

University of Queensland Heron Island Research Station Update:

Twenty years of Mapping Corals On Heron Reef

Satellites are capturing detailed imagery of the earth surface and have been used to map coral reefs globally. [Associate Professor Chris Roelfsema](#) has led a monitoring program at Heron Reef that has been ongoing for more than 20 years. It captured annual thousands of underwater photographs combined with satellite imagery. The underwater photographs have been analysed for coral cover and composition and combined with the satellite imagery to create annual habitat maps offering a better potential to understand the changes on reefs over time beyond the photos captured underwater.

Here fore PhD candidate David E. Carrasco Rivera from UQ's [School of Environment](#) analysed thousands of images from the 20 years of field studies and satellites captured of Heron Reef.

"Most of what we know about world's reefs comes from field data, which is done in less than 0.1 per cent of the actual reef area," Mr Carrasco Rivera said.

"That's like completing a full body assessment by only looking at a portion of your finger.

"Our study found using satellite imagery gives researchers the ability to continually monitor the reef and identify trends in the environment beyond the areas visited underwater.

"By combining machine learning with the image data sets, we created annual maps of reef composition over 2 decades.

Mr Carrasco Rivera used the field photos to estimate and map how much sand, rock and coral was present in the areas where satellite photos were only taken.

a/Prof. Chris Roelfsema said understanding the entirety of the reef over time is vital to making appropriate conservation and management decisions.

"We look at ourselves in the mirror daily so we can identify small changes in appearance when we are sick, it's the same with the reef, we need to see it regularly to notice changes," Dr Roelfsema said.

"Consistent and ongoing monitoring is a key contributor to understanding what a normal environment cycle is, or if another factor is leading to changes including coral cover variations and colour."

"If you can only get out to a very small part of the reef, you can miss vital changes. For example, a reef could be impacted by bleaching, and if you don't have information before the event then it's hard to understand the impact or to assess the recovery."

Dr Roelfsema said the study was possible through the facilities of UQ's [Heron Island Research Station](#) and the consent from the traditional owners.

"These remote sensing findings have scope to benefit reefs across the globe as they continue to be impacted by climate change."

More of this can be read in the [publication](#).

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