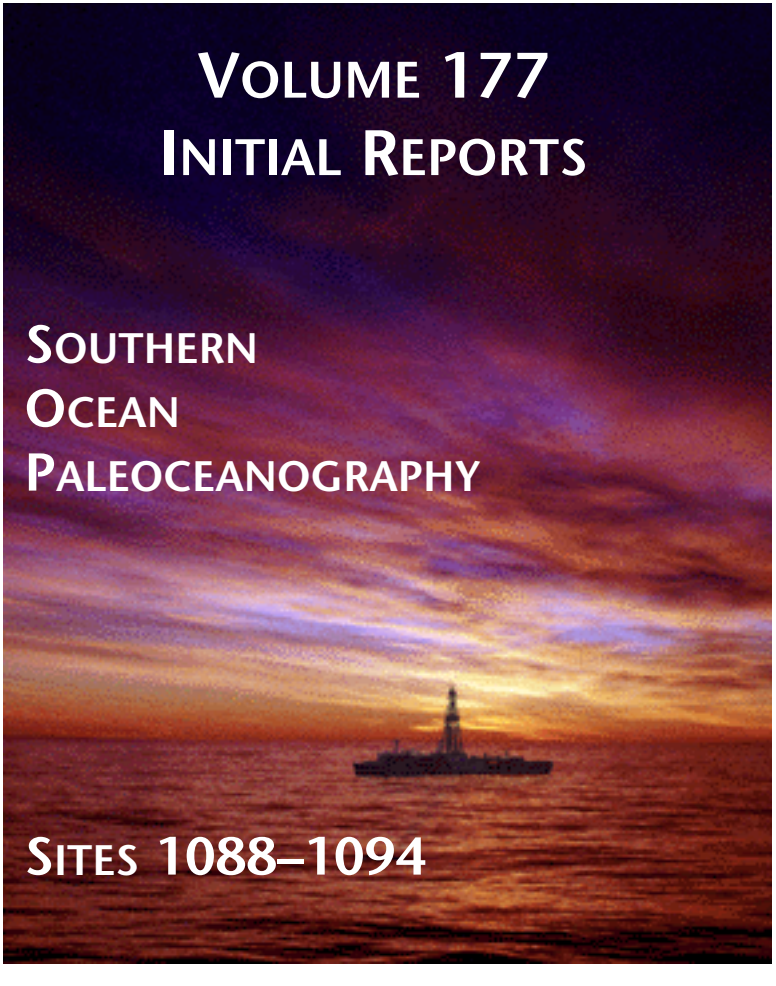

PROCEEDINGS OF THE OCEAN DRILLING PROGRAM

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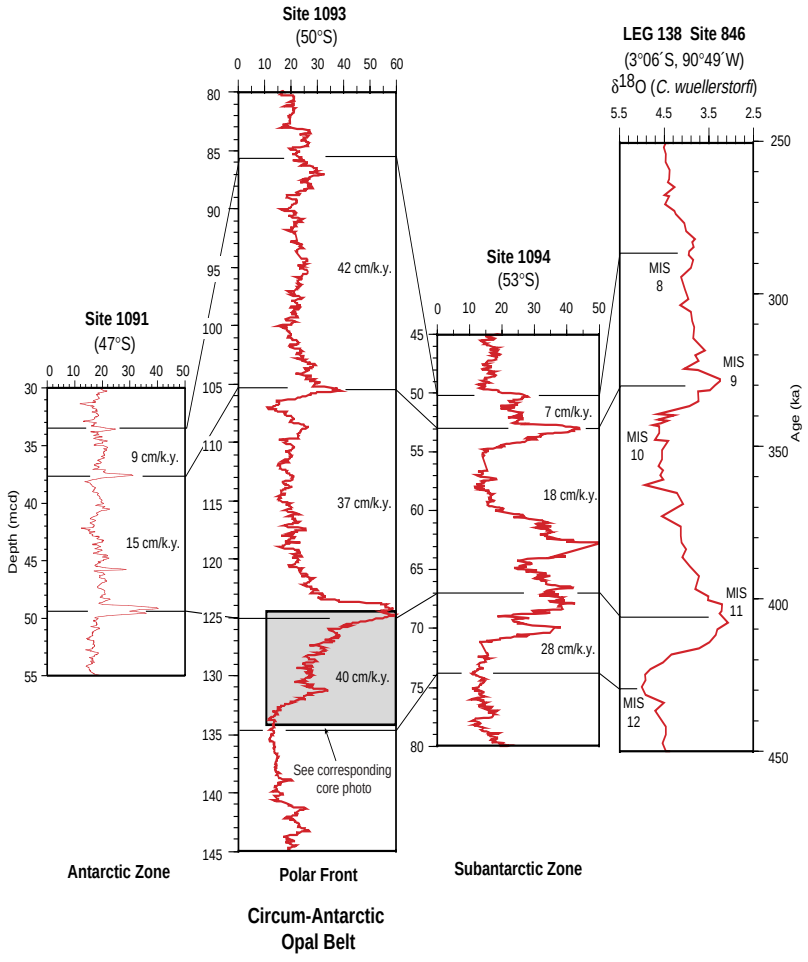
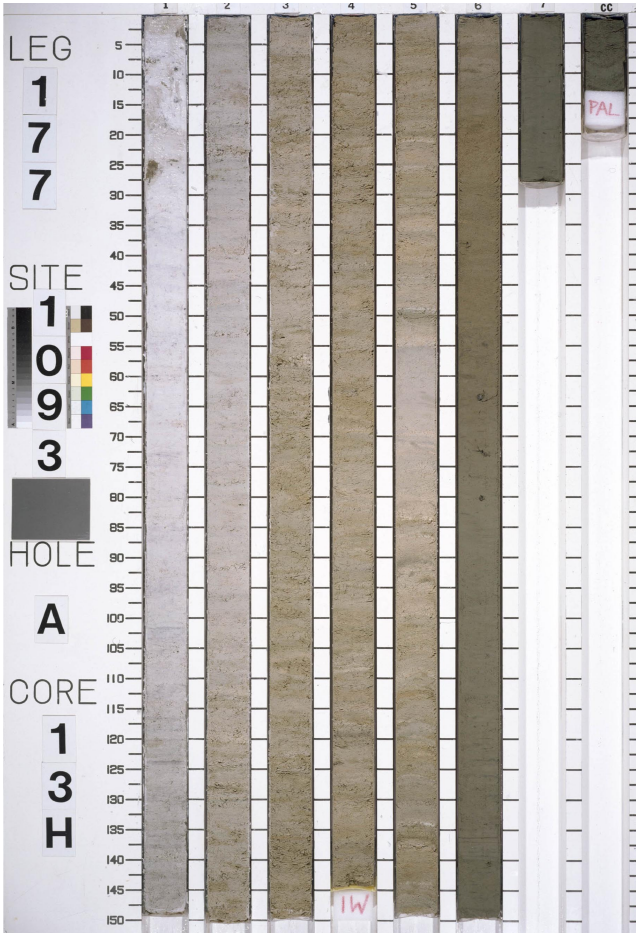


Frontispiece 1. Tentative correlation of color reflectance records at Sites 1091, 1093, and 1094 with a benthic oxygen isotopic record from Site 846 for marine isotope Stages (MISs) 8 through 12 (Mix et al., 1995[1]). High reflectance values represent peak interglacial stages when sediments contain a high proportion of $CaCO_3$. The high sedimentation rates at these Leg 177 sites, located on a north-south transect across the Antarctic Circumpolar Current, permit paleoceanographic studies at millennial scale or better resolution. In most sites, MIS 11 stands out as the brightest, most carbonate-rich sediments of the Pleistocene. At Site 1093, Termination V (MIS 12–11 transition) is represented by an 8-m expanded section (from ~133 to 125 meters composite depth [mcd]) that contains a thick laminated interval of *Thalassiothrix* diatom mats (see corresponding core photograph of the section enclosed by the box in the reflectance record of Site 1093).

[1]Mix, A.C., Le, J., and Shackleton, N.J., 1995. Benthic foraminiferal stable isotope stratigraphy of Site 846: 0–1.8 Ma. *In* Pisias, N.G., Mayer, L.A., Janecek, T.R., Palmer-Julson, A., and van Andel, T.H. (Eds.), *Proc. ODP, Sci. Results*, 138: College Station, TX (Ocean Drilling Program), 839–854.



Frontispiece 2. Core 177-1093A-13H contains sediments that represent the transition from MIS 12 to 11 (Termination V). The dark sediment in Sections 177-1093A-13H-6, 13H-7, and 13H-CC corresponds to glacial MIS 12. Sections 177-1093A-13H-2 (*partim*), 13H-3, 13H-4, and 13H-5 represent a thick laminated interval of *Thalassiothrix* diatom mats that accumulated at high sedimentation rates, offering an unprecedented opportunity to study paleoceanographic changes in the Southern Ocean associated with Termination V at high temporal resolution. The white sediment in Section 177-1093A-13H-1 represents MIS 11.

Proceedings of the Ocean Drilling Program

Volume 177
Initial Reports
Southern Ocean Paleoceanography

Covering Leg 177 of the cruises of the Drilling Vessel *JOIDES Resolution*
Cape Town, South Africa, to Punta Arenas, Chile
Sites 1088–1094
9 December 1997–5 February 1998

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Supplemental data on the volume CD-ROM were provided by the authors and may not conform to ODP publication formats.

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 the volume CD in PDF format.

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Cover photograph of the *JOIDES Resolution*.

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.

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 seven 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 eleven 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 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.

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* 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.**

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The Leg 177 operations were carefully executed by the skillful crew of the *JOIDES Resolution* under the supervision of Captain Tom Ribbens, Drilling Superintendent Bob Caldow, and ODP Operations Manager Glen Foss. Special thanks are extended to the drill crew and marine specialists whose hard work was responsible for the recovery and processing of more than 4000 m of sediment. We also acknowledge the efforts of the meteorological crew of the *Polarstern* for providing weather forecasts that aided in planning the drilling program and the transit to Punta Arenas. The Leg 177 scientists extend our gratitude to all individuals and institutions (academic and governmental) who supported us in making our expedition possible. Leg 177 marked the first return in over a decade of the *JOIDES Resolution* to the southern high latitudes, and we sincerely appreciate this opportunity to study the role of the Southern Ocean in past, present, and perhaps future changes in Earth's climate system.

CD-ROM Contents: Chapters

CD-ROM Contents: Core Descriptions

Digital images and visual core descriptions (VCDs) are included in this section. VCDs and smear-slide data tables are combined into one PDF file for each site. Images can be accessed from the VCD pages. Smear-slide data tables in an ASCII format are also included on the ASCII TABLES page.

Site 1088

Visual Core Descriptions · Smear Slides

Site 1089

Visual Core Descriptions · Smear Slides

Site 1090

Visual Core Descriptions · Smear Slides

Site 1091

Visual Core Descriptions · Smear Slides

Site 1092

Visual Core Descriptions · Smear Slides

Site 1093

Visual Core Descriptions · Smear Slides

Site 1094

Visual Core Descriptions · Smear Slides

CD-ROM Contents: ASCII Tables

This CD-ROM contains ASCII versions of some of the **data tables** presented in the volume chapters and all of the **smear-slide data tables** presented in the Core Descriptions section. A complete listing of the ASCII data tables can be found on the next 5 pages. You can access these files directly from the PDF files. Depending on your computer platform, the following information applies.

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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; Windows 98 systems: View > Folder Options > File Types; and Windows 3.1 systems: File Manager > File > Associate.

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Chapter 1, Leg 177 summary

Chapter 2, Explanatory notes

Chapter 3, Site 1088

Chapter 4, Site 1089

Chapter 5, Site 1090

Chapter 6, Site 1091

Table T1. X-ray diffraction data for Site 1091.
Table T3. Composite depths for Site 1091.
Table T4. Site 1091 splice tie points.
Table T5. Distribution of main calcareous nannofossil species in Hole 1091A.
Table T6. Summary of biostratigraphic age assignments for Site 1991.
Table T7. Distribution of major planktic foraminifer species at Site 1091.
Table T8. Distribution of benthic foraminifers at Site 1991.
Table T9. Diatom, silicoflagellate, ebridian, *Actiniscus,* sponge spicule, and phytolith occurrence, Site 1091.
Table T10. Control points used to calculate sedimentation rates at Site 1091.
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Chapter 7, Site 1092

Table T1. X-ray diffraction data for Site 1092.
Table T2. Composite depths for Site 1092.
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Table T4. Distribution of main calcareous nannofossil species in Holes 1092A and 1092B.
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Table T7. Distribution of benthic foraminifers at Site 1092.
Table T8. Diatom, silicoflagellate, ebridian, *Actiniscus,* sponge spicule, and phytolith occurrence, Site 1092.
Table T9. Control points used to calculate sedimentation rates at Site 1092.
Table T10. Distribution of the main components of the radiolarian assemblages at Site 1092.
Table T15. Thermal conductivity measurements at Site 1092.

Chapter 8, Site 1093

Chapter 9, Site 1094

Smear-Slide Data Tables

CD-ROM Contents: Supplementary Data

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 177 Site Map

ODP Map (Legs 100–177)

DSDP Map (Legs 1–96)

Related CD-ROM Material

Logging, Core, & Color Reflectance Data

A second CD-ROM, called Log and Core Data, was produced in conjunction with this leg. The Log and Core Data CD contains Leg 177 depth-shifted and processed logging data and ODP core data (shipboard gamma-ray attenuation porosity evaluator, index properties, magnetic susceptibility, *P*-wave, natural gamma, and color reflectance). The logging data are provided by the Borehole Research Group at the Lamont-Doherty Earth Observatory (LDEO), ODP Logging Services Operator for ODP. Also included on the LDEO CD are reflectance data collected during Leg 177 using the Oregon State University Split Core Analysis Track.

The majority of the data included in this 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 the ODP Logging Services Operator at the Lamont-Doherty Earth Observatory; Tel: (914) 365-8672; Fax: (914) 365-3182; E-mail: **borehole@ldeo.columbia.edu**.

CD-ROM Directory Structure