

DRILLING THE TORE SEAMOUNT - ARCHIVE OF A NATURAL OCEANIC SEDIMENT-TRAP (APL-989)

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DRILL SITE TORE-01A and Calypso MD13-3473

- Singular location: 5 km-deep basin inside the Tore seamount
- Semi-isolated natural laboratory for deep water circulation
- Giant sediment-trap for vertical fluxes

APL shares some of the Scientific Objectives of proposal #771-Iberian Margin Paleoclimate: reconstructing and investigating changes in ventilation and deep-water sourcing associated with millennial variability throughout the Quaternary, and assessing past trends in seafloor sediment preservation, including their impacts on the carbon cycle

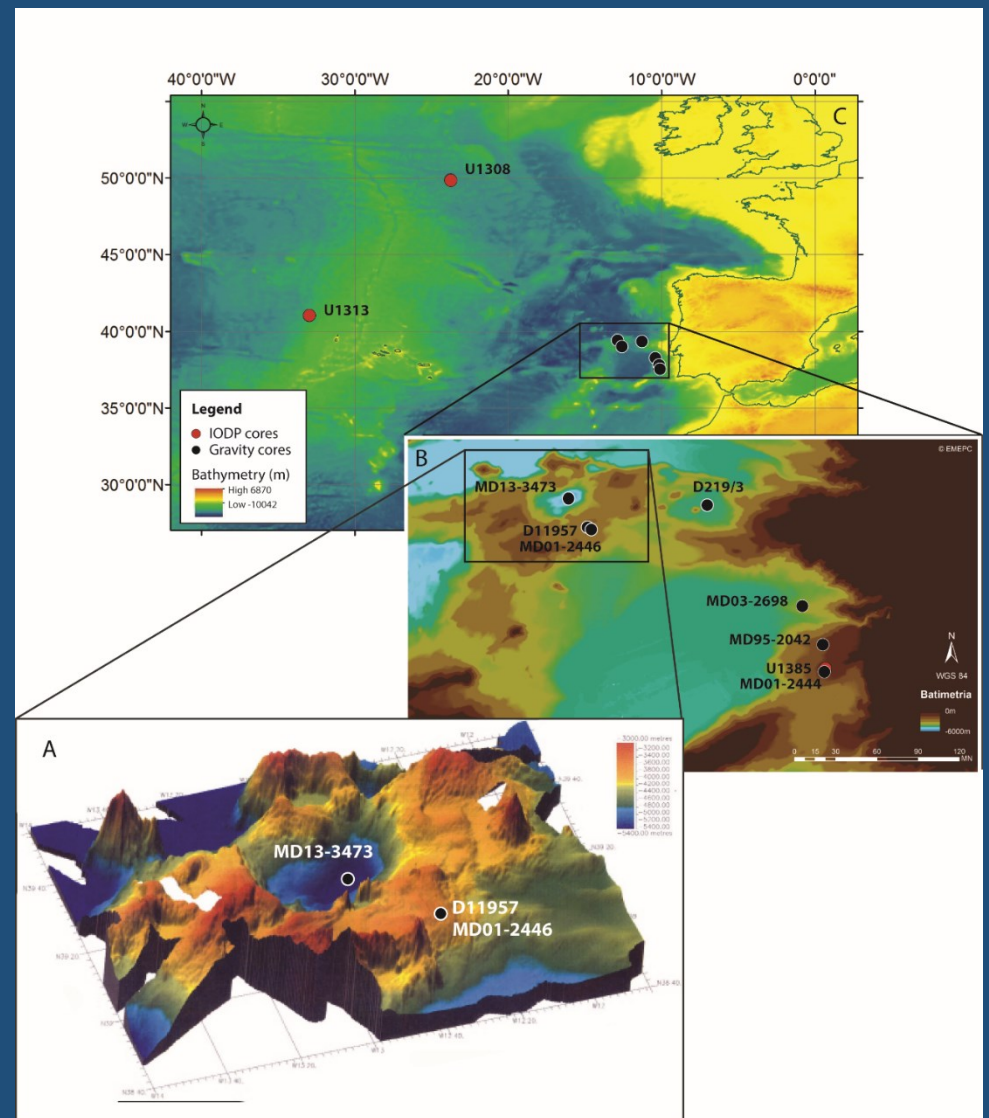


Figure 1. A) Tore seamount showing the enclosed 5 km deep Tore basin, and location of Calypso cores MD13-3473, and MD01-2446 Bathymetry from Cornen et al. (2003). B) Location of IODP, calypso and piston cores at the Portuguese margin. Bathymetry from EMEPC, Portugal. C) NE Atlantic context and IODP cores available.

OBJECTIVES

- Assess ocean productivity of the subtropical NE Atlantic gyre, at times of most rapid CO₂ changes (G/I transitions) and millennial timescales
- Examine the limited exchange of NE Atlantic deep (NADW) and Antarctic Bottom Waters (AABW) into the Tore
- Test the link between climate and glacioeustatic sea-level (ice volume) changes and the frequency of turbidity currents in the open deep-ocean

DRILL site will address questions of high-scientific value related to the role of:

- Quaternary climate change and global carbon cycle-climate feedbacks
- Influence of variable AABW incursion on ocean interior oxygenation and deep-sea carbonate preservation
- Stability of slopes away from continental margins