

Jekyll and Hyde corals tell different warming story

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(Phys.org) —Like the rings of a tree trunk, Strontium-to-calcium ratios (Sr/Ca) in coral skeletons have been widely used to determine past ocean temperatures from yearly banded corals. However, scientists have now found that biological (growth) effects can overpower the climate information locked in the coral skeletons.

An international group of researchers, led by Assistant Professor Jens Zinke from The University of Western Australia's Oceans Institute and the School of Earth and Environment, and Australian Institute of Marine Science, studied two corals of the same species just 720 metres apart near northeast Madagascar.

Taking a detailed look at how Sr/Ca varies with temperature and with biological factors, the group compared cores from the corals and examined the Sr/Ca ratios and growth rates over a 43-year period, along with historical [sea surface temperature](#) data for the region, looking at seasonal and interannual variability as well as longer term trends.

The results show that part of the variation in Sr/Ca ratios is accounted for by the individual coral's growth rather than temperature.

"Both cores showed similar seasonal variations in growth rate and Sr/Ca ratios, but on interannual time scales, the two corals growth rates had opposite responses to temperature: In one core, increasing sea surface temperature was accompanied by increasing growth rate and increasing Sr/Ca, while in the other, over the same period the rising temperatures led to declining growth rate and declining Sr/Ca," Dr Zinke said.

The conclusion drawn by the study, "Confounding effects of [coral growth](#) and high SST variability on skeletal Sr/Ca: implications for coral paleothermometry", published as an *American Geophysical Union* (AGU) "Research Spotlight" is that scientists need to consider analysing multiple coral cores when attempting to use Sr/Ca ratios as a proxy for past ocean temperature.

More information: onlinelibrary.wiley.com/journal/10.1002/%28ISSN%292324-9250

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