

Mapping coral reef using photogrammetry technique: A preliminary study at Pulau Udar Besar, Sabah, Malaysia

ABSTRACT

Mapping of coral reefs is useful for understanding, monitoring and tracking their development. However, studies on reef mapping in the Southeast Asian region are limited. The main objectives of this study were to 1) map the coral reefs using photogrammetry in order to create a 3D map of the reef, and 2) determine the coral growth forms and identify the corals to the lowest possible taxa from the images. Data collection was conducted on 19 and 24 January 2018. All images were captured by applying photogrammetry technique using a digital camera with waterproof housing. Image reconstruction process was performed in Agisoft Photoscan and Blender, using the structure-from-motion (SfM) algorithms to reconstruct the 2-Dimensional images into a 3D model. The reef map generated from Agisoft Photoscan is of medium quality. Coral growth forms were determined and identified to the lowest possible taxa through the images. From the images, free-living corals of the family Fungiidae were the most common coral observed in the study site. In conclusion, the output of this study shows that reef mapping is possible using a photogrammetry approach and images can be used to identify coral growth forms.