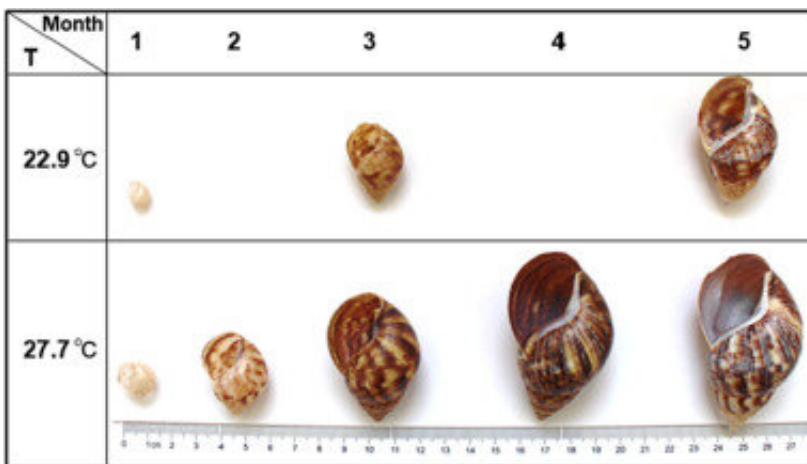


Land snail shells help to reconstruct quantitative temperature

September 10 2021, by Li Yuan



Credit: DOI: 10.1016/j.palaeo.2021.110530

Quantitatively reconstructing temperature changes is vital to understand the history and law of the Earth's climate system.

Land snails are widely distributed, and the clumped isotope (Δ_{47}) in their shell carbonates can serve as a proxy for temperature in terrestrial environments. However, it is unclear whether the Δ_{47} values of snail shells are affected by [biological processes](#) known as "vital effects."

Researchers from the Institute of Earth Environment of the Chinese Academy of Sciences and Caltech cultured [land snails](#) at different well-controlled temperatures. They collected snail shells from different

species at different growth age, and reported their Δ_{47} values.

This [study](#) was published in *Palaeogeography, Palaeoclimatology, Palaeoecology*.

The researchers found that there were no significant differences in the Δ_{47} values of different species, indicating no influences of species. The good correlation between snail [shell](#)'s Δ_{47} and their growth temperature suggested its potential for temperature reconstruction.

When applied the previously established Δ_{47} -temperature transfer function, the mean reconstructed temperature is ~ 6 °C higher than snail culturing temperatures. This indicated the existence of the vital effect in land snail shells.

Furthermore, the researchers found that this effect could be corrected by establishing a new Δ_{47} -temperature transfer function.

The study provided a valuable dataset for building Δ_{47} -temperature transfer function for land snails and it also served as a good foundation for past [temperature](#) study using fossil snail shells in the near future.

More information: Jibao Dong et al, Clumped isotopic compositions of cultured and natural land-snail shells and their implications, *Palaeogeography, Palaeoclimatology, Palaeoecology* (2021). [DOI: 10.1016/j.palaeo.2021.110530](https://doi.org/10.1016/j.palaeo.2021.110530)

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