WHAT IS THE BIOSPHERE?
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Sometimes the history of a word can tell us a lot about what the word means. The word biosphere was first used by English-Austrian geologist Eduard Suess. It appeared more than a hundred years ago in his book *The Face of the Earth*. Suess combined two words to make biosphere. Bio means life. Sphere refers to the round Earth.

The biosphere is the part of our planet that supports life. Suess made up this word because he wanted people to see how all life on Earth is related. He did not want to just focus on living things separately. We now use the word biosphere to explain how all life on Earth is connected.

In *The Face of the Earth*, Suess used a plant as an example of his idea. The plant feeds itself through its roots deep in the soil. At the same time, it rises into the air to breathe. The soil and the air are part of two different spheres, yet the plant interacted in both. Suess wrote that on “the surface of continents it is possible to single out an independent biosphere.”

The biosphere is the habitat for all life on the planet. The biosphere is home to life in all its forms, with all its relationships.

**Biosphere = the network of all life on Earth**
BIOSPHERE COMFORT ZONE

RÜPPELL'S GRIFFON
Gyps rupelli

BAR-HEADED GOOSE
Anser indicus

MOST BIRDS
Fly within 2 km of the ground

MOST LIFE ON EARTH
Lives in a thin layer on, near, or under the surface

SPERM WHALE
Physeter macrocephalus

EXTREMOPHILE BACTERIA
Staphylothermus marinus & Thermoproteus tenax

DEVIL WORM
Halicephalobus mephisto

GIANT SQUID
Architeuthis dux

ANGLERFISH
Cryptopsaras couesii

SNAILFISH
Liparidae

FORAMINIFERA
Single-celled protists

12
11
8.8
5
2
0

AIR
LAND
SEA

KILOMETERS

MOUNT EVEREST
Its summit 8,848 meters (29,029 feet) above sea level, Mount Everest is the world's highest mountain. Located on the Nepal-Tibet border, Everest is one of many peaks taller than 8,000 meters in the massive Himalayan range. The Himalayas were formed 40–50 million years ago when the Indian plate collided with the Eurasian plate. The intense cold at this altitude makes for a rough habitat, but birds have been seen flying over Everest and some even nest on its lower slopes.

CHALLENGER DEEP
At least 10,902 meters (35,768 feet) below sea level, Challenger Deep is the deepest depression in the western Pacific’s Mariana Trench. The trench, near Guam, was formed when the Pacific plate was subducted beneath the smaller Mariana plate. The pressure this deep in the ocean is more than a thousand times that at sea level, but some organisms thrive in these extreme conditions.
The biosphere is incredibly small. It’s just a thin layer around a medium-sized planet. But it’s also incredibly large when you consider all the living things on Earth. It includes huge land areas and the massive oceans. The biosphere can be broken down in smaller areas. These smaller areas are called “ecosystems.” An ecosystem is a unique area that supports certain forms of life.

Oceans, jungles, and mountain ranges can be ecosystems, but so can smaller places. Think of a cave, a river, a coral reef, or a city. The “vent communities” that surround hydrothermal vents on the ocean floor are ecosystems.

Each ecosystem is different. Its location on Earth, its climate, soils, terrain and other things make it one of a kind. The Earth has many different environments. The biosphere has incredible diversity. Even in extreme environmental conditions, we see amazing examples of life’s flexibility and determination.

Every organism has a different way to make a living. Every species must fight for resources and energy. All must reproduce in their own environment. Through biology and geology, we can study these individual ecosystems. What we learn reveals the many complex relationships between life and the planet we all share.