

## A rapid method for 3D mapping and visualization of marine cave topography

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**Abstract.** In marine caves, site-specific topographic features play determinant role in the spatial distribution of cavernicolous assemblages. Mapping and visualization of cave topography constitute integral elements of any attempt to describe the cavernicolous environment and examine the potential mechanisms underlying the observed spatiotemporal physico-chemical and biotic variability. Underwater cave research is logistically challenging given the limitations in time, space and visibility conditions. The described method provides an easy and flexible mapping scheme for producing scaled 3D models of fully and semi-submerged caves in a rapid and cost-effective manner. The method can be applied by two divers over 1–2 dedicated dives and requires a regular dive line, an inexpensive handheld echosounder, and standard diving equipment. Post-processing is performed automatically by the accompanying custom software. The realistic 3D cave representations enable the depiction of particular geomorphological and biological features, thus facilitating the dissemination of scientific results to the wider community.

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