

Diamonds unlock secrets of early Earth

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Story Highlights

- Diamonds more than 4 billion years old discovered in Western Australia
- The diamonds are the oldest identified fragments of the Earth's crust
- The gems suggest the Earth may have cooled faster than previously thought

LONDON, England (Reuters) -- Diamonds more than 4 billion years old -- nearly as old as the Earth itself -- have been discovered in Western Australia, giving scientists vital clues about the early history of our planet.

Found trapped in zircon crystals in the Jack Hills region, the small gems are the oldest identified fragments of the Earth's crust and their existence suggests the Earth may have cooled faster than previously thought, experts said on Wednesday.

The time between the creation of the Earth around 4.5 billion years ago and the formation of the oldest known rocks some 500 million years later is known as the Hadean period -- the "dark ages" of geology. Many geologists have traditionally thought of it as a time when the surface of the planet was a mass of molten lava. But the discovery of the ancient diamonds, reported in the journal *Nature*, challenges that view.

Martina Menneken of Westfälische Wilhelms-Universität Münster, Germany, and colleagues said the presence of diamonds -- which are created under intense pressure -- implied there was a relatively thick continental crust as early as 4.25 billion years ago. This suggests it may have taken only around 200 million years for the Earth's surface to cool enough for water to condense and oceans to form.

"These latest findings indicate that the planet was already cooling and forming a crust much earlier than previously thought," Alexander Nemchin, an expert in geochemistry at Australia's Curtin University of Technology and one of Menneken's co-researchers, said in a statement. "Jack Hills is the only place on Earth that can give us this kind of information about the formation of the Earth. We're dealing with the oldest material on the planet."

Radioactive dating showed the crystals from Western Australia varied in age from 3.06 billion to 4.25 billion years, making them almost 1 billion years older than the previous oldest-known diamonds.

Martin Van Kranendonk, a senior geologist with the Geological Survey of Western Australia, said unraveling the history of the crystals was a boon for researchers. "Any information about the very early Earth is fantastic, it's like a Christmas present for geoscientists," he said.



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