Recording Prehistoric Tsunami Events on the Pacific Coast, Guerrero, Mexico

Abstract

The study of prehistoric and historic tsunamis along the Pacific coast of Mexico is crucial for understanding the impact of these events on human societies. This research focuses on the Gulf of California, where a sequence of prehistoric tsunami events has been identified. The study employed various methodologies, including sedimentology, geochemistry, and historical records, to reconstruct the timing and magnitude of these events. The results have significant implications for coastal management and disaster preparedness in the region.

Introduction

The specific objectives of the study are to (1) examine the prehistoric evidence for tsunamis along the Pacific coast of Mexico, (2) assess the potential impact of these events on human societies, and (3) contribute to the understanding of past environmental changes. The study was conducted using a multidisciplinary approach that included field surveys, laboratory analyses, and historical research.

4. Results - coring

Mud Flats - coring locations

\[ \text{Suitable (i.e., low elevation, nearshore, undisturbed coastal areas in Guerrero state for coring).} \]

Core sites

\[ \text{Cores were either sampled intact or subsampled in the field prior to laboratory analysis (i.e., surface samples, and \( ^{14} \text{C} \) dating, sediment geochemistry, provenance, magnetic properties, and paleomagnetism).} \]

GPS Measurements

\[ \text{Individual core sites were located by GPS, to determine their elevations relative to semipermanent GPS stations set up in advance (courtesy of Team Kostoglodov).} \]

5. Results - core stratigraphy

\[ \text{3 cores were taken in 2003 and 2004, from the Tes Palos, Coyua, Molina El Teniente, and El Plan lagarón mounds (core ACD03-05 is not included in this study).} \]

6. Results - sediment geochemistry

Interpretation of Whole Earth Events in Core ACD03-05

\[ \text{The geochemistry of Las Salinas core sediments indicates four different events (i.e., 30/20-20-25/25 PE), which are consistent with historical records. The event 2003 is recorded in the core sample as a distinct layer of blue clay.} \]

Conclusion

\[ \text{The study of prehistoric and historic tsunamis along the Pacific coast of Mexico is crucial for understanding the impact of these events on human societies. This research focuses on the Gulf of California, where a sequence of prehistoric tsunami events has been identified. The results have significant implications for coastal management and disaster preparedness in the region.} \]