

## What keeps the Earth habitable?

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### Abstract:

The Earth has been inhabited by life for at least 85% of its existence. This remarkable fact requires relatively narrow climatic conditions for most of Earth history, to allow life to continue to exist. One of the main mechanisms by which this might occur is the Earth's "thermostat", a temperature-driven feedback on CO<sub>2</sub> removal by chemical weathering.

However, we actually know very little about how this operates, the rates at which it responds to climate change, or even if it truly does function. Novel methods have given us the opportunity to examine the interplay between weathering and climate in the geological record. Ultimately we can now begin to determine and quantify the climate system processes that have directly led to our existence.