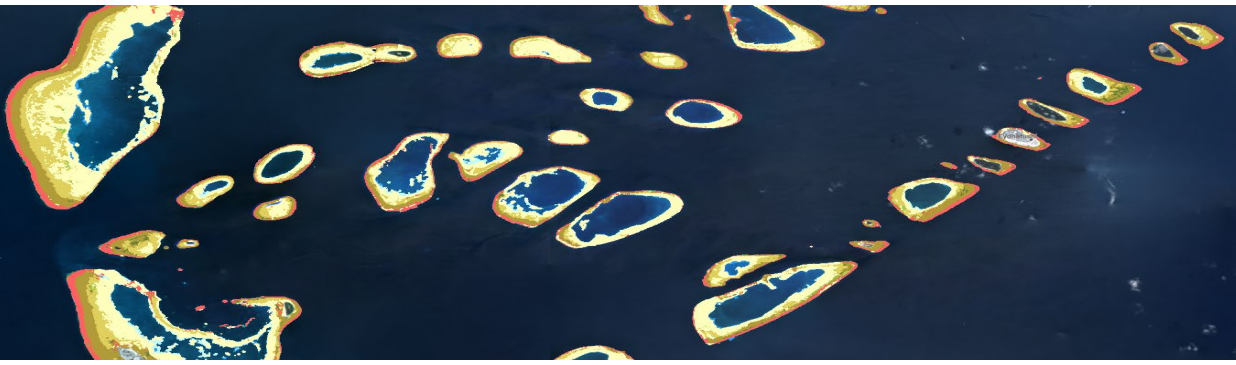


Allen Coral Atlas: New Field Data Collection

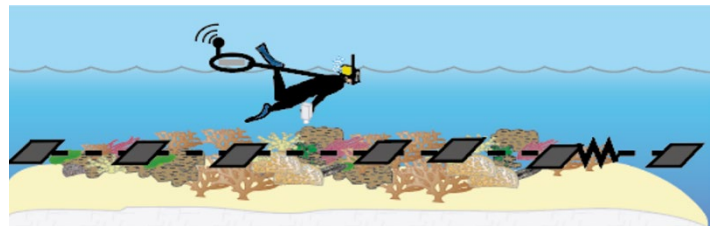


To map the world's reefs, the Allen Coral Atlas team utilized a large amount of newly collected ground-truth field data. This data was collected by themselves and in collaboration with other field teams around the world, using a geo-referenced photo-transect protocol developed at the University of Queensland's Remote Sensing Research Centre (RSRC) over many years. The protocol is relatively simple and uses simple equipment, to make it accessible as a method for collecting geo-referenced in-water data for any teams who would benefit from it. We have made the software created for linking the benthic photos to a GPS position freely available.

If you are interested in using the protocol and software briefly described below, feel free to contact the team at UQ (c.roelfsema@uq.edu.au or k.markey1@uq.edu.au) or access this dropbox link for the software and full protocol manual created by RSRC and National Geographic: <https://www.dropbox.com/sh/9cbcr6l3zugfs7n/AAAWQ4QmCh0mjYAnPMHRowHoa?dl=0>

Geo-referenced photo-transect protocol overview

1. Minimum requirements: People who can swim. Underwater camera, GPS that can be downloaded, float, dry bag and some rope. Software provided by Allen Coral Atlas team
2. Photo quadrats representing 1m² of the benthos are collected along transects at 0-3 m depth (snorkelling) or 3-10 m depth (SCUBA diving), by a person towing a GPS on a float at the surface recording the position that can be linked to each photo.
3. For mapping purposes, the transects should cover the significant geomorphic and benthic zones on the reef.
4. Each photo is linked to a GPS point by timestamp using the GPSPHOTO software provided. To capture the error between your camera and GPS time, ensure all gear is in local time zone and the start of each day take a photo of the GPS time screen in HH:MM:SS with the camera used for the transects.
5. Photo quadrats can then be analysed for benthic composition manually or through machine learning to provide a quantitative benthic value for a known position on the satellite image.
6. Geo-referenced benthic composition can be used to calibrate and validate maps or for other monitoring and research projects.
7. Consider sharing your photos or data with the ACA for future improvements and/or other collaborative initiatives such as ReefCloud, GCRMN and Data Mermaid, to help improve global-scale reef research and management.



Resources for further study

Detailed methods are available from the Atlas team:

Roelfsema C.M., K. Markey, E. Kennedy, E. Kovacs, R. Borrego, H. Fox, B. Bambic, B. Free, K. Rice and S.R. Phinn (2019). Protocol for Georeferenced Benthic Photoquadrat Surveys. Remote Sensing and Research Centre, School of Earth And Environmental Sciences, University of Queensland, Brisbane, Australia.

Other resources on: <https://www.rsrc.org.au/coastal-mapping-and-monitoring> Georeferenced Photo Quadrat Methods:

Roelfsema, C.M., Joyce, K. E., Phinn, S.R. (2006) Evaluation of Benthic Survey Techniques for Validating Remotely Sensed Images of Coral Reefs. Proceedings 10th International Coral Reef Symposium Okinawa.

Roelfsema, C.M., and S.R. Phinn (2010) Calibration and Validation of Coral Reef Benthic Community Maps: Integration of Field Data with High Spatial Resolution Multi Spectral Satellite Imagery. Journal of Applied Remote Sensing, DOI:10.1117/1.3430107.

Roelfsema, C, M. Lyons, M. Dunbabin, E. M. Kovacs & S. Phinn (2015) Integrating field survey data with satellite image data to improve shallow water seagrass maps: the role of AUV and snorkeller surveys? Remote Sensing Letters, DOI:10.1080/2150704X.2015.1013643