

Global warming and climate events triggering coral bleaching at South Atlantic reefs

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Abstract

Statement of the Problem: El Niño Southern Oscillation (ENSO) is worldwide recognized in triggering coral bleaching, mainly in the Indo-Pacific. In the South Atlantic, the main drivers of coral bleaching are still poorly understood. This phenomenon is getting more frequent and intense, probably related to an increase in local marine heat waves (MHW). **Methodology & Theoretical Orientation:** We assembled a dataset on Brazilian coral bleaching events by searching information published since 1993, in the South Atlantic (0°S - 20°S). Moreover, we evaluated episodes of *Siderastrea stellata* bleaching and mortality at a Brazilian oceanic island, Rocas Atoll, using visual censuses conducted in 2016, 2017 and 2019. The objective was to evaluate the influence of climatic events such as ENSO and local MHW in bleaching episodes.

Findings: Coral bleaching events are becoming more frequent in the South Atlantic, mainly in the last decade. The first bleaching records on the Brazilian coast were related to ENSO, including 1998 and 2010. Between 2015 and 2017, a strong and prolonged ENSO sparked the most intense massive coral bleaching worldwide and became known as the third global mass coral bleaching event. During this period, few Brazilian corals bleached and less than 4% died, as well as in Rocas Atoll, with the same mortality rate and less than 10% bleaching. Surprisingly, in 2019, without intense ENSO or bleaching alerts, corals from Brazil presented bleaching rates higher than 70%, but maintained low mortality. Some reefs with the highest bleaching rate experienced severe marine heat waves during these episodes, including Rocas Atoll.

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Biography

Tainá Gaspar is an Oceanographer and a Master's student in Ecology at the Federal University of Santa Catarina. As part of the Long Term Ecological Research of Brazilian Oceanic Islands

project, she studies coral bleaching events on reefs in the South Atlantic, including the oceanic island of Atol das Rocas, seeking to understand the physical factors that trigger them, such as El Niño and local waves of marine heat.