

Singapore's Natural Archives in Coral Skeletons Reveal Earlier Sea-Level Rise

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Sea-Level Rise in the Indian Ocean Began Earlier Than Thought A groundbreaking international study led by marine scientists in Singapore has revealed that sea-level rise in the Indian Ocean began accelerating much earlier than previously thought. By analyzing coral samples from the Maldives, researchers reconstructed a century-long record of sea-level changes and climate shifts, extending the historical record back to the early 1900s.

Published in *Nature Communications*, the study was conducted by Professor Paul Kench from the National University of Singapore (NUS) in collaboration with researchers from NUS and Nanyang Technological University (NTU). The findings indicate that sea levels in the Indian Ocean, which covers 30% of the world's ocean area and supports 30% of the global population, have risen by 30cm since the mid-20th century. One of the study's key findings is the pronounced acceleration of sea-level rise in the Indian Ocean starting around 1959, earlier than indicated by coastal tide gauges or satellite observations.

This timing aligns closely with global temperature increases and accelerated glacial melt driven by human activity, suggesting that the Indian Ocean has been highly responsive to climate change for over half a century. The study also highlights the significant threats posed by accelerating sea-level rise, including increased flooding, erosion, saltwater intrusion, and damage to vital ecosystems like mangroves and coral reefs.

These effects ripple beyond Asia, underscoring the need for international cooperation to address global challenges such as water security, agriculture, and disaster preparedness. For Singapore and its Southeast Asian neighbors, the study provides a

historical baseline that can enhance climate models and improve sea-level projections. This new data supports ongoing efforts like Singapore's Coastal-Inland Flood Model and Climate Impact Science Research Programme, helping the region plan for future risks under continued global warming.