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# Humble moss helped to cool Earth and spurred on life



By Pallab Ghosh Science correspondent, BBC News



Moss under the microscope: could it have been responsible for the evolution of life as we know it?

Primitive moss-like plants could have triggered the cooling of the Earth some 470 million years ago, say researchers.

A study [published in Nature Geoscience](#) may help explain why temperatures gradually began to fall, culminating in a series of "mini ice ages".

Until now it had been thought that the process of global cooling began 100 million years later, when larger plants and trees emerged.

The simple plants' interactions with rocks are believed to be the cause.

"The humble moss has created the climate which we enjoy today, from which the life we see all around us evolved," said Prof Tim Lenton of Exeter University, one of the lead researchers.

Carbon dioxide insulates the planet, rather like a duvet wrapped around it: the higher the concentration of CO<sub>2</sub>, the higher the average global temperature.

"The invasion of the land by plants was a pivotal time in our history. It brought about huge changes to our climate"

Prof Liam Dolan Oxford University

Atmospheric levels of the gas 480 million years ago are thought to have been 16 times higher than they are now, and average global temperatures are thought to have been 25C, around 10C higher than they are now.

But by 460 million years ago, CO<sub>2</sub> levels had fallen by half and the planet began to cool, allowing the formation of the polar ice caps.

The question is: what caused the drop in CO<sub>2</sub> levels? The answer, according to an experiment

by Prof Lenton and his colleague Prof Liam Dolan of Oxford University is "moss".

According to Prof Dolan, the invasion of the land by moss was a "pivotal" time in our history. "It brought about huge changes to our climate," he said.

The researchers wanted to investigate whether their interaction with rocks, in a process known as chemical weathering, could have been responsible for the drop in CO<sub>2</sub> levels.

Weathering involves the mosses extracting nutrients from rock formations by dissolving them with acid. This chemical reaction also leads to CO<sub>2</sub> reacting with the rocks and being removed from the atmosphere.

By studying this process with modern mosses, the researchers found that the plants' appetite for CO<sub>2</sub> is voracious and could indeed explain the drop in temperature.