



VOLUME 205
SCIENTIFIC RESULTS

**FLUID FLOW AND SUBDUCTION FLUXES
ACROSS THE COSTA RICA CONVERGENT
MARGIN: IMPLICATIONS FOR THE
SEISMOGENIC ZONE AND
SUBDUCTION FACTORY
SITES 1253–1255**

**PROCEEDINGS OF THE
OCEAN DRILLING PROGRAM**

Prepared by the
OCEAN DRILLING PROGRAM,
TEXAS A&M UNIVERSITY,
in cooperation with the
NATIONAL SCIENCE FOUNDATION and JOINT OCEANOGRAPHIC INSTITUTIONS, INC.

PROCEEDINGS OF THE OCEAN DRILLING PROGRAM

Volume 205

Scientific Results

Fluid Flow and Subduction Fluxes across the Costa Rica
Convergent Margin: Implications for the Seismogenic
Zone and Subduction Factory

Covering Leg 205 of the cruises of the Drilling Vessel *JOIDES Resolution*
Victoria, Canada, to Balboa, Panama

Sites 1253–1255

2 September–6 November 2002

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Current policy requires that all figures published in *Scientific Results* volumes of the *Proceedings of the Ocean Drilling Program* be provided by the authors.

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).

This volume includes 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 in PDF. These maps were produced using Generic Mapping Tools (GMT) of Paul Wessel and Walter H.R. Smith (gmt.soest.hawaii.edu).

Cover photograph is a storm threatening the horizon off the *JOIDES Resolution* 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, the fluctuations of climate, and the study of the Earth's deep biosphere.

Although ODP ended operations in 2003, science results from ODP's expeditions on the *JOIDES Resolution* continue to emerge. The results represent the contributions of scientists and research institutions from 22 ODP member countries. International oversight and coordination of the program was provided by the ODP Council, which was made up of representatives from the member countries. Scientific and management guidance was provided by representatives from the Joint Oceanographic Institutions for Deep Earth Sampling (JOIDES).

Joint Oceanographic Institutions, Inc. (JOI), a nonprofit consortium of 29 U.S. oceanographic institutions, serves as the National Science Foundation's prime contractor for ODP. JOI implemented scientific objectives, plans, and recommendations of the JOIDES committees through 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 worked together successfully for many years to manage the Ocean Drilling Program. We look forward to many exciting discoveries and continued international collaboration on the Integrated Ocean Drilling Program as we further our scientific mission.

Steven R. Bohlen

President of the Joint Oceanographic Institutions and Executive Director of the Ocean Drilling Programs
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PREFACE

THE VOYAGES OF DISCOVERY

The *Scientific Results* volumes of the *Proceedings of the Ocean Drilling Program* are about Earth and her oceans.

These volumes contain contributions to a better understanding of the history of our planet through time. This exploration of Earth's past is based on scientific analyses of layers of strata sampled by the *JOIDES Resolution* at key locations throughout the global ocean. These volumes are a tribute to the scientific exploration carried out by the men and women who contributed to these voyages of discovery. Like the pioneering exploration and research of Captain Cook aboard the first *Resolution*, these volumes are a credit to the human spirit, which sees no boundaries.

The papers in this volume are published in a new online format that will be archived on CD-ROM. The *Proceedings* contents are available to students, scientists, and the public throughout the world. Volumes, once housed in the libraries of the member nations of the Ocean Drilling Program (ODP), are now published on the Internet for a worldwide audience and are also available in CD-ROM format. This electronic publication enables future investigators to gain easier access to the results of ocean drilling research. I acknowledge and thank the authors for their contributions and willingness to participate in this new venture in our successful transition to electronic publications.

Each *Scientific Results* volume has an Editorial Review Board that is responsible for obtaining peer reviews of papers submitted to the volume. This board usually is made up of the two co-chief scientists for the cruise, the ODP staff scientist for the cruise, and one external specialist who is familiar with the geology of the investigated area. ODP staff coordinate the peer-review process and also edit and produce each paper.

Each *Scientific Results* volume contains one leg synthesis paper and other peer-reviewed papers that present the results of extensive research in various aspects of scientific ocean drilling related to each leg. Each paper submitted to a *Scientific Results* volume undergoes rigorous peer review by at least two specialists in the author's research field. Volumes may also contain short reports of useful data. These Data Reports do not include interpretation of results and are peer-reviewed by at least one specialist. We seek to maintain a peer-review system comparable to those of the most highly regarded journals in the geological sciences.

To acknowledge the contributions made by this volume's Editorial Review Board, the Board members are designated Editors of the volume. Reviewers of manuscripts for this volume, whose efforts are so essential to the success of the publication, are listed without attribution to any particular manuscript.

On behalf of ODP and now the Integrated Ocean Drilling Program, the successor to ODP, I extend sincere appreciation to the members of the Editorial Review Board and to the reviewers for generously contributing their time and effort. This process ensures that only papers of high scientific quality are published in the *Scientific Results* volumes.

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CD-ROM CONTENTS: SYNTHESIS AND CHAPTERS

SYNTHESIS

1. **Leg 205 Synthesis: Subduction Fluxes and Fluid Flow across the Costa Rica Convergent Margin**

Julie D. Morris and Heinrich W. Villinger
doi:10.2973/odp.proc.sr.205.201.2006

CHAPTERS

SEDIMENTOLOGY, GEOCHEMISTRY, AND BIOGEOCHEMISTRY

2. **Data Report: Barium Cycling at the Costa Rica Convergent Margin**

Evan A. Solomon, Miriam Kastner, and Gretchen Robertson
doi:10.2973/odp.proc.sr.205.210.2006

3. **Data Report: Geochemical Analyses of Hydrothermally Altered Sediments from the Convergent Costa Rican Margin**

Valerie Chavagnac, Laura Font, J. Andy Milton, and Ian W. Croudace
doi:10.2973/odp.proc.sr.205.207.2006

4. **Data Report: Carbon and Oxygen Isotope Geochemistry along a Subducting Pelagic Section offshore Costa Rica (ODP Legs 170 and 205)**

Michael Strasser, Helmut Weissert, and Stefano M. Bernasconi
doi:10.2973/odp.proc.sr.205.205.2006

5. **Data Report: Chemical and Isotopic Compositions of Pore Fluids and Sediments from across the Middle America Trench, offshore Costa Rica**

Miriam Kastner, Evan Solomon, Wei Wei, Lui-H. Chan, and Ola M. Saether
doi:10.2973/odp.proc.sr.205.208.2006

6. **A Transport-Reaction Model of the Hydrological Systems of the Costa Rica Subduction Zone**

Matthias Haeckel
doi:10.2973/odp.proc.sr.205.215.2006

7. **Carbon and Nitrogen Geochemistry of Wedge Sediments at ODP Site 1040: Evidence for Sediment Sources, Diagenetic History, and Fluid Mobility**

Long Li and Gray E. Bebout
doi:10.2973/odp.proc.sr.205.214.2006

8. Habitability of Subseafloor Sediments at the Costa Rica Convergent Margin

D. Cardace, J.D. Morris, A.D. Peacock, and D.C. White
doi:10.2973/odp.proc.sr.205.213.2006

IGNEOUS PETROLOGY

9. Source and Petrogenesis of the Igneous Complex Cored during ODP Leg 205: Implications for Off-Axis Plume-Ridge Interaction on the Cocos Plate

Brian Dreyer, Valerie Chavagnac, Julie Morris, and Laura Font
doi:10.2973/odp.proc.sr.205.212.2006

HYDROGEOLOGY

10. Data Report: Permeability and Consolidation Properties of Subducting Sediments off Costa Rica, ODP Leg 205

Alexander W. McKiernan and Demian M. Saffer
doi:10.2973/odp.proc.sr.205.203.2006

11. Data Report: Permeabilities of Costa Rica Subduction Zone Sediments

Elizabeth Screaton, Troy Hays, Kusali Gamage, and Jennifer Martin
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LONG-TERM BOREHOLE MONITORING AND DOWNHOLE LOGGING

12. Data Report: Long-Term Temperature Measurements in Holes 1253A and 1255A off Costa Rica, ODP Leg 205

Martin Heesemann, Heinrich Villinger, Hans W. Jannasch, Miriam Kastner, and the Expedition 301T Scientists
doi:10.2973/odp.proc.sr.205.209.2006

13. Estimating Fracture Density in Oceanic Basement: An Approach Using Stoneley Wave Analysis

Marion Pfender and Heinrich W. Villinger
doi:10.2973/odp.proc.sr.205.206.2006

BIOSTRATIGRAPHY

14. Calcareous Nannofossil Biostratigraphy: Ocean Drilling Program Leg 205, Costa Rica Subduction Zone

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CD-ROM CONTENTS: DRILLING LOCATION 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 205 Site Map](#)

[ODP Map](#) (Legs 100–210)

[DSDP Map](#) (Legs 1–96)

CD-ROM CONTENTS: INDEX TO LEG 205 *INITIAL REPORTS AND SCIENTIFIC RESULTS VOLUMES*

The index covers both the *Initial Reports* and *Scientific Results* portions of Volume 205 of the *Proceedings of the Ocean Drilling Program*. The index contains a subject and taxonomic index.

[Index to Leg 205](#)

CD-ROM CONTENTS: COMPILED ELECTRONIC INDEX

The Compiled Electronic Index of the *Proceedings of the Ocean Drilling Program* contains the indexes of Volumes 101–178, 180–192, 194–201, and 205. 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. For information on using the Acrobat search function, see the Help function in Adobe Reader.

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	UNIX	
	WINDOWS	
	README.TXT	
MAPS (Drilling location maps)	205_MAP.PDF (Leg 205 site map)	
	ODPMAP.PDF (ODP map, Legs 100 through 210)	
	DSDPMAP.PDF (DSDP map, Legs 1 through 96)	
VOLUME (Leg 205 <i>Scientific Results</i> volume)	SYNTH (Overview chapter)	
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	CHAPTERS (Volume chapters)	210.PDF (Chapter 2: Data Report: Barium Cycling)
		207.PDF (Chapter 3: Data Report: Geochemical Analyses of Altered Sediments)
		205.PDF (Chapter 4: Data Report: Carbon and Oxygen Isotope Geochemistry)
		208.PDF (Chapter 5: Chemical and Isotopic Compositions of Pore Fluids and Sediments)
		215.PDF (Chapter 6: Transport-Reaction Model of Hydrogeological Systems)
		214.PDF (Chapter 7: Carbon and Nitrogen Geochemistry of Wedge Sediments)
		213.PDF (Chapter 8: Habitability of Subseafloor Sediments)
		212.PDF (Chapter 9: Source and Petrogenesis of the Igneous Complex)
		203.PDF (Chapter 10: Data Report: Sediment Permeability and Consolidation Properties)
		204.PDF (Chapter 11: Data Report: Sediment Permeabilities)
		209.PDF (Chapter 12: Data Report: Long-Term Temperature Measurements)
		206.PDF (Chapter 13: Estimating Fracture Density in Basement)
		211.PDF (Chapter 14: Calcareous Nannofossil Biostratigraphy)
205NDX.PDF (Leg 205 <i>Proceedings</i> volume index)		
ODPINDEX (Compiled Electronic Index of the <i>Proceedings of the Ocean Drilling Program</i>)	101NDX.PDF through 178NDX.PDF, 180NDX.PDF through 192NDX.PDF, 194NDX.PDF through 201NDX.PDF, and 205NDX.PDF (Index files)	