# Noluses as Boind cators of Paleoclimate and Paleoenvironment in **Sediments of Neotropical Aquatic** Ecosystems

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## INTRODUCTION

Lake and marine sediments are used to explore past changes in climate and environment.

Inferences about the past rely on analyses of physical, chemical and biological indicators.

## **RESULTS & DISCUSSION**













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Molluscs are one of the most abundant groups in aquatic ecosystems and can be used as environmental indicators since their abundances vary depending on fluctuations in the environmental conditions.

We used sedimented mollusc remains (gastropods and bivalves) to infer Late Holocene environmental conditions.

### STUDY AREA

The study area includes four aquatic ecosystems (fresh, brackish, marine) in the Neotropics: Nahá Lake (Chiapas, Mexico), coastal Ría Lagartos Lagoon (Yucatán, Mexico), Ilha do Mel and Ilha de Currais islands (Paranaguá, Brazil).



Figure 1. Study area in the neotropics, Nahá Lake and Ria Lagartos Lagoon in southern Mexico and the Ilha do Mel and Ilha de Currais Islands in southern Brazil









Figure 9. Absolute abundances of mollucs identified in the Islands' vermetid reefs. A) Abundances of Ilha do Mel, Abundances of Ilha de Currais

Figure 10. Sketch of paleo sea level levels. A) Ilha do Mel, B) Ihla de Currais, I) Depositional conditions during the Holocene sea-level highstands, II) Present position. Modified from Angulo e al., 2013.

#### METHODOLOGY LAKE & LAGOON Nahá 14C-Date methodological process consisted in: 1) Recovering the

# Figure 3. Age model of Nahá

## CONCLUSIONS



The freshwater gastropod community in Lake Nahá was sensitive to changes in water level and trophic state.



The malacological assemblages in the coastal lagoon record show they responded to climate events such as hurricanes and recent human impacts.

sedimentary sequence, 2) Build the age model, 3) Analysis of biological indicators.

The



#### **ISLANDS**

The methodological process consisted in: 1) Identification of the vermetid reef, 2) Survey of the elevation data, 3) Sampling and Chronology, 4) Analysis of biological indicators.



Figure 4. Bioestromes of living vermetids and calcareous algae. The upper level (with arrows corresponds to the mean low tide level, A) Vermetid reef sample from Ilha do Mel, B) Vermetid reef sample from Ilha de Currais (both scales are 2 cm). Modified from Angulo et al., 2013.

#### Vermetid reefs are indicators of past sea level changes.

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