

Reading the weather from inside a seashell

September 29 2015

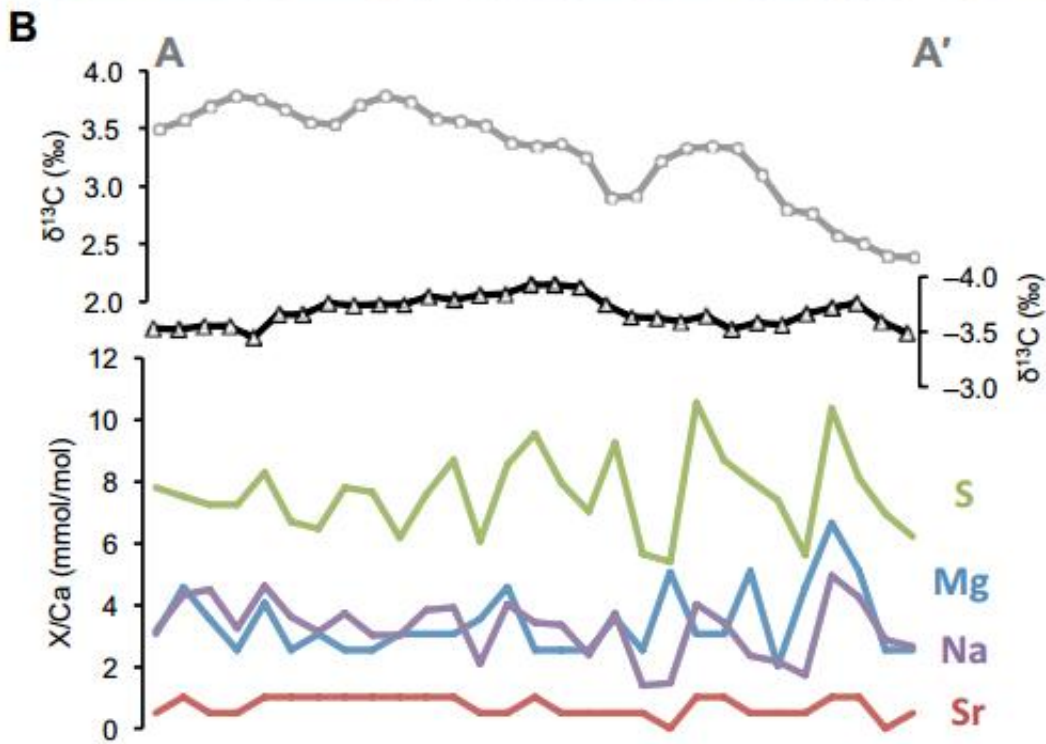
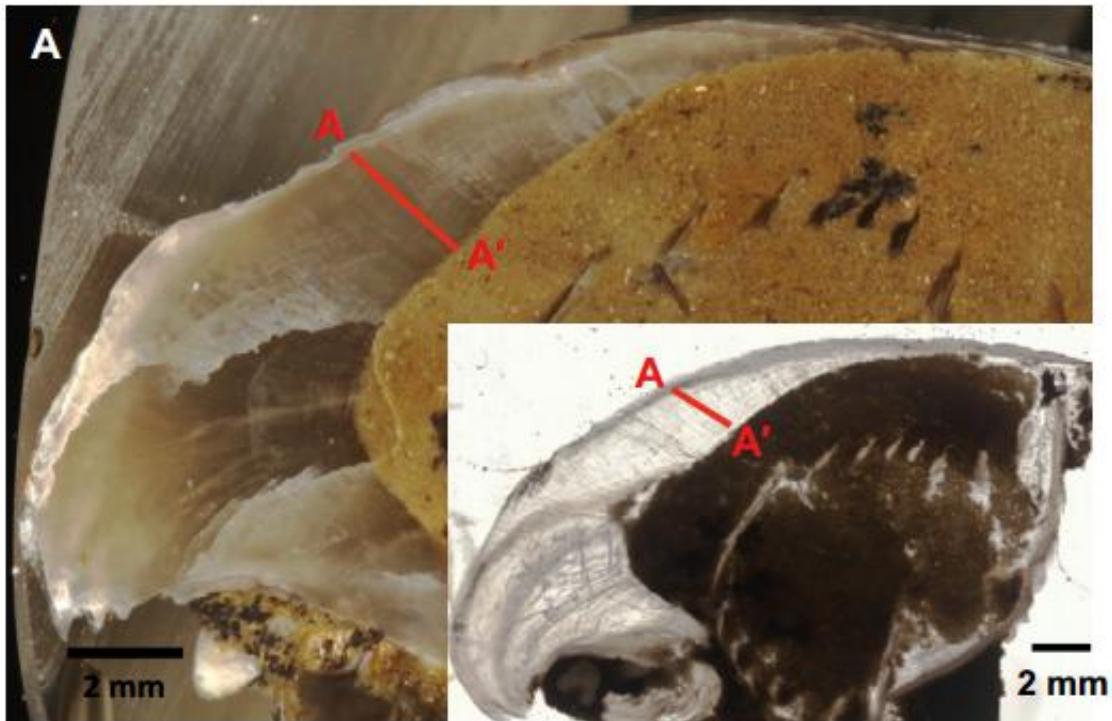


Figure 5 from A. Roark et al. (A) Orientation of the sampling transects through specimen MID2 for stable isotopes (outer image; sample billet) and trace elements (inset image; thin section). (B) The resulting isotopic and trace-element data for specimen MID2. Credit: A. Roark et al. and GSA Bulletin

Does assembling a mega-continent necessarily lead to a mega-monsoon?
Can you tell by looking at seashells?

This study by Andy Roark and colleagues tested predictions that the supercontinent Pangea underwent strong monsoons, or massive seasonal changes in [wind direction](#), during times of high sea level (i.e., interglacial) by analyzing the chemistry of fossil brachiopod shells. The shells were deposited in a [shallow sea](#) in present-day West Virginia and Ohio in the latest Pennsylvanian (~300 million years ago).

By carefully micro-sampling each shell along its direction of growth and analyzing for stable carbon and [oxygen isotopes](#) and trace elements, the team reconstructed a record of seasonal variation during the lifetimes of the organisms. The data showed that the region experienced minimal seasonal variation in temperature and rainfall; in other words, at most a very weak monsoon.

These results may help resolve a paleoclimate debate about the relationship between monsoonality and sea level and provide a glimpse of changing seasons on an ancient mega-continent.

More information: Low seasonality in central equatorial Pangea during a late Carboniferous highstand based on high-resolution isotopic records of brachiopod shells A. Roark et al., This article is online at [dx.doi.org/10.1130/B31330.1](https://doi.org/10.1130/B31330.1)

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