Trace Metal Analysis of Coral Skeletons: Anthropogenic Influences on Corals at Ilha Grande Bay (Rio de Janeiro, Brazil)

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Unfortunately, corals are under increasing anthropogenic pressure and the health of these ecosystems is at risk in several areas of the world due to the deterioration of the marine environment. Corals store chemical elements inside their skeletons through the filter-feeding process providing records of seawater conditions, this characteristic makes them useful proxies of environmental changes. The investigation of trace element uptake in the skeletons of these animals provides a reliable opportunity to evaluate the effects of marine pollution on coral reefs. Here, we show a practical application of high-spatial-resolution analysis of trace metals in coral skeletons for water quality research. This approach can be applied to monitor the impact of anthropogenic activities on corals.

The general aim of this research is to identify the ongoing impacts of heavy metal contamination on corals at Ilha Grande Bay, Rio de Janeiro – Brazil. The main focus of the study is the investigation of heavy metal concentrations inside the skeletons using as a way to monitor the anthropogenic addition of the metals into the Bay. This study aims to quantify Barium (Ba), Strontium (Sr), Chromium (Cr), Manganese (Mg), Nickel (Ni), Copper (Cu), Tin (Sn), and Lead (Pb) concentrations within the aragonite skeletons using LA-ICP-MS and LA-MC-ICP-MS techniques to obtain information about anthropogenic influences on corals at the study area.