



# **PROCEEDINGS OF THE INTEGRATED OCEAN DRILLING PROGRAM VOLUME 325 EXPEDITION REPORTS GREAT BARRIER REEF ENVIRONMENTAL CHANGES**

Expedition 325 of the mission-specific drilling platform  
from and to Townsville, Queensland (Australia)  
Sites M0030–M0058  
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The central portal for all IODP data, including Expedition 325 data, is the Scientific Earth Drilling Information Service ([sedis.iodp.org/](http://sedis.iodp.org/)). IODP mission-specific platform data are also downloadable from [iodp.wdc-mare.org/](http://iodp.wdc-mare.org/). Downhole wireline data are archived at [brg.ldeo.columbia.edu/logdb/](http://brg.ldeo.columbia.edu/logdb/). If you cannot access this site or need additional data, please contact:

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Supplemental data were provided by the authors and may not conform to IODP publication formats.

Some core photographs have been tonally enhanced to better illustrate particular features of interest. High-resolution images are available upon request.

Cover photograph shows Core 325-M0055A-4R and the derrick of the Expedition 325 drillship, the *Greatship Maya*. Photograph by C. Cotterill ©ECORD/IODP.

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# Foreword

## By Integrated Ocean Drilling Program Management International, Inc.

The Integrated Ocean Drilling Program (IODP) is now in the latter half of its decadal program (2003–2013). As envisioned in the Initial Science Plan (ISP), IODP expeditions take advantage of three scientific ocean drilling platforms that enable us to cover unprecedented areas of wide oceans, from ice-covered shallow water to full ocean depths. Drilling miles of depth below seafloor, now part of IODP capabilities, is the major advance from the program predecessors, the Deep Sea Drilling Project and the Ocean Drilling Program. The living Earth is a dynamic system that is continuously evolving. IODP seeks to understand this complex and unique system through scientific ocean drilling, sampling, and experimenting in deep holes, along with advancement of related scientific disciplines. IODP is an international collaboration among scientists and nations with keen aspirations to attain the scientific goals of the ISP. IODP currently includes participating members from 24 nations.

The *Proceedings* present the scientific and engineering results of IODP drilling projects, each designed to better understand the past, present, and future of the Earth system.

IODP expeditions begin with scientists who submit research drilling proposals to test new and innovative ideas, then the proposals progress to international scientific advisors (Science Advisory Structure) who nurture, 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. The science party, collectively and individually, conducts science on board and on shore. The co-chief scientists on each expedition are responsible for synthesizing the scientific results as hallmark of expedition.

Ocean-drilling achievements help us to understand and interpret phenomena in various parts of the Earth system. Achievements in the two legacy drilling programs 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. IODP is truly an expansion and extension of the scientific research conducted by the legacy programs, engaging in cutting-edge research concerning topics of global importance.

IODP drilling platform operations are conducted by three Implementing Organizations (IOs). Riserless platform operations are conducted by the U.S. Implementing Organization (USIO), comprising the Consortium for Ocean Leadership, 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 (ECORD) Science Operator (ESO), comprising the British Geological Survey, the University of Bremen, and the European Petrophysics Consortium. The European IO currently represents the ocean-drilling efforts of 16 nations in Europe, plus Canada.

The discoveries presented 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 Education, Culture, 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 publication.



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# Contents

## Expedition reports

### Chapters

**Expedition 325 summary**  
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### Core descriptions

Visual core descriptions (VCDs) and core images are included in this section. VCDs are combined into PDF files for each transect. The entire set of core images in PDF is available in the IMAGES directory.

**Transect HYD-01C**  
**Visual core descriptions**

**Transect HYD-02A**  
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**Visual core descriptions**



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# Expedition research results

## Data reports

Titles are available in [HTML](#) pending completion of the volume.

## Syntheses

See “[Syntheses](#)” in the Expedition-related bibliography.

## Supplementary material

Supplementary material for this volume includes CTD data in their native format, foraminifera IDs in Microsoft Excel format, core close up image logs in Microsoft Excel format, an image of the API pipe in .JPG format, and a movie of Dive 7 highlights (Site M0057, Noggin Pass) in .MPG format. 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/](http://gmt.soest.hawaii.edu/)).

[IODP Expedition 325 site map](#)

[IODP map](#) (Expeditions 301–325)

[ODP map](#) (Legs 100–210)

[DSDP map](#) (Legs 1–96)

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# Expedition-related bibliography

## IODP publications

### *Scientific Prospectus*

Webster, J.M., Yokoyama, Y., and Cotterill, C., 2009. Great Barrier Reef environmental changes: the last deglacial sea level rise in the South Pacific: offshore drilling northeast Australia. *IODP Sci. Prosp.*, 325. [doi:10.2204/iodp.sp.325.2009](https://doi.org/10.2204/iodp.sp.325.2009)

### *Preliminary Report*

Expedition 325 Scientists, 2010. Great Barrier Reef environmental changes: the last deglacial sea level rise in the South Pacific: offshore drilling northeast Australia. *IODP Prel. Rept.*, 325. [doi:10.2204/iodp.pr.325.2010](https://doi.org/10.2204/iodp.pr.325.2010)

### *Scientific Drilling journal\**

Pending.

### *Proceedings volume*

Webster, J.M., Yokoyama, Y., Cotterill, C., and the Expedition 325 Scientists, 2011. *Proc. IODP, 325: Tokyo* (Integrated Ocean Drilling Program Management International, Inc.). [doi:10.2204/iodp.proc.325.2011](https://doi.org/10.2204/iodp.proc.325.2011)

Expedition 325 Scientists, 2011. Expedition 325 summary. In Webster, J.M., Yokoyama, Y., Cotterill, C., and the Expedition 325 Scientists, *Proc. IODP, 325: Tokyo* (Integrated Ocean Drilling Program Management International, Inc.). [doi:10.2204/iodp.proc.325.101.2011](https://doi.org/10.2204/iodp.proc.325.101.2011)

Expedition 325 Scientists, 2011. Methods. In Webster, J.M., Yokoyama, Y., Cotterill, C., and the Expedition 325 Scientists, *Proc. IODP, 325: Tokyo* (Integrated Ocean Drilling Program Management International, Inc.). [doi:10.2204/iodp.proc.325.102.2011](https://doi.org/10.2204/iodp.proc.325.102.2011)

Expedition 325 Scientists, 2011. Transect HYD-01C. In Webster, J.M., Yokoyama, Y., Cotterill, C., and the Expedition 325 Scientists, *Proc. IODP, 325: Tokyo* (Integrated Ocean Drilling Program Management International, Inc.). [doi:10.2204/iodp.proc.325.103.2011](https://doi.org/10.2204/iodp.proc.325.103.2011)

Expedition 325 Scientists, 2011. Transect HYD-02A. In Webster, J.M., Yokoyama, Y., Cotterill, C., and the Expedition 325 Scientists, *Proc. IODP, 325: Tokyo* (Integrated Ocean Drilling Program Management International, Inc.). [doi:10.2204/iodp.proc.325.104.2011](https://doi.org/10.2204/iodp.proc.325.104.2011)

Expedition 325 Scientists, 2011. Transect RIB-02A. In Webster, J.M., Yokoyama, Y., Cotterill, C., and the Expedition 325 Scientists, *Proc. IODP, 325: Tokyo* (Integrated Ocean Drilling Program Management International, Inc.). [doi:10.2204/iodp.proc.325.105.2011](https://doi.org/10.2204/iodp.proc.325.105.2011)

Expedition 325 Scientists, 2011. Transect NOG-01B. In Webster, J.M., Yokoyama, Y., Cotterill, C., and the Expedition 325 Scientists, *Proc. IODP, 325: Tokyo* (Integrated Ocean Drilling Program Management International, Inc.). [doi:10.2204/iodp.proc.325.106.2011](https://doi.org/10.2204/iodp.proc.325.106.2011)

## Syntheses\*

Pending

## Journals/Books\*

Pending

## Conferences\*

Pending

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



# Directory structure\*

<b>325.PDF</b> (Preliminary pages and table of contents)			
<b>README.TXT</b> (Information about the Expedition Reports DVD-ROM)			
<b>ACROREAD</b> (Acrobat Reader installation software and instructions for different platforms)	<b>MAC_OS</b>		
	<b>WINDOWS</b>		
	<b>UNIX</b>		
	<b>README.TXT</b>		
<b>EXP_REPT</b> (Expedition Reports section of <i>Proc. IODP, 325</i> )	<b>CHAPTERS</b> (Expedition Reports chapters)	<b>325_101.PDF</b> (Expedition 325 summary)	
		<b>325_102.PDF</b> (Methods)	
		<b>325_103.PDF</b> (Transect HYD-01C)	
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	<b>CORES</b> (Visual core descriptions and digital core images)	<b>CORHYD01.PDF</b> (Transect HYD-01C)	
		<b>CORHYD02.PDF</b> (Transect HYD-02A)	
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		<b>CORN0G01.PDF</b> (Transect NOG-01B)	
		<b>IMAGES</b> (PDF files of core images)	
<b>SUPP_MAT</b> (Supplementary material)	<b>CTD</b>	<b>CTD_CDF</b>	
		<b>CTD_DATA</b>	
	<b>FORAM</b>	<b>HYD01C_FID.XLS</b>	
		<b>HYD02A_FID.XLS</b>	
		<b>RIB02A_FID.XLS</b>	
	<b>SEDIMENT</b>	<b>HYD01CCLOSEUP.XLS</b>	
		<b>HYD02ACLOSEUP.XLSM</b>	
		<b>NOG01BCLOSEUP.XLSM</b>	
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	<b>APIPIPE.JPG</b>		
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		<b>IODPMAP.PDF</b> (IODP map, Expeditions 301–325)	
		<b>ODPMAP.PDF</b> (ODP map, Legs 100–210)	
<b>DSDPMAP.PDF</b> (DSDP map, Legs 1–96)			

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

