



Democratising reef monitoring data in the cloud

The challenge

Pacific Island communities rely on coral reefs for food, income and coastal protection, but these ecosystems face risk of collapse under the pressures of climate change.

Preventing further degradation of coral reefs depends on the availability of timely and accurate information about reef condition to determine regional trends and inform conservation and management decisions.

Reef monitoring across large expanses of ocean is expensive for island nations with limited resources. Collating and integrating data from different formats and methodologies is labour intensive and complicated.

Documenting the changing reef condition proved difficult following the effects of recent typhoons and bleaching events.

The approach

Reef scientists across the Indo-Pacific, worked with the Australian Institute of Marine Science (AIMS) to create ReefCloud.

ReefCloud is a digital tool that uses machine learning and advanced analysis to rapidly extract and share data from images of coral reefs anywhere in the world.

The user-friendly, open-access platform democratises reef data, enabling the world's coral reef monitoring community to share knowledge and work together, in real time.

ReefCloud's automated analysis reduces training time so the Maldives Marine Research Institute (MMRI) and Wildlife Conservation Society Fiji (WCS) overcame COVID-19 lockdowns using resort-based marine biologists to collect and enter field data into ReefCloud.

As the data is stored in the cloud, it is secure from damaging weather and makes information sharing much easier. ReefCloud was the Environment and Sustainability winner at the 2022 Asia-Pacific Spatial Excellence Awards.

The impact

ReefCloud provides a solid foundation to deliver economic, ecological and social benefit through fundamental improvements to monitor, understand, and actively protect and manage coral reefs.

ReefCloud standardises coral reef data, analysing coral composition with 80-90 percent accuracy, 700 times faster than manual assessment. It ensures reliable data is available for historical comparisons to assess trends in reef condition.

This can free-up finite reef monitoring resources for science tasks and speed-up assessments and decision-making.

In Fiji, WCS was able to remotely track reef health during COVID-19 to ensure important monitoring records were maintained throughout the pandemic. In the Maldives, MMRI increased the rate and scale of data collection and reduced data processing time.

By transitioning its reef monitoring program to ReefCloud, the Palau International Coral Reef Centre will save up to four months of labour cost a year.

ReefCloud was co-funded by AIMS and the Department of Foreign Affairs and Trade with support from [Accenture](#) and the [Allen Coral Atlas](#). For more information: [ReefCloud](#) | [AIMS](#). Photo © AIMS | Marie Roman



80-90%
ACCURACY ANALYSING
REEF COMPOSITION



700 x FASTER
THAN
MANUAL ASSESSMENT



WINNER
ASIA-PACIFIC SPATIAL
EXCELLENCE AWARDS



SECURE
DATA IN THE CLOUD