

ECORD Summer School on “Submarine Landslides, Earthquakes and Tsunamis”

3–14 September 2012,
Bremen, Germany



The
6th
ECORD

Summer School to be held at the Center for Marine Environmental Sciences (MARUM) at the University of Bremen, Germany, aims to bring Ph.D. students and young postdocs in touch with IODP at an early stage of their careers, inform them about research within this international scientific program, and prepare them for future participation on IODP expeditions. Such training will be achieved by taking the summer school participants on a “virtual ship” by exploiting the unique facilities linked to the IODP Bremen Core Repository (photo below). They will be introduced to a wide spectrum of state-of-the-art analytical technologies and core description methods, including core logging/scanning according to IODP expedition standards. In addition, the topic “Submarine Landslides, Earthquakes and Tsunamis” will be covered by lectures and discussions with leading geoscientists in the field. The latter will include specialists in sedimentology, seismics, tectonics, and sediment transport modeling. This comprehensive approach—combining scientific lectures with practicals on IODP-style “shipboard” measurements—is the blueprint for the Bremen ECORD summer school series, which now rounds

off its second three-year cycle of ECORD summer schools covering the three major topics of the IODP Initial Science Plan. For detailed information about the summer school, the application procedure and the scholarship options, visit http://www.marum.de/en/ECORD_Summer_Schools.html.

2012 IODP-Canada Activities



2012 is shaping up to be a busy year for IODP-Canada!

In January, we awarded IODP research grants to three Ph.D. students: John Evangelatos (Dalhousie University)—The origin and evolution of the Canada Basin, Arctic Ocean; Olivia Gibb (Université du Québec à Montréal)—The paleoceanographic conditions of Baffin Bay during the interglacials of MIS 5e and 11; and Matthew Izawa (University of Western Ontario)—Integrated mineral, chemical and isotopic study of microbial ichnofossil preservation in basaltic glass. Student travel grants and summer school scholarships will also be offered this year.

In February, the workshop “Coordinated Scientific Drilling in the Beaufort Sea: Addressing Past, Present and Future Changes in Arctic Terrestrial and Marine Systems” took place in Kananaskis, Alberta. Participants defined and integrated the scientific questions and drilling strategies required to assess environmental change and geohazards in the Beaufort Sea. The workshop was funded by IODP-MI, IODP-Canada, ICDP-Canada and Natural Resources Canada.

IODP-Canada will again share an exhibition booth with ICDP-Canada at the joint annual meeting of the Geological Association of Canada and the Mineralogical Association of Canada in St. John’s, Newfoundland and Labrador on 27–29

May 2012. IODP-Canada will also participate in the IODP-ECORD booth at the Goldschmidt conference in Montréal, Quebec on 24–29 June, 2012. In conjunction with Goldschmidt, we plan to host a “town hall” reception to stimulate discussion about Canada’s continued participation in IODP post-2013. Planning is also underway to help organize activities for the public and scientific community during the port call of the *JOIDES Resolution* in St. John’s in August.

ECORD/ICDP/IODP-Canada 2012 Summer School

5–21 July 2012

Registration deadline: 1 June 2012



An ECORD/ICDP/IODP-Canada summer school “Impacts of the cryosphere dynamics from land to ocean” will be held in Québec on 5–21 July 2012 in partnership with ECORD, IODP-Canada and ICDP. The main goal of the summer school is to train graduate students and postdoctoral fellows in the fields of paleoceanography, paleoclimatology, marine geology and their associated methodological approaches and techniques. The program will be centered on four days of fieldwork on the north shore of the St. Lawrence River, which will be complemented with classes given by international invited lecturers, workshops involving the students, and four days of hands-on exercises in Montréal. A special attention will be given to polar and subpolar environments and to ice-ocean-atmosphere interactions and their role in climate dynamics. The school is open to graduate students and postdoctoral fellows from all over the world.

Find more information, visit at IODP-Canada website (<http://www.iodpcanada.ca>) or contact Diane Hanano (coordinator@mail.iodpcanada.ca).



Poland Joins ECORD and IODP



Poland became the 18th member of ECORD (European Consortium

for Ocean Research Drilling) and the 25th member of IODP on 14 December 2011, when the Director of the Polish Geological Institute – National Research Institute (PGI – NRI) signed the ECORD MoU during a visit to Warsaw by Catherine Mével, ECORD Managing Agency Director.

The PGI – NRI has a long tradition of working in the Baltic Sea, and the prospect of the implementation of the Baltic Sea proposal by the ECORD Science Operator in 2013 has certainly contributed in this excellent decision.



However, there is a move in Poland to expand the scope of marine sciences and a plan to build a Polish research vessel. We therefore expect the Polish science community to be strongly involved in all ocean drilling activities.

As a member of ICDP and now of IODP through ECORD, Poland will definitely play an important role in scientific drilling (More information available at http://www.ecord.org/p/new_members.html)

International Symposium on Submarine Mass Movements and Their Consequences



In October 2011, 137 researchers

from sixteen countries gathered in Kyoto for the IODP-MI co-sponsored 5th International Symposium on Submarine Mass Movements and Their Consequences. The meeting represents the continuation of a series of conferences initiated by UNESCO-IGCP Project 511 and its successor and ongoing project IGCP Project 585 (Earth's continental margins: Assessing the geohazard from sub-marine landslides—www.igcp585.org). The main objective of the conference was to bring a worldwide per-

Southwest Pacific Ocean IODP Workshop

Sydney, Australia, 9–12 October 2012

For more information, write: Neville.Exon@anu.edu.au



**Australian and New Zealand
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This workshop, to be held at Sydney University, will address global geoscience problems in the southwest Pacific Ocean by building on existing and new geophysical and geological information including earlier scientific drilling. Its aim is to commence building coherent and well-integrated IODP proposals. The convenors are Neville Exon, Maria Seton and Stephen Gallagher (Australia), Minoru Ikehara (Japan) and Walter Roest (France), with many others in key roles. At this stage IODP-MI and ANZIC funding is assured. More information will be sent to likely participants soon.

This region has had a complex tectonic history, with plate boundary interactions resulting in an assemblage of deep oceanic basins, volcanic arcs, back-arc and fore-arc basins, continental ribbons, and emerged and submerged carbonate platforms. The workshop will identify the global scientific hypotheses and questions in this region that require ocean drilling to resolve them. The region's extensive plateaus and basins can provide crucial sedimentary records to help understand the developing interactions between the tropics and Antarctica, and between the Pacific and Indian Oceans. Furthermore, Australia has been one of the two major land masses (the other being India) undergoing major northward migration during the Cretaceous and Cenozoic with resulting fundamental

changes in the tectonic and climate development of Earth and its biota. The workshop themes are:

1) Climate and Ocean Change: Reading the Past, Informing the Future

This will cover questions related to climate and paleoceanographic change in this complex region, on all timescales.

2) Biosphere Frontiers: Deep Life, Biodiversity, and Environmental Forcing of Ecosystems

Almost nothing is known about the deep biosphere in the region, so pioneering studies of both sediments and basalts should lead to exciting results.

3) Earth Connections: Deep Processes and Their Impact on Earth's Surface Environment

The links between surface lithosphere and deep earth processes are of great interest in this tectonically complex region.

4) Earth in Motion: Processes and Hazards on Human Timescales

This region has its share of earthquakes, tsunamis and submarine slides that have impacted on populations and will continue to do so. Targeted scientific drilling will help address some of these hazards.

5) Marine Resources: Opportunities and Responsibilities: Opportunities and Responsibilities

What contribution can IODP make to the exploration, characterization and responsible exploitation of marine resources in the southwest Pacific region and under what arrangements? These resources may include offshore oil and gas, gas hydrates and offshore minerals.

spective of submarine mass movements and their consequences by assembling state-of-the-art contributions from international researchers of academic institutions and the offshore industry. The symposium provided full coverage of the scientific and engineering aspects of this type of marine and coastal geo-hazards. It also highlighted the role of scientific ocean drilling to be well positioned to elucidate submarine slope failure and mass movement processes through direct sampling and *in situ* measurements within active systems, as well as sampling and dating of event deposits to determine timing and size of past geohazards.

The elevated awareness of the need for better understanding of submarine landslides is coupled with great advances in submarine mapping, sampling and monitoring technologies. Laboratory analogue and numerical modeling capabilities have also devel-

oped significantly of late. Multibeam sonar, 3-D seismic reflection, and remote and autonomous underwater vehicle technologies provide hitherto unparalleled imagery of the geology beneath the oceans, permitting investigation of submarine landslide deposits in great detail. Increased and new access to drilling, coring, *in situ* measurements and monitoring devices allows for ground truth of geophysical data and provides access to samples for geotechnical laboratory experiments and information on *in situ* strength and effective stress conditions of underwater slopes susceptible to failure. Great advances in numerical simulation techniques of submarine landslide kinematics and tsunami propagation have also led to increased understanding and predictability of submarine landslide consequences.

The symposium provided a refreshing view on these state of the art in submarine landslide research. A total

of 103 contributions presented the latest scientific research results by international experts in geological, geophysical, engineering and environmental aspects of submarine mass failures, focused on understanding the full spectrum of challenges presented by submarine mass movements and their consequences. Seven presentations were directly related to recent IODP expeditions, and many more provided links to data and studies resulting from scientific offshore drilling efforts.

As a result of the conference the fourth edition of the 'Submarine Mass Movements and Their Consequences' book containing peer-reviewed manuscripts by symposium presenters was published (Yamada, Y., Kawamura, K., Ikehara, K., Ogawa, Y., Urgeles, R., Mosher, D., Chaytor, J., and Strasser M., (Eds.) 2012. *Submarine Mass Movement and Their Consequences 5th International Symposium*. Advances in

International Geothermal Center in Bochum (Germany) Announces Start of Drilling Services with "BO-Rex"

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Since October 2011 the International Geothermal Center (GZB) in Bochum, Germany started to operate its brand new track-mounted, mobile drill rig for depths up to 2000 m using rod diameters of up to 350 mm. The "BO-Rex" (HRB 207 GT) rig has been designed together by GZB and the manufacturer. It is capable of running any drilling process like mud rotary, DTH hammer drilling with water, mud or air, GeoJetting, geotechnical work, coring and sampling, augering, etc. It is equipped with a double



head drilling setup to run and turn two rod strings independently of each other. For all kinds of hydraulic high-pressure drilling applications an external powerful triplex plunger pump is available for "BO-Rex" covering pressure regimes of 100 bar

(max. 1000 L min⁻¹), 200 bar (max. 600 L min⁻¹) and 1500 bar (max. 80 L min⁻¹).

Technical Data:

Total gross weight: 32 t
Rotary heads torque: 50.000 and 20.000 Nm
Diesel engine: 250 kW engine
Pull force: 33 t + 20 t in the clamp
Feed force: 17 t
Max. drill rod length: 4.5 m
Mast length overall: 10 m
Winch system for rod handling: 2 t
Pumps: 20 bar robust mud pump, small Triplex water pump
Remote control: Track unit for full hydraulic operation
Manufacturer: Hütte GmbH, subsidiary of Casagrande Group, Italy

Both drill rig and pump are available to be used in scientific drilling, exploration, coring or other kind of project. Terms and conditions will be discussed per case. For more information please contact: Volker Wittig (e-mail: volker.wittig@hs-bochum.de) at the GZB website (www.geothermie-zentrum.de).

Natural and Technological Hazards Research, 31: Dordrecht, The Netherlands (Springer). doi:10.1007/978-94-007-2162-3

Contact details: Yasuhiro Yamada, yamada@earth.kumst.kyoto-u.ac.jp.

Small, Portable Drilling Rig Available for Research



DOSECC has acquired a small man-portable drilling rig suitable for drilling small coreholes and collecting core samples (1.06-inch/27 mm diameter) in remote areas or in places inaccessible by conventional drilling rigs. The rig weighs just 185 lbs (84 kg) and can be hand-carried to the drilling location. It can be used to collect rock cores to about 200 ft (60 m) deep. The system comes complete with all tools and materials included in a parts trailer. Perfect for small budget projects, it is rented for a low daily fee. Purchased with funding from the U.S. National Science Foundation, it is available to the scientific community for sampling projects and field lab experiments, including field camps. More information and photos can be

found at <http://www.dosecc.org/index.php/equipment/winkie-drill-system>

New U.S. Continental Scientific Drilling Initiative Report Available

Follow-up Workshop: 21–22 May 2012, Arlington, Virginia, U.S.A.



As societies around the world seek an economic balance between environmental and energy needs while planning effectively for a wide range of natural hazards, the need for subsurface information about our planet has never been greater. DOSECC annual workshops in 2009 and 2010 produced the background narrative justifying a new interdisciplinary consortium of research scientists who could leverage funds more effectively across national and international interests in the geosciences. The DOSECC workshop held on 23–24 May 2011 in Arlington, Virginia focused on the next phase: producing a vision of how the United States, under the auspices of the U.S. National Science Foundation and other federal agencies, would pro-

mote scientific drilling as a critical tool in the earth sciences to grapple with major societal issues. To that end, the workshop laid out the initial architecture for a U.S. Continental Scientific Drilling (USCSD) Initiative, to be guided by a revitalized Interagency Coordinating Group linking federal and academic stakeholders.

The workshop produced themes and workshop needs for planning future U.S. continental drilling ranging from pre-site surveys to facilities and data management, emphasizing the synergies to be developed and coordinated with a larger, stronger US CSD program. While large challenges exist in coordinating across mission-based agencies and NSF-program goals, it is clear that the transformative scientific payoffs are far greater and cost effective than the current structure for leveraging both science and mission. The full workshop report will be available at <http://www.dosecc.org/index.php/publications/reports-and-brochures>.

The follow-up workshop will be held on 21–22 May 2012 in Arlington, Virginia. This workshop will further define the USCSD initiative. More information on this workshop can be found at www.dosecc.org.

New Drilling and Coring Tools

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The Engineering Geology Department of Lund University, Sweden, was recently awarded a Science Council grant for buying, implementing and operating a drilling infrastructure. Currently the implementation and testing phase of a high-capacity, modern diamond wireline coring rig is starting. The rig is lightweight and has a small footprint and a high capacity. It is highly atomized and fully diesel-hydraulic operated under strict safety regulations and complying to the latest environmental noise and exhaust rules. The depth coring capacities are as follows:

P-size (hole size 123 mm, core size 85 mm): 1050 m
H-size (hole size 96 mm, core size 63 mm): 1600 m
N-size (hole size 76 mm, core size 48 mm): 2500 m

The core rig has a main hoist with 178 kN, an hydraulic feed cylinder with 200 kN and 3.5-m feed stroke. It is equipped with drilling equipment for all coring sizes, at

the moment including 11-km long drill rods and casing, fifty diamond core bits, and core barrels as double and single tubes in doublets. Additional drilling equipment such as wellhead, preventer, mud and cementing systems, deviation and fishing tools, logging and MWD-recording capability make the system versatile for all kinds of scientific drilling projects in various environments.

It will be utilized in the Swedish Deep Drilling Program but is also available for the international scientific community.



History of Controlled-Source Seismology Onshore and Offshore



Geological Society of America has published its new Memoir 208 entitled "Exploring the Earth's Crust. History and Results of Controlled-Source Seismology", written by Claus Prodehl (University of Karlsruhe, Germany) and Walter D. Mooney (U.S. Geological Survey, Menlo Park, California, U.S.A.). This volume presents a comprehensive, worldwide history of seismological studies of the Earth's crust using controlled sources from 1850 to 2005. Essentially, all major seismic projects on land and the most important oceanic projects are presented. The time period of 1850 to 1939 is presented as a general synthesis, and from 1940 onward the history and

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results are subdivided into a separate chapter for each decade, with the material ordered by geographical region. Each chapter highlights the major advances achieved during that decade in terms of data acquisition, processing technology, and interpretation methods. For all major seismic projects, we provide specific details regarding the field observations, interpreted crustal cross-section, and key references. The Memoir concludes with global- and continental-scale maps of all field measurements and interpreted Moho contours. An accompanying DVD contains important out-of-print publications and an extensive collection of controlled-source data, location maps, and crustal cross-sections.

Contact: Claus Prodehl, Geophysical Institute, University of Karlsruhe, Karlsruhe Institute of Technology, Hertzstr. 16, 76187 Karlsruhe, Germany, e-mail: claus.prodehl@gmx.net

Rob McKay Wins the Prime Minister's MacDiarmid Emerging Scientist Prize



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Dr. Rob McKay, a postdoctoral researcher at Victoria University's Antarctic Research Centre in Wellington, New Zealand, has been awarded the New Zealand Prime Minister's MacDiarmid Emerging Scientist Prize (worth NZ\$200,000) for his work on Antarctic ice sheet response to past climate fluctuations. His research uses glacial deposits and marine sedimentary records to investigate changes in ice volume and thermal regime of the Antarctic ice sheets since their inception approximately 34 million years ago and the resulting influence on eustatic sea level. This has particular relevance today as climate scientists struggle with how the

The Rodderberg Quaternary Climate Archive



A suite of three shallow boreholes (164 m, 74 m, and 102 m) have explored the filling of the main crater of the Late Quaternary Rodderberg volcanic system near Bonn, Germany. The age of the volcano is dated to 300 ka (Paulick et al., 2008). The drilling activities finished in February, 2012. Two parallel

cores were recovered from closely neighboring holes, each of them more than 70 m long, representing the sedimentary and volcano-clastic crater fill. The core material offers the unique opportunity to study a long complete climate archive representative for the Eifel region. Mainly lacustrine and aeolian (loess-like) sediments accumulated in the bowl-shaped crater since its last eruption (Zöller et al., 2010). Intercalated tephra layers of other dated volcanoes of the Eifel give a dense stratigraphic framework. A high-resolution reconstruction of past climate conditions during the last three glacial cycles may be derived from the core samples and the open hole borehole logging data. This is the central objective of the DUST TRAP project. It will study the geometry, volcanic evolution, and tectonic setting of the Rodderberg crater as well as the sedimentology, geophysics, and geochronology of its loess and loess-derived sediments. DUST TRAP is coordinated by

the Steinmann Institute of Bonn University, the Leibniz Institute for Applied Geophysics, Hanover, and the Geological Survey NRW, Krefeld, and comprises groups from the Universities of Bayreuth, Braunschweig, Bremen, and Cologne.

References

- Paulick, H., Ewen, C., Blanchard, H., and Zöller, L., 2008. The Middle Pleistocene Rodderberg (~300 ka) maar-scoria cone volcanic complex (Bonn, Germany): Eruptive history, geochemistry, and thermoluminescence dating. – *Int. J. Earth Sci. (Geol. Rundsch.)*, 98:1879–1899. doi:10.1007/s 00531-008-0341-0
- Zöller, L., Hambach, U., Blanchard, H., Fischer, S., Köhne, S., and Stritzke, R., 2010. Der Rodderberg-Krater bei Bonn. *E&G – Quat. Sci. J.*, 59:1–2

Authors

Franz Binot, Leibniz Institute for Applied Geophysics, Stilleweg 2, D-30655 Hannover, Germany, e-mail: franz.binot@liag-hannover.de

Nikolaus Froitzheim, Steinmann Institute of Bonn University, Poppelsdorfer Schloss, D-53115 Bonn, Germany, e-mail: niko.froitzheim@uni-bonn.de
and the DUST TRAP science team

Related Web Link

www.rodderberg.org

Antarctic ice sheets will respond to future climate change.

Much of his recent work has been a result of his participation on two scientific drilling expeditions to Antarctica. The first was the ANDRILL McMurdo Ice Shelf Project (2006–2007), which collected a 1280-m-long core representing the last 13 million years to study ice shelf response to past climate forcing. Rob's research focuses on investigating the glacial-interglacial cycles preserved in this record and the concomitant change in thermal regime of the Antarctic ice sheet. He is also working to improve the chronology of West Antarctic Ice Sheet changes in the Ross embayment over the last 18,000 years to better assess Antarctica's role in global sea-level change.

Rob returned to Antarctica in 2010 when he sailed as a sedimentologist on Integrated Ocean Drilling Program (IODP) Expedition 318 to the Wilkes Land margin of Antarctica. The primary goal of the expedition is to collect long-term sedimentary records in a nearshore to offshore transect off of the Wilkes Land margin to examine the influence of Cenozoic Antarctic glaciation on global climate. As part of the Wilkes Land science team, he is currently developing a cyclostratigraphy and geochemical record of the past ice sheet, sea ice and oceanographic variability at the East Antarctic margin of the Southern Ocean for the past 5 million years.

Another avenue of Rob's research utilizes Ocean Drilling Program (ODP) Leg 181 legacy cores, collected from the New Zealand region, to examine how changes in ice sheet and sea ice extent in Antarctica and the Southern Ocean over the last five million years are manifested in the ocean/climate system farther afield. This record will document how changes in Antarctica affected the New Zealand region, and should be important for predicting future changes as the climate warms.

Rob will receive \$50,000 of the prize money, with the remainder used to support his ongoing research. He intends to use some of the award to



fund a Ph.D. student. In addition, the money will help to support lab work with international collaborators, concentrating on the IODP Exp. 318 Wilkes Land cores and the archive ODP Leg 181 cores from the New Zealand region.

IODP-MI Announces Upgraded IT Systems



IODP-MI is pleased to announce the development of several IT systems to support mission critical tasks in IODP science. More information can be found at the newly re-designed IODP.org website.

As of 1 April 2012 drilling proposal submission deadline, proponents will be able to submit electronic proposals to the new Proposal Database version 2.0 (PDB 2.0). The PDB 2.0 (proposals.iodp.org) is a user-friendly, webforms system for compiling the many documents required for a drilling proposal. The PDB 2.0 offers significant benefits to proponents and in managing the proposal process from submission through SAS and to operations and scheduling.

Planned developments of Scientific Earth Data Information System (SEDIS: sedis.iodp.org) are completed for the user interface. An exciting functionality now available is parameter queries of the data across IOs and Expeditions. Using the SEDIS search interface to retrieve a subset from the SEDIS catalogue, the user can then click the Data Warehouse link where they can then select specific parameters (and methods) and construct aggregated data sets by

retrieving rows matching the specific criteria from all of the data sets pre-selected by the initial search. The SEDIS catalogue currently comprises approximately 100,000 data sets and 30,000 publications from IODP/ODP/DSDP.

The Sample Materials Request Management (SDRM v.2) system has also been updated by IODP-USIO. The new SDRM v.2 will be launched soon.

The Site Survey Data Bank (SSDB) has been upgraded to use the INT Enterprise Seismic Viewer for web-based visualization of SEG Y data.

IODP-MI appreciates feedback on these new systems.

Joint IODP/ICDP Activities at the 34th IGC in Brisbane, Australia



Several ICDP and IODP activities are scheduled for the forthcoming 34th

International Geological Congress in Brisbane, Australia (6–10 August 2012). IODP and ICDP will run a joint booth to provide information about current drilling activities and latest scientific results. An introduction to the International Continental Scientific Drilling Program (Workshop #20) will be offered to inform delegates who are not familiar with the ICDP about the ways of support and funding for continental scientific drilling through ICDP. Symposium #25.1 will report on important results of deep ocean drilling of the Integrated Ocean Drilling Program. Times, dates and locations will be announced in the near future on the congress website (<http://www.34igc.org/>)

Peering into the Cradle of Life: Scientific Drilling in the Barberton Greenstone Belt

by N.T. Arndt, A. Wilson, A. Hofmann, P. Mason, D. Lowe, M. Tice, G. Byerly, and G. Chunnnett



The Barberton greenstone belt in South Africa is one of the best-preserved successions of mid-Archean (3.5–3.2 Ga) supracrustal rocks in the world, and, as such, a remarkable natural laboratory where conditions and processes at the surface of the Archean Earth can be studied in detail. A scientific drilling program supported by the International Continental Drilling Program (ICDP) started in August 2011 under the direction of the international team listed on two web sites: http://www.icdp-online.org/front_content.php?idart=2709 and <http://www.peeringintobarberton.com/>. Updates on drilling progress are also found on these sites.

Planning of this project—the choice of targets, drilling strategies and scientific goals—started in October 2006 at University of the Witwatersrand in Johannesburg, and continued during meetings at San Francisco, Berlin and Vienna, and a one-week field conference in the Barberton belt. A research networking program of the European Science Foundation, “Archean Environment: the Habitat of Early Life”, supported this part of the project. ICDP approved the drilling proposal in August 2009, but problems related to the procurement of drilling permission from the South African Department of Mineral Resources held up the start of drilling for more than a year.

Two main drilling targets were identified:

- (1) Sedimentary sequences will provide information about erosion and sedimentation on the early Earth, the composition and temperature of Archean seawater, and one possible site where life may have emerged and evolved;
- (2) Successions of ultramafic to mafic volcanic rocks will provide new insights into volcanic processes, dynamics of the crust and mantle, interaction between oceanic volcanic crust and the hydrosphere and biosphere.

At the time of writing in mid-January 2012, two holes had been drilled at the Tjakastad komatiite site in the southern part of the belt. The first—BARB1, 425 m in length—intersected an unusual tumulus structure composed of highly magnesian, vesicular komatiite basalts and 300 m of overlying spinifex-textured and massive komatiitic and basaltic flows. The hole BARB2 intersects an adjacent sequence of komatiitic flows. Petrological and geochemical

study of the core will address questions such as the nature of komatiitic volcanism, the origin of komatiite magmas, alteration of volcanic rocks following their eruption, and the composition and evolution of the Archean mantle.

The second site is in the Buck Reef, a thick sequence of cherts and shales. Hole BARB3 is currently at a depth of 709 m, about 100 m from its target of 800 m. This hole has sampled over 500 m of banded cherts with remarkable sedimentary and diagenetic structures such as those illustrated in Fig. 1a. Study of these samples and inter-layered ferruginous and black shale will focus on the other origin of the sedimentary rocks, the evidence of early life that they contain, and the composition and temperature of Archean seawater.

The fourth hole, BARB4 in the middle Fig Tree Group in the eastern part of the belt, is currently at 352 m, 200 m short of its target. It has sampled turbiditic graywackes, mudstones, sideritic banded ferruginous chert and banded iron formations (Fig. 1b). Drilling at the last two sites, one in barite-rich sediments of the Barite Valley and another in silicified komatiites on the Mendon Formation, should be completed before April.

The distribution of samples and post-drilling research will be coordinated by a steering committee comprising representatives from all major participating countries. Compositions of the drilling teams and steering committee are given on the web sites. Once the core has been described and archived, a call will be made for proposals to work on the core. This call will be open to all scientists but priority will be given to those involved in the drilling or working in South African institutions.

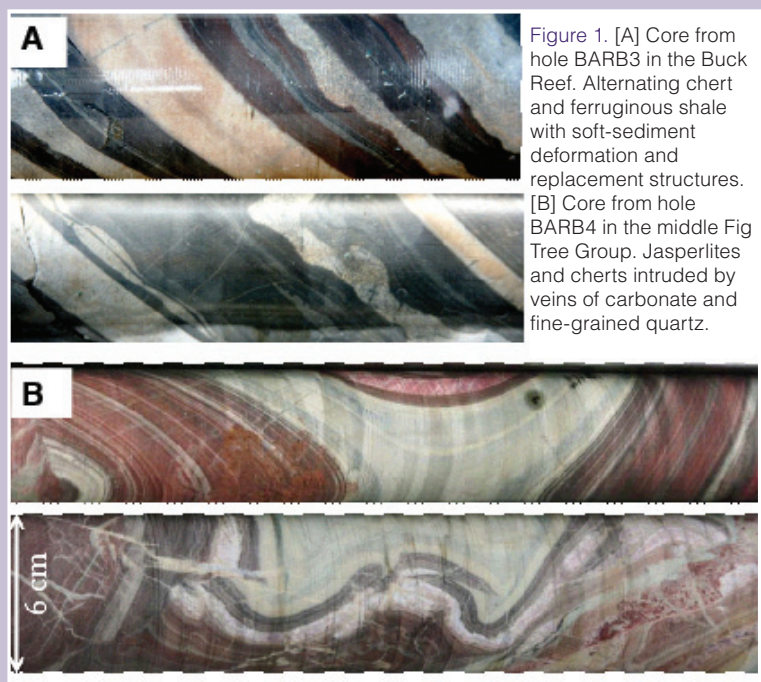


Figure 1. [A] Core from hole BARB3 in the Buck Reef. Alternating chert and ferruginous shale with soft-sediment deformation and replacement structures. [B] Core from hole BARB4 in the middle Fig Tree Group. Jasperlites and cherts intruded by veins of carbonate and fine-grained quartz.