

Early Earth

Lesson 5



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How did Earth form?

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I. How did Earth form?

A. Using radioactive dating, scientists have determined that the oldest rocks ever found on Earth are about 4 billion years old

- * Scientists think the Earth formed even earlier than that



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B. The age of the Earth

According to scientists' hypothesis, the moon formed from material knocked loose when a very young Earth collided with another object

- * means the Earth and moon are about the same age
- * scientists use radioactive dating to find the age of rocks brought back from the moon
- * oldest moon rocks about 4.6 billion years
- * scientists infer that the Earth is about that age, only a little older

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C. Earth takes shape

Scientists think that Earth began as a ball of dust, rock, and ice in space. Gravity pulled this mass together.

- * As the Earth grew larger, gravity increased pulling in more dust, rock, and ice
- * Energy from collisions raised the Earth's temperature until the planet was hot
- * Scientists think the Earth became so hot that it melted

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- * Denser materials sank toward the center forming the core
- * Less dense materials hardened to form Earth's outer layer (crust and mantle)



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D. The atmosphere

Early Earth may have included light gases like hydrogen and helium

- * The sun released strong bursts of solar winds which blew away the Earth's first atmosphere
- * Earth's second atmosphere formed
- * Volcanic eruptions and collisions with comets added carbon dioxide, water vapor, nitrogen and other gases
- * Comet= a ball of dust, gas and ice that orbits the sun

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E. The Oceans

Earth's first surface was too hot for water to remain a liquid

- * all water remained as water vapor
- * as surface cooled, water vapor condensed to rain
- * rain water accumulated and formed oceans
- * oceans absorbed much of the carbon dioxide from the atmosphere

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F. The continents

During the Precambrian Time much of the Earth's rock cooled and hardened

- *less than 500 million years after the Earth formed, the rock at the surface formed continents
- * Scientists have found that the continents move very slowly over Earth's surface
- *Over billions of years the landmasses have formed, broke apart and crashed together again

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G. Early Organisms

Scientists cannot pinpoint when or where life began on Earth. But they have found fossils of single celled organisms that formed about 3.5 billion years ago

- *scientists think all that all other life forms arose from these simple organisms
- * about 2.5 billion years ago, many organisms began using energy to make food
- * this process is called photosynthesis

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- * one waste product of photosynthesis is oxygen
- * as organisms released oxygen, the amount of oxygen in the atmosphere grew
- * some oxygen changed to ozone
- * the atmosphere developed an ozone that blocked the UV rays of the sun.
- * this allowed organisms to live on land

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