

New Insights from a Young Ocean Basin: Overview of Drilling Results from IODP Expedition 385, Guaymas Basin, Mexico

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Note: Shipboard Science Party (33 scientists) listed at <https://www.iodp.tamu.edu/scienceops/precruise/guaymas/participants.html>

Abstract

The early history of mature ocean basins is often buried by thick, continent-derived sediment prisms or carbonate build ups and rarely tapped by deep ocean drilling. Drilling in young ocean basins, such as those in the Gulf of California, Mexico, offers insights into the interplay of tectonic, magmatic and sedimentologic processes and into the extent and nature of post- depositional diagenesis/alteration and microbiological activity in the basin fill. The ~4 km of biosiliceous to terrigenous sediments and mafic intrusive rocks recovered during International Ocean Discovery Program (IODP) Expedition 385 provide an unprecedented record for a nascent ocean basin setting. These cores were distributed across seven continuously-cored sites, each with multiple holes, drilled to a maximum depth of 507 m below the seafloor. Expedition results have environmental implications for large-scale carbon cycling and applications to hydrocarbon exploration, including Monterey Formation exploration and production in California. A summary of shipboard drilling results along with preliminary post-cruise stratigraphic and lithofacies integration with prior Deep Sea Drilling Project (DSDP) Leg 64 cores will be presented.