

Scientific Event:

Dark Clouds Cover a Water Covered Earth

Time Frame: about 4.4 billion years ago

The scientific descriptions on these pages are derived from AI investigations using ChatGPT and Gemini 3 asking about the history of cloud and water formation on early Earth. The AI output has been revised appropriately for improved accuracy, ease of comprehension, and relevance to this study of Genesis 1.

Background: The History of *Early Earth*

The description for Genesis Physical Event 2, when the Earth was formless and empty, briefly covered the initial formation of the Earth. By 4.54 billion years ago, according to isotope dating of the ancient meteorites and the Earth's oldest rocks, the Earth had reached its final overall size. Within 30 million years or so, a Mars-sized body ("Theia") collided with Earth. The debris from the collision coalesced into the Moon. After the collision, Earth wasn't solid. The whole surface was covered with a **deep ocean of melted rock** called **magma**. Immediately after the Moon-forming impact, the Earth's atmosphere had something like a **dense steam-CO₂-silicate fog**, glowing red from the underlying magma ocean. Because the planet was so hot there was no land or water and the atmosphere was full of **steam, carbon dioxide, sulfur gases, and dust**.

- **Time Frame:** 4.54 to 4.4 billion years ago
- **Evidence:** Isotopes in lunar rocks that match Earth's mantle support the giant impact of the Moon origins. Young stars with protoplanetary disks show similar processes happening today.

Development of Earth's Dark Clouds and a Watery Surface

As Earth gradually cooled, volcanic activity released enormous amounts of gas from the interior in a process called outgassing. Among the most important of these gases was water vapor. As temperatures dropped below about 100 °C (212 °F), water vapor in the atmosphere began to condense. This condensation likely occurred very early - possibly by 4.4 to 4.3 billion years ago - forming thick, global cloud layers. Instead of brief rainstorms, Earth may have experienced long periods of intense rainfall lasting thousands or even millions of years. These rains accumulated in low areas of the crust, forming the planet's first oceans.

The atmosphere during this time would have been dominated by thick clouds composed mostly of water droplets, along with volcanic aerosols and ash. Carbon dioxide levels were extremely high, contributing to a strong greenhouse effect that helped keep Earth warm even as the Sun was fainter than it is today. These cloud layers would have been far thicker and more opaque than modern storm clouds. Because of this dense cloud cover, very little direct sunlight would have reached the surface at first. Most incoming light would have been scattered or reflected back into space, creating a dim, diffuse glow at ground level rather than clear daylight.

1. Dark Clouds Above and Water Beneath

- a. **Time Frame:** ~4.4 to 4.3 Ga
- b. **Evidence:** Zircon crystals from Australia dated to about 4.4 Ga contain oxygen isotope signatures that indicate interaction with liquid water. Geological models of planetary cooling, combined with laboratory studies of volcanic gases, support the idea of a steam-rich atmosphere that condensed as temperatures fell

Description in Genesis 1 of This Event

Now the earth was formless and empty, darkness was over the surface of the deep, and the Spirit of God was hovering over the waters.
Genesis 1:2b (NIV)

Passages left highlighted are those most relevant to the scientific event of interest

The approach that this supplement pack takes in making associations between Genesis 1 events and scientific events is to use the earliest scientific event that makes sense according to the Hebrew words used in Genesis 1 (i.e., the use of good hermeneutics) while also considering where the event would likely be placed on a timelines that is consistent with the sequence of events described in Genesis 1.

After the first phrase of Genesis 1:2 describing the earth as "formless and void", the second phrase of Genesis 1:2 (which we denote as Genesis 1:2b) moves to the situation where water covers the earth and there is darkness above this water-covered earth. In this visualization we take the point of view of the Spirit of God hovering over the waters, where everything is very dark. We could also have taken the point of view of viewing the dark cloud covered earth from outer space as well. But in either case, the earth has been transformed to the point of water covering the entire earth and dark clouds of carbon dioxide above.