



**PROCEEDINGS OF THE
INTEGRATED OCEAN
DRILLING PROGRAM
VOLUME 317 EXPEDITION REPORTS
CANTERBURY BASIN SEA LEVEL**

Expedition 317 of the riserless drilling platform
Townsville, Australia, to Wellington, New Zealand
Sites U1351–U1354
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Volume authorship

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Scientists

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Ministry of Earth Sciences (MoES) India

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Examples of how to cite this volume or part of this volume are available at publications.iodp.org/proceedings/317/317bib.htm.

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. 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 IODP-USIO Science Services, Lamont-Doherty Earth Observatory (LDEO), is available at brg.ldeo.columbia.edu/logdb/. 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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Supplemental data were provided by the authors and may not conform to IODP publication formats.

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

Cover photograph shows drill rig floor. Photograph by Bill Crawford.

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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, Bremen University, 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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University of Tokyo, Japan

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*At time of expedition.



Implementing organizations

IODP European Implementing Organization: European Consortium for Ocean Research Drilling, Science Operator (ESO)

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

Web site: www.jamstec.go.jp/chikyu/eng/index.html

IODP-Japan Science Operator

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Core descriptions

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

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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 includes filtered physical property data in Excel format, an explanation of the filtered data in Word format, handwritten smear slide and thin section description worksheets in PDF format, handwritten core description worksheets in PDF format, counts of minerals and biogenic material in smear slides and thin sections in Excel format, paleodepth estimates in Excel format, captions and notes for paleodepth estimate tables in Word format, and XRD data in Excel 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/).

[IODP Expedition 317 site map](#)

[IODP map](#) (Expeditions 301–317 and 319–324)

[ODP map](#) (Legs 100–210)

[DSDP map](#) (Legs 1–96)

Expedition-related bibliography

IODP publications

Scientific Prospectus

Fulthorpe, C.S., Hoyanagi, K., Blum, P., and Geldmacher, J., 2009. Global and local controls on continental margin stratigraphy: Canterbury Basin, eastern South Island, New Zealand. *IODP Sci. Prosp.*, 317. doi:10.2204/iodp.sp.317.2009

Preliminary Report

Expedition 317 Scientists, 2010. Canterbury Basin sea level: Global and local controls on continental margin stratigraphy. *IODP Prel. Rept.*, 317. doi:10.2204/iodp.pr.317.2010

*Scientific Drilling journal**

Pending

Proceedings volume

Fulthorpe, C.S., Hoyanagi, K., Blum, P., and the Expedition 317 Scientists, 2011. *Proc. IODP*, 317: Tokyo (Integrated Ocean Drilling Program Management International, Inc.). doi:10.2204/iodp.proc.317.2011

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Expedition 317 Scientists, 2011. Site U1354. In Fulthorpe, C.S., Hoyanagi, K., Blum, P., and the Expedition 317 Scientists, *Proc. IODP*, 317: Tokyo (Integrated Ocean Drilling Program Management International, Inc.). doi:10.2204/iodp.proc.317.106.2011

Syntheses*

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



Directory structure*

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317_105 (Site U1353 files)	
317_106 (Site U1354 files)	
SUPP_MAT (Supplementary material)	FILT_DATA (Filtered physical property data)
	EXPLANATION.DOC
	U1351.XLS
	U1352.XLS
	U1353.XLS
	U1354.XLS
	LITH (Handwritten core descriptions and mineral counts)
	HAND_VCD (Sites U1331 through U1354)
	SS_TS_COUNTS (Sites U1331 through U1354)
	PALEODEPTH (Paleodepth estimates)
BIOSTRATIGRAPHY.DOC	
U1351.XLS	
U1352.XLS	
U1353.XLS	
U1354.XLS	
XRD (XRD data)	
U1351.XLS	
U1352.XLS	
README.TXT	
MAPS (Drilling location maps)	317_MAP.PDF (Expedition 317 site map)
	IODPMAP.PDF (IODP map, Expeditions 301–317, and 319–324)
	ODPMAP.PDF (ODP map, Legs 100–210)
	DSDPMAP.PDF (DSDP map, Legs 1–96)

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

