

Study: Coral atolls hold on despite sea-level rise

June 3 2010, By RAY LILLEY , Associated Press Writer



This artist's drawing, based on an undated satellite photo, provided by Auckland University, shows islands of the Funafuti Atoll of Tuvalu in the South Pacific. The dotted lines indicate the coast lines in 1984 while the solid line represents where the coast line of the islands were as of 2004. Some South Pacific coral atolls have held their own or even grown in size over the past 60 years despite rising sea levels, newly published research showed Thursday, June 3, 2010. Some scientists have worried for years that many of the tiny, low-lying islands throughout the South Pacific will eventually disappear under rising sea levels. (AP Photo/Auckland University)

(AP) -- Some South Pacific coral atolls have held their own or even grown in size over the past 60 years despite rising sea levels, research showed Thursday.

Some scientists worry that many of the tiny, low-lying islands throughout the South Pacific will eventually disappear under [rising sea levels](#).

But two researchers who measured 27 islands where local sea levels have

risen 4.8 inches (120 millimeters) - an average of 0.08 inch (2 millimeters) a year - over the past 60 years, found just four had diminished in size.

The reason: Coral islands respond to changes in [weather patterns](#) and climate, with coral debris eroded from encircling reefs pushed up onto the islands' coasts by winds and waves.

Professor Paul Kench of Auckland University's environment school and coastal process expert Arthur Webb of the Fiji-based South Pacific Applied Geoscience Commission, used historical [aerial photographs](#) and high-resolution satellite images to study changes in the land area of the islands.

While four had gotten smaller, the other 23 had either stayed the same or grown bigger, according to the research published in the scientific journal *Global and Planetary Change*.

The shape-shifting islands changed their size through what the pair describe as ocean shoreline displacement toward their lagoons, lagoon shoreline growth or extensions to the ends of elongated islands.

Kench said it had been assumed that islands would "sit there and drown" as sea levels rise. But as the sea rises, the islands respond.

"They're not all growing, they're changing. They've always changed ... but the consistency (with which) some of them have grown is a little surprising," he told The Associated Press on Thursday.

Tuvalu, a coral island group that [climate change](#) campaigners have repeatedly predicted will be drowned by rising seas, has its highest point just 14 feet (4.5 meters) above sea level. The researchers found seven of its nine islands had grown by more than 3 percent on average over the

past 60 years.

In 1972, Cyclone Bebe dumped 346 acres (140 hectares) of sediment on the eastern reef of Tuvalu, increasing the area of Funafuti, the main island, by 10 percent. Another island, Funamanu, gained 1.1 acres (0.44 hectares) or nearly 30 percent of its previous area.

A similar trend was found in Kiribati, where three main islands also "grew." Betio expanded by 30 percent (89 acres or 36 hectares), Bairiki by 16.3 percent (14 acres or 5.8 hectares), and Nanikai by 12.5 percent (2 acres, or 0.8 hectares).

On World Environment Day in 2008, Kiribati President Anote Tong warned parts of his island nation were already being submerged, forcing some of Kiribati's 94,000 people living in shoreline village communities to be relocated from century-old sites.

Worst case scenarios showed Kiribati would disappear into the sea within a century, he said at the time.

But Kench said the study shows the islands are coping with sea-level change, with higher waves and water depth supplying sand and gravel from coral reefs.

"In other words, they (the islands) are slowly moving ... migrating across their reef platforms," he said. "As the sea-level conditions and wave conditions are changing, the islands are adjusting to that."

But he warned an accelerated rate of sea-level rise could be "the critical environmental threat to the small island nations," with "a very rapid rate of island destruction" possible from a water depth beyond a certain threshold. That threshold is unknown.

Australian sea level oceanographer John Hunter said the findings "are good news and not a surprise."

"Coral islands can keep up with some sea-level rise, but (there's also) ocean warming ... and ocean acidification ... that are certainly problematic for the corals. Sea-level rise can actually make the islands grow - as it apparently is doing," said Hunter, who did not participate in the study.

While coral might adjust to ocean warming, ocean acidification "will probably be the death knell of the coral reefs," leaving coastal management by humans as the only way of retaining and rebuilding atolls, said Hunter, a researcher at the University of Tasmania's Antarctic Climate and Ecosystems Cooperative Research Center.

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Citation: Study: Coral atolls hold on despite sea-level rise (2010, June 3) retrieved 2 May 2024 from <https://phys.org/news/2010-06-coral-atolls-sea-level.html>

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