Proceedings of the Integrated Ocean Drilling Program
Volume 308 Expedition Reports
Gulf of Mexico Hydrogeology

Expedition 308 of the riserless drilling platform from Mobile, Alabama, to Balboa, Panama
Sites U1319–U1324
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Volume Authorship
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and the Expedition 308 Scientists

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Any opinions, findings, and conclusions or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the views of the participating agencies, Integrated Ocean Drilling Program Management International, Inc. (IODP-MI), or the Integrated Ocean Drilling Program Implementing Organizations.

Abbreviations for names of organizations and publications in IODP reference lists follow the style given in Chemical Abstracts Service Source Index (published by American Chemical Society).

The bulk of the shipboard-collected core data from this expedition is accessible from Integrated Ocean Drilling Program U.S. Implementing Organization (IODP-USIO) Science Services, Texas A&M University (TAMU), at iojp.tamu.edu/database/index.html. If you cannot access this site or need additional data, please contact:

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A complete set of the logging data collected by ODP-USIO Science Services, Lamont-Doherty Earth Observatory (LDEO), is available at iojp.ldeo.columbia.edu/DATA/IODP/. If you have problems downloading the data, wish to receive additional logging data, or have questions regarding the data, please contact:

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Some close-up core photographs have been tonally enhanced to better illustrate particular features of interest.

Cover photograph, by IODP Photographer William Crawford, is of removal of bit during trip-out operations in the Gulf of Mexico.

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Foreword

By Integrated Ocean Drilling Program Management International, Inc.

The Integrated Ocean Drilling Program (IODP) is the most ambitious ocean exploration and drilling program ever undertaken. With multiple platforms and multiple partners, our research spans the globe and truly represents international collaboration and diplomacy among scientists and nations interested in attaining scientific goals.

The Proceedings present the scientific and engineering results of IODP drilling projects, each an important component of an international program designed to better understand Earth, its environmental changes and processes, the deep biosphere, and climate change.

The collective effort required to conduct each IODP expedition is colossal. Beginning with scientists who submit ocean drilling research proposals, there are others who evaluate, rank, and prioritize proposals. Scientists also schedule the science operations, select science party members from scores of international scientists qualified to participate, plan platform operations, ready the drillship, and choose borehole locations. There are onboard logistics to manage and critical communications to coordinate among various academic institutions, governments, and national science organizations. And the resulting data must be managed and made accessible to scientists, particularly those who will prepare future proposals. Every aspect of planning an IODP expedition takes a village—or several. There are many participants and many more stakeholders.

Ocean-drilling achievements, however complex, help us understand extraordinary linkages and interpret relationships as they exist in various parts of the Earth system. Achievements in two legacy drilling programs (the Ocean Drilling Program and Deep Sea Drilling Program) have validated the scientific concepts behind plate tectonics, contributed to the understanding of ocean circulation changes, and extended our knowledge of long- and short-term climate change—scientific information at the foundation of our current drilling program.

IODP drilling platform operations are conducted by three Implementing Organizations (IOs). Riserless platform operations are conducted by the JOI Alliance, comprising the Joint Oceanographic Institutions, Inc., Texas A&M University through the Texas A&M Research Foundation, and Lamont-Doherty Earth Observatory of Columbia University. Riser platform operations are conducted by the Japan Agency for Marine-Earth Science and Technology through Japan’s Center for Deep Earth Exploration in cooperation with the Center for Advanced Marine Core Research at Kochi University. Mission-specific platform operations are conducted by the European Consortium for Ocean Research Drilling, Science Operator, comprising the British Geological Survey, Bremen University, and the European Petrophysics Consortium. The European IO currently represents the ocean-drilling efforts of 16 nations in Europe, plus Canada. At the start of this drilling project, IODP involved 20 nations.

The discoveries discovered in this volume build upon layers of knowledge and science developed over roughly the last fifty years. Expedition Proceedings are published by IODP Management International for IODP under the sponsorship of the U.S. National Science Foundation (NSF), Japan’s Ministry of Culture, Education, Sports, Science and Technology, and other IODP members. The material is based upon research supported under Contract OCE-0432224 from NSF.

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*At time of expedition.
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Web site: www.ecord.org/eso/eso.html

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IODP Japanese Implementing Organization: Japan Agency for Marine-Earth Science and Technology (JAMSTEC)

Web site: www.jamstec.go.jp/chikyu/

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To achieve Expedition 308’s scientific goals, we completed the design and testing of a new downhole tool, used a new technique of drilling with weighted mud, and monitored downhole pressure in real time. This was accomplished because of the skill and persistence of the engineering, operations, and technical staff of the U.S. Implementing Organization (USIO) of the Integrated Ocean Drilling Program. USIO Science Services, TAMU, Deputy Director Jack Baldauf doggedly pursued a safe and well-designed drilling program. USIO engineering staff members Derryl Schroeder, Kevin Grigar, and Dean Ferrell helped to build the temperature-dual pressure (T2P) data acquisition system. USIO Science Services, LDEO, Director Dave Goldberg planned our logging program.

All of the shipboard technical staff provided outstanding support and maintained a positive “can do” attitude throughout the expedition. We acknowledge more particularly Operations Superintendent Ron Grout’s patient oversight, and Transocean’s Wayne Lambert, Mark Robinson, Craig Prosser, Mick Curry, Jim Fyfe, and Ian McDonald for their ingenuity with deploying and repairing our downhole tools.

Expedition 308 was conceived in the spring of 1999 with a Joint Oceanographic Institution–U.S. Science Support Advisory Committee (JOI-USSAC)-sponsored industry academic workshop focused on the study of hydrodynamics in sedimentary basins. A 5 year effort was launched; three proposal versions, countless responses, planning documents, safety meetings, and evaluations followed. Hundreds of individuals helped to create Expedition 308: we thank you all.
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Core descriptions

Visual core descriptions (VCDs), smear slide data tables, and digital images are included in this section. VCDs and smear slide data tables are combined into one PDF file for each site.

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Expedition research results

Data reports
Titles are available in HTML pending completion of the volume.

Syntheses
Titles are available in HTML pending completion of the volume.

Supplementary material
Supplementary material for this volume includes physical properties (vane shear and water contents in Microsoft Excel and ASCII formats), downhole temperature and pressure measurements (APCT, DVTPP, and T2P data in Microsoft Excel and raw data formats), and Rhizone geochemistry data in Microsoft Excel. See README.TXT in the SUPP_MAT directory for a full listing of directories and files, or see the Directory structure for the names of the main subdirectories.

Drilling location maps
A site map showing the drilling locations for this expedition and maps showing the drilling locations of all Integrated Ocean Drilling Program (IODP), Ocean Drilling Program (ODP), and Deep Sea Drilling Project (DSDP) drilling sites are available in PDF format. These maps were produced using Generic Mapping Tools (GMT) of Paul Wessel and Walter H.F. Smith (gmt.soest.hawaii.edu).

IODP Expedition 308 site map
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ODP map (Legs 100–210)
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Expedition-related bibliography

IODP publications

Scientific Prospectus

Preliminary Report

Scientific Drilling journal

Proceedings volume


Journals/Books*


Zampetti, V., and Expedition 308 Scientists, 2005. IODP Expedition 308: Gulf of Mexico hydrogeology, overpressure and fluid flow processes in the deepwater Gulf of Mexico: slope stability, seeps, and shallow-water flow. IODP-UK newsletter.

Conferences*


*The Expedition-related bibliography is continually updated online. Please send updates to PubCrd@iodp.tamu.edu.*


Shumnyk, A., Flemings, P.B., Behrmann, J., John, C., and the Expedition 308 Shipboard Scientific Party, 2006. High-resolution calcareous nannofossil biostratigraphy of high-energy sediments from the Ursa and Brazos-
Trinity minibasins (Gulf of Mexico) during the latest Quaternary: preliminary results from IODP Expedition 308 [paper presented at the AAPG Annual Convention, 9–12 April 2006, Houston, Texas].


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* Directory structure reflects the Expedition Reports content and volume material produced on DVD-ROM.