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Title: Hidden Archives of Environmental Change

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Abstract (250-300 words)

The investigation of trace element uptake into coral skeletons provides powerful insights into the effects of marine pollution on coral reefs. Corals feed by filtering plankton from the water as it flows through the reef. During this process, known as filter-feeding, chemical traces are systematically taken up and stored inside the corals' aragonitic skeletons. As the coral grows, its skeleton forms annual bands akin to the growth rings found in trees. The chemicals stored within these bands can provide insight into the changing conditions of seawater over the entire lifetime of the coral, and serve as useful environmental records (proxies) that indicate pollution events. The study of geochemical proxies in coral skeletons, therefore, provides a reliable opportunity for understanding the impact of anthropogenic activities on these critical ecosystems. Corals incorporate trace elements that can be precisely registered using high-resolution analytical techniques. These strategies offer high levels of precision to determine the distribution of trace elements along the annual bands of the skeletons, which can serve for both fixed-point time-series and large-scale in ocean observations, as well as for water quality research. This procedure provides insights unobtainable with traditional monitoring studies, as these methods help us reconstruct pollution events. This approach has great value because we can obtain isotopic data at high-spatial-resolution to create time-resolved records for the investigation of threats that affect the health of coral reefs. Metals can occur in polluted water as dissolved elements or adhered to the suspended particulate, having different forms of mobility in the seawater circulating throughout the shoreline zones. When filter-feeding in polluted water, chemicals can accumulate in soft inner coral tissues or are removed from the body by detoxification mechanisms and stored in skeletons. In this manner high-resolution measurements of metal content in skeletons allow us to monitor the impacts of human-derived pollution.

Biography(100-150 words)

My research lies in the field of Marine Biogeochemistry, on the isotope exchange between seawater and marine carbonates via biological cycling to interpret environmental changes. The main focus of my research is the investigation of heavy metal pollution in protected marine areas along the Rio de Janeiro State coast. Along my graduate degree I have been applying LA(MC)ICP-MS methods to

interpret environmental changes from the isotopic diagnostic proxies, I also had worked for about 3 years as a Graduated Technician at the Marine Ecotoxicology Laboratory, (UERJ), in the project: "Investigation on the occurrence of endocrine disruption in marine protected areas along the Rio de Janeiro Coast". My Ph.D. thesis, titled "Trace Metal Analysis of Coral Skeletons: Anthropogenic Influences on Corals at Ilha Grande Bay" deals with the investigation of trace elements in coral skeletons in order to evaluate the anthropogenic impacts on the corals at Ilha Grande Bay.

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