RESEARCH HIGHLIGHTS

JOURNAL CLUB

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A palaeoceanographer worries not about corals, but about coral reefs.

To understand what the consequences of human-induced CO_2 increases might be, I study how atmospheric CO_2 concentrations fluctuated in the past.

One outcome of high atmospheric CO_2 that is inevitable is ocean acidification. Atmospheric CO_2 dissolves in sea water, lowering the pH of the ocean's surface layer.

We expect this to create problems for marine creatures that precipitate their skeletons from calcium carbonate, because the mineral dissolves in acid. Some researchers have suggested that scleractinian corals might even be driven to extinction.

But what does the geological record tell us? Corals' reef-building fossils have appeared and disappeared over the past 200 million years and despite periods of elevated atmospheric CO_2, the organisms did not go extinct.

A recent experiment (M. Fine & D. Tchernov *Science* **315**, 1811; 2007) resolves this apparent paradox. The team grew scleractinian corals for a year in sea water with a lower-than-normal pH. They found that the corals reproduced and grew happily in this acidic environment — albeit without their hard skeletons. The corals adjusted their skeleton-forming physiology in response to the different growing conditions.

So corals seem to be quite adaptable. But I would like to know whether other calcifying organisms have such physiological versatility.

Moreover, we have to remember that although corals may survive in an ocean with a lower pH as sea-anemone-like organisms, they are currently major contributors to the intricate physical structure of coral reefs. What will be the future of these ecosystems if their calcium-carbonate scaffolding disappears? Will our grandchildren enjoy the spectacular beauty of these 'rainforests' of the ocean?