



Coral and speleothem records of past sea level change: a global repository

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Coral benchmarks and speleothem records are valuable markers of past sea level. They are however, heterogeneous in both geographic location and occurrence in time. In addition, potential methodological (e.g. potential open system behaviour within U-series dating or unknown ΔR in radiocarbon dating), local tectonic (i.e. site specific subsidence/uplift), and isostatic influences complicate their interpretation as markers of past sea level. Nonetheless, they remain for many the pre-eminent means of reconstructing and evaluating former sea levels during the Late Quaternary.

We present an internally consistent global compilation of U-series dated coral benchmarks (building on the compilations of Medina-Elizalde, 2012 and Dutton and Lambeck, 2012) and speleothem records that now contains >130 studies and 40 locations. We include a rigorous consideration of each error term associated with these records, such as: age, depth habitat (for corals), elevation measurement, and uplift correction. We apply commonly employed age screening methods ($\delta^{234}\text{U}$ initial and detrital ^{230}Th concentrations) before undertaking a site specific assessment of each sea-level record. This includes consideration of stratigraphic integrity, replication (and any concordant age determinations) as well as the validation of assumptions (e.g. uplift rates) where possible.

This presentation will show results from the dataset as currently compiled (2,720 coral and 477 speleothem datapoints), and initial evaluations on a site-specific basis, with particular reference to the age and duration of the last interglacial sea level highstand. The database will eventually be used in GIA modelling that is currently under development and will merge the coral and speleothem information with information from other, continuous methods of sea-level reconstructions.