

The background of the cover features several fossilized porcupine shells, also known as nautilus shells, which are light-colored and show a distinct spiral pattern. They are set against a dark, semi-transparent background that allows the text to be clearly visible.

# **PROCEEDINGS OF THE INTEGRATED OCEAN DRILLING PROGRAM**

## **VOLUME 307 EXPEDITION REPORTS MODERN CARBONATE MOUNDS: PORCUPINE DRILLING**

Expedition 307 of the riserless drilling platform  
Dublin, Ireland, to Mobile, Alabama  
Sites U1316–U1318  
25 April–30 May 2005

### **Volume authorship**

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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 [iodp.tamu.edu/database/index.html](http://iodp.tamu.edu/database/index.html). If you cannot access this site or need additional 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 Eddy Van Der Meersche, is of *Lophelia pertusa* from the Belgica mound province, North Atlantic.

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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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## Expedition reports

### Chapters

**Expedition 307 summary**  
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**Site U1318**  
Expedition 307 Scientists

### Core descriptions

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

#### **Site U1316**

[Visual core descriptions · Smear slides](#)

#### **Site U1317**

[Visual core descriptions · Smear slides](#)

#### **Site U1318**

[Visual core descriptions · Smear slides](#)



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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.

## 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](http://gmt.soest.hawaii.edu)).

[IODP Expedition 307 site map](#)

[IODP map](#) (Expeditions 301–312)

[ODP map](#) (Legs 100–210)

[DSDP map](#) (Legs 1–96)



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# Expedition-related bibliography

## IODP publications

### *Scientific Prospectus*

Henriet, J.-P., Kano, A., Malone, M.J., and the Expedition 307 Project Team, 2005. Modern carbonate mounds: porcupine drilling. *IODP Sci. Prosp.*, 307. doi:10.2204/iodp.sp.307.2005

### *Preliminary Report*

Expedition Scientists, 2005. Modern carbonate mounds: Porcupine drilling. *IODP Prel. Rept.*, 307. doi:10.2204/iodp.pr.307.2005

### *Scientific Drilling journal*

Ferdelman, T.G., Kano, A., Williams, T., and the IODP Expedition 307 Scientists, 2006. IODP Expedition 307 drills cold-water coral mound along the Irish continental margin. *Sci. Drill.*, 2:11–16. doi:10.2204/iodp.sd.2.02.2006

### *Proceedings volume*

Ferdelman, T.G., Kano, A., Williams, T., Henriet, J.-P., and the Expedition 307 Scientists, 2006. *Proc. IODP*, 307: Washington, DC (Integrated Ocean Drilling Program Management International, Inc.). doi:10.2204/iodp.proc.307.2006

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\*The Expedition-related bibliography is continually updated online. Please send updates to [PubCrd@iodp.tamu.edu](mailto:PubCrd@iodp.tamu.edu).



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