When did it first rain on Earth?

It's been raining for a long time on Earth!

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Whether we drink it or wash in it, fresh water is a very important part of life, in fact it's essential.

New research has found that fresh water, in the form of rain, first appeared on Earth about four billion years ago - 500 million years earlier than previously thought. So it's been raining for a very long time!

Researchers studied ancient minerals from the Earth's crust and they believe the findings could help us to further explore where life came from.

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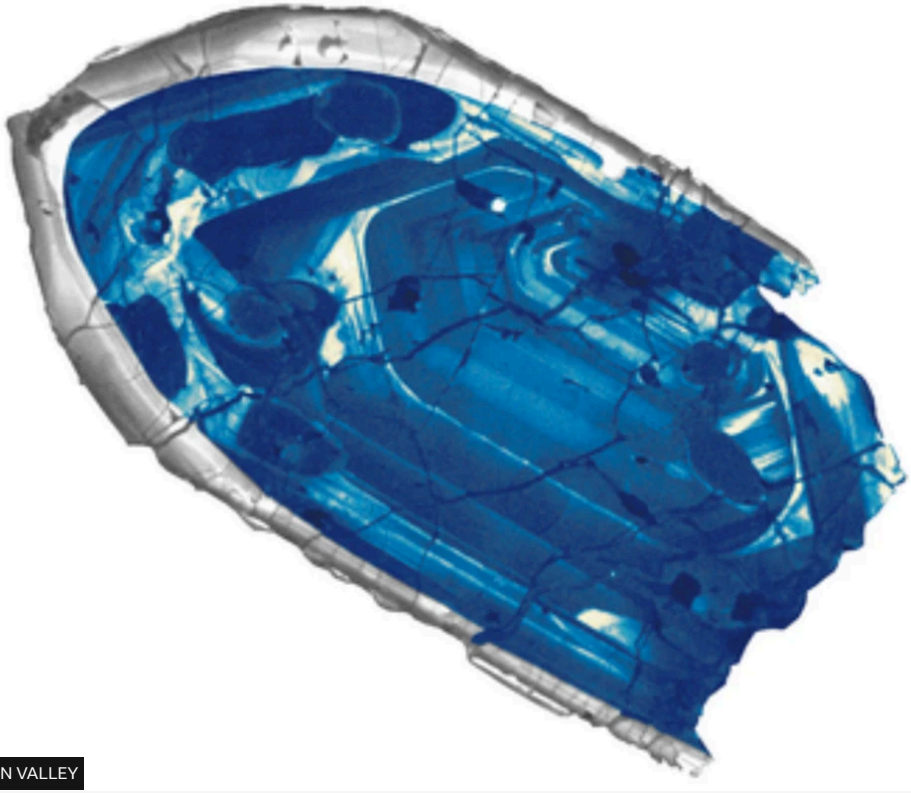

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The mineral zircon is found to be oldest material formed on the Earth

How did scientists make the discovery?

The findings are based on studying **ancient crystals from an area called the Jack Hills in Western Australia**. This is where some of the oldest remaining material from the Earth's crust is found.

The Earth's crust is a thin layer of rock that forms the outer layer of the Earth's surface.

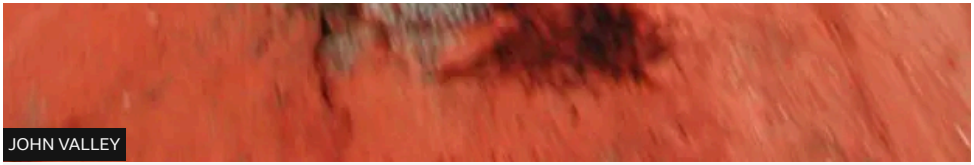
If you think of the Earth as an apple, the crust would be it's skin.

While this area in Australia is mainly a dry and dusty place now, that's where evidence of the first rains to land on Earth have been found.

Researchers measured the oxygen that was trapped in a mineral called zircon. It formed in some rocks that made up the Earth from 3.2 to 4.2 billion years ago.

They found evidence that the hot, molten rocks they grew in came into contact with water that had fallen from the sky during their formation.

Geologist and lead author of the study, Hamed Gamaleldien from Curtin University in Australia, said: "Evidence of fresh water this deep inside Earth challenges the existing theory that Earth was completely covered by ocean four billion years ago."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Water on Earth moves between the land, oceans and atmosphere through processes including evaporation and precipitation, in a system known as the water cycle.

During the Earth's early history, freshwater being available and the start of the water cycle may have contributed to what was needed for early life to develop.

But there's uncertainty about when the water cycle began.

According to the scientists, the emergence of part of the Earth called the continental crust, freshwater, and the start of the water cycle may have helped the right environments needed for life less than 600 million years after the planet formed. Wow!

Study co-author Dr Hugo Olierook, from Curtin University's School of Earth and Planetary Sciences, said the discovery was crucial for understanding how Earth formed and how life emerged.

He added: "This discovery not only sheds light on Earth's early history but also suggests landmasses and fresh water set the stage for life to flourish within a relatively short time frame - less than 600 million years after the planet formed.

"The findings mark a significant step forward in our understanding of Earth's early history and open doors for further exploration into the origins of life."

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