Reconstruction of ventilation ages of the Indian Ocean sector of the Southern Ocean using ^{14}C and U-Th ages of deep-sea isidid octocorals

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Carbonaceous skeletons of the deep-sea corals are generally dated by uranium-series systematics. By combining the absolute ages obtained with radiocarbon, the past ocean ventilation rate has been estimated. This approach is particularly effective in the Southern Ocean, where carbonate compensation depths are shallow and carbonate rocks are not likely to remain. Previous studies performed on the Southern Ocean have mainly focused on corals from the Drake Passage and off Tasmania. In this study, we focused on deep-sea isidid octocorals (Bamboo coral) collected from the Conrad Rise, Indian sector of the Southern Ocean, and report the results of ^{14}C and U-Th ages in the presentation. The skeleton of deep-sea isidid octocorals is formed of very dense calcite material, which makes it difficult to dissolve even after the death of the coral polyp that cover it.

A characteristic of deep-sea isidid octocorals is that new skeletons may form to encapsulate the old coral skeleton. We performed both of uranium-series and radiocarbon measurements on two samples of old coral inclusions. The U-Th dating provided insight into the age distribution of coral skeletons collected by dredge from Conrad Rise. Periods of relatively high coral production frequency may indicate that the environment was conducive to coral growth.

Keywords: Deep-sea coral, Bamboo coral, U-Th dating, radiocarbon dating, Southern Ocean, Conrad Rise

