# Reassessing coral U-Th dating

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Coral carbonate skeletons constitute paleoceanographic archives of rapid responses in ocean temperature, chemistry and circulation, to climatic, tectonic and seismic events. $^{238}$U-$^{234}$U-$^{230}$Th dating of corals can yield an absolute chronology of past environmental changes over the time period of about 1 to 600 kyrs before present, and concomittantly underly the calibration of radiocarbon time scales, as well as the use of $^{14}$C as a water-mass proxy [1]. However, multiple sources of potential bias related to sampling, analytical protocols and uncertainty propagation require thorough inspection prior to validating U-Th ages, such as (i) pristinity and purity of coralline aragonite (ii) contamination related to the presence of initial detrital and/or hydrogenous $^{230}$Th (iii) limited counting statistics and detector intercalibration (iv) peak tailing and hydride interference corrections (v) choice of well-constrained carbonate references for accurate age uncertainty assessment.

We aim at proposing an accurate U-Th dating protocol for corals of deep-sea environments that suffered mild Fe-Mn crust contaminations, by circumventing analytical challenges and Fe-Mn crust remains.

We applied our protocol to the dating of coralline aragonite from the Mayotte, Glorieuses and Comores areas, which are subject to volcanism and thus prone to Fe-Mn oxide contaminations.

[1] Edwards et al. (2003). *Reviews in Mineralogy and Geochemistry* **52**, 363-405.