

# Proceedings of the International Ocean Discovery Program

## Volume 378

### South Pacific Paleogene Climate

Expedition 378 of the R/V *JOIDES Resolution*

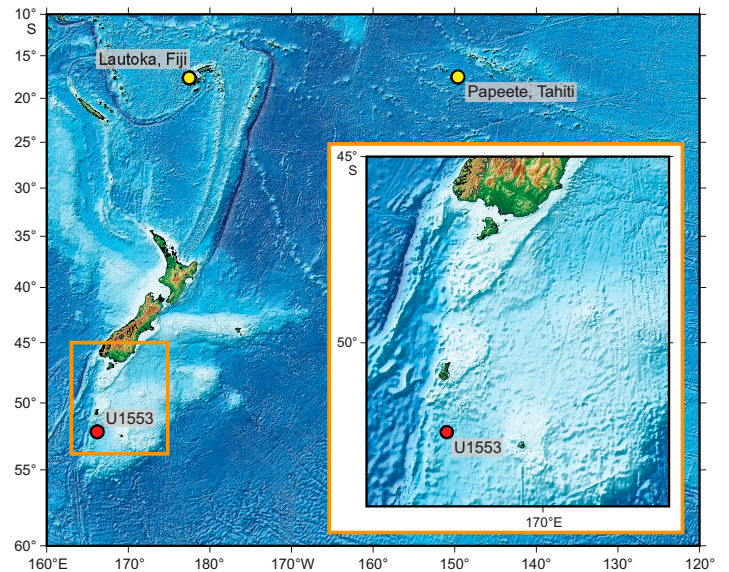
Lautoka, Fiji, to Papeete, Tahiti

Site U1553

3 January–6 February 2020

#### Volume authorship

Röhl, U., Thomas, D.J., Childress, L.B., and the Expedition 378 Scientists



## Publisher's notes

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Korea Institute of Geoscience and Mineral Resources (KIGAM)  
Australia-New Zealand IODP Consortium (ANZIC)  
Ministry of Earth Sciences (MoES), India

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The bulk of the shipboard-collected core data from this expedition is accessible at <http://iodp.tamu.edu/database/index.html>. If you cannot access this site or need additional data, please contact Data Librarian, International Ocean Discovery Program *JOIDES Resolution* Science Operator, Texas A&M University, 1000 Discovery Drive, College Station TX 77845-9547, USA. Tel: (979) 845-8495; Fax: (979) 458-1617; Email: [database@iodp.tamu.edu](mailto:database@iodp.tamu.edu).

A complete set of the logging data collected during the expedition is available at [http://mlp.ldeo.columbia.edu/logdb/scientific\\_ocean\\_drilling](http://mlp.ldeo.columbia.edu/logdb/scientific_ocean_drilling). 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; Email: [logdb@ldeo.columbia.edu](mailto:logdb@ldeo.columbia.edu).

Supplemental data were provided by the authors and may not conform to IODP publication formats.

JRSO expedition photos are the property of IODP and are public access.

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

Cover photograph shows R/V *JOIDES Resolution* departing Lautoka, Fiji, during Expedition 378. Photo credit: Phil Christie and IODP JRSO.

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### Core descriptions

Visual core descriptions (VCDs) are presented in PDF files for each site.

#### [Site U1553](#)

Thin sections and/or smear slides for each site or hole are presented in CSV or PDF format in the CORES directory and in Excel format in DESC\_WKB in Supplementary material. The entire set of core images in PDF is available in the IMAGES directory.

### Supplementary material

Supplementary material for the Volume 378 expedition reports includes calibration data in SPE format, thin section sampling diagrams in PDF, and DESClogik workbooks in Microsoft Excel format. A full list of directories can be found in SUPP\_MAT in the volume zip folder or on the [Supplementary material for Volume 378 expedition reports](#) web page.

### Expedition research results

#### Data reports

Titles are available in [HTML](#).

#### Syntheses

Titles are available in [HTML](#).

### Drilling location maps

A site map showing the drilling locations for this expedition and maps showing the drilling locations of all International Ocean Discovery Program (IODP) expeditions, produced using QGIS (<http://www.qgis.org>), and all Integrated Ocean Drilling Program, Ocean Drilling Program (ODP), and Deep Sea Drilling Project (DSDP) expeditions, produced using Generic Mapping Tools (GMT) of Paul Wessel and Walter H.F. Smith (<https://www.generic-mapping-tools.org>), are available in PDF.

#### [IODP Expedition 378 site map](#)

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## Foreword

The International Ocean Discovery Program (IODP) represents the latest incarnation of almost five decades of scientific ocean drilling excellence and is generally accepted as the most successful international collaboration in the history of the Earth sciences. IODP builds seamlessly on the accomplishments of previous phases: the Deep Sea Drilling Project, Ocean Drilling Program, and Integrated Ocean Drilling Program. The 2013–2023 IODP Science Plan (*Illuminating Earth's Past, Present, and Future*) defines four themes and thirteen challenges for this decade of scientific ocean drilling that are both of fundamental importance in understanding how the Earth works and of significant relevance to society as the Earth changes, at least in part in response to anthropogenic forcing. This phase of IODP represents an intense level of international collaboration in bringing diverse drilling platforms and strategies to increasing our understanding of climate and ocean change, the deep biosphere and evolution of ecosystems, connections between Earth's deep processes and surface manifestations, and geologically induced hazards on human timeframes.

The *Proceedings of the International Ocean Discovery Program* presents the scientific and engineering results of IODP drilling projects, expedition by expedition. As in the preceding Integrated Ocean Drilling Program, expeditions in the current IODP phase are conducted by three implementing organizations, each providing a different drilling capability. These are the US Implementing Organization (USIO; through September 2014) and the *JOIDES Resolution* Science Operator (JRSO; as of October 2014), providing the leased commercial vessel *JOIDES Resolution* for riserless drilling operations; JAMSTEC's Institute for Marine-Earth Exploration and Engineering (MarE3), providing the drillship *Chikyu* for riser and occasional riserless operations; and the European Consortium for Ocean Research Drilling (ECORD) Science Operator (ESO), providing "mission-specific" platforms (MSPs) for expeditions that extend the IODP operational range where neither drillship is suitable, for example, in polar environments and in shallow waters. Scheduling decisions for each capability are made by three independent Facility Boards, each of which includes scientists, operators, and platform funding partners: the *JOIDES Resolution* Facility Board (JRFB), *Chikyu* IODP Board (CIB), and ECORD Facility Board (EFB). At the beginning of the current IODP, the three Facility Boards agreed to utilize Publication Services at the USIO and now the JRSO for production of all expedition *Proceedings* volumes and reports.

The current IODP differs from prior scientific ocean drilling programs in that it has neither a central management organization nor commingled funding for program-wide activities. Yet this phase of IODP retains a fundamental integrative structural element: a "bottom-up" evaluation of all proposals for drilling expeditions by a single advisory structure composed of scientists representing all international program partners. International scientists may submit drilling proposals to the Science Support Office; all submitted proposals are then evaluated by a Science Evaluation Panel in the context of the Science Plan.

The current IODP also has an international integrative level for high-level discussion and global consensus-building: the IODP Forum. The Forum is not only charged with assessing program-wide progress toward achieving the current Science Plan, but also with overseeing approaches toward a new bright future of scientific ocean drilling post 2023. At present, IODP involves 22 international funding agencies, including those from the United States, Japan, an Australia/New Zealand consortium (ANZIC), China, India, South Korea, and the fifteen members of ECORD (Austria, Canada, Denmark, Finland, France, Germany, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom). The IODP membership represents an unparalleled level of international scientific collaboration; one of the greatest, and ongoing strengths of scientific ocean drilling.

Henk Brinkhuis  
Chair, IODP Forum

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## Expedition-related bibliography\*

Citation data for IODP publications and journal articles in RIS format

### IODP publications

#### Scientific Prospectus

Thomas, D.J., Röhl, U., and Childress, L., 2018. *Expedition 378 Scientific Prospectus: South Pacific Paleogene Climate*. International Ocean Discovery Program. <https://doi.org/10.14379/iodp.sp.378.2018>

Thomas, D.J., Röhl, U., and Childress, L., 2019. *Expedition 378 Scientific Prospectus Addendum: South Pacific Paleogene Climate*. International Ocean Discovery Program. <https://doi.org/10.14379/iodp.sp.378add.2019>

#### Preliminary Report

Thomas, D.J., Röhl, U., Childress, L.B., and the Expedition 378 Scientists, 2020. *Expedition 378 Preliminary Report: South Pacific Paleogene Climate*. International Ocean Discovery Program. <https://doi.org/10.14379/iodp.pr.378.2020>

#### Proceedings volume

Röhl, U., Thomas, D.J., Childress, L.B., and the Expedition 378 Scientists, 2022. *South Pacific Paleogene Climate*. Proceedings of the International Ocean Discovery Program, 378: College Station, TX (International Ocean Discovery Program). <https://doi.org/10.14379/iodp.proc.378.2022>

#### Expedition reports

Röhl, U., Thomas, D.J., Childress, L.B., Anagnostou, E., Ausín, B., Borba Dias, B., Boscolo-Galazzo, F., Brzelinski, S., Dunlea, A.G., George, S.C., Haynes, L.L., Hendy, I.L., Jones, H.L., Khanolkar, S.S., Kitch, G.D., Lee, H., Raffi, I., Reis, A.J., Sheward, R.M., Sibert, E., Tanaka, E., Wilkens, R., Yasukawa, K., Yuan, W., Zhang, Q., Zhang, Y., Drury, A.J., and Hollis, C.J., 2022. Expedition 378 summary. In Röhl, U., Thomas, D.J., Childress, L.B., and the Expedition 378 Scientists, *South Pacific Paleogene Climate*. Proceedings of the International Ocean Discovery Program, 378: College Station, TX (International Ocean Discovery Program). <https://doi.org/10.14379/iodp.proc.378.101.2022>

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Röhl, U., Thomas, D.J., Childress, L.B., Anagnostou, E., Ausín, B., Borba Dias, B., Boscolo-Galazzo, F., Brzelinski, S., Dunlea, A.G., George, S.C., Haynes, L.L., Hendy, I.L., Jones, H.L., Khanolkar, S.S., Kitch, G.D., Lee, H., Raffi, I., Reis, A.J., Sheward, R.M., Sibert, E., Tanaka, E., Wilkens, R., Yasukawa, K., Yuan, W., Zhang, Q., Zhang, Y., Drury, A.J., Crouch, E.M., and Hollis, C.J., 2022. Site U1553. In Röhl, U., Thomas, D.J., Childress, L.B., and the Expedition 378 Scientists, *South Pacific Paleogene Climate*. Proceedings of the International Ocean Discovery Program, 378: College Station, TX (International Ocean Discovery Program). <https://doi.org/10.14379/iodp.proc.378.103.2022>

#### Supplementary material

Röhl, U., Thomas, D.J., Childress, L.B., and the Expedition 378 Scientists, 2022. Supplementary material, <https://doi.org/10.14379/iodp.proc.378supp.2022>. *Supplement to Röhl, U., Thomas, D.J., Childress, L.B., and the Expedition 378 Scientists, South Pacific Paleogene Climate*. Proceedings of the International Ocean Discovery Program, 378: College Station, TX (International Ocean Discovery Program). <https://doi.org/10.14379/iodp.proc.378.2022>

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