

Study finds coral reefs under even greater threat

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In a landmark study, scientists at The University of Queensland (UQ) have simulated future ocean conditions and found climate change will jeopardise the future of coral reefs.

The study published today in prestigious scientific journal, *PNAS*, finds coral reefs dissolve rapidly once exposed to warmer, more acidic [ocean conditions](#) associated with business-as-usual CO₂ emission rates predicted for the latter half of this century.

The collaborative study, led by Associate Professor Sophie Dove from UQ's School of Biological Sciences, concludes that increases in temperature and acidity cause major disruptions to coral reefs like those

growing around the world famous Heron Island on Australia's Great Barrier Reef.

Associate Professor Dove said even under fairly low emission scenarios, most corals bleached and died.

"Given corals are essential to coral reefs, this is not good news," Associate Professor Dove said.

In a world-first, the nine-month study used computers to control CO₂ content and temperature of water flowing over small patches of coral reef at UQ's Heron Island research centre.

Associate Professor Dove describes one of the most significant challenges of [climate change](#) as being able to accurately reduce future uncertainties.

"By simulating future environments above complex [reef systems](#), we come closer to understanding what might happen as the oceans warm and acidify," she said.

"If we can reduce the uncertainty, then we have a much better chance of making better decisions to help protect and conserve these valuable ecosystems."

The study also found for the first time that increases in [ocean temperature](#) and acidity not only leads to a reduction in [calcification](#), the process by which corals build coral reefs, but also the rate at which coral reefs dissolve.

"We discovered that coral reefs under the business-as-usual-emission scenario, the one we are on, show high rates of decalcification," Associate Professor Dove said.

"Essentially, dissolving before our eyes over a few months.

"This has serious implications for the role of coral reefs in providing habitat for thousands of species and their role in protecting coastlines from wave impacts."

Studies like these are providing important information and are likely to be considered by the intergovernmental panel on climate change (IPCC).

The first of three major reports by the IPCC will be released next month.

The second report will be released at the end of March in Yokohama, Japan.

Study co-author Professor Ove Hoegh-Guldberg, from UQ's Global Change Institute, stressed the importance of scientific research in understanding and solving the problem of rapid anthropogenic climate change.

"One of the key messages of this study is that [coral reefs](#) are under even greater threat from ocean warming and acidification than we first thought." Professor Hoegh-Guldberg said.

"This sounds gloomy but our study also emphasises the fact that there is time and that small amount of effort today can have a huge impact on what happens in the future."

More information: Future reef decalcification under a business-as-usual CO2 emission scenario,

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Provided by University of Queensland

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