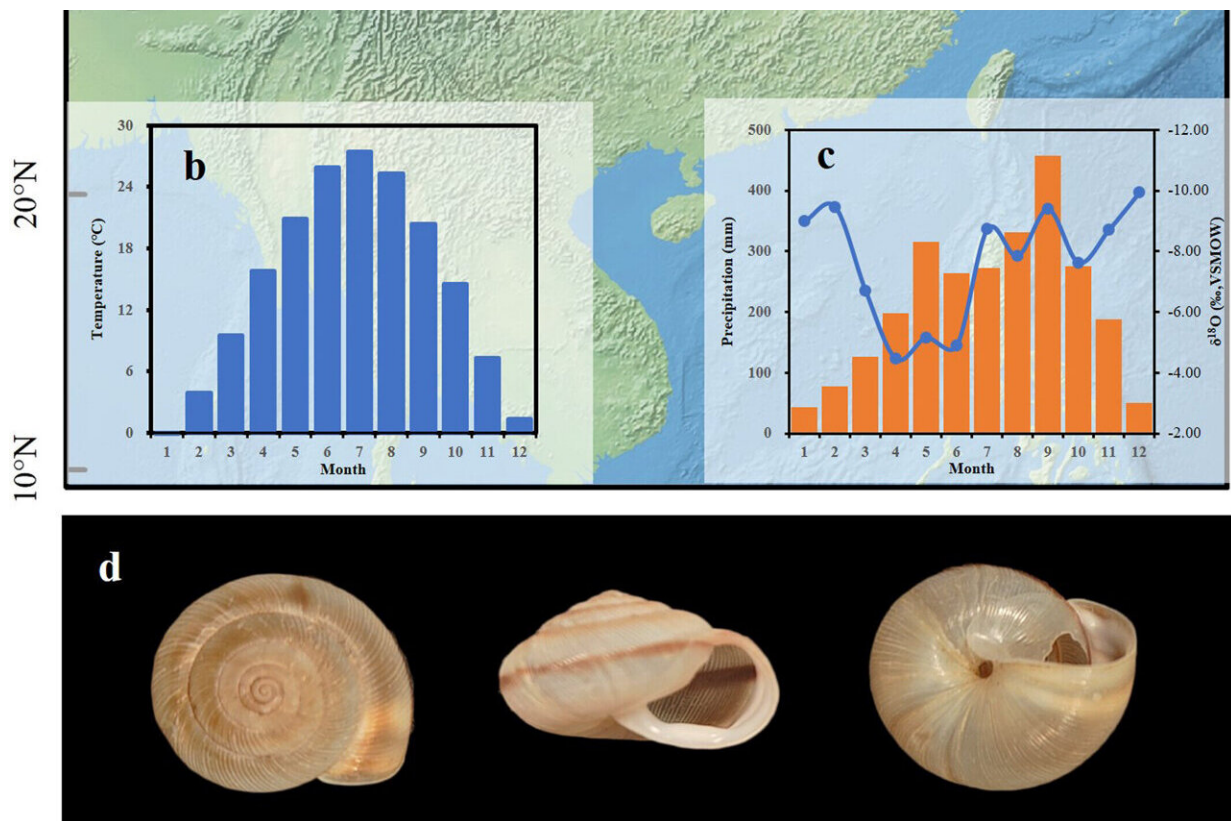


Land snails: Recorders of climate and weather changes

March 21 2024, by Zhang Nannan



Location of study site (a), monthly average temperature (b), precipitation and monthly mean $\delta^{18}O_p$ (c) and the land snail species of *Cathaica fasciola*, and *Bradybaena ravida*. Credit: *Geophysical Research Letters* (2024). DOI: 10.1029/2023GL107835

In a study published in [Geophysical Research Letters](#) on March 13, researchers from the Institute of Earth Environment of the Chinese Academy of Sciences and Northwest University showed that land snails are very sensitive to climate and environmental changes, and they can record high-resolution terrestrial climate changes.

The researchers performed high-resolution (~0.3 mm intervals) oxygen isotope ($\delta^{18}\text{O}_s$) analyses of individual snail shells and obtained a large amount of data. They found that the intra-[shell](#) $\delta^{18}\text{O}_s$ sequences of [land snails](#) were well reproducible and they could reflect seasonal to even daily scale changes of the precipitation $\delta^{18}\text{O}$, mainly from March to October in the studied region.

It is worth noting that the calculated average growth rate for non-adult *Cathaica fasciola* snail shells is as high as ~290 mm/day (varying from 250 to 330 mm/day) according to these new results. This means that the time resolution of each intra-shell sample could reach two to four days using the current manual sampling method.

Thus, the land snail shells are very promising records for reconstructing high-resolution terrestrial [environmental changes](#) in the future.

"From the fossil snail shells, we can get [climate](#) and weather timescale climatic changes from past warm periods, such as the middle Holocene and the last interglacial. And this can serve as a mirror for us to understand what we may experience in the near future under global warming conditions," said Dr. Dong Jibao, corresponding author of the study.

This new advance will allow for the integration of studies of ancient and modern climate change.

More information: Qianya Li et al, High-Resolution Intrashell Oxygen Isotope Studies of *Cathaica fasciola* and *Bradybaena ravida* Land Snails and Their Environmental Implications, *Geophysical Research Letters* (2024). [DOI: 10.1029/2023GL107835](https://doi.org/10.1029/2023GL107835)

Provided by Chinese Academy of Sciences

Citation: Land snails: Recorders of climate and weather changes (2024, March 21) retrieved 28 April 2024 from <https://phys.org/news/2024-03-snails-climate-weather.html>

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