

#### **STARS**

Though they appear as tiny lights in the night sky, stars are huge balls of hot gas. Chemical reactions inside them release enormous amounts of energy. The most famous star is our sun!



# THE SOLAR SYSTEM

#### **OUR COSMIC NEIGHBORHOOD**

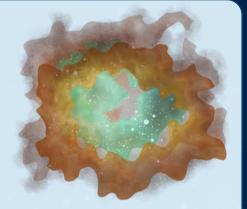
There's a particular solar system inside the Milky Way galaxy that has eight planets, all orbiting a star known as the Sun. This system is home to our own planet, Earth.

#### COMETS

Celestial objects made of ice and dust, comets are like dirty snowballs in space. When a comet nears the Sun, it becomes visible in the sky with a long, trailing tail, putting on an amazing show.

#### **NEBULAE**

These clouds of dust and gas in outer space are sometimes visible to the naked eye, appearing as a haze in the sky. When seen through a telescope, a nebula appears bright, with vibrant colors.



#### **ASTEROIDS**

These little celestial bodies consist of rock, metal, and dust. Asteroids are much smaller than planets, though. Some are only a few yards long, while others measure up to hundreds of miles across.





#### **GALAXIES**

A galaxy is an enormous formation of stars, planets, dust, and gases, held together by gravity. Earth and its solar system are situated within the Milky Way galaxy.



#### **SATURN**

The second largest planet in the Solar System, Saturn is known for its beautiful rings, which consist of ice and rock.

#### WHAT IS GRAVITY?

Gravity is a force that attracts all objects to one another. It's the reason we stay on Earth instead of being flung into outer space. When you throw a ball up in the air, it always falls down again. This is thanks to gravity.



The second smallest planet in the Solar System, Mars is known as the "Red Planet" because it's covered in red dust. Huge volcanoes and deep canyons pepper the surface, which scientists study for signs of life.

#### NEPTUNE

Neptune is the outermost planet of our solar system. An ice giant, it's made mostly of gases and liquids and appears blue in color.



#### **MERCURY**

Mercury is the smallest planet in the Solar System and the one closest to the Sun. It has no atmosphere, which makes its surface extremely hot during the day and very cold during the night.

#### **URANUS**

The blue-green Uranus is an ice giant and the third largest planet in the Solar System.



EARTH

VENUS

THE SUN

MERCURY

#### **JUPITER**

A gas giant, Jupiter is the largest planet in the Solar System. A massive storm called the Great Red Spot rages on its surface.



JUPITER

When seen from outer space, it's one of the most beautiful planets. It's the third planet in the Solar System, in terms of its distance from the Sun. Most of its surface is covered in water.



Venus is similar to Earth in terms of size, but its atmosphere is dense and full of toxic gases, which cause extreme heat. It's often called the "evening star" or the "morning star" because it shines like a star in the sky.



#### **THE SUN**

The Sun is actually a huge star orbited by our Earth. Temperatures on the surface are blisteringly hot, and the large core at its center is even hotter. At 109 times the size of Earth, the Sun is the source of light and warmth for our planet. Without the Sun, no plants would grow, and no life would exist.

URANUS



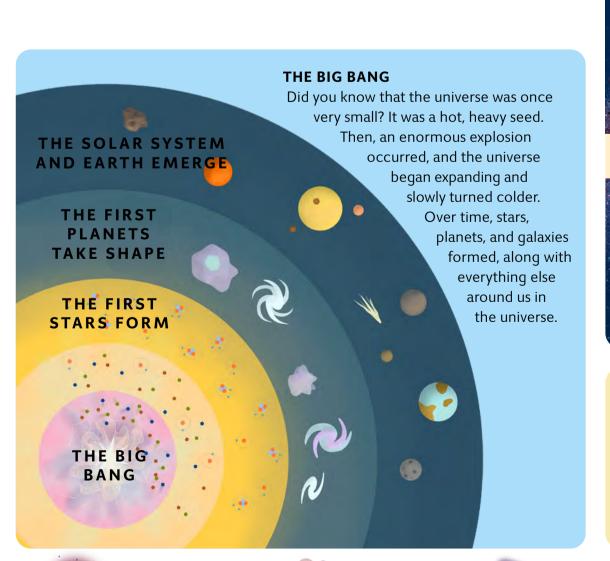
#### **EARTH**

The subject of this book, planet Earth is our home.

**VENUS** 

# THE ORIGINS OF EARTH

Planet Earth is a wonderful place. Full of plants, animals, and people, our home is the only planet we know of where life exists. When it began forming, over 4.5 billion years ago, it became part of a long story that began with a huge explosion known as the Big Bang.



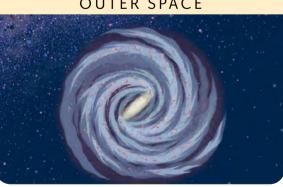
#### THE MILKY WAY

The Milky Way is the galaxy that houses our solar system. Why is it called the Milky Way? The answer can be found in the night sky. If you look up, you'll see a thick band of stars that resembles spilled milk.

AS SEEN FROM EARTH



AS SEEN FROM OUTER SPACE









#### THE FORMATION OF PLANET EARTH

- **1.** At first, there was only gas and dust, which began to cluster into larger clumps. These became the seeds of our planet.
- **2.** The clumps collided with each other over and over again, growing bigger and bigger. Because the collisions produced a lot of heat, Earth became a scorching ball of molten rock.
- **3.** The new planet attracted more material, colliding with many cosmic bodies, including asteroids and comets containing frozen water.
- **4.** The planet's surface slowly cooled. Water vapor condensed and, along with melted ice, formed the first oceans.
- **5.** Volcanic activity at the bottom of the oceans created the first islands and the foundations of Earth's continents.
- **6.** Movements of individual islands and landmasses caused them to meet, combine, and grow larger.







#### **CONTINENTAL DRIFT**

The Pangaea supercontinent formed to be over 300 million years ago, when Earth's individual continents combined into a single giant landmass. Many years later, it broke up again into separate parts, which kept drifting until they took their current positions. Because the continents still move, slowly and imperceptibly, the world will look different several hundred million years from now.









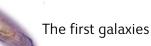


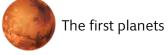
THE CONTINENTS TODAY





The first stars







The Solar System



Planet Earth



Life on Earth



13.7 billion years ago 13.5 billion years ago 13.4 billion years ago

13.3 billion years ago

4.6 billion years ago

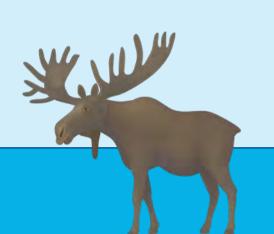
4.54 billion years ago

4 billion years ago

300 million years ago

#### MOOSE

Found mostly in the cold forests of North America, Europe, and Asia, moose are the largest species of deer. Though they can't see very well, being nearsighted and having eyes on the sides of their head, they make up for this with excellent hearing and sense of smell.



# LIFE ACROSS THE CONTINENTS

#### **LIFE ACROSS CONTINENTS**

Our planet is home to many animals and plants, from tiny to really big ones. Every corner of the world, from hot deserts to icy tundras, is full of life. Some animals adapted to life in water, others fly high above the ground, and others inhabit thick forests or vast, grassy plains. Animals and vegetation are a part of nature and need to be protected. Without them, our planet would be nowhere near as charming as it is.

#### **AMAZING ANIMAL ABILITIES**

Animals across the planet possess incredible abilities: bats are the only mammals that can fly, chameleons change color to hide themselves or express emotion, and orcas communicate using complex sounds. Every animal is unique, with abilities that help it survive in the

#### **ENDANGERED SPECIES**

Many animals and plants are threatened with extinction, like giant pandas and several species of orchids. The danger comes from climate change and humans who hunt them and destroy their habitats. It's important to protect these species so that they survive for generations to come.



#### **BISON**

Bison once roamed all across North America, before human hunters and habitat loss caused their numbers to dwindle for a time. Today, they are a protected species in many areas.

**HUMMINGBIRD** 

pollinate plants.



rattlesnake turkey

hummingbird



polar bear

armadillo



elephant

chameleon rhinoceros

## **GORILLA**

albatross

All gorilla species are considered endangered, due to humans destroying their Central African forest habitats and even hunting them. Although gorillas are a protected species, their numbers are dwindling.



penguin

#### YAK

walrus

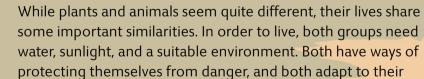
Found high up in the mountains, yaks have long, shaqqy fur to keep them warm. They're great climbers, able to adapt to harsh freezing environments.



kangaroo

#### SLOTH

Sloths do indeed seem slothful. These tropical mammals of the Americas spend most of their lives in trees, moving slowly to conserve energy. When they do need to pick up the pace, they can cover up to 15 feet per minute—an athletic performance by their standards.



**PLANT AND ANIMAL SURVIVAL** 

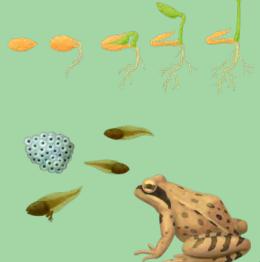
surroundings in order to survive.

Among the smallest birds in the world, hummingbirds have the incredible ability to hover, thanks to wings that can beat up to

80 times per second. They feed on nectar and help

#### **PLANT AND ANIMAL DEVELOPMENT**

Plants start out as seeds, which then germinate, grow, and mature into adults. This is similar to how animals develop. A frog, for example, starts as an egg, which then hatches a tadpole that matures into an adult. In both groups, life starts small and grows stronger.



#### **PLANT ROOTS AND FOOD**

Whereas animals use their mouths and digestive systems to eat and process food, plants dig into the soil with their roots to absorb water and nutrients. These travel up into the leaves, where they combine with sunlight and carbon dioxide to make food for the plant. This process is called photosynthesis.



#### **PLATYPUS**

Although these strange creatures are mammals, they lay eggs! They also have toothless beaks like ducks, they swim like otters, and their males have venomous spurs on their hind legs.

#### **ELEPHANT**

Przewalski's

rooster

jellyfish

**ALBATROSS** 

With the largest

wingspan of all birds

at over 11 feet, an

albatross can fly for

days without coming

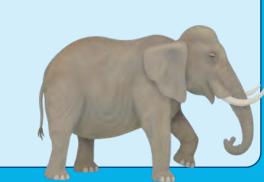
down, using ocean

aloft.

winds to conserve

energy and keep

Elephants are the largest land mammals on Earth. They have enormous ears that keep them cool and excellent memories. They can remember where water is, even many years after locating it.



#### **KANGAROO**

Female kangaroos carry their young around in belly pouches. The little joeys grow and develop inside of these until they're strong enough to start discovering the world beyond.

# LIFE ON EARTH

Life on Earth is wonderfully diverse. It can be found on land, in the sky, or under the sea. Together, plants, animals, and smaller organisms form a natural community in which everyone plays a vital role. Without all that life, our planet wouldn't be the amazing place we know. As we look at the many variations of life on Earth, it's important to understand how it began and how it developed over the course of millions of years.



**PREHISTORIC EARTH** 

Around four billion years

oceans, and atmosphere

had formed—the

planet's first living

simple bacteria. Hundreds of millions

of years later, the

fascinating story

of the beginning

geological periods.

unfolded over four long

of life on Earth

organisms emerged:

ago—after the Earth's crust,

#### **PLANETARY LIFE**

For a planet to be habitable, it must meet several requirements. Earth is special because it meets all of them. It's possible that another planet like Earth exists somewhere in the universe, but if it does, the life there probably takes a different shape.

#### **BIODIVERSITY**

Earth is home to billions of plant and animal species, living in various environments (forests, oceans, deserts). Some are tiny, like bacteria and insects, while others are huge, like elephants and whales.



#### 4. The Quaternary Period:

Beginning 2.6 million years ago, this ongoing period saw a boom of mammals and the evolution of humans.

**3. The Cenozoic Era:** Beginning 66 million years ago, this period saw the emergence of birds and large mammals, as well as human predecessors.

**2. The Mesozoic Era:** Beginning 252 million years ago, this period saw the evolution of the first small mammals, birds, and flowering plants. Earth was dominated by

**1. The Paleozoic Era:** Beginning 542 million years ago, this period saw the tumultuous development of life, first in the oceans and then on land. It produced the first fish, land plants, amphibians, trees, and large reptiles.

## **PLANT PRODUCE**

There's an incredible variety of plants growing on Earth. Many of them produce fruits, like plums, dates, and figs, while others yield vegetables, like carrots and onions. Some plants, like the pineapple, yield special fruits found only in certain areas.



#### **ADAPTABILITY OF PLANTS**

Plants are able to adapt to extreme conditions of their habitats, like high temperatures, lack of water, and different kinds of soil. Cacti, for example, store water inside themselves to help them survive in the dry desert.



## **ADAPTABILITY OF ANIMALS**

Some animals are able to survive in hostile environments. The emperor penguin lives in Antarctica, where temperatures regularly drop to -40°F. Its thick feathers and layer of fat gives protection against the cold.



Flowers are a great example of the natural world's beautiful diversity, coming in many sizes and colors. Some are small, like daisies, and others are large, like sunflowers.



#### **LEAVES**

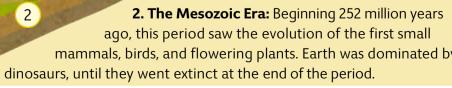
Plant leaves can range in size from little pine needles to the broad fronds of banana trees. Some have smooth edges, others are jagged, and come fall, many turn beautiful shades of red, orange, and yellow.



#### **TREES**

A tree can be as short as a bush or as tall as a tower, like the giant sequoia. Some yield fruit, like the lemon tree, and many have leaves that turn beautiful colors in the fall.





#### **EARTH'S EXPLORERS**

Humans are curious by nature, and throughout history people have sought to explore, traveling to distant lands to discover new places. One of the most famous groups to do so were the Vikings, who set out on long voyages across the sea. Their longships took them to Iceland and Greenland, and they were the first Europeans to discover parts of North America, long before Christopher Columbus arrived in the fifteenth century.





#### **INCREDIBLE CONSTRUCTIONS**

There are man-made structures on Earth whose amazing construction can take your breath away. For example, the huge stone-head statues on Easter Island, called the moai, are so heavy that we still don't understand how the ancient island-dwellers were able to position them. Or take the Great Wall of China, one of the longest man-made structures on the planet. While it may not actually be visible from space, as some claim, it's still evidence that our ancestors could accomplish wonders that would be a challenge even today, with modern engineering and technology.

#### ADAPTING TO THE ENVIRONMENT

Many environments don't make it easy to survive, but people find a way to adapt. We build igloos from snow blocks to shelter from the freezing Arctic. In rainforests, where the ground is often flooded, we put houses on stilts to keep water from getting inside.



#### **EXPLORING THE DEEP**

After conquering Earth's surface and sky, people ventured deep into the oceans in special submarines called bathyscaphes, allowing scientists to study some of the most inaccessible parts of the planet.



## **PEOPLE ON**

# **PLANET EARTH**

Compared to the lifespan of the Earth, modern humans have only been around for a brief moment. Still, in that time, we've affected the planet more than any other species in history. It's interesting and inspiring to look at all that humankind has built and at the various places across the planet we've adapted to and inhabited.



#### **INTERESTING ARCHITECTURE**

People don't only construct buildings for their usefulness; we also make structures that are beautiful and interesting, such as the Leaning Tower of Pisa or New York's Statue of Liberty, which symbolizes freedom and hope. The Eiffel Tower in Paris showcases our ability to blend technology and art in unique architecture.

**AUSTRALIA** 



#### **ICONIC BUILDINGS**

Some constructions are so iconic that they have come to symbolize the regions in which they stand. For example, San Francisco's enormous, red Golden Gate Bridge is famous for its amazing engineering as well as its beauty. The Sydney Opera House is known around the world for its exceptional architectural design. The White House in Washington, DC, is the home of U.S. presidents and the best-known government building. And the Christ the Redeemer statue in Rio de Janeiro, standing atop a mountain in the Brazilian rainforest, is one of the New Seven Wonders of the World.



For thousands of years, people have built temples for worship. These structures, found all over the world, are diverse and beautiful. Some regions have produced great works of architecture with tall towers, filled with art that tells tales of their religious history. Others areas preferred simpler, smaller temples carved into natural settings. Whatever shape they took, all of these buildings were made to be communal places of prayer and celebration.



#### **EXTREME CONDITIONS**

People have figured out how to survive in the most inhospitable places on Earth, like Antarctica, where we've built research stations to study the continent and its influence on the planet.

**ANTARCTICA** 



#### **DISTINCTIVE DWELLINGS**

The many types of shelters from various cultures around the world are a testament to the range of human creativity. Some Indigenous groups of North America's Great Plains, like the Sioux, utilized tepees as light, portable tents to carry along as they followed animal herds. Japanese pagodas are tall buildings of multi-tiered roofs that resemble a stack of umbrellas. These structures reveal how different cultures adapt to where and how they live.



#### THE COLDEST PLACE ON EARTH

In 2013, the lowest temperature on Earth was measured using satellites. A frigid -136°F was found at icy peaks in East Antarctica.

# -136°F

#### **GLOBAL WARMING**

There have always been parts of Earth with more extreme temperatures, be they hot or cold, and we have to do everything in our power to ensure that those extremes don't spread. Global warming means that the global temperature is growing due to excessive amounts of greenhouse gases, such as CO<sub>2</sub>. This can lead to the melting of Earth's glaciers, changes in the weather, and threats to many of our planet's plants and animals.

#### WHAT CAN WE DO FOR EARTH?

Come and learn what we can do to make sure our planet remains the beautiful place full of life we know it to be.

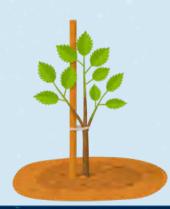
#### **USE GREEN TRANSPORTATION**

Environmentally friendly means of getting around include electric cars and buses, trams, scooters, and bicycles.
Using any of these is much easier on the environment than conventional gas cars.



#### **PLANT TREES**

Trees are vital to sustaining life on Earth. Every one that's planted gives us more oxygen and better air—and they're beautiful, too.



# PROTECTING OUR PLANET

#### THE EARTH AND US

Earth is a wonderful planet, teeming with life. We need to take better care of it than we've been so far, to keep it green, healthy, and beautiful. We need to be environmentally-friendly, stop wasting things, and treat our home respectfully. Each of us can take small steps, and if we look after the planet together, it will reward us with clean air, healthy forests full of animals, and beautiful nature for us and our children to enjoy.

## PROTECT THE WILDERNESS

THE HOTTEST PLACE ON EARTH

Satellites have measured a staggering 177.4°F

ever recorded. This extreme heat is caused by

dark rocks and sand absorbing sunlight.

177.4°F

temperature in the Lut Desert of Iran, the highest

Every year, there are fewer and fewer unspoiled areas on the planet. Wild animals, native plants, and national parks all need our protection.



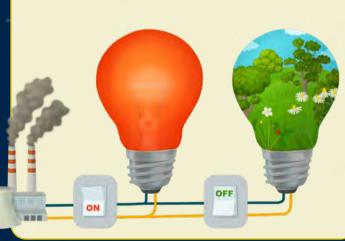
#### EDUCATE YOURSELF

Take the time to understand how our planet works, and share what you learn with your classmates, friends, and loved ones.



#### **CONSERVE ENERGY**

Switching off lights, computers, TVs, and other electronics when they're not in use can have a real environmental impact. Spending electricity without need is as wasteful as throwing away any other resource.



### CONSERVE WATER

There would be no life without water, and it's not an unlimited resource. Using it responsibly—for example, closing the tap when washing hands or brushing teeth—can help conserve water so that there will be more for people to use.



#### **USE LESS PLASTIC**

Avoiding plastic bags and single-use plastics, like containers, can make a big difference. Reusable items, like cloth bags, do the same job just as well, over and over again.



#### **USE GREEN ENERGY**

Wind farms use wind to generate electricity. Solar power is sunlight that has been converted into electricity. Using this kind of green, renewable energy promotes a healthy and safe environment as, unlike coal or oil, they don't produce greenhouses gases. Best of all, the sun and wind will always be here.



#### SEPARATE YOUR WASTE

Sorting plastic, paper, glass, and other types of waste helps them get recycled and ensures that they won't be a burden on the planet.



# SHOP LOCAL Supporting local farmers

and manufacturers prevents goods from needing to be transported across great distances, which in turn decreases carbon emissions and air pollution.





## DISCOVER THE BEAUTY OF OUR HOME PLANET ON SIX FOLDING MAPS

Written by Oldřich Růžička Illustrated by Tomáš Tůma

Set out on a fascinating journey through our shared home: Earth! You'll learn a lot of fascinating facts about the planet, such as how it formed, where it sits in the universe, and what it's made of. You'll learn about our world's animals, plants, people, and everything else that makes it up. You'll explore hot deserts, freezing polar ice caps and rainforests teeming with life. You'll learn how people designed amazing architecture, came up with inventions to make life easier, and how each and every one of us can help protect our beautiful planet. Accessible text and captivating illustrations playfully invite the readers to discover the secrets of planet Earth!

This atlas contains 6 fully illustrated folding maps, with information on:

- Our place in the Solar System
- Earth's atmosphere and immediate surroundings
- The various climates across the planet
- The mark people have made on Earth

HAVE FUN LEARNING

• Our planet's future and how we can affect it





big folding maps







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