

SST RECONSTRUCTIONS FROM ELEMENTAL GEOCHEMISTRY OF TROPICAL CORALS

M. CANESI^{1,2}, E. DOUVILLE¹, S. CAQUINEAU³,
L. BORDIER¹, P. MONTAGNA⁴, D. ALLEMAND²,
S. PLANES⁵, S. REYNAUD²

¹ LSCE (CEA-CNRS-UVSQ), Gif-sur-Yvette, France
(marine.canesi@lsce.ipsl.fr)

² Centre Scientifique de Monaco, Monaco

³ LOCEAN (IRD-CNRS-UPMC-MNHN) Bondy, France

⁴ Istituto di Scienze Marine (CNR), Bologna, Italy

⁵ CRIOBE (CNRS-EPHE-UPVD), Perpignan, France

Li/Mg, Sr/Ca and multiproxy SST-calibrations

The evaluation of SST-proxy precision and accuracy in calcifying organisms is essential to reconstruct past reliable variabilities of the sea surface temperature (SST) and to better understand the interactions between shallow oceans and the Climate. Many studies have shown the potential of both separate [1, 2] and most recently, combined [3] Sr/Ca and Li/Mg ratios in corals.

In this study, new SST-multi-proxy calibrations based on the 40 *Porites sp.* and 6 *Diploastrea sp.* living coral colonies collected during the Tara-Pacific expedition (2016-2018) have been compared. As first observations, multi-element calibrations seem improve the suitability of SST-reconstructions. The potential effects of extension rates and the presence of calcite on these results have been evaluated.

Palau SST reconstructions over the last century

The SST changes have been reconstructed and compared from trace element analysis of *Porites sp.* and *Diploastrea sp.* colonies collected at the same location in Palau, using the SST-calibrations developed in this study.

Over the last century, the inter-annual reconstructed SST from both genera in Palau are consistent with those of the databases (NOAA). Recent warm SST peaks inferred from the geochemical proxies coincide with strong El Niño events in Palau. Nevertheless, depending on proxy or genus considered, differences remain in both long-term trends and amplitudes of temperature change.

[1] Corrège *et al.* (2006) [2] Montagna *et al.* (2014)
[3] Zinke *et al.* (2019)