



## **Paleoclimate record at 5.5 ka BP from the tropical South Pacific based on Porites microatolls from French Polynesia**

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Understanding natural climate variability prior to anthropogenic forcing is crucial to improve the predictions of future climate and sea level. As part of a collaborative project, we are using a fossil microatoll to reconstruct the paleoenvironment from the French Polynesian atoll of Tikehau U/Th dated to 5.5 ka BP. For this conference we will present preliminary results around 5.5 ka BP but our available material has the potential to reconstruct paleotemperatures for other key periods. The fossil microatoll of primary interest from around 5.5 ka BP is located roughly 60 cm above present day sea level (Hallman et al., 2018) at a well-flushed site by an inlet to the open ocean. It consists of a 1.8 m radius well-preserved aragonite (99.7% aragonite from XRD measurement) Porites skeleton. The excellent preservation of the coral skeleton is additionally confirmed using SEM imaging, thin-section analyses, and X-ray imaging. These combine to determine the primary growth axes and the unaltered coral skeleton to be sampled at a millimeter scale resolution, which translates to a monthly resolution. The geochemical composition of the coral skeleton is being analyzed to reconstruct the paleoenvironmental conditions, focusing so far on the Sr/Ca and  $\delta^{18}O$  tracers. Depending on the conclusions drawn from our modern calibration work assessing the latest paleothermometry methods proposed in the literature (Farley et al., this volume), we may also apply the Sr-U and Li/Mg geochemical tracers.

### Reference

Hallmann N., Camoin G., Eisenhauer A., Botella A., Milne G.A., Vella C., Samankassou E., Pothin V., Dussouillez P., Fleury J., Fietzke J. (2018) Ice volume and climate changes from 6,000 year sea-level record in French Polynesia. Nature Communications, (in press).