

Proceedings of the International Ocean Discovery Program

Volume 381

Corinth Active Rift Development

Expedition 381 of the mission-specific drilling platform *D/V Fugro Synergy*

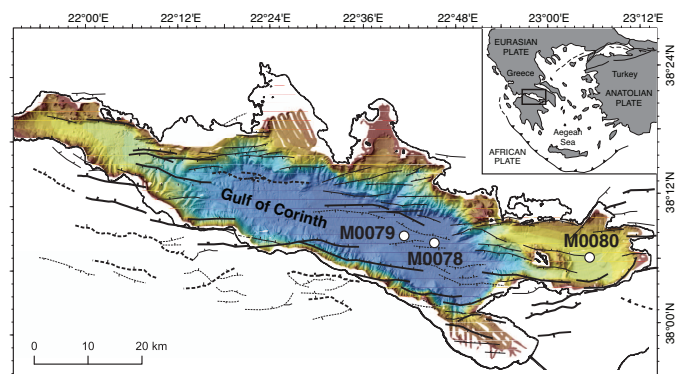
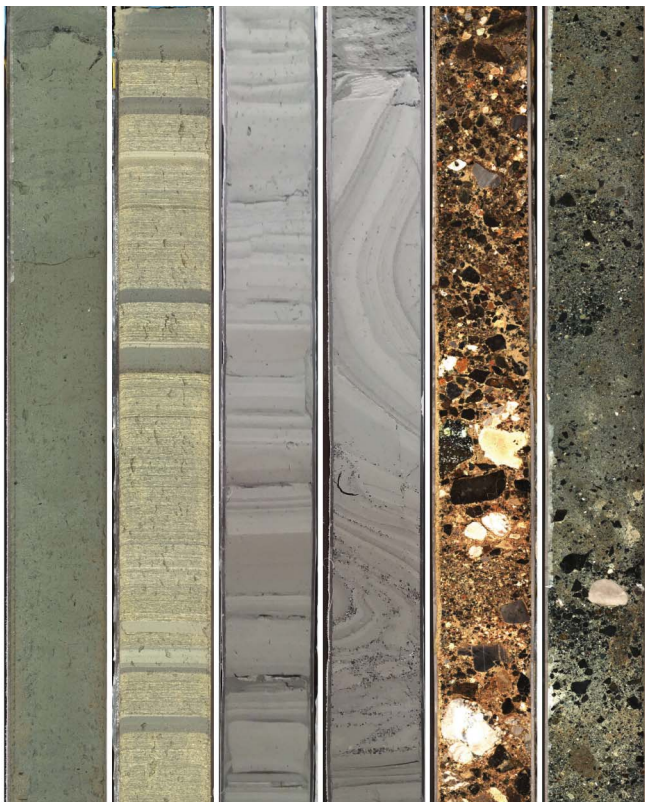
from and to Corinth, Greece

Sites M0078–M0080

19 October–18 December 2017

Volume authorship

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Publisher's notes

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Any opinions, findings, and conclusions or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the views of the participating agencies or TAMU.

IODP mission-specific platform data are accessible at <http://iodp.pangea.de>. If you cannot access this site or need additional data, please contact Data Librarian, PANGAEA, University of Bremen, MARUM, Leobener Strasse 8, 28359 Bremen, Germany. Tel: (40) 421-218-65592; Fax: (49) 421-218-65505.

A complete set of the logging data collected during the expedition is available at 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.

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

ESO 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 photographs show (left) representative cores from all three sites and (top right) the D/V *Fugro Synergy*, the platform for the expedition. Photo credit: Giorgos Michas (part of core images), Donna Shillington (*Fugro Synergy*), and IODP ESO.

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Core descriptions

Visual core descriptions (VCDs) are presented in PDF files for each site. Smear slides and/or thin sections are presented in PDF and/or CSV files for each site and/or hole (CSV files are available in the CORES directory). The entire set of core images in PDF is available in the IMAGES directory.

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[Site M0079](#)

[Visual core descriptions](#) · [Smear slides](#) · [Thin sections](#)

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Supplementary material

Supplementary material for the Volume 381 expedition reports includes core-log-seismic integration output velocity profile and time-depth relationship data files 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 381 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 (<http://gmt.soest.hawaii.edu>), are available in PDF.

[IODP Expedition 381 site map](#)

[IODP map](#) (Expeditions 349–357, 359–371, and 381)

[Integrated Ocean Drilling Program map](#) (Expeditions 301–348)

[ODP map](#) (Legs 100–210)

[DSDP map](#) (Legs 1–96)

Acknowledgments

The members of the Expedition 381 science party sincerely thank all of the personnel aboard the D/V *Fugro Synergy* for their skill, hard work, and professionalism. We specifically acknowledge the Fugro drilling team for their can-do attitude, dedication, and patience throughout the expedition, even as we encountered difficult drilling conditions. All International Ocean Discovery Program (IODP) staff are gratefully acknowledged for their support and hard work before, during, and after the expedition. We especially wish to thank the European Consortium for Ocean Research Drilling (ECORD) Science Operator (ESO) scientific, technical, and operational staff who participated in the preparation of the expedition and the offshore and onshore parts of the program and whose knowledge, hard work, and dedication were essential to the success of the expedition. We recognize and greatly appreciate the extraordinary time and energy invested by ESO staff who participated in both the offshore and onshore phases of the expedition and thus spent long periods of time away from home. This expedition was made possible by financial and logistical support from IODP program members and IODP committees. A very large number of scientists working in the region are thanked for their long-term intellectual input, motivation, and continued support to the project and for site survey data to aid development of the project. Funding organizations in Greece, the United Kingdom, USA, and France are acknowledged for enabling the collection of offshore geophysical and geological data that underpin this project. For the drill sites selected, we specifically utilized seismic and bathymetric data collected by the R/V *Maurice Ewing* (courtesy of Brian Taylor, University of Hawaii, USA) and R/V *Aegaeo* (courtesy of Dimitris Sakellariou, Hellenic Center for Marine Research, Greece). We thank Brian Taylor, Andrew Goodliffe, and Tim Henstock for their assistance with seismic reflection and navigation data before the expedition. We particularly wish to thank Dimitris Sakellariou for assistance with logistics and permitting in advance of and during the expedition.

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 a renewed 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 new IODP 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 Center for Deep Earth Exploration (CDEX), 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 new 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 new 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 new IODP also has a second internationally integrative level for high-level discussion and consensus-building: the IODP Forum. The Forum is charged with assessing program-wide progress toward achieving the Science Plan. At present, IODP involves 26 international financial partners, including the United States, Japan, an Australia/New Zealand consortium (ANZIC), Brazil, China, India, South Korea, and the eighteen members of ECORD (Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Israel, Italy, the Netherlands, Norway, Poland, Portugal, Spain, Sweden, Switzerland, and the United Kingdom). This enhanced membership in the new IODP represents a remarkable level of international collaboration that remains one of the greatest ongoing strengths of scientific ocean drilling.

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JOIDES Resolution Science Operator

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IODP publications

Scientific Prospectus

McNeill, L.C., Shillington, D., and Carter, G., 2017. *Expedition 381 Scientific Prospectus: Corinth Active Rift Development*. International Ocean Discovery Program. <https://doi.org/10.14379/iodp.sp.381.2017>

Preliminary Report

Shillington, D.J., McNeill, L.C., Carter, G.D.O., and the Expedition 381 Participants, 2019. *Expedition 381 Preliminary Report: Corinth Active Rift Development*. International Ocean Discovery Program. <https://doi.org/10.14379/iodp.pr.381.2019>

Proceedings volume

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Expedition reports

McNeill, L.C., Shillington, D.J., Carter, G.D.O., Everest, J.D., Le Ber, E., Collier, R.E.L.L., Cvetkoska, A., De Gelder, G., Diz, P., Doan, M.-L., Ford, M., Gawthorpe, R.L., Geraga, M., Gillespie, J., Hemelsdaël, R., Herrero-Bervera, E., Ismaiel, M., Janikian, L., Kouli, K., Li, S., Machlus, M.L., Maffione, M., Mahoney, C., Michas, G., Miller, C., Nixon, C.W., Oflaz, S.A., Omale, A.P., Panagiotopoulos, K., Pechlivanidou, S., Phillips, M.P., Sauer, S., Seguin, J., Sergiou, S., and Zakharova, N.V., 2019. Expedition 381 summary. *In* McNeill, L.C., Shillington, D.J., Carter, G.D.O., and the Expedition 381 Participants, *Corinth Active Rift Development*. Proceedings of the International Ocean Discovery Program, 381: College Station, TX (International Ocean Discovery Program). <https://doi.org/10.14379/iodp.proc.381.101.2019>

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