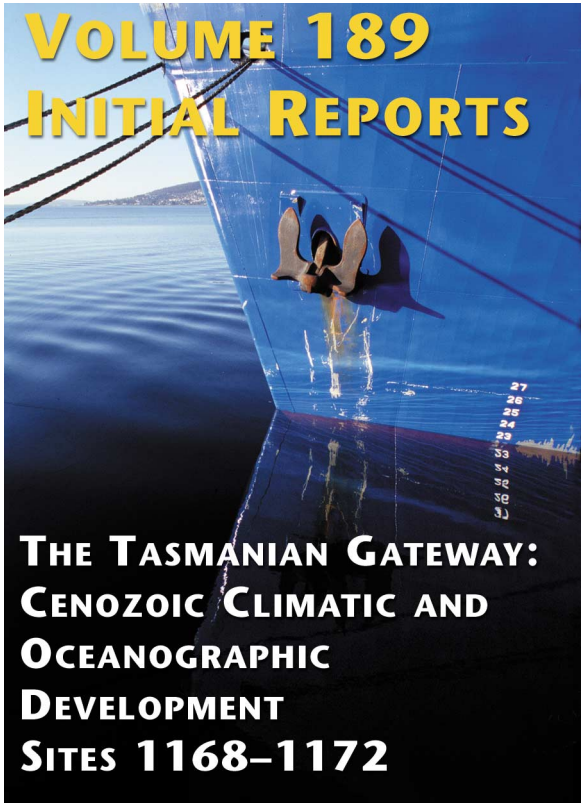

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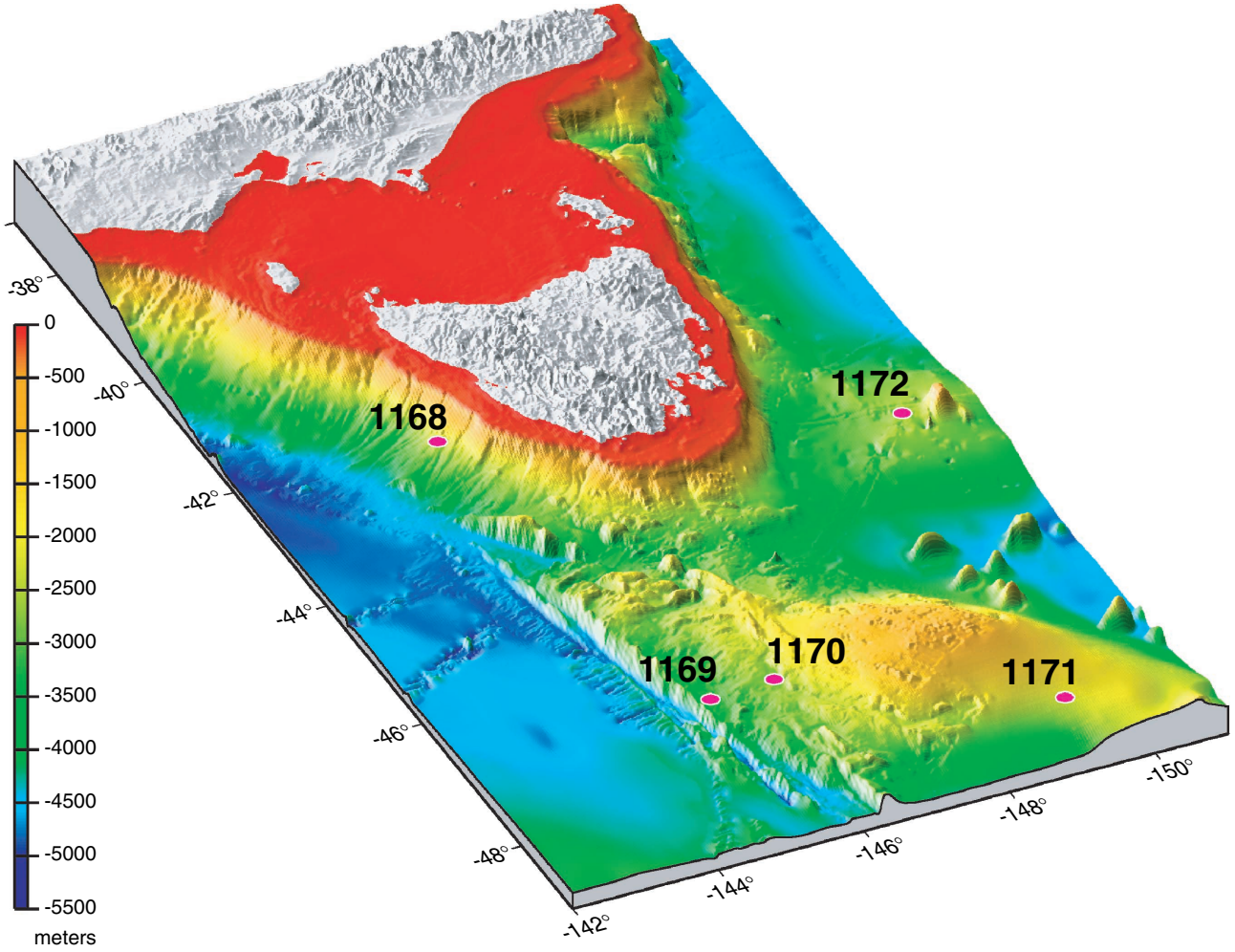
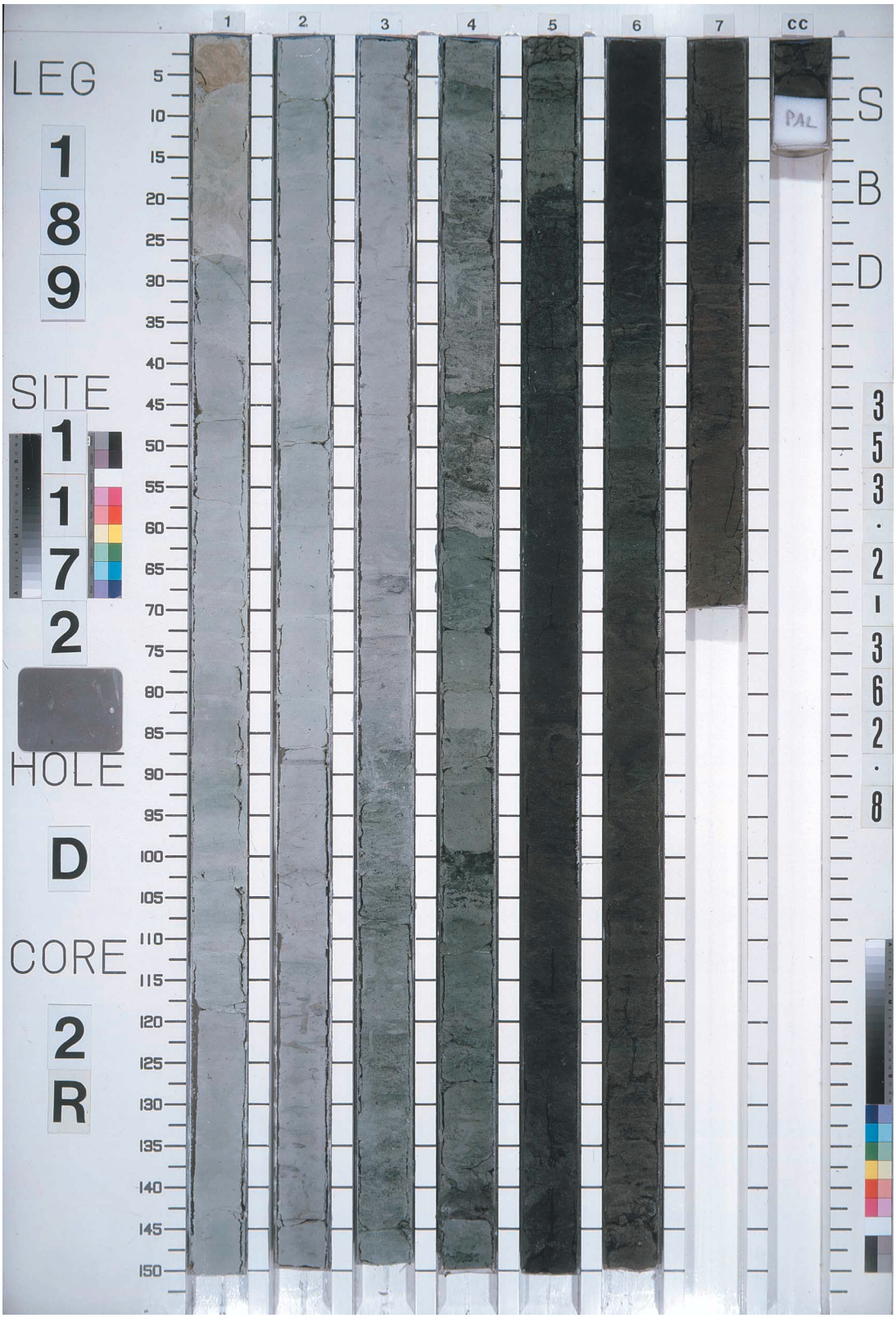


Frontispiece 1. Relief map showing the setting of all sites drilled during Leg 189. Site 1168 is on the segmented and canyoned western Tasmania margin, Site 1172 is on the isolated east Tasman Plateau, and the other sites are on the South Tasman Rise. Strike-slip motion along the western margin of Tasmania (north northwest-south southeast) is shown by one major fault scarp formed >43 Ma. Similar motion along the western margin of the South Tasman Rise and within the rise (north-south) is shown by several fault scarps formed 43–33 Ma.



Frontispiece 2. Leg 189 core across the Eocene/Oligocene boundary on the East Tasman Plateau, showing gray late Eocene mudstones, green latest Eocene glauconitic siltstones, and white early Oligocene chalks. This core summarizes the profound changes that occurred as the Tasmanian Gateway opened.

Proceedings of the Ocean Drilling Program

Volume 189
Initial Reports
The Tasmanian Gateway: Cenozoic Climatic and Oceanographic Development

Covering Leg 189 of the cruises of the Drilling Vessel *JOIDES Resolution*
Hobart, Tasmania, to Sydney, Australia
Sites 1168–1172
11 March–6 May 2000

SHIPBOARD SCIENTISTS
Neville F. Exon, James P. Kennett, Mitchell J. Malone, Hendrik Brinkhuis, George C.H. Chaproniere, Atsuhito Ennyu, Patrick Fothergill, Michael D. Fuller, Marianne Grauert, Peter J. Hill, Thomas R. Janecek, Daniel C. Kelly, Jennifer C. Latimer, Stefan Nees, Ulysses S. Ninnemann, Dirk Nürnberg, Stephen F. Pekar, Caroline C. Pellaton, Helen A. Pfuhl, Christian M. Robert, Kristeen L. McGonigal Roessig, Ursula Röhl, Stephen A. Schellenberg, Amelia E. Shevenell, Catherine E. Stickley, Noritoshi Suzuki, Yannick Touchard, Wuchang Wei, Timothy S. White

SHIPBOARD STAFF SCIENTIST
Mitchell J. Malone

VOLUME EDITOR
John M. Scroggs

VOLUME GRAPHIC DESIGNER
Jennie L. Lamb

VOLUME PRODUCTION EDITOR
Cathy Martin

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Publisher's Notes

This volume also appears on the World Wide Web. Any corrections, revisions, or additions will be noted in the chapter (see "Chapter Notes") at **www-odp.tamu.edu/publications/**.

This publication was prepared by the Ocean Drilling Program, Texas A&M University, as an account of work performed under the international Ocean Drilling Program, which is managed by Joint Oceanographic Institutions, Inc., under contract with the National Science Foundation. Funding for the program was provided by the following agencies at the time of this cruise:

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European Science Foundation Consortium for Ocean Drilling (Belgium, Denmark, Finland, Iceland, Ireland, Italy, The Netherlands, Norway, Portugal, Spain, Sweden, and Switzerland)

Institut National des Sciences de l'Univers–Centre National de la Recherche Scientifique (INSU–CNRS) (France)

Marine High-Technology Bureau of the State Science and Technology Commission of the People's Republic of China

National Science Foundation (United States)

Natural Environment Research Council (United Kingdom)

University of Tokyo, Ocean Research Institute (Japan)

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

The bulk of the shipboard-collected data from this leg is available on the World Wide Web and is accessible at **www-odp.tamu.edu/database**. If you cannot access this site or need additional data, please contact the ODP Data Librarian, Ocean Drilling Program, Texas A&M University, College Station TX 77845-9547, USA (e-mail: **database@odpemail.tamu.edu**).

A site map showing the drilling locations for this leg and maps showing the drilling locations of all Ocean Drilling Program (ODP) and Deep Sea Drilling Project (DSDP) drilling sites are available on this CD-ROM in PDF format. These maps were produced using Generic Mapping Tools (GMT) of Paul Wessel and Walter H.F. Smith (**imina.soest.hawaii.edu/gmt/**).

Cover photograph is of the *JOIDES Resolution* in Hobart, Tasmania, by ODP Photographer John Beck.

Foreword

By Joint Oceanographic Institutions, Inc.

This volume presents scientific and engineering results from the Ocean Drilling Program (ODP). These results address the scientific and technical goals of the program, which are focused on the study of the dynamics of Earth's interior and environment, the evolution of oceanic crust, and the fluctuations of climate. In addition, study of the Earth's deep biosphere is an emergent research objective.

ODP, an international partnership of scientists and research institutions from 22 countries, operates the drillship *JOIDES Resolution*. This state-of-the-art research vessel contains eight levels of laboratories and other scientific facilities required for carrying out the program's objectives.

The management of ODP involves a partnership of scientists and governments. International oversight and coordination are provided by the ODP Council, which is made up of representatives from the member countries. Overall scientific and management guidance is provided by representatives from the Joint Oceanographic Institutions for Deep Earth Sampling (JOIDES).

Joint Oceanographic Institutions, Inc. (JOI), a nonprofit consortium of 14 U.S. oceanographic institutions, serves as the National Science Foundation's prime contractor for ODP. JOI implements scientific objectives, plans, and recommendations of the JOIDES committees through major subcontracts to Texas A&M University (TAMU) for science operations and to Lamont-Doherty Earth Observatory (LDEO) of Columbia University for geochemical and geophysical well-logging services.

JOI, TAMU, and LDEO have worked together successfully for many years to manage the Ocean Drilling Program. We look forward to many exciting discoveries and continued international collaboration as we further our scientific mission, especially the planning for the future of ocean drilling beyond 2003.

Steven R. Bohlen
President of the Joint Oceanographic Institutions and Executive Director of the Ocean Drilling Programs
Washington, D.C.

Ocean Drilling Program*

National Science Foundation
4201 Wilson Boulevard
Arlington VA 22230, USA
Tel: (703) 306-1581; Fax: (703) 306-0390
Web site: www.nsf.gov

Member Organizations of the Joint Oceanographic Institutions for Deep Earth Sampling (JOIDES)

University of California at San Diego, Scripps Institution of Oceanography

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University of Texas at Austin, Institute for Geophysics

*At time of publication. See **Publisher's Notes,** p. 7, for list of funding agencies at time of cruise. For an up-to-date list of current member organizations and office contact information, see the ODP Web site: **www.oceandrilling.org.**

University of Washington, College of Ocean and Fishery Sciences

Woods Hole Oceanographic Institution

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France, Institut National des Sciences de l'Univers–Centre National de la Recherche Scientifique (INSU–CNRS)

Japan, University of Tokyo, Ocean Research Institute

People's Republic of China, Marine High-Technology Bureau of the State Science and Technology Commission of the People's Republic of China

United Kingdom, Natural Environment Research Council

Ocean Drilling Program (ODP)

Web site: www.oceandrilling.org

ODP Science Advisory Structure (JOIDES)

JOIDES Office
University of Miami—RSMAS
4600 Rickenbacker Causeway
Miami FL 33149, USA
Tel: (305) 361-4668; Fax: (305) 361-4632
E-mail: **joides@rsmas.miami.edu**
Web site: **joides.rsmas.miami.edu**

ODP Program Manager

Joint Oceanographic Institutions, Inc.
1755 Massachusetts Avenue, NW, Suite 700
Washington DC 20036-2102, USA
Tel: (202) 232-3900; Fax: (202) 462-8754
E-mail: **joi@brook.edu**
Web site: **www.joi-odp.org**

ODP Science Operator

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: **odp@odpemail.tamu.edu**
Web site: **www-odp.tamu.edu**

ODP Logging Services

Borehole Research Group
Lamont-Doherty Earth Observatory
Columbia University
Route 9W
Palisades NY 10964, USA
Tel: (845) 365-8341; Fax: (845) 365-3182
E-mail: **borehole@ldeo.columbia.edu**
Web site: **www.ldeo.columbia.edu/BRG/ODP**

ODP Site Survey Data Bank

Lamont-Doherty Earth Observatory
Columbia University
Route 9W
Palisades NY 10964, USA
Tel: (845) 365-8542; Fax: (845) 365-8159
E-mail: **odp@ldeo.columbia.edu**
Web site: **www.ldeo.columbia.edu/databank**

Leg 189 Participants*

Shipboard Scientific Party

Neville F. Exon
Co-Chief Scientist
Petroleum and Marine Division
Australian Geological Survey Organisation
PO Box 378
Canberra ACT 2601
Australia
neville.exon@agso.gov.au

James P. Kennett
Co-Chief Scientist
Department of Geological Sciences and Marine Science Institute
University of California, Santa Barbara
Santa Barbara CA 93106
USA
kennett@magic.geol.ucsb.edu

Mitchell J. Malone
Staff Scientist/Inorganic Geochemist
Ocean Drilling Program
Texas A&M University
1000 Discovery Drive
College Station TX 77845-9547
USA
malone@odpemail.tamu.edu

Henk Brinkhuis
Palynologist
Laboratory of Palaeobotany and Palynology
Utrecht University
Budapestlaan 4
Utrecht 3584 CD
The Netherlands
h.brinkhuis@bio.uu.nl

*Addresses at time of cruise, except where updated by the leg participants before publication.

George C.H. Chaproniere
Paleontologist (foraminifers)
Department of Geology
The Australian National University
Canberra ACT 0200
Australia
george.chaproniere@anu.edu.au

Atsuhito Ennyu
Sedimentologist
Department of Geosciences
Pennsylvania State University
437 Deike Building
University Park PA 16802
USA
aennyu@psu.edu

Patrick Fothergill
LDEO Logging Staff Scientist
Department of Geology
Borehole Research
University of Leicester
University Road
Leicester LE1 7RH
United Kingdom
paf10@leicester.ac.uk

Michael D. Fuller
Paleomagnetist
Hawaii Institute of Geophysics and Planetology
University of Hawaii at Manoa
2525 Correa Road
Honolulu HI 96822
USA
mfuller@soest.hawaii.edu

Marianne Grauert
Sedimentologist
Geographical Institute
University of Copenhagen
Oester Voldgade 10
1350 Copenhagen K
Denmark
marianne@grauert.dk
mg@geogr.ku.dk

Peter J. Hill
Stratigraphic Correlator
Petroleum and Marine Division
Australian Geological Survey Organisation
GPO Box 378
Canberra ACT 2601
Australia
peter.hill@agso.gov.au

Thomas R. Janecek
Stratigraphic Correlator
Antarctic Research Facility
Florida State University
108 Carraway Building
Tallahassee FL 32306-4100
USA
janecek@gly.fsu.edu

Daniel C. Kelly
Paleontologist (foraminifers)
Department of Geology and Geophysics
Woods Hole Oceanographic Institution
266 Woods Hole Road
Mail Stop #23, Clark Building
Woods Hole MA 02543
USA
dkelly@whoi.edu

Jennifer C. Latimer
Physical Properties Specialist
Department of Geology
Indiana University/Purdue University, Indianapolis
723 West Michigan Street
Indianapolis IN 46202
USA
jclatime@iupui.edu

Kristeen McGonigal
Paleontologist (nannofossils)
Department of Geology
Florida State University
108 Carraway Building
Tallahassee FL 32306-4100
USA
roessig@gly.fsu.edu

Stefan Nees
Sedimentologist
GEOMAR
Christian-Albrechts-Universität zu Kiel
Wischhofstrasse 1-3
24148 Kiel
Federal Republic of Germany
snees@geomar.de

Ulysses S. Ninnemann
LDEO Logging Staff Scientist
Borehole Research Group
Lamont-Doherty Earth Observatory
Columbia University
Route 9W
Palisades NY 10964
USA
ulysses@ldeo.columbia.edu

Dirk Nürnberg
Inorganic Geochemist
GEOMAR
Department of Paleoceanology
Research Center of Marine Geosciences at
University of Kiel
Christian-Albrechts-Universität zu Kiel
Wischhofstrasse 1-3, Building 8
24148 Kiel
Federal Republic of Germany
dnuernberg@geomar.de

Stephen F. Pekar
Sedimentologist
Department of Geological Sciences
Rutgers, The State University of New Jersey
Wright Labs
Piscataway NJ 08854
USA

Present address (6 March 2001):
Lamont-Doherty Earth Observatory
Columbia University
Route 9W
Palisades NY 10964
USA
pekar@ldeo.columbia.edu

Caroline C. Pellaton
Sedimentologist
Département de Géologie et de Paléontologie
Université de Genève
13 rue des Maraîchers
1211 Genève 4
Switzerland
caroline.pellaton@terre.unige.ch

Helen A. Pfuhl
Paleontologist (foraminifers)
Godwin Laboratory
University of Cambridge
Pembroke Street/NMS
Cambridge CB2 3SA
United Kingdom
hap21@cus.cam.ac.uk

Christian M. Robert
Sedimentologist
Centre d'Ocanologie de Marseille
Luminy case 901
13288 Marseille Cedex 09
France
robert@com.univ-mrs.fr

Ursula Röhl
Physical Properties Specialist
Fachbereich Geowissenschaften
Universität Bremen
Postfach 33 04 40
Bremen 28334
Federal Republic of Germany
uroehl@allgeo.uni-bremen.de

Stephen A. Schellenberg
Sedimentologist
Department of Earth Sciences
University of California, Santa Cruz
EMS-A232
1156 High Street
Santa Cruz CA 95064
USA
schellen@es.ucsc.edu

Amelia E. Shevenell
Sedimentologist
Department of Geological Sciences
University of California, Santa Barbara
Santa Barbara CA 93106
USA
amelia@magic.geol.ucsb.edu

Catherine E. Stickley
Paleontologist (diatoms)
Environmental Change Research Centre
Department of Geography
University College London
26 Bedford Way
London WC1H 0AP
United Kingdom
c.stickley@ucl.ac.uk

Noritoshi Suzuki
Paleontologist (radiolarians)
Institute of Geology and Paleontology
Tohoku University
Aoba, Aramaki
Sendai, Miyagi 980-8578
Japan
suzuki.noritoshi@nifty.ne.jp

Yannick Touchard
Paleomagnetist
CNRS
CEREGE, Domaine de L'Arbois
Europole Mediterranean L'Arbois,
BP 80
13545 Aix-en-Provence Cedex 4
France
touchard@cerege.fr

Wuchang Wei
Paleontologist (nannofossils)
Scripps Institution of Oceanography
Geoscience Research Division
University of California, San Diego
La Jolla CA 92093-0244
USA
wwei@ucsd.edu

Timothy S. White
Organic Geochemist
EMS Environment Institute
The Pennsylvania State University
2217 Earth-Engineering Science Building
University Park PA 16802
USA
tswhite@essc.psu.edu

Transocean Sedco Forex Officials

Captain Tom Hardy
Master of the Drilling Vessel
Overseas Drilling Ltd.
707 Texas Avenue South, Suite 213D
College Station TX 77840-1917
USA

Wayne Malone
Drilling Superintendent
Overseas Drilling Ltd.
707 Texas Avenue South, Suite 213D
College Station TX 77840-1917
USA

Shipboard Personnel

Chris Bodley
Information Services Representative

Gar Esmay
Marine Laboratory Specialist
(Curator)

Charlie Endris
Marine Laboratory Specialist
(Paleomagnetism)

Mike Friedrichs
Downhole Tool Specialist

Randy Gjesvold
Marine Electronics Specialist

Dennis Graham
Marine Laboratory Specialist
(Chemistry)

Ron Grout
Operations Manager

Gus Gustufson
Marine Laboratory Specialist
(Downhole Tools/Thin Section)

Mark Hagerty
Marine Laboratory Specialist
(Photographer)

Burney Hamlin
Laboratory Officer

Michiko Hitchcox
Marine Laboratory Specialist
(Yeoperson)

Jessica Huckemeyer
Marine Laboratory Specialist
(Assistant Curator)

Maniko Kamei
Marine Laboratory Specialist
(Core Lab/X-Ray)

Dave Kotz
Marine Computer Specialist

Anastasia Ledwon
Marine Laboratory Specialist
(Physical Properties)

Chris Lernihan
Marine Laboratory Specialist
(Technician)

Tony Muir
Downhole Tool Engineer

Bob Olivas
Marine Laboratory Specialist (X-Ray)

Chieh Peng
Marine Laboratory Specialist
(Chemistry)

Don Sims
Marine Laboratory Specialist
(Underway Geophysics)

Johanna Suhonen
Marine Laboratory Specialist
(Downhole Measurements)

Kerry Swain
Schlumberger Engineer

Hardus van Bosch
Marine Electronics Specialist

Jason Wilsterman
Marine Laboratory Specialist
(Technician)

Laura Wright
Marine Computer Specialist

ODP Publications Staff*

Karen Benson
Production Editor

Brenda Bridges
Editor

Lori J. Cagle
Editor

Gudelia ("Gigi") Delgado
Senior Publications Coordinator

Patrick H. Edwards
Production Editor

Edward W. Flax
Student Assistant

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Senior Production Editor

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Assistant Editor

Ann Klaus
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Kathryn M. Kozelsky
Graphic Designer

Jennie L. Lamb
Graphic Designer

Nancy H. Luedke
Graphic Designer

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Production Editor

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Reference Editor

Angeline T. Miller
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Production Assistant

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Senior Graphic Designer

Lorri L. Peters
Editor

Katerina E. Petronotis
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Publications Specialist

Jennifer Pattison Rumford
Electronic Publications Specialist

John M. Scroggs
Editor

Kenneth Sherar
Production Editor

Ann Yeager
Distribution Specialist

*At time of publication.

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CD-ROM Contents: Chapters

1. Leg 189 Summary
2. Explanatory Notes
3. Site 1168
4. Site 1169
5. Site 1170
6. Site 1171
7. Site 1172

CD-ROM Contents: Appendix

Appendix: Magnetic Experiments

CD-ROM Contents: 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. ACSII versions of the smear-slide data tables are also available (see **"ASCII Tables"**).

Site 1168

Visual Core Descriptions · Smear Slides

Site 1169

Visual Core Descriptions ·Smear Slides

Site 1170

Visual Core Descriptions · Smear Slides

Site 1171

Visual Core Descriptions ·Smear Slides

Site 1172

Visual Core Descriptions · Smear Slides

CD-ROM Contents: ASCII Tables

This CD-ROM contains ASCII versions of biostratigraphic **data tables** presented in the volume chapters and **smear-slide data tables** presented under "Core Descriptions." A complete listing of the ASCII data tables can be found on the next two pages.

You can access these data directly from the PDF files. Depending on your computer platform, the following information applies.

PC computers

By default, clicking on a filename with a .TXT extension will launch the Notepad application. You can configure your computer's operating system so that files on this CD with .TXT extensions automatically open in other software, such as Microsoft Excel. Follow these steps from the pull-down menu: Windows 95 and NT operating systems: View > Options > File Types; and Windows 98 systems: View > Folder Options > File Types.

MAC computers

All table files with .TXT extensions will automatically open into Excel. If you do not have Excel installed on your computer, you may view these files through other spreadsheet or text-editor programs. Open the application of your choice, select File > Open, and open the ASCII file.

UNIX computers

You can open files with .TXT extensions in any text editor or spreadsheet program, but not directly from PDF files.

Chapter 3, Site 1168
Table T12. Reliable biostratigraphic events identified, Site 1168.

Chapter 4, Site 1169
Table T7. Combined bioevents used for the age model, Site 1169A.

Chapter 5, Site 1170
Table T13. Biostratigraphic events, Site 1170.

Chapter 6, Site 1171
Table T13. Biostratigraphic events identified, Site 1171.

Chapter 7, Site 1172
Table T11. Selected dinocyst datums, Holes 1172A and 1172D.

Smear-Slide Data Tables

Hole 1168A smear-slide table.
Hole 1168B smear-slide table.
Hole 1168C smear-slide table.

Site 1169 smear-slide table.

Site 1170 smear-slide table.

Hole 1171A smear-slide table.
Hole 1171B smear-slide table.
Hole 1171C smear-slide table.
Hole 1171D smear-slide table.

Hole 1172A smear-slide table.
Hole 1172B smear-slide table.
Hole 1172C smear-slide table.
Hole 1172D smear-slide table.

CD-ROM Contents: Drilling Locations Maps

A site map showing the drilling locations for this leg and maps showing the drilling locations of all Ocean Drilling Program (ODP) and Deep Sea Drilling Project (DSDP) drilling sites are available in PDF format.

ODP Leg 189 Site Map

ODP Map (Legs 100–189)

DSDP Map (Legs 1–96)

Related Leg Data

Downhole Logging and Core Data

A second CD-ROM is included with this volume. The "Log and Core Data" CD contains Leg 189 depth-shifted and processed downhole logging data and shipboard core logging data (gamma-ray attenuation bulk density, natural gamma radiation, magnetic susceptibility, color reflectance, and moisture and density). The downhole logging data are provided by the Borehole Research Group at the Lamont-Doherty Earth Observatory, Wireline Logging Operator for ODP.

The majority of the logging data included on the CD are available on the World Wide Web at **www.ldeo.columbia.edu/BRG/ODP**. If you cannot access this site or want to order the CD, please contact: ODP Logging Services Operator, Lamont-Doherty Earth Observatory, Route 9W, Palisades NY 10964, USA; Tel: (845) 365-8341; Fax: (845) 365-3182; E-mail: **borehole@ldeo.columbia.edu**.

The majority of the core data on the CD are available on the Web at **www-odp.tamu.edu/database**. If you cannot access the ODP database or need additional data, please contact: ODP Data Librarian, 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@odpemail.tamu.edu**.

Compiled Electronic Index

The Compiled Electronic Index of the *Proceedings of the Ocean Drilling Program* included on the *Initial Reports* CD-ROM contains individual indexes of Volumes 101–171B. The indexes are contained in the directory titled ODPINDEX and are named ###NDX.PDF (### = the leg number). These indexes can be searched individually or collectively.

CD-ROM Directory Structure