



## **Carbonate facies patterns in surface sediments of upwelling and non-upwelling environments (Panama, East Pacific)**

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The Gulf of Panama (upwelling) and the Gulf of Chiriqui (non-upwelling) display significant differences in their main carbonate producing biota. Both gulf areas show warm and temperate carbonate-producing biota, with carbonate producers from tropical (corals) to mixed tropical to cool-water (coralline red algae) and cold-water (balanids and molluscs) environments. The Gulf of Chiriqui is characterized by oligotrophic to mesotrophic conditions resulting in a photozoan (coral-) and/or rhodolith-facies in shallow-water areas surrounding the islands and a mollusc-dominated facies in deeper waters towards the shelf. Seasonal upwelling influences the Gulf of Panama and thus causes eutrophic conditions, which result in a heterozoan facies around the islands dominated by balanids, echinoderms and/or molluscs. This distinct facies differentiation in close geographical vicinity shows the importance of oceanographic conditions, upwelling vs. non-upwelling in influencing carbonate production and associated facies patterns.