

## CLIMATE CHANGE JUNIOR VERSION

The atmosphere provides planet Earth with a climate conducive to life through what is known as the natural greenhouse effect. When the sun's rays reach the Earth's surface, they are only partly absorbed, while some are reflected outward; in the absence of an atmosphere they would be scattered into space, but instead they are for the most part retained and, therefore, redirected back to Earth by certain gases in the atmosphere (namely the greenhouse gases, including mainly carbon dioxide and methane, but also water vapour and others). The result is an additional amount of heat added to that produced by directly absorbed sunlight. One significant additional comment: without the natural greenhouse effect, the average temperature on Earth would be -19 degrees Celsius instead of about +15.

If the greenhouse effect is such a beneficial phenomenon, why do we talk about it so much and worry about it now? And what is meant by climate change and global warming? Climate change has always characterised the history of Planet Earth. Over the course of our planet's long life (about 4.5 billion years), the climate has changed very many times, alternating between eras when the Earth was colder (Ice Age) and eras when on the contrary temperatures were significantly milder. Evidence of climate change can also be found in human history: between the 14th and 19th centuries, for example, it was significantly colder in Europe than at the time of the Ancient Romans. These changes occurred naturally and over very long periods of time. However, the global warming we have been witnessing for about 150 years is different because it is triggered by humans and their activities. It is called the anthropogenic (human-caused) greenhouse effect and is in addition to the natural greenhouse effect. With the industrial revolution, humans suddenly began emitting large amounts of carbon dioxide and other greenhouse gases, greatly increasing the amount of carbon dioxide in the atmosphere.

A warmer Earth (even 1-2°C more makes all the difference in the world) results in large changes in the planet's balance. The main consequences of climate change are:

- Melting ice sheets: the warmer climate causes large glaciers, both those on mountains and Antarctic glaciers, to melt faster. The melting of land glaciers leads to rising sea levels, submerging coastlines as a result.
- Disappearing habitats, flora and fauna: over millions of years of evolution, flowers, plants and animals have adapted perfectly to their environments. If such environments change due to the changing climate, many animal and plant species will not be able to adapt as quickly as necessary to the new living conditions, eventually becoming extinct.
- Drought and scarcity of food for humans: if plants and animals disappear, humans will no longer be able to feed themselves. In addition, rising temperatures also mean more

frequent droughts in different areas of the planet, leading to less water for everyone. And water is the basis of life.

- Increased extreme weather events: if weather conditions change, storms, hurricanes and floods will become more frequent, affecting agriculture and populations.