

## 1.1. We are the part of the nature that surrounds us



### 1.1.1. What is important to know?

Our living environment consists of air, soil, surface and groundwater, plants, animals, landscape and the built environment. Why are water, air and soil important for us?



#### The water

Water is very important for life. It is required by every living creatures on Earth. It helps plants to produce organic matter. And it provides food for animals and people. For many animals, water is their immediate living environment, which means they are only able to live in water.

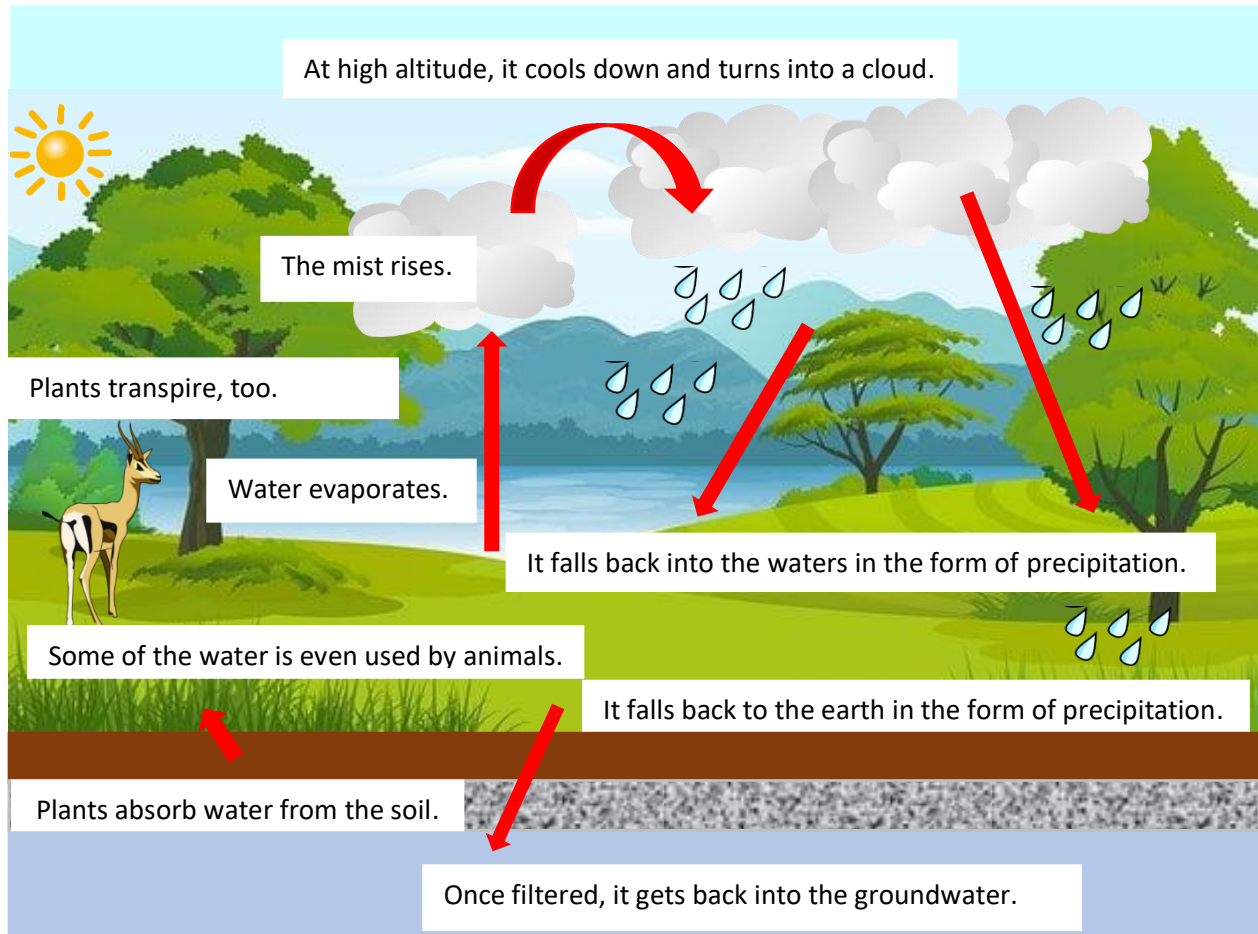
Most of the Earth's surface is covered by water (71%). Land makes up a smaller proportion (29%). Water is found almost everywhere, in oceans, seas, rivers, lakes, rocks and even clouds. It is a very important part of animals, plants and the human body.

Most of the water is saline seawater (97%), with much less freshwater (3%). Some freshwater is found in ice sheets and frozen ground, groundwater (e.g. mineral water, groundwater, medicinal water) and surface water (e.g. rivers, lakes, swamps, precipitation). Only a small proportion of fresh water (0.3%) is consumable, and unfortunately it is becoming increasingly polluted. Freshwater is used for many purposes, such as drinking water, washing, agriculture, food production, industry, etc.

Water is in constant motion between the Earth and the atmosphere, which we call the water cycle. The sun causes water to evaporate from the Earth's surface. It turns into mist and rises into the atmosphere. At high altitude, the mist cools and the water droplets turn into clouds. They then fall back to Earth in the form

of precipitation, rain or snow. Some water is absorbed into the soil, some is used by plants and animals, while some of it evaporates.

### The water cycle



We need to save water, because water supplies are constantly diminishing. In many places they still do not have access to enough water.

### The air

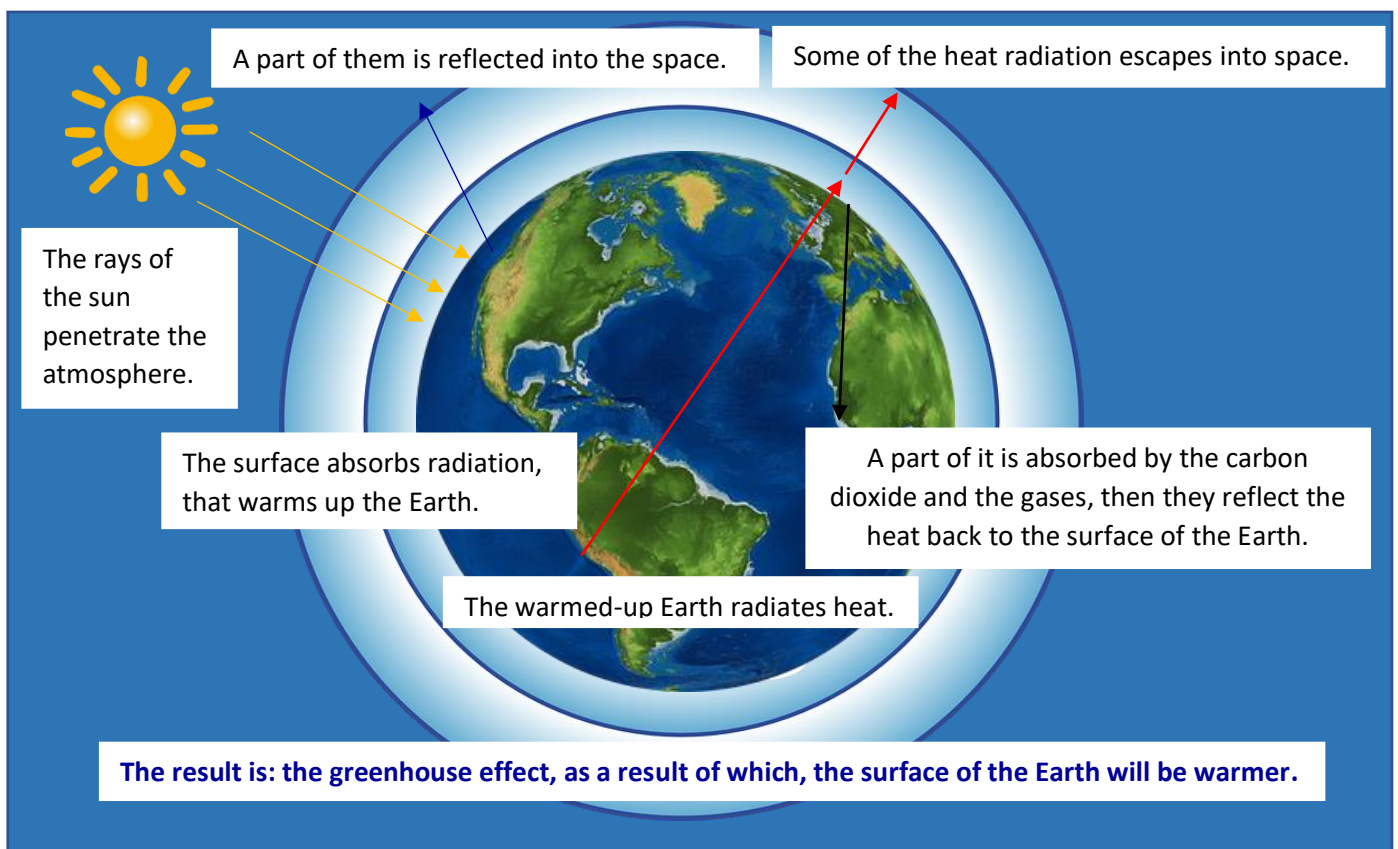


Air is a colourless and odourless gas mixture. Its main components are nitrogen ( $\frac{4}{5}$ ) and oxygen ( $\frac{1}{5}$ ). It also contains gases and small particles such as dust and soot, but also pollutants. The lower layers of air are the most important for us. This is where water is found, where clouds and precipitation are formed, and where winds and storms are developed. The ozone layer is at an altitude of 20-30 km. The ozone layer absorbs the part of ultraviolet radiation that is harmful to living organisms.

We could not live without air. Air contains oxygen, which is important for breathing, but without it, we could not even start petrol engines, either. We can also use oxygen to light our campfires. Oxygen helps to break down fallen leaves, a fallen tree and rubbish. The atmosphere is important for plants because it provides carbon dioxide. Green plants turn carbon dioxide into organic substances using solar energy and water. This is called photosynthesis.

Greenhouse effect is a natural process. It is important because without it, the Earth's average temperature would be about 34°C colder. This could cause the extinction of many organisms. As a result of the greenhouse effect, some of the sunlight reaching our Earth is absorbed by the surface of the earth. Sunlight is converted into heat energy, but it cannot fully escape from the atmosphere because greenhouse gases (e.g., carbon dioxide, water vapour, methane, ozone) prevent it. They form a shell around the Earth from which heat is reflected, thereby warming the atmosphere. The use and combustion of fuels such as coal, petroleum and wood increase the amount of carbon dioxide in the air, causing climate change.

### The greenhouse effect



The air is a habitat for birds, bats, arthropods. Even the wind can blow smaller organisms – viruses, bacteria, fungal spores, aphids. The wind also carries small organisms - viruses, bacteria, fungal spores, aphids, small spiders. The atmosphere is also important because it is where planes fly.



### **The soil**

The soil is the uppermost, loose, fertile part of the earth's surface. Its most important task is to provide nutrients and water to the plants growing on it and to provide a habitat for the organisms that live in the soil. There is a variety of organisms living in the soil, such as bacteria, fungi, mites, spiders, worms, earthworms and insects. A very important part of the soil is humus, which is formed from the remains of decaying plants and animals. The humus mixes with the debris from decomposing rocks and over time this forms the soil. Soil fertility is the ability of the soil to supply water and nutrients to the vegetation living on it. The higher the humus content of the soil, the darker the colour, the more fertile it is.

Without soil, life would be unimaginable for human beings. In a soil with good fertility, we can grow crops for food or to produce other industrial products.

The soil is very sensitive. If the vegetation is eradicated from the soil surface, rains and strong winds can carry away the top fertile parts of the slopes of hills and mountains. This process is called soil degradation. Soil degradation can be prevented by planting forests, because the roots of plants retain the soil.

The fertility of soil can be damaged by the use of pesticides and pollutants (e.g., oil, waste). They can also enter the human body through the food we eat.

The soil has many other important tasks as well: for example, it provides habitat for millions of living organisms other than plants. Thus, contributing to the preservation of biodiversity. The soil also has a natural filtering and detoxifying impact. Thus, providing us with healthy drinking water.