

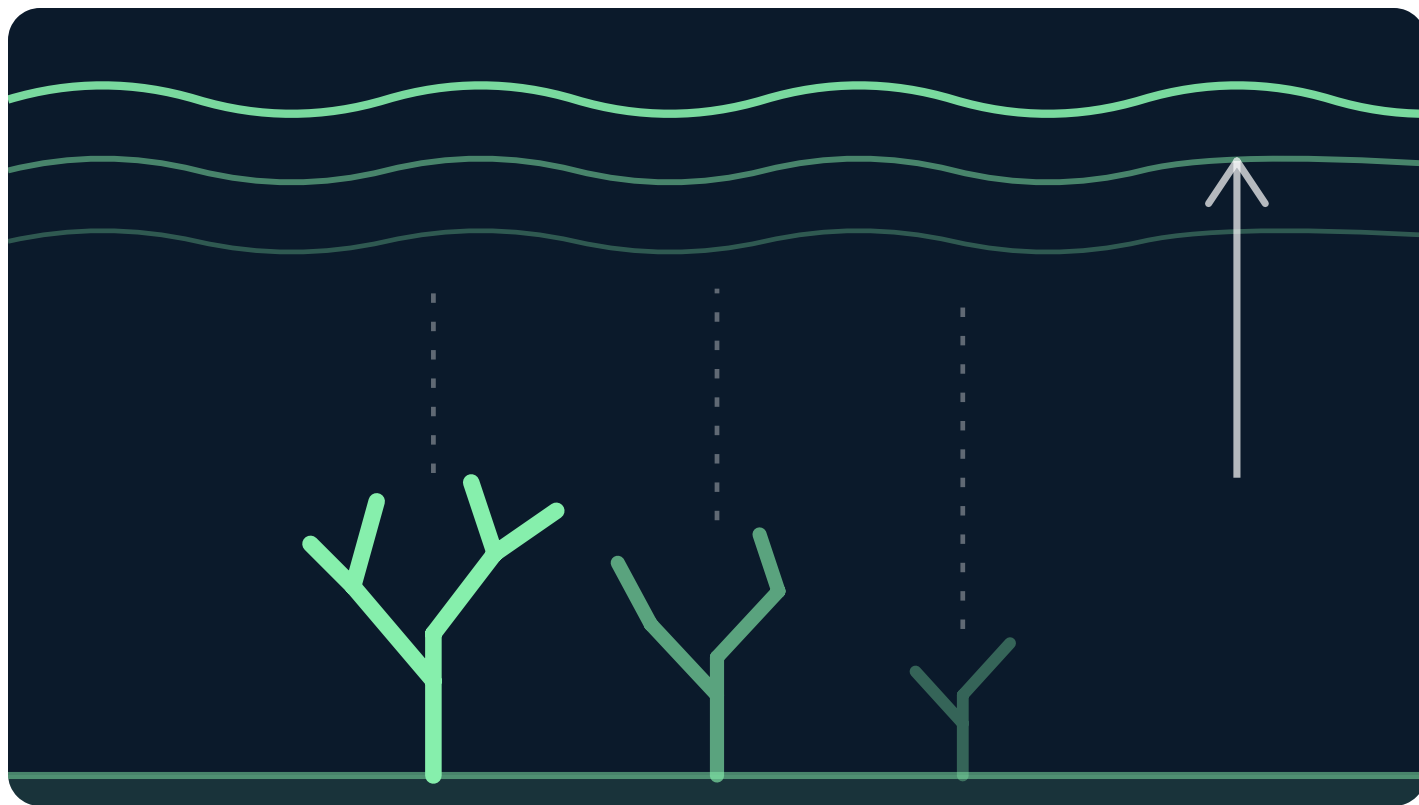
Climate

## Three-Quarters of Indo-Pacific Coral Reefs Could Drown as Seas Rise, Study Finds

A Nanyang Technological University-led study of ancient reef records finds most Indo-Pacific coral reefs cannot grow fast enough to keep pace with sea-level rise expected under high greenhouse-gas emissions.

19 August 2026 at 1:09 am

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Coral reefs have kept pace with rising seas for thousands of years by building themselves upward as corals and other organisms produce calcium carbonate, the hard material that

forms the reef structure. But reefs can only grow so fast; if sea level rises faster than a reef can build upward, the reef becomes progressively submerged, a process scientists call reef drowning, in which the reef may still hold living coral but loses the shallow structure that protects coastlines and shelters marine life.

A study published in Nature Communications, led by Earth Observatory of Singapore research fellow Dr. Riovie Ramos and Nanyang Technological University assistant professor Kyle Morgan, found that 76% of surveyed Indo-Pacific reef sites cannot grow fast enough to keep pace with projected sea-level rise under a high greenhouse-gas emissions scenario. The researchers identified a threshold: once relative sea level rises more than 5.3 millimeters a year, there is a greater than 90% chance a reef cannot keep up, a rate they say is likely to be exceeded within 35 years unless emissions are substantially cut.

To reach these conclusions, the team compiled 288 ancient reef growth records from 92 sites across the Indo-Pacific, spanning the Holocene, the roughly 11,700-year period since the last ice age. These records, based on layers of skeletal carbonate left by reef-building organisms, capture the growth of entire reef structures rather than individual coral colonies, accounting for erosion, breakage and other natural processes.

The researchers found that reefs today are increasingly dominated by smaller, disturbance-tolerant coral species that recolonize damaged reefs quickly but build less structurally complex frameworks than the competitive corals that dominated ancient reefs, further slowing the pace at which modern reefs can grow upward.

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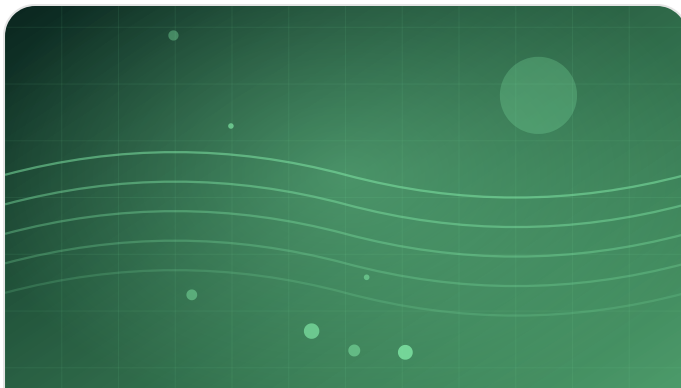
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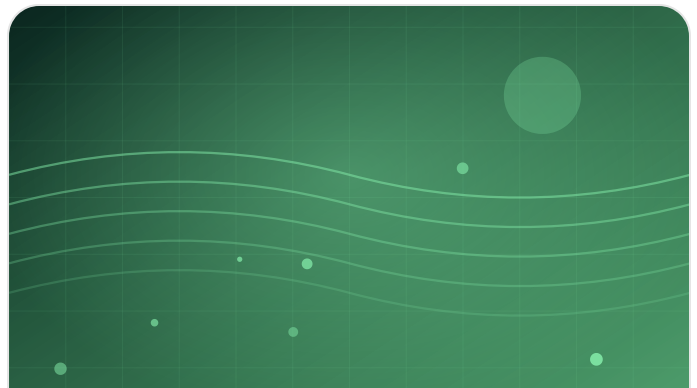
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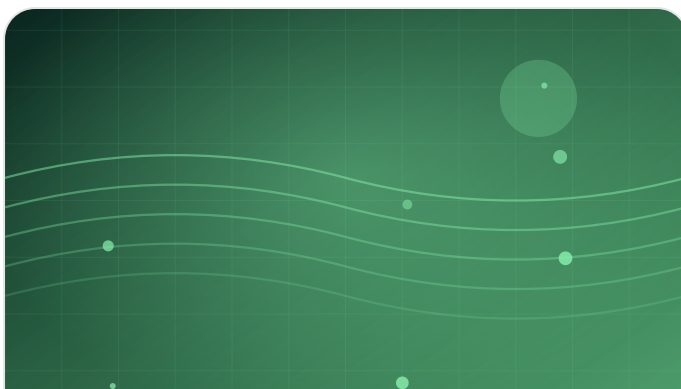
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