



**PROCEEDINGS OF THE
INTEGRATED OCEAN
DRILLING PROGRAM**
VOLUME 330 EXPEDITION REPORTS
LOUISVILLE SEAMOUNT TRAIL

Expedition 330 of the riserless drilling platform
from and to Auckland, New Zealand
Sites U1372–U1377
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Koppers, A.A.P., Yamazaki, T., Geldmacher, J., and the Expedition
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Australian Research Council (ARC) and GNS Science (New Zealand), Australian/New Zealand Consortium

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/330/330bib.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:

Data Librarian, Integrated Ocean Drilling Program, Texas A&M University, 1000 Discovery Drive, College Station TX 77845-9547, USA. Tel: (979) 845-8495; Fax: (979) 458-1617; E-mail: database@iodp.tamu.edu

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:

Database Administrator, Borehole Research Group, Lamont-Doherty Earth Observatory of Columbia University, PO Box 1000, 61 Route 9W, Palisades NY 10964, USA. Tel: (845) 365-8343; Fax: (845) 365-3182; E-mail: logdb@ldeo.columbia.edu

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 the *JOIDES Resolution's* bell. Photograph by Lara Miles, IODP-USIO/TAMU.

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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.

Kiyoshi Suyehiro
President & Chief Executive Officer
Integrated Ocean Drilling Program Management International, Inc.
Tokyo
www.iodp.org/



Integrated Ocean Drilling Program

Integrated Ocean Drilling Program Management International, Inc.

Web site: www.iodp.org/

IODP-MI

1001 Connecticut Avenue, NW, Suite 504
Washington DC 20036
USA
Tel: (202) 465-7500; Fax: (202) 955-8363
E-mail: info@iodp.org

IODP-MI

Tokyo University of Marine Science and
Technology
Office of Liaison and Cooperative Research,
3rd Floor
2-1-6, Etchujima, Koto-ku, Tokyo 135-8533
Japan
Tel: (81) 3-6701-8-3181; Fax: (81) 3-6701-3189

IODP-MI member organizations*

Alfred-Wegener-Institute für Polar und
Meeresforschung, Germany

British Geological Survey, United Kingdom

Cardiff University, United Kingdom

Columbia University, Lamont-Doherty Earth
Observatory, USA

Federal Institute of Technology (ETH) Zurich,
Switzerland

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Institut de Physique du Globe de Paris, France

Institut Universitaire Européen de la Mer (IUEM),
France

Japan Agency for Marine-Earth Science and
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Kochi University, Japan

Kyushu University, Japan

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Centre, United Kingdom

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University of Tokyo, Japan

University of Washington, USA

Woods Hole Oceanographic Institution, USA

*At time of expedition.



Implementing organizations

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

Web site: www.eso.ecord.org/

IODP-ESO Coordinator: Science, Logistics, and Operations

British Geological Survey
Murchinson House
West Mains Road
Edinburgh EH9 3LA
United Kingdom
Tel: (44) 131-667-1000; Fax: (44) 131-668-4140
E-mail: eso@bgs.ac.uk

IODP-ESO Petrophysics

European Petrophysics Consortium
Department of Geology
University of Leicester
Leicester LE1 7RH
United Kingdom
Tel: (44) 116-252-3611; Fax: (44) 116-252-3918
E-mail: sjd27@leicester.ac.uk

IODP-ESO Curation and Laboratories

Integrated Ocean Drilling Program
Bremen Core Repository
Center for Marine Environmental Sciences
DFG Research Center for Ocean Margins
University of Bremen
Leobener Strasse
28359 Bremen
Germany
Tel: (49) 421-218-65561; Fax: (49) 421-218-98-65565
E-mail: bcr@marum.de

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

Center for Deep Earth Exploration (CDEX)
Japan Agency for Marine-Earth Science and Technology
Yokohama Institute for Earth Sciences
3175-25 Showa-machi
Kanazawa-ku, Yokohama
Kanagawa 236-0001
Japan
Tel: (81) 45-778-5643; Fax: (81) 45-778-5704
E-mail: cdex@jamstec.go.jp



IODP U.S. Implementing Organization

Web site: www.iodp-usio.org/

IODP-USIO Systems Integration Contractor

Consortium for Ocean Leadership
1201 New York Avenue, NW, Fourth floor
Washington DC 20005
USA
Tel: (202) 232-3900; Fax: (202) 462-8754
E-mail: info@oceanleadership.org

IODP-USIO Science Services, LDEO

Lamont-Doherty Earth Observatory
of Columbia University
PO Box 1000, 61 Route 9W
Palisades NY 10964
USA
Tel: (845) 365-8672; Fax: (845) 365-3182
E-mail: borehole@ldeo.columbia.edu

IODP-USIO Science Services, TAMU

Integrated Ocean Drilling Program
Texas A&M University
1000 Discovery Drive
College Station TX 77845-9547
USA
Tel: (979) 845-2673; Fax: (979) 845-4857
E-mail: information@iodp.tamu.edu



Expedition 330 science party*

Expedition 330 scientists

Anthony A.P. Koppers

Co-Chief Scientist

College of Oceanic and Atmospheric Sciences
Oregon State University
104 COAS Administration Building
Corvallis OR 97331-5503
USA

akoppers@coas.oregonstate.edu

Toshitsugu Yamazaki

Co-Chief Scientist

Geological Survey of Japan, AIST
1-1-1 Higashi
Tsukuba 305-8567
Japan

toshi-yamazaki@aist.go.jp

Jörg Geldmacher

Expedition Project Manager/Staff Scientist

Integrated Ocean Drilling Program
Texas A&M University
1000 Discovery Drive
College Station TX 77845-9547
USA

Present address (September 2011):

IFM-GEOMAR
University of Kiel
Wischhofstrasse 1-3
24148 Kiel
Germany

jgeldmacher@ifm-geomar.de

Louise Anderson

Logging Staff Scientist

Department of Geology
University of Leicester
Leicester LE1 7RH
United Kingdom

lma9@le.ac.uk

Christoph Beier

Petrologist/Structural Geologist

GeoZentrum Nordbayern
University of Erlangen-Nürnberg
Schlossgarten 5
91054 Erlangen
Germany

christoph.beier@gzn.uni-erlangen.de

David M. Buchs

Sedimentologist

Research School of Earth Sciences
Australian National University
61 Mills Road, Building J1
Canberra ACT 0200
Australia

Present address (April 2011):

Research Division 4: Dynamics of the Ocean Floor
IFM-GEOMAR
Wischhofstrasse 1-3
24148 Kiel
Germany

dbuchs@ifm-geomar.de

Li-Hui Chen

Inorganic Geochemist

School of Earth Sciences and Engineering
Nanjing University
Hankou Road 22
Nanjing 210093
People's Republic of China

chenlh@nju.edu.cn

Benjamin E. Cohen

Petrologist/Structural Geologist

School of Earth Sciences
The University of Queensland
St. Lucia QLD 4072
Australia

b.cohen@uq.edu.au

Fabien Deschamps

Petrologist/Alteration Specialist

Géosciences Montpellier
UMR 5243-CC 60
Université Montpellier 2
Place E. Bataillon
34095 Montpellier Cedex 5
France

fabien.deschamps@ujf-grenoble.fr

Michael J. Dorais

Petrologist/Alteration Specialist

Department of Geological Sciences
Brigham Young University
S-335 ESC
Provo UT 84602
USA

dorais@byu.edu

*Addresses at time of expedition, except where updated by the participants.



Daniel R. Ebuna
Physical Properties Specialist
Scripps Institution of Oceanography
University of California, San Diego
9500 Gilman Drive
La Jolla CA 92093-0205
USA
debuna@ucsd.edu

Sebastian Ehmann
Göttingen Borehole Magnetometer Specialist
Institut für Geophysik und Extraterrestrische Physik
TU Braunschweig
Mendelssohnstrasse 3
38106 Braunschweig
Germany
s.ehmann@tu-bs.de

J. Godfrey Fitton
Volcanologist/Petrologist
School of GeoSciences
University of Edinburgh
Grant Institute
West Mains Road
Edinburgh EH9 3JW
United Kingdom
godfrey.fitton@ed.ac.uk

Patrick M. Fulton
Physical Properties Specialist
Institute for Geophysics
University of Texas at Austin
10100 Burnet Road, Building 196 (R2200)
Austin TX 78758
USA
pfulton@ig.utexas.edu

Erdenesaikhan Ganbat
Petrologist
Ishiwatari's Laboratory
Center for Northeast Asian Studies, Tohoku
University
Kawauchi 41, Aoba-ku
Sendai 980-8576
Japan
ergaad@gmail.com

Jeffrey S. Gee
Paleomagnetist
Scripps Institution of Oceanography
University of California, San Diego
Geosciences Research Division
9500 Gilman Drive
La Jolla CA 92093-0220
USA
jsgee@ucsd.edu

Cedric Hamelin
Petrologist
Institut de Physique du Globe de Paris
1 Rue Jussieu, Bureau 345
75238 Paris Cedex 05
France
ced.hamelin@gmail.com

Takeshi Hanyu
Inorganic Geochemist
Institute for Research on Earth Evolution (IFREE)
Japan Agency for Marine-Earth Science and
Technology
2-15 Natsushima-cho, Yokosuka
Kanagawa 237-0061
Japan
hanyut@jamstec.go.jp

Hiroyuki Hoshi
Paleomagnetist
Department of Earth Sciences
Aichi University of Education
1 Hirosawa, Igaya-cho
Kariya City, Aichi 448-8542
Japan
hoshi@aecc.aichi-edu.ac.jp

Lara Kalnins
Physical Properties Specialist
Department of Earth Sciences
University of Oxford
South Parks Road
Oxford OX1 3AN
United Kingdom
larak@earth.ox.ac.uk

Johnathon Kell
Paleontologist (nannofossils)
Department of Earth and Atmospheric Sciences
University of Nebraska-Lincoln
214 Bessey Hall
PO Box 880340
Lincoln NE 68588-0340
USA
jkell@huskers.unl.edu

Shiki Machida
Volcanologist/Petrologist
Department of Resources and Environmental
Engineering
Waseda University
3-4-1 Okubo, Shinjyuku
Tokyo 169-8555
Japan
m-shikit@aoni.waseda.jp



John J. Mahoney
Inorganic Geochemist
School of Ocean and Earth Science and
Technology
University of Hawaii at Manoa
1680 East-West Road
Room 606D
Honolulu HI 96822
USA
jmahoney@hawaii.edu

Kazuyoshi Moriya
Paleontologist (foraminifers)
Department of Earth Sciences
Waseda University
1-6-1 Nishiwaseda, Shinjuku-ku
Tokyo 169-8050
Japan
kmoriya@aoni.waseda.jp

Alexander R.L. Nichols
Volcanologist/Petrologist
Institute for Research on Earth Evolution (IFREE)
Japan Agency for Marine-Earth Science and
Technology
2-15 Natsushima-cho, Yokosuka
Kanagawa 237-0061
Japan
nichols@jamstec.go.jp

Nicola J. Pressling
Paleomagnetist/Downhole Tools Specialist
National Oceanography Centre
University of Southampton
Waterfront Campus
European Way
Southampton SO14 3ZH
United Kingdom
n.j.pressling@soton.ac.uk

Svenja Rausch
Petrologist
Department of Geosciences
University of Bremen
Klagenfurter Strasse
28359 Bremen
Germany
srausch@uni-bremen.de

Shin-ichi Sano
Sedimentologist
Fukui Prefectural Dinosaur Museum
51-11 Terao
Muroko, Katsuyama
Fukui 911-8601
Japan
ssano@dinosaur.pref.fukui.jp

Jason B. Sylvan
Microbiologist
Department of Biological Sciences
University of Southern California
3616 Trousdale Parkway, AHF 143
Los Angeles CA 90089-0371
USA
jsylvan@usc.edu

Rebecca Williams
Volcanologist/Petrologist
Department of Geology
University of Leicester
University Road
Leicester LE1 7RH
United Kingdom
rw89@le.ac.uk

Education and outreach

Kevin Kurtz
Education Officer
Science Factory Children's Museum and
Planetarium
PO Box 1518
Eugene OR 97440
USA
sfeducation@sciencefactory.org

Lisa Strong
Videographer
Strong Mountain Productions
3400 Baker Street
San Francisco CA 94123
USA
lisa@strongmountain.com

Operational and technical staff

Transocean officials

Terry Skinner
Master of the Drilling Vessel
Overseas Drilling, Ltd.

James Samuel Mclelland
Drilling Superintendent
Overseas Drilling, Ltd.

IODP-USIO shipboard personnel and technical representatives

Grant Banta
Marine Computer Specialist

Heather Barnes
X-Ray Laboratory

Christopher Bennight
Chemistry Laboratory

Etienne Claassen
Marine Instrumentation Specialist

Trevor Cobine
Paleomagnetism Laboratory

William Crawford
Imaging Specialist

David Fackler
Applications Developer

Thomas Gorgas
Core Laboratory

Ronald Grout
Operations Superintendent

Ted Gustafson
Downhole Tools/Thin Section Laboratory

Rhonda Kappler
Publications Specialist

Jan Jurie Kotze
Marine Instrumentation Specialist

Lara Miles
Curatorial Specialist

William Mills
Laboratory Officer

Erik Moortgat
Underway Geophysics Laboratory

Chieh Peng
Assistant Laboratory Officer

Steve Prinz
Assistant Laboratory Officer

J. Patrick Riley
Core Laboratory

Johanna Suhonen
Core Laboratory

Kerry Swain
Logging Engineer

Andrew Trefethen
Marine Computer Specialist

Hai (James) Zhao
Applications Developer



IODP-USIO Publication Services staff*

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Production Specialist III

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Production Specialist II

Jean Wulfson
Graphics Specialist II

Ann Yeager
Distribution Specialist

*At time of publication.



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Core descriptions

Visual core descriptions (VCDs), smear slide data tables, 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.

Site U1372

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Expedition research results

Data reports

Titles are available in [HTML](#).

Syntheses

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

Supplementary material

Supplementary material for this volume includes scans of handwritten core descriptions in Adobe PDF format, descriptions of clast characteristics and occurrences in Microsoft Word format, tables of grain size and roundness in Microsoft Excel format, and evaluation of the Niton XL3 X-ray Fluorescence Analyzer in Adobe PDF 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 330 site map](#)

[IODP map](#) (Expeditions 301–333)

[ODP map](#) (Legs 100–210)

[DSDP map](#) (Legs 1–96)



Expedition-related bibliography

IODP publications

Scientific Prospectus

Koppers, A.A.P., Yamazaki, T., and Geldmacher, J., 2010. Louisville Seamount Trail: implications for geodynamic mantle flow models and the geochemical evolution of primary hotspots. *IODP Sci. Prosp.*, 330. doi:10.2204/iodp.sp.330.2010

Preliminary Report

Expedition 330 Scientists, 2011. Louisville Seamount Trail: implications for geodynamic mantle flow models and the geochemical evolution of primary hotspots. *IODP Prel. Rept.*, 330. doi:10.2204/iodp.pr.330.2011

*Scientific Drilling journal**

Pending

Proceedings volume

Koppers, A.A.P., Yamazaki, T., Geldmacher, J., and the Expedition 330 Scientists, 2012. *Proc. IODP*, 330: Tokyo (Integrated Ocean Drilling Program Management International, Inc.). doi:10.2204/iodp.proc.330.2012

Expedition 330 Scientists, 2012. Expedition 330 summary. In Koppers, A.A.P., Yamazaki, T., Geldmacher, J., and the Expedition 330 Scientists, *Proc. IODP*, 330: Tokyo (Integrated Ocean Drilling Program Management International, Inc.). doi:10.2204/iodp.proc.330.101.2012

Expedition 330 Scientists, 2012. Methods. In Koppers, A.A.P., Yamazaki, T., Geldmacher, J., and the Expedition 330 Scientists, *Proc. IODP*, 330: Tokyo (Integrated Ocean Drilling Program Management International, Inc.). doi:10.2204/iodp.proc.330.102.2012

Expedition 330 Scientists, 2012. Site U1372. In Koppers, A.A.P., Yamazaki, T., Geldmacher, J., and the Expedition 330 Scientists, *Proc. IODP*, 330: Tokyo (Integrated Ocean Drilling Program Management International, Inc.). doi:10.2204/iodp.proc.330.103.2012

Expedition 330 Scientists, 2012. Site U1373. In Koppers, A.A.P., Yamazaki, T., Geldmacher, J., and the Expedition 330 Scientists, *Proc. IODP*, 330: Tokyo (Integrated Ocean Drilling Program Management International, Inc.). doi:10.2204/iodp.proc.330.104.2012

Expedition 330 Scientists, 2012. Site U1374. In Koppers, A.A.P., Yamazaki, T., Geldmacher, J., and the Expedition 330 Scientists, *Proc. IODP*, 330: Tokyo (Integrated Ocean Drilling Program Management International, Inc.). doi:10.2204/iodp.proc.330.105.2012

Expedition 330 Scientists, 2012. Site U1375. In Koppers, A.A.P., Yamazaki, T., Geldmacher, J., and the Expedition 330 Scientists, *Proc. IODP*, 330: Tokyo (Integrated Ocean Drilling Program Management International, Inc.). doi:10.2204/iodp.proc.330.106.2012

Expedition 330 Scientists, 2012. Site U1376. In Koppers, A.A.P., Yamazaki, T., Geldmacher, J., and the Expedition 330 Scientists, *Proc. IODP*, 330: Tokyo (Integrated Ocean Drilling Program Management International, Inc.). doi:10.2204/iodp.proc.330.107.2012

Expedition 330 Scientists, 2012. Site U1377. In Koppers, A.A.P., Yamazaki, T., Geldmacher, J., and the Expedition 330 Scientists, *Proc. IODP*, 330: Tokyo (Integrated Ocean Drilling Program Management International, Inc.). doi:10.2204/iodp.proc.330.108.2012

Kalnins, L.M., and the Expedition 330 Scientists, 2012. Underway geophysics. In Koppers, A.A.P., Yamazaki, T., Geldmacher, J., and the Expedition 330 Scientists, *Proc. IODP*, 330: Tokyo (Integrated Ocean Drilling Program Management International, Inc.). doi:10.2204/iodp.proc.330.109.2012

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Syntheses*

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Directory structure*

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		U1372_TS.PDF (Site U1372 thin sections)
		U1373_TS.PDF (Site U1373 thin sections)
		U1374_SS.PDF (Site U1374 smear slides)
U1374_TS.PDF (Site U1374 thin sections)		
U1375_SS.PDF (Site U1375 smear slides)		
U1375_TS.PDF (Site U1375 thin sections)		
U1376_TS.PDF (Site U1376 thin sections)		
U1377_SS.PDF (Site U1377 smear slides)		
U1377_TS.PDF (Site U1377 thin sections)		
IMAGES (PDF files of core images)		
OVERSIZE (Large-format files of data tables)	330_103 (Site U1372 files)	
	330_104 (Site U1373 files)	
	330_105 (Site U1374 files)	
	330_107 (Site U1376 files)	
	330_108 (Site U1377 files)	
SUPP_MAT (Supplementary material)	SCANS (Scans of annotated core photos)	PETROLOGY (Igneous cores)
		SEDIMENT (Sedimentary cores)
	SEDIMENT (Clast characteristics and grain size roundness)	CHAR (Clast characteristics)
		SIZE (Grain size and roundness)
	XRF (Shipboard evaluation of Niton XL3)	XL3_EVAL.PDF
	README.TXT	
MAPS (Drilling location maps)	330_MAP.PDF (Expedition 330 site map)	
	IODPMAP.PDF (IODP map, Expeditions 301–333)	
	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.

