

Uranium in Corals provide the clue to solve the Quaternary chronology logjam

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Shallow water corals provide only direct way of determining the absolute timing and magnitude of Quaternary sea levels extending back over 600,000 years. Their uranium and thorium abundances and uranium isotope ratios when combined with coral reef elevations help determine sea-levels. Radiocarbon dating is also useful up to ca. 50,000 years but older than that relying on the U-series dating technique. It relies on the following radioactive decay chain:

^{238}U (4.5×10^9 yr) $\rightarrow$ ^{234}Th (24 days) $\rightarrow$ ^{234}U (2.5×10^5 yr) $\rightarrow$ ^{230}Th (7.5×10^4 yr)

Deep-sea corals do not provide sea level information but appear to be responsive to ocean circulation changes and continental riverine and ice-sheet meltwater inputs to the oceans (Chen et al., 2016 Science).

In this presentation, we introduce recent debate with regards to uranium isotopes in ocean and discuss the reliable method to conduct U-series dating. Also consequence on the topic related to the phase relations of climate sub-systems are discussed.

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