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TITLE: Climate changes in mangrove forests and salt marshes

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ABSTRACT:

Abstract This synthesis is framed within the scope of the Brazilian Benthic Coastal Habitat Monitoring Network (ReBentos WG 4: Mangroves and Salt Marshes), focusing on papers that examine biodiversity-climate interactions as well as human-induced factors including those that decrease systemic resilience. The goal is to assess difficulties related to the detection of climate and early warning signals from monitoring data. We also explored ways to circumvent some of the obstacles identified. Exposure and sensitivity of mangrove and salt marsh species and ecosystems make them extremely vulnerable to environmental impacts and potential indicators of sea level and climate-driven environmental change. However, the interpretation of shifts in mangroves and salt marsh species and systemic attributes must be scrutinized considering local and setting-level energy signature changes; including disturbance regime and local stressors, since these vary widely on a regional scale. The potential for adaptation and survival in response to climate change depends, in addition to the inherent properties of species, on contextual processes at the local, landscape, and regional levels that support resilience. Regardless of stressor type, because of the convergence of social and ecological processes, coastal zones should be targeted for anticipatory action to reduce risks and to integrate these ecosystems into adaptation strategies. Management must be grounded on proactive mitigation and collaborative action based on long-term ecosystem-based studies and well-designed monitoring programs that can 1) provide real-time early warning and 2) close the gap between simple correlations that provide weak inferences and process-based approaches that can yield increasingly reliable attribution and improved levels of anticipation.

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