components)

1. **Atmosphere**
  - Layer of gases that surround earth.
  - Allows us to breathe and protects earth.
2. **Hydrosphere**
  - All the water on earth (surface water, underground water and water vapor in the atmosphere).
3. **Lithosphere**
  - Surface of the planet that forms the continents and the ocean floor.
4. **Biosphere**
  - Part of earth where life exists.



### 1. Composition of Atmosphere

- Nitrogen (N<sub>2</sub>) - 78%
- Oxygen (O<sub>2</sub>) - 21%
- Argon (Ar) - 0.3%
- Carbon dioxide (CO<sub>2</sub>) - 0.037%
- Other gases including water vapor make up the rest

**Layers of Atmosphere:** 4 layers are defined by constant trends in average air temperature:

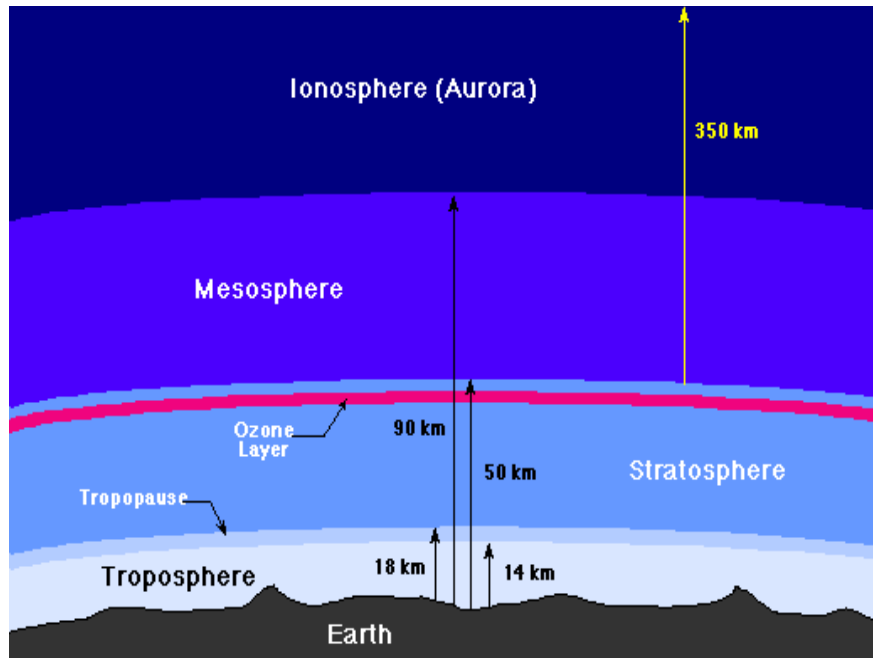
1. Troposphere: Temp decrease with height.
  - Most of our weather occurs in this layer.
  - Varies in height around the globe.
  - Averages about 11 km in height.

**Tropopause:** Tropopause separates troposphere from stratosphere.

2. Stratosphere: (up to 50 Km)
  - Temperature inversion in stratosphere
  - Ozone plays a major part in heating the air at this altitude
3. Mesosphere: also called Middle atmosphere
  - Pressure low,
  - Air quite Cold -90°C (-130°F) near the top of mesosphere

4. Thermosphere: It is also called "Hot layer" – oxygen molecules absorb energy from solar rays warming the air. Very few atoms and molecules in this region.

**Lapse Rate:** The rate at which air temperature decreases with height. The standard (average) lapse rate in the lower atmosphere is about 6.5°C per 1 km or 3.6°F per 1000 ft.



**Vertical structure of Atmosphere:**

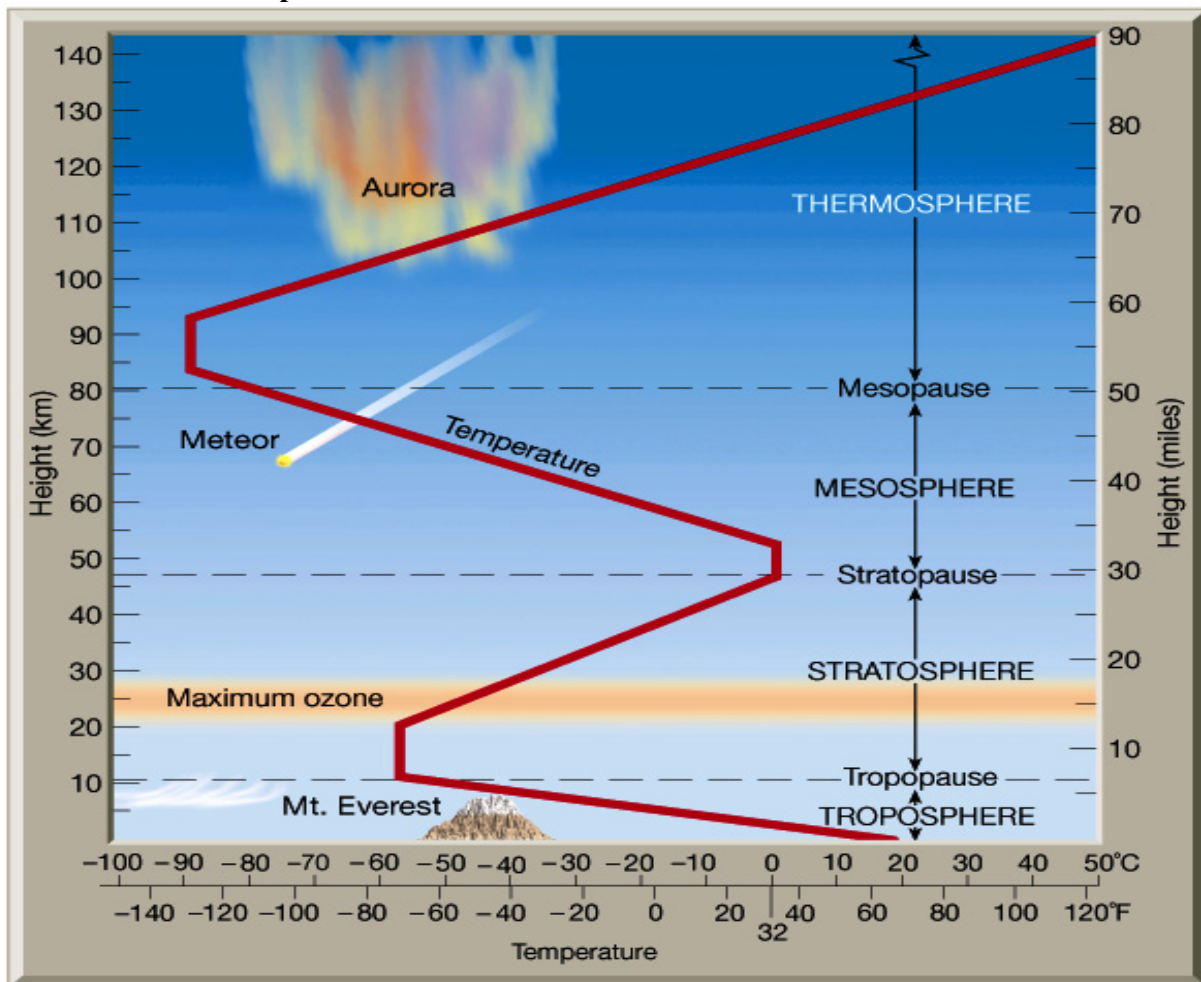


Fig: Vertical structure of atmosphere

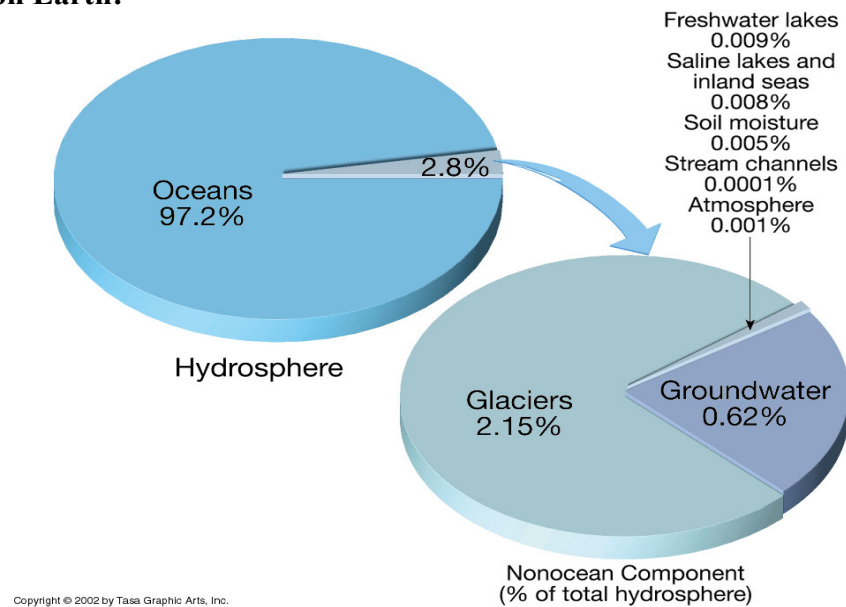
2. **Hydrosphere:** All the water on Earth is part of a large system called the *hydrosphere*. On Earth, water occurs in all three phases. About 71 percent of Earth's surface is covered with water. This water is found:

- Oceans
- Rivers
- Lakes
- Ponds
- Under ground water
- Glaciers

● **Surface water** on Earth refers to water that collects on the ground.

- Oceans
  - Lakes
  - Rivers
  - Streams
  - Reservoirs.
- **Glacier:** A *glacier* is a huge mass of ice that forms on land when snow and ice accumulate faster than they melt. Most of Earth's fresh water is in the form of glacier ice.
- **Groundwater:** *Groundwater* is water that collects under ground. Some of the water on Earth's surface moves down through the soil to the **water table** (the upper level of underground water).

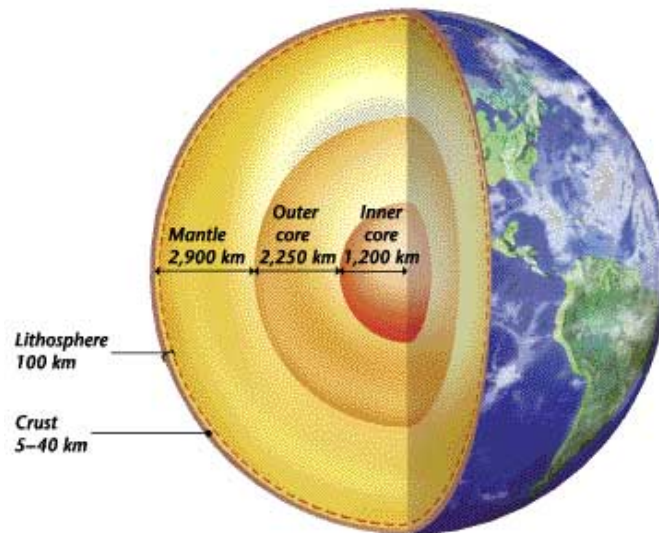
#### Distribution of Water on Earth:



3. **Lithosphere:** The upper most 100 km thick layer of earth is called lithosphere where all continents and ocean exist.

- **Crust** – upper most 5-50 km thick layer of earth made of solid lighter rocks.

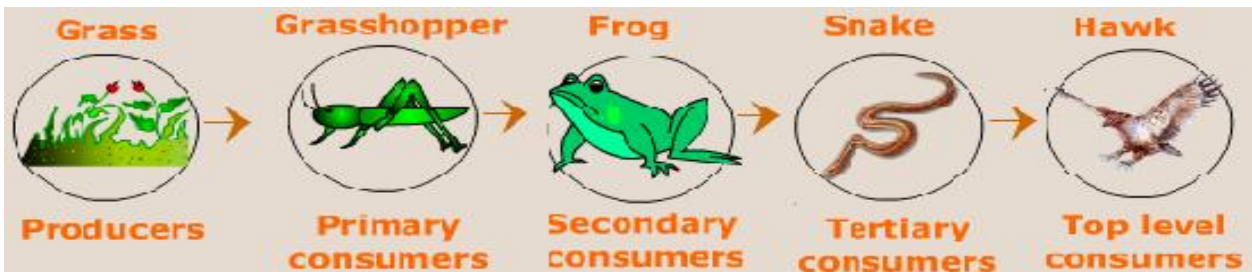
## Earth's Interior



- **Inner Core** – 1200 km made of solid Fe, Ni.
- **Outer Core** – 2250 km made of liquid Fe, Ni.
- **Mantle** – 2900 km made of dense rocks.

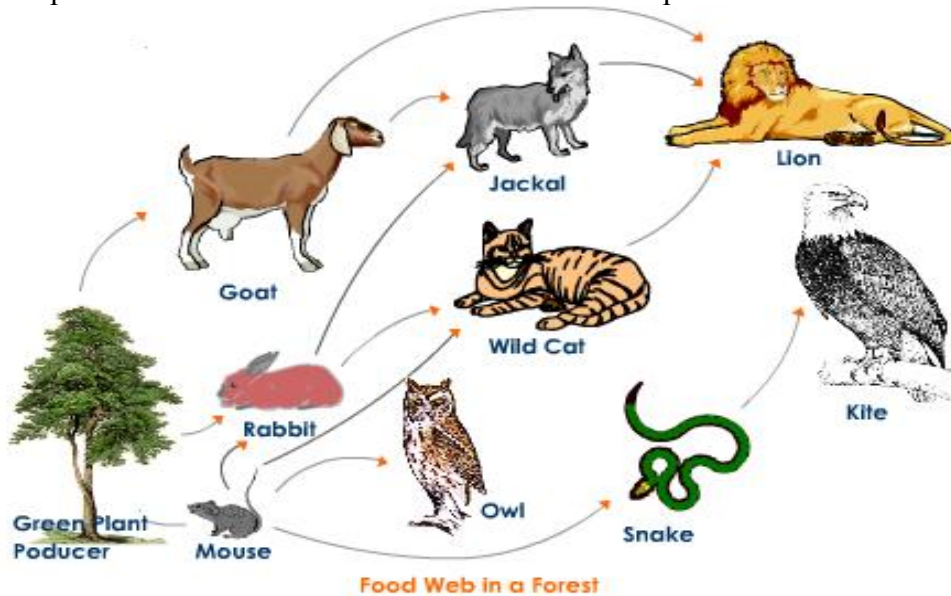
**4. Biosphere:** The part of the earth where life exists is called biosphere.

**Food Chain:** The sequence of the transfer of food energy from one organism.



Food chain

**Food Webs:** A complex net of different food chains. It is more complex than food chains.



## Food Web