ECORD
EUROPEAN CONSORTIUM FOR OCEAN RESEARCH DRILLING

Newsletter

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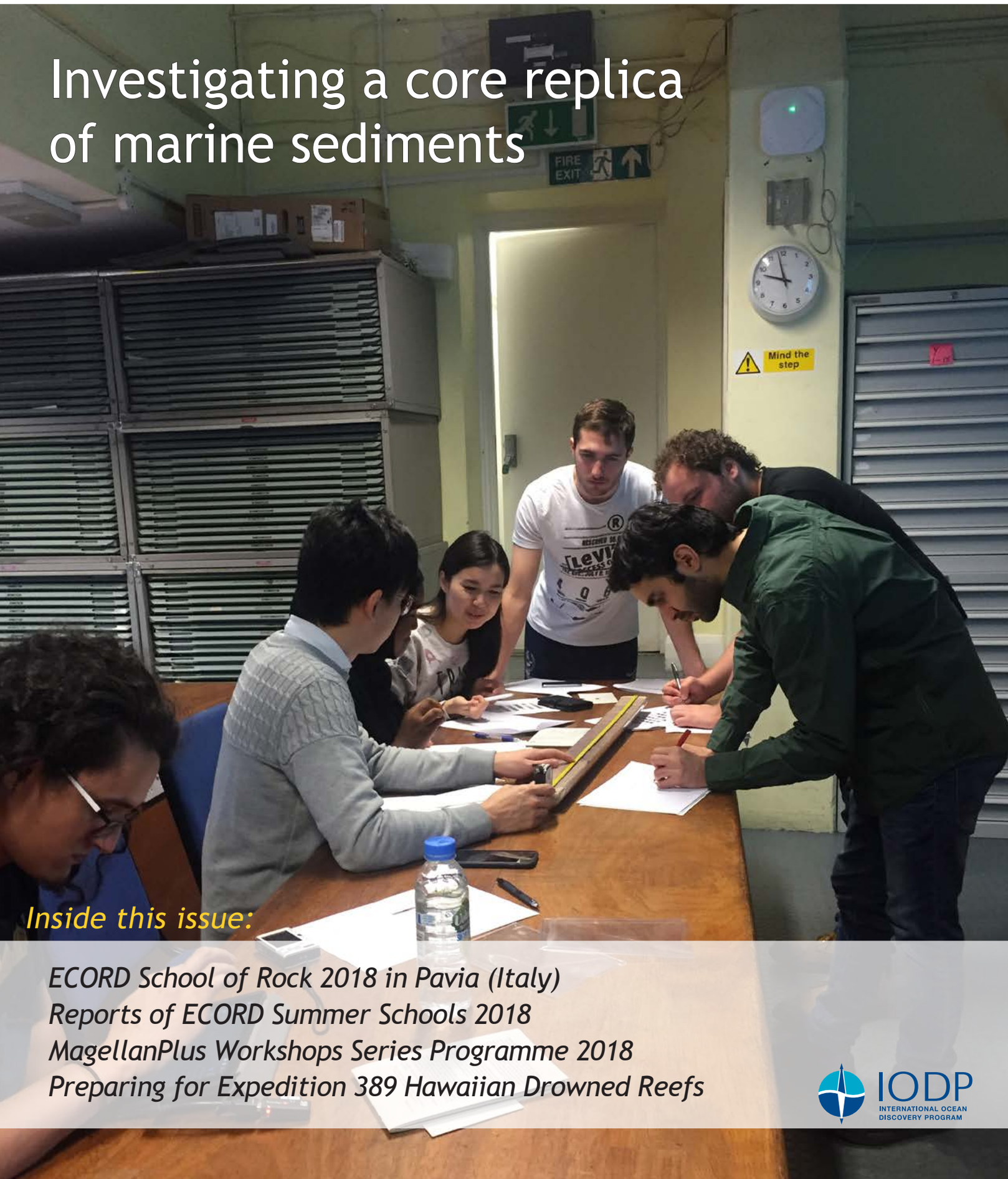

Investigating a core replica of marine sediments

Inside this issue:

IODP
INTERNATIONAL OCEAN DISCOVERY PROGRAM

Contents

The International Ocean Discovery Program (IODP) - **http://ww.iodp.org** - is an international research programme dedicated to advancing the scientific understanding of the Earth through drilling, coring, and monitoring the sub-seafloor. The **European Consortium for Ocean Research Drilling (ECORD)** supports the participation of European and Canadian scientific communities in IODP and provides funding for the implementation of mission-specific platform expeditions. ECORD is funded by 15 countries: Austria, Canada, Denmark, Finland, France, Germany, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

IODP is funded by the US National Science Foundation (NSF), Japan's Ministry of Education, Culture, Sports, Science, and Technology (MEXT); ECORD; the Australia-New Zealand IODP Consortium (ANZIC); India's Ministry of Earth Sciences; China's Ministry of Science and Technology; the Korea Institute of Geoscience and Mineral Resources (KIGAM); and Brazil's Ministry of Education (CAPES).

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Thanks to all authors who contributed to this issue.

Cover: *Paleoceanography course at University College London uses a core replica of ODP Leg 208 showing the Paleocene-Eocene Temperature Maximum (photo Bridget Wade).*
Back cover: *Participants of the Petrophysics Summer School 2018 visiting Weatherford (photo Erwan Le Ber).*
Right*: Sunset over the Gulf of Mexico pictured during Expedition 364 Chicxulub K-Pg Impact Crater (photo A. Rae, ECORD/IODP).*


Gilbert Camoin


Nadine Hallmann

ECORD News


Guido Lüniger

With the revision and finalisation of the ECORD Memorandum of Understanding (MoU) and of the ECORD-US National Science Foundation (NSF) MoU, ECORD is ready to enter the second phase of the International Ocean Discovery Program (IODP). Based primarily on ECORD's and IODP's scientific and operational excellence in the international research landscape, some ECORD member countries have already decided to commit until 2023. Decisions by the other ECORD member countries will be made within the next few weeks to months. With a budget that is expected to remain stable during the second phase of the programme, with more than 95% being dedicated towards expedition funding, ECORD is now in a secure position to build concrete plans for 2019-2023.

Mission-Specific Platform (MSP) Expeditions

Following the postponement of Expedition 377 Arctic Ocean Paleoceanography (ArcOP), no MSP expedition has been implemented in 2018 *(see EFB page 5)*.

Based on two potential scheduling scenarios for MSP expeditions that were considered by the ECORD Facility Board (EFB) for FY19 and 20, Expedition 389 Hawaiian Drowned Reefs Proposal 716 (Lead Proponent: J. Webster, Australia) is now scheduled for Autumn 2019 and will be the fourth full expedition implemented by ECORD for IODP in this phase. Expedition 373 Antarctic Cenozoic Paleoclimate (Co-chief Scientists: C. Escutia, ECORD-Spain and T. Williams, USA), which was the second component of these operational scenarios, has been postponed as no appropriate platform could be identified by the ECORD Science Operator (ESO) *(see ESO, page 7)*.

Two new MSP proposals were forwarded to the EFB since its last meeting in Venice, Italy, held on 6-7 March 2018. The Science Evaluation Panel (SEP) has forwarded Proposal 866 Japan Trench Paleoseismology (Lead proponent: M. Strasser, ECORD-Austria) to the EFB. In parallel, the Complementary Project Proposal - CPP-2 Gulf of Mexico Methane Hydrate (Lead Proponent: P. Flemings, USA) was forwarded by the *JOIDES Resolution* Facility Board (JRFB) following the removal of the related Expedition 386 from the *JR* schedule. This is the first CPP received by the EFB. These two proposals now form the FY20 and 21 MSP scheduling proposed by the EFB to be discussed at the next ECORD Council meeting that will be held in The Hague, The Netherlands, on 7-8 November 2018. Based on an expected stable ECORD budget during the second phase of IODP, it would therefore allow the implementation of four to five additional MSP expeditions before the end of the programme. ESO will continue to explore operating models for Expedition 377 Arctic Ocean Paleoceanography (ArcOP), which is still considered as a high-priority MSP expedition by ECORD. Submission of new proposals will be required to support post-2023 MSP scientific ocean drilling. In-kind contributions (IKC) and/or external co-funding from IODP and/or non-IODP members may become a key component in the financial model for future MSP expeditions.

ECORD partnership: *JOIDES Resolution (JR)* and *Chikyu* expeditions *(table page 15)*

Three out of the four *JR* expeditions that are scheduled in FY19 are based on proposals led by ECORD scientists *(page 14)*. The removal of Expedition 386 Gulf of Mexico Methane Hydrate from the *JR* schedule has led the JRFB to reconsider the FY20 and 21 *JR* schedule, which now includes eight months of operations annually and the implementation of the first *JR* expeditions in the Atlantic Ocean. Four out of the seven scheduled expeditions in FY20 and 21 arose from proposals led by ECORD scientists. It is now anticipated that, based on current and upcoming proposal pressure, the *JR* will operate through FY22 in the general area of the Equatorial and North Atlantic, Gulf of Mexico, Mediterranean, Caribbean and the Arctic. The four MagellanPlus workshops that have been held in 2018 - www.ecord.org/science/magellanplus and *pages 27-28* - to develop *JR* drilling proposals concerning diverse scientific topics in this area demonstrate the pivotal role that the ECORD science community will play in this endeavour.

The *JR* is expected to complete its global circumnavigation in the Indo-Pacific region by the end of the programme *(page 4)*.

The implementation of Expedition 358 NanTroSEIZE Plate Boundary Deep Riser 4 consisting of *Chikyu* riser drilling at Site C0002 in late 2018 and early 2019 *(page 14 and photo page 15)* will mark the end of the NanTroSEIZE programme. This programme started in 2007 and its completion will have resulted in 12 expeditions involving more than 200 scientists from 15 countries. The postponement of the drilling expedition based on IODP Proposal 871-CPP Lord Howe Rise Continental Ribbon (Lead Proponent: R. Hackney, Australia) that was initially scheduled in 2020, will lead the *Chikyu* IODP Board (CIB) to revisit the scheduling of the *Chikyu* for FY20 and 21 at its next meeting that will be held on 11-12 June 2019 in Kobe, Japan.

A forward look

The end of IODP in 2023 will be a crucial period in the history of scientific ocean research drilling as the challenges to build a successor to the current programme are enormous. Such a programme might have to fit a totally different model from that of its predecessors as available facilities are still not defined and that drastic programmatic changes will be necessary. This endeavour will require the full mobilisation and involvement of all stakeholders to ensure the building of a programme in which suitable technological facilities will meet the scientific needs of the community.

Based on the building phases of the current IODP (2013-2023), the planning of a scientific ocean drilling programme beyond 2023 will start in 2019 with several initiatives taken at the national or consortia levels. However, the coordination of all these actions across IODP is still to be defined. ECORD, as a unique international research infrastructure, which has demonstrated its well-established operational model, its successful implementation and its competitiveness in the international research landscape, can play a cardinal role in future endeavours.

The ECORD Council has agreed to fund the organisation of a workshop aiming at initiating concepts and defining new goals for a future international scientific ocean drilling programme to be developed beyond 2023. Special emphasis will be on new science frontiers and technological developments in a multiple drilling platform approach. The workshop, entitled **PROCEED** (EXPANDING FRONTIERS OF SCIENTIFIC OCEAN DRILLING) *(page 3)* - **http://www.ecord.org/science/proceed/**, will be held at the Austrian Academy of Sciences in Vienna, Austria, on 6-7 April 2019. ECORD has a unique opportunity to initiate the momentum that is needed to maintain scientific ocean drilling research in the next decade.

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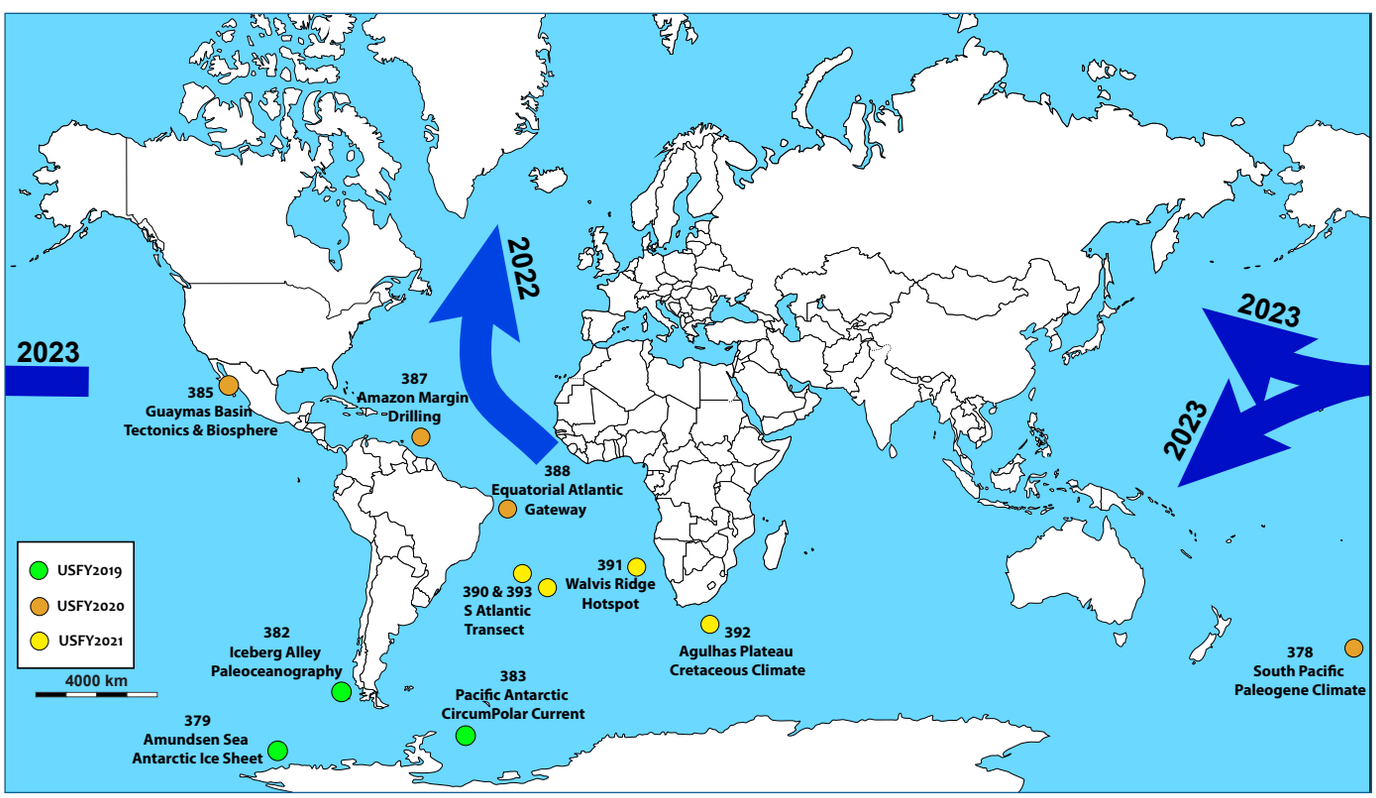


Scheduled IODP JOIDES Resolution expeditions for 2019-2021 and planned ship track for 2022-2023.

Union Lecture U12A: Fifty Years of Scientific Ocean Drilling: How the Past Informs the Future
10:20-12:20 - 10 December, Convention Ctr - 202A
https://agu.confex.com/agu/fm18/meetingapp.cgi/Session/49858

Gilles Lericolais

News from the ECORD Facility Board

Gabriele Uenzelmann-Neben

Since the last ECORD Facility Board meeting that was held on 6 and 7 March 2018 in Venice, Italy, new developments resulted occurred in the EFB considering proposals that have recently been forwarded to the Board *(map and table below)*.

The *JOIDES Resolution (JR)* will not be able to implement **Expedition 386 Gulf of Mexico Gas Hydrates (Proposal 887)** due to changes in the regulations in the Gulf of Mexico as a consequence of the "New Horizon" disaster. This led the *JOIDES Resolution* Facility Board to forward this proposal to the EFB. The EFB met virtually to evaluate the possibility of implementing Expedition 386 as a Mission-Specific Platform (MSP) operation, with ESO selecting a platform meeting the Mobile Offshore Drilling Unit (MODU) 1989 Standard, or even a more modern and stringent standard. This proposal is a Complementary Project Proposal (CPP), the first one considered by ECORD. The proponents have expressed a clear preference to keep their proposal in the IODP system.

Recent developments concerning **Expedition 373 Antarctic Cenozoic Paleoclimate**, which was expected to be implemented in 2019-20, required re-evaluation of this proposal by the EFB. The tender period finished with no compliant bids *(ESO, pages 6-7)*, which led the EFB to revise the MSP schedule proposed at the last EFB meeting. Accordingly, ESO has moved forward with the call to implement **Expedition 389 Hawaiian Drowned Reefs** *(ESO, page 7)*, which was also being considered for 2019 in case suitable operational plans could not be defined for Expedition 373.

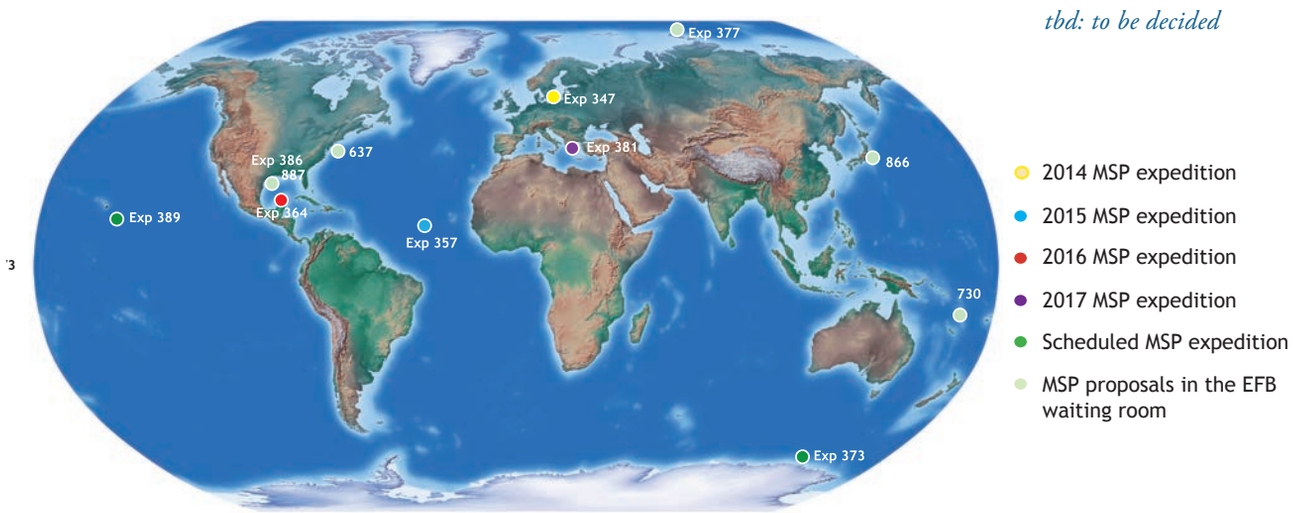
Proposal 866 Japan Trench Paleoseismology was also recently forwarded to the EFB, and ESO and EMA together with CDEX started to explore operational possibilities to implement this proposal. The EFB recommended scheduling it as an MSP expedition in 2020. This expedition would be led by ESO and involve collaboration between ESO and CDEX/JAMSTEC.

The next EFB meeting will be held on 21 and 22 March 2019 in Bremen (Germany). Two EFB members, Fumio Inagaki (Japan) and Stephen Gallagher (Australia) will rotate off at the end of 2018, and will be replaced by Yasuhiro Yamada (Japan) and Feng Ping Wang (China), respectively. The EFB warmly thanks both Fumio and Stephen for their work and engagement in this fantastic team of Science Board members. Gabriele Uenzelmann-Neben will also become the new EFB Chair on 1 January 2019.

Gilles Lericolais, EFB Chair - gilles.lericolais@ifremer.fr
Gabriele Uenzelmann-Neben, EFB Vice-chair
gabriele.uenzelmann-neben@awi.de

2013-14	2015	2016	2017	2018	2019	2020	2021	2022	2023
Exp 347 Baltic	Exp 357 Atlantis	Exp 364 Chicxulub	Exp 381 Corinth	-	**Exp 389 Hawaii**	*tbd*	*tbd*	*tbd*	*tbd*
Drillship	*Seabed drills RD2-MeBo*	*Liftboat*	*Drillship*	-	*Seabed drill*				
reviewed Nov 2014	reviewed Oct 2016	reviewed June 2017	**reviewed Nov 2018**	-	**Sept-Oct 2019**				

tbd: to be decided



http://www.ecord.org/about-ecord/management-structure/efb/


David McInroy


Sarah Davies

ECORD Science Operator
News and Views


Ursula Röhl


Dave Smith

In the previous ECORD Newsletter (#30 April 2018), we reported on the successful implementation of the offshore and Onshore Science Party phases of IODP Expedition 381 Corinth Active Rift Development. Since the completion of Expedition 381, ESO has been planning for the next MSP expedition in 2019 (Expedition 389 Hawaiian Drowned Reefs), and scoping future MSP expeditions for potential scheduling by the ECORD Facility Board (EFB).

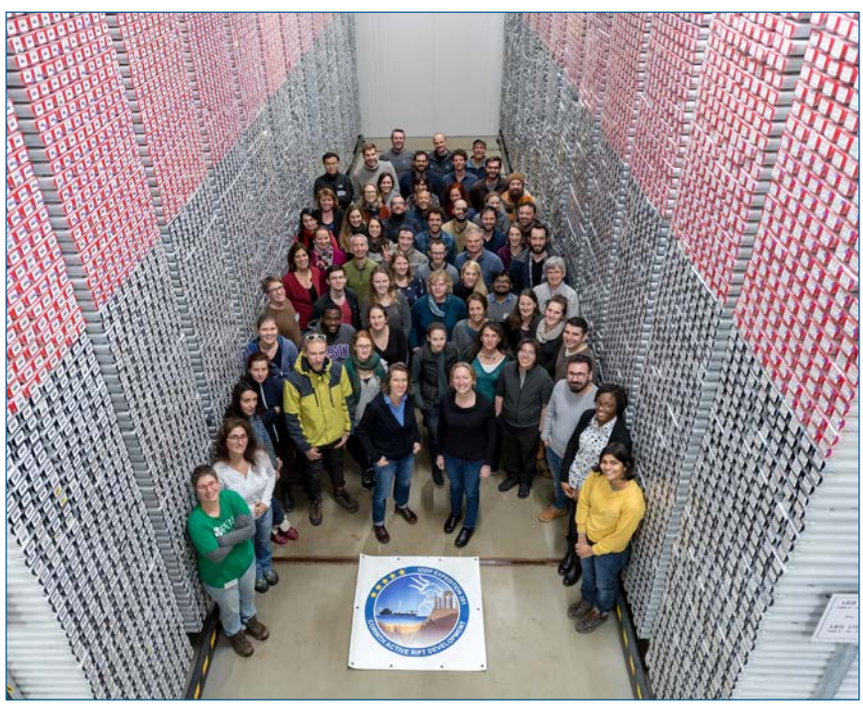


photo V Diekamp, ECORD/IODP

In addition to preparing for scheduled and potential future expeditions, ESO staff organised and participated in other IODP-related meetings, workshops and conferences, and contributed to proponent consultation, training and programme outreach. Such activities included:

- Participating in the MagellanPlus Workshop "Fjord sediment archives in the NE Atlantic", April 2018 *(page 27)*;
- Attending the ECORD/ICDP booth and co-convening an education and outreach session at EGU 2018 *(pages 8-9)*;
- Organising, hosting and providing content for the ECORD Training Course "The Virtual Drillship Experience", IODP Bremen Core Repository and MARUM Laboratories, April 2018 *(page 22)*;
- Organising, hosting and providing content for the Petrophysics Summer School, University of Leicester, June 2018 *(pages 19-20)*;
- Organising, hosting and providing content for the ECORD Summer School "Sub-seafloor fluid transport and gas hydrate dynamics", IODP Bremen Core Repository and MARUM Laboratories, September 2018 *(page 21)*;

Expedition 381 Corinth Active Rift Development - Post expedition news
Co-chief Scientists: Lisa McNeill and Donna Shillington

This expedition ended with the conclusion of the Onshore Science Party on 28 February *(photo above left)*. Since then, the Science Party and their collaborators have continued their post-expedition research. The moratorium period for Expedition 381 will end on 28 February 2019, when the IODP Proceedings volume will be published. The majority of peer-reviewed papers from this expedition are expected to be submitted to journals before October 2020. Several papers are already in preparation or in press, including an early results paper submitted to *Nature Scientific Reports* entitled "High-resolution record reveals climate-driven environmental and sedimentary changes in an active rift". The IODP Preliminary Report is currently under embargo to allow this early results paper to be published.

Meanwhile, early preparations are being made for the Expedition 381 2nd Post-expedition Meeting, to be held in Greece in either fall 2019 or spring 2020. At this meeting, the Science Party will present the first results from their individual post-expedition research projects, and will coordinate their publication strategies.

Expedition 373 Antarctic Cenozoic Climate - postponed until further notice
Co-chief Scientists: Trevor Williams and Carlota Escutia

In March 2018, the EFB scheduled the implementation of Expedition 373 in the 2019/21 Antarctic summer season. Acknowledging the risks associated with securing an appropriate ice-capable vessel for the deployment of seafloor drilling technology, the EFB also proposed the scheduling of Proposal 716 Hawaiian Drowned Reefs as a back-up for the 2019 MSP expedition.

ESO issued a world-wide invitation to tender in May 2018 for platform and drilling services for Expedition 373. The invite was for an icebreaking platform with a suitable drilling system and, although geotechnical vessel-based options were not ruled out by the call wording, submission of seafloor drilling equipment was specifically encouraged. A full evaluation of the received bids was undertaken by ESO in June 2018, which revealed that no affordable or compliant platform options were offered to implement this expedition in the 2019/20 or 2020/21 Antarctic summer seasons.

As a consequence of being unable to secure a suitable vessel for either 2019/20 or 2020/21, ESO reverted to the EFB consensus to implement Proposal 716 Hawaiian Drowned Reefs as the 2019 expedition *(below)*. Expedition 373 will remain as a future expedition option for ECORD, and ESO will continue scoping platform opportunities that may allow its implementation before 2023.

Expedition 389 Hawaiian Drowned Reefs - planned 2019 MSP expedition

Co-chief Scientists: Jody Webster and Christina Ravelo

Expedition 389 Hawaiian Drowned Reefs replaced Expedition 373 on the 2019 MSP schedule, and is provisionally scheduled for September-October 2019.

The overall goal of the drilling campaign is to sample a unique succession of drowned coral reefs around Hawaii now at -134 to -1155 m below sea level *(map below)*. As a direct result of Hawaii's rapid but nearly constant subsidence, a thick (100-200 m) expanded sequence of shallow coral reef dominated facies is preserved within the reefs. These reefs span important periods in Earth climate history, either not available or highly condensed on stable (Great Barrier Reef, Tahiti) and uplifted margins (Papua New Guinea, Barbados) due to a lack of accommodation space and/or unfavourable shelf morphology. Specifically, these data show that the reefs grew into, during and out of the majority of the last five to six glacial cycles. Scientific drilling through these reefs will generate a new record of sea-level and associated climate variability during several controversial and poorly understood periods over the last 500 kyr.

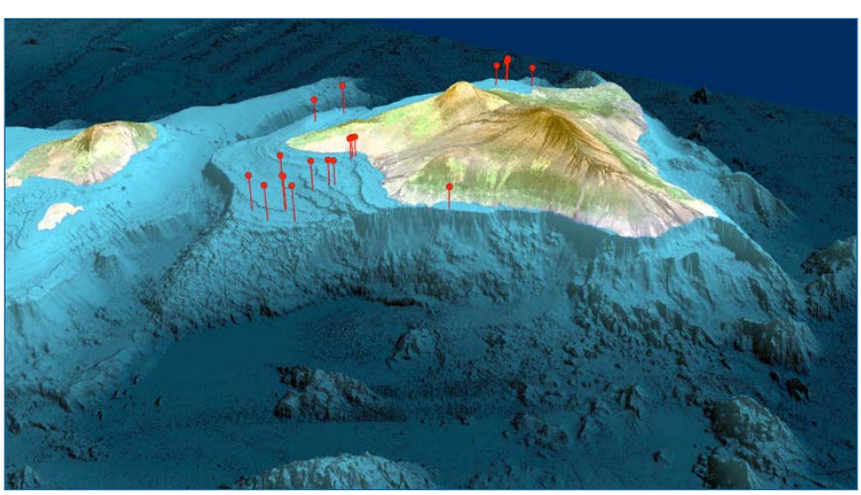
In August, ESO issued a world-wide invitation to tender for platform and seafloor drill coring services. At the time of writing, the received bids were being evaluated. The Co-chief Scientists for this expedition are Jody Webster (University of Sydney, Australia) and Christina Ravelo (University of California, Santa Cruz, USA). The Call for Scientists is open from 1 October to 23 November 2018 - please visit **http://www.iodp.org/expeditions/apply-to-sail to apply**.

Expedition 377 Arctic Ocean Paleoceanography (ArcOP) - postponed until further notice

Co-chief Scientists: Rüdiger Stein and Kristen St. John

In ECORD Newsletters #29 and #30, we reported on the cancellation of Expedition 377 for 2018, and that planning efforts would continue for an Arctic expedition in 2019 or 2020. Continued efforts were made to secure in-kind contributions from IODP and non-IODP countries, without success. At this moment in time, Expedition 377 is postponed until further notice. The expedition will remain as a future expedition option for ECORD, and ESO will continue scoping platform opportunities that may allow its implementation before 2023.

David McInroy, ESO Science Manager, Sarah Davies, EPC Manager, Ursula Röhl, ESO Curation and Laboratory Manager, and Dave Smith, ESO Operations Manager
http://www.ecord.org/about-ecord/management-structure/eso



Planned primary and alternate coring sites of Expedition 389 around the Island of Hawaii.

More information about IODP MSP expeditions:

http://www.ecord.org/expeditions/msp/2013-2023

ECORD Outreach Task Force

News and Activities

Since April 2018, the ECORD Outreach Task Force (EOTF) has promoted ECORD and IODP at international conferences, such as the keynote talk at the inaugural Australian Geoscience Council Conference (AGCC 2018) on ECORD innovation and technology; the 2018 General Assembly of the European Geosciences Union (EGU 2018) and at the International Sedimentological Congress (ISC 2018), as well as producing various resources and supported educational activities.

ECORD, IODP and ICDP outreach group on the roof of the Natural History Museum in Vienna during a visit organised by Ludovic Ferrière (Museum Curator) (photo ECORD/IODP).

Activities

Exhibition booths presenting ICDP and IODP under a "Scientific Drilling banner" were co-organised at:

- **EGU 2018** (7-12 April), in Vienna (Austria), in collaboration with colleagues from EPC, ECORD national offices, USSSP and CDEX/JAMSTEC, ICDP and with ECORD/IODP teachers *(photo above)*. This event is the largest earth-sciences conference held in Europe and brought together 15,000 participants from 106 countries.
- **ISC 2018** (13-17 August) in Québec (Canada). Every four years, this conference gathers sedimentologists from all over the world.

ECORD sponsored the **ECORD School of Rock (SOR) 2018**, organised by Italian scientists Claudia Lupi and Angelo Camerlenghi, and the ECORD Education Officer on Expedition 367, Alessia Ciccone, along with IODP-Italia, in Pavia *(page 12)*. After Agnès Pointu (France), who sailed on IODP Expedition 374 to the Ross Sea *(page 13)*, Vivien Cumming (UK) was selected to sail as **Outreach Officer** on **Expedition 379 Amundsen Sea W Antarctic Ice Sheet History** (Co-chief Scientists Karsten Gohl, ECORD-Germany and Julia Wellner, USA). Vivien has already sailed on Expedition 369 and produced TV documentaries for broadcast on the BBC. ECORD sponsored Lucas Kavanagh to attend a workshop on IODP outreach resources in Victoria (Canada) *(page 9)*. The EOTF also sponsored a professional video team to produce a TV documentary highlighting IODP science in the final NanTroSEIZE Expedition 358 and ECORD scientists onboard the *Chikyu*.

Resources

ECORD/IODP information materials (Annual Report 2017, Newsletter, and flyers) - http://www.ecord.org/resources/brochures - were distributed to the ECORD community. IODP/ODP core replicas were loaned to university courses *(cover and page 11)* and displays *(page 10)*. New core replicas arising from **Expedition 364 Chicxulub K-Pg Impact Crater** are in preparation *(page 10)*.

The pre-expedition flyer advertising Expedition 389 is ready for distribution *(below)*. Following EMA's proposition that have been approved by the ECORD Council to address stakeholders, funding agencies and the general public, the EOTF is working with Alex Ingle - https://www.alexingle.com - to produce a new video and brochure.

ECORD online

Since July 2018, the **ECORD website** has had an average of 400 visits per day with a peak of 700 visits during the ISC in Québec. The website is now compliant with the new EU GDPR and a new monitoring system of our web statistics was implemented to better protect the privacy of our visitors - http://www.ecord.org/privacy. To increase our visibility, the ECORD, ESO and ESSAC social media were merged into a single **"ECORD-IODP" access** *(back cover)*. Visual resources have been uploaded on the **ECORD photo gallery** - http://www.ecord.org/resources/gallery/photos and **ECORD TV** - http://www.ecord.org/resources/gallery/ecord-tv.

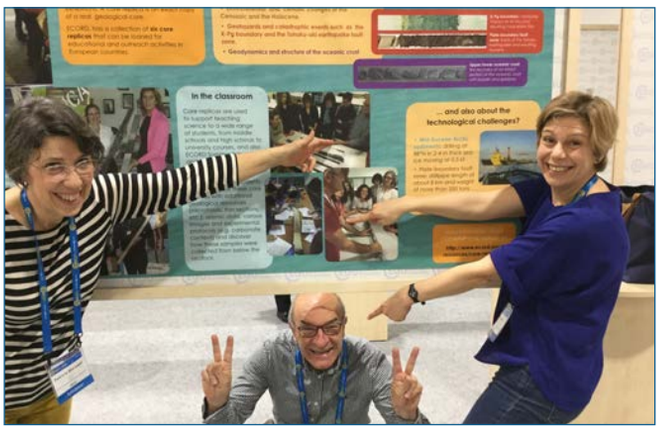
Upcoming events / activities

ECORD / IODP - ICDP exhibition booths will be co-organised at **AGU 2018** in Washington (USA), and at **EGU 2019** (7-12 April, Vienna, Austria), in conjunction with outreach *(page 9)* and science *(page 17)* sessions. Regarding upcoming MSP Expedition 389 Hawaiian Drowned Reefs *(page 7)*, the ESO outreach team is preparing for outreach and media events. A detailed outreach and communications plan is being discussed in collaboration with the Co-chief Scientists (Jody Webster, ANZIC, and Christina Ravelo, USA). The renewal of the ECORD Information Database will be an important task for the EOTF in 2019. The fall EOTF meeting was held on 5 November 2018, in The Hague, The Netherlands, and the next spring meeting will be held on 28 February-1 March 2019 in Aix en Provence, France.

Patricia Maruéjol and Nadine Hallmann, EMA,
Carol Cotterill and Ulrike Prange, ESO
Hanno Kinkel, ESSAC
info@ecord.org

IODP Outreach @ EGU 2018

For the first time an ECORD/IODP Outreach session was organised (Convenor: Carol Cotterill, Co-conveners: Jean-Luc Bérenguer, Ulrike Prange, Dan Brinkhuis) at the EGU General Assembly meeting. Eight posters were presented, all of them related to education and outreach topics past and present that have occured under the banner of IODP. An important contribution came from ECORD Education Officers who sailed on IODP expeditions, Agnès Pointu (Exps 362 and 374, *page 13*), Michelle Darrieu (Exp 359) and Jean-Luc Bérenguer (Exp 345) *(right)*, as well as from our IODP colleagues, Sharon Katz Copper (USSSP) and Nobu Eguchi (CDEX-JAMSTEC) *(below right)*.



An outreach session has been proposed for EGU 2019 *(below)* (Convenor: Carol Cotterill, Co-conveners: Vivien Cumming, Christian Koeberl, Ulrike Prange, Thomas Wiersberg) entitled "Outreach in Geoscience, what does it mean to you".

Call for abstracts at EGU 2019
7-12 April, Vienna, Austria

EOS4.2 Outreach in geoscience: What does it mean to you

https://meetingorganizer.copernicus.org/EGU2019/session/31743

Deadline: 10 January 2019

Education/Outreach follow-up meeting: developing IODP resources

I sailed aboard the *JOIDES Resolution* (*JR*) as an ECORD education and outreach officer in early 2016. Since that expedition, I have kept in close contact with the IODP community, presenting at conferences, and consulting with others sailing aboard the ship.

In June 2018, some of that community was brought together for a workshop held alongside the ASLO 2018 summer meeting in Victoria, Canada. Attendees included both past education and outreach officers and School of Rock participants *(photo left)*. The two-day workshop focused on reporting on our outreach work after our time on the *JR* and identifying common areas of interest in order to foster future collaboration.

Participants of the workshop with Lucas Kavanagh (left) and Sharon Katz-Cooper (right) (photo S. Katz Cooper).

My sub-group focused on developing an outline for an online training module to teach easy techniques for outreach through digital media. This would walk participants through the basics of video production, graphic design, and social media best practices in order to increase the impact of both the scientists and education and outreach officers sailing aboard future expeditions. Development of this module will continue over the coming months.

I greatly appreciate the ECORD travel support I received to attend this valuable workshop and look forward to the exciting products that are sure to come from it.

Lucas Kavanagh, Exp 360 Education & Outreach Officer,
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Studying the rocks beneath the seafloor: Girls into Geoscience 2018, University of Plymouth, UK

Girls into Geoscience is an annual event organised by staff from the University of Plymouth and is aimed at encouraging 16-17 year old female students to pursue a career in the geosciences. This event has grown and evolved since it began in 2014 and over 320 students from across the UK have participated. The event has been recognised nationally and was the recipient of the Geological Society R H Worth Award in 2018, presented in recognition of achievements in outreach, public engagement and/or education.

This year the event included an optional day fieldtrip to the English Riviera UNESCO Global Geopark, followed by a day of inspiring talks and workshops for the girls to find out more about geosciences and the opportunities that are out there. In celebration of 50 years of scientific ocean drilling and the role that IODP has had in inspiring my career so far, I organised one of the afternoon workshops to introduce how we study the rocks beneath the seafloor. During the workshop the girls were introduced to the typical layer cake stratigraphy of the ocean crust and the different ways we can study it. They had the opportunity to study and describe samples from the different layers of the ocean crust recovered from ophiolites, and then compared these to the IODP core replica of a composite section from ODP Hole 1256D *(photo above)*, the only hole to recover an *in-situ* section of fast spreading rate ocean crust. The workshop was a lively event and the core replica was an excellent way to demonstrate how IODP has helped geoscientists understand the structure of the ocean crust. Hopefully we have inspired some of them to go on and study earth sciences and perhaps one day participate in their own IODP adventure!

The ODP Hole 1256D core replica takes centre stage in the "Discovering the rocks beneath the seafloor: Celebrating 50 years of Scientific Ocean Drilling" (photo Sarah Boulton, University of Plymouth).

Michelle Harris, University of Plymouth, UK
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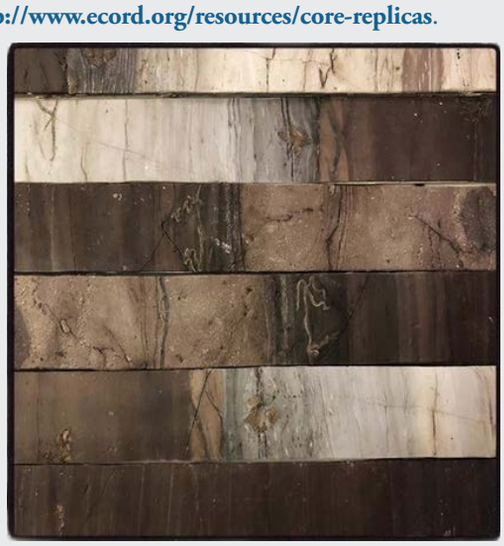
Accurate reproduction of geological cores

A comprehensive set of cores has been selected by Joanna Morgan and Sean Gulick, Co-chief Scientists of **Expedition 364 Chicxulub K-Pg Impact Crater**, to create new core replicas. A few months ago, series of replicas were ordered with Paula Weiss, who will manufacture these new core replicas. Paula is now putting the finishing touches on the first batch of Chicxulub replicas (364-M0077A-40R-1, 0-130cm) *(below)*. The next ones to be manufactured will be 364-M0077A-81R-2, 0-50cm. Some of those replicas will be added to the collection of ECORD outreach materials - **http://www.ecord.org/resources/core-replicas**.



Core replicas by Paula Weiss

Science communication for early-career scientists

Since outreach and science communication is becoming more important, a talk on "Reaching the public" is now included in the ECORD Summer Schools in Bremen. **Ulrike Prange**, outreach for MARUM and media relations for ECORD, gave participants an insight into how to write about one's individual research for lay persons and what means exist to reach out to the public *(photo below)*.

(photo Volker Diekamp, MARUM)

The Paleocene-Eocene Thermal Maximum (PETM): practical exercises in Paleoceanography course

Thamer Alnasser*

Paleoceanography offers valuable insights into past climates through extensive records documenting marine sedimentation processes for over than 100 million years before present time. The International Ocean Discovery Program (IODP) has allowed access to this enormous archive, helping scientists to dive in deep through the geologic record and finding past geologic analogues that can provide invaluable evidence to the likely future climate response.

Approximately 56 million years ago, across the Paleocene-Eocene Thermal Maximum (PETM), a depletion in ^{13}C approximately 4 - 5‰ was observed *(Kennett and Stott, 1991; Gehler et al., 2016)*. It has been simulated that carbon emissions required to cause such depletion range between 0.3 to 1.7 peta grams (10^{15}) of carbon every year *(Cui et al., 2011)*, which is much slower than modern day emission rates. During the PETM, global environmental shifts led to profound biologic consequences.

At the University College London, students get the opportunity to study the PETM, investigating a replica of an ocean floor sediment core retrieved from Walvis Ridge, ODP Leg 208, Site 1262 in the Southeastern Atlantic Ocean *(photo below)*.

The aim of this practical exercise is to have a simulation of real-time work challenges, evaluating content from multiple modules and applying interdisciplinary knowledge to interpret observations scientifically.

An abrupt change in colour from pale brown carbonate to red clay is observed, the underlying carbonates were dominantly composed of calcareous nannofossils, these nannofossils completely disappear with the deposition of the red clay. Students get to utilise their newly acquired knowledge to understand the mechanisms leading to such abrupt change at the PETM and build up on concepts from other modules to explain the recovery process.

References

Cui Y et al (2011). Nature Geoscience, 4:, 481-485. doi:10.1038/ngeo1179

Gehler A, Gingerich PD and Pack A (2016). Proc. Natl. Acad. Sci. USA. 113(28), 7739-7744. doi:10.1073/pnas.1518116113

Kennett JP and Stott LD (1991) Nature, 353, 225-229.

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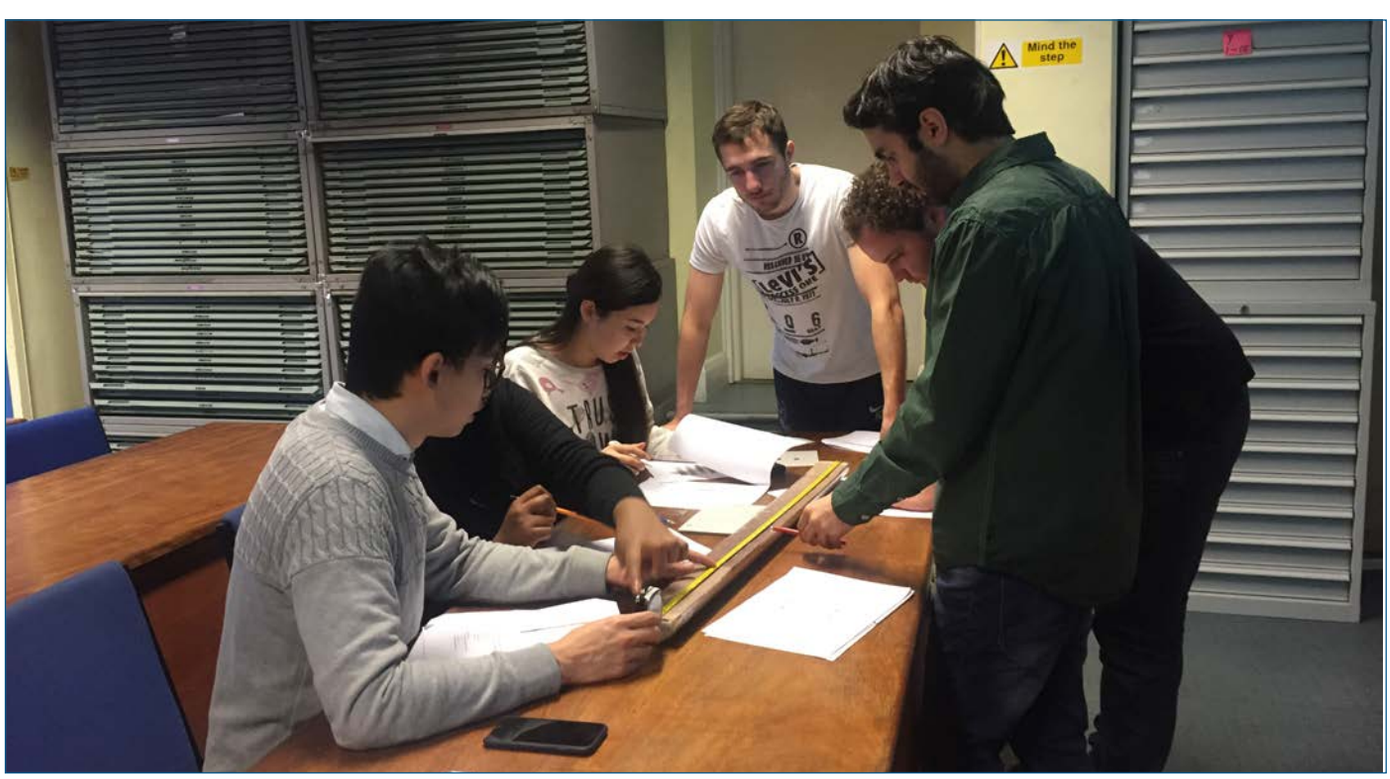

Geoscience students at UCL investigating a core replica documenting the PETM (photo Bridget Wade)

http://www.ecord.org/resources/core-replicas/

ECORD School of Rock 2018, Pavia (Italy) "Understand the climate system through deep sea sediments"

Claudia Lupi*

Sixteen science teachers from all over Italy participated in the fourth **ECORD School of Rock (SOR)** on 24-27 July 2018, in Pavia, Italy. Through lectures alternating with practical activities familiarising the participants with earth sciences, the teachers discovered which tools scientific drilling and the International Ocean Discovery Program provide to scientists to reconstruct past climates, to understand mechanisms and make predictions about future changes. At the end of the workshop, the teachers participated in a reflection on how civil society can and must face climate change with a view to adaptation and mitigation.

The ECORD School of Rock is a workshop designed by scientists and outreach & education officers who have sailed onboard IODP/ODP expeditions to share their at-sea experience with teachers of their home country and to introduce educational resources which can be used in the classroom. The teachers thus experienced an immersive research experience: **"With scientists as scientists"**.

For the ECORD SOR 2018, the workshop activities and lectures were conducted by *(below)*:

- Angelo Camerlenghi, Legs 178 Antarctic Peninsula (Co-chief Scientist) and 146 Cascadia Margin (Sedimentologist);
- Alessia Cicconi, Expedition 367 South China Sea (Outreach & Education Officer);
- Laura de Santis, Expedition 374 Ross Sea (Co-chief Scientist);
- Patrizia Ferretti, Expeditions 359 Maldives Monsoon, 344S Baffin Bay and 306 N Atlantic Climate (Sedimentologist);
- Claudia Lupi, Expedition 367 South China Sea (Nannofossils specialist).

ECORD sponsorship consisted of providing each School of Rock participant with a copy of the book ***"Reconstructing Earth's Climate history: inquiry-based exercises for lab and classes"*** by K. St. John, M. Leckie, K. Pound, M. Jones and L. Krissek" published in 2012 (Wiley-Blackwell).

ECORD School of Rock, 2018
«Comprendere il Sistema Climatico attraverso i sedimenti marini profondi

Dal 24 al 27 Luglio 2018 si è tenuta a Pavia la "ECORD *School of Rock*". Ogni anno l' *European Consortium for Ocean Research Drilling* (ECORD) organizza *School of Rock* in uno dei paesi membri.

In Italia, la scuola è stata organizzata da:
Angelo Camerlenghi dell'Istituto Nazionale di Oceanografia e Geofisica Sperimentale- OGS- di Trieste;
Alessia Cicconi docente di Scienze del Liceo Classico "F. Stabili - E. Trebbiani" di Ascoli Piceno;
Claudia Lupi del Dipartimento di Scienze della Terra e dell'Ambiente, Università di Pavia.

16 docenti di Scienze provenienti da tutta Italia hanno partecipato a lezioni frontali alternate ad attività pratiche familiarizzando con le Scienze della Terra e con il programma di esplorazione e perforazione degli oceani - *International Ocean Discovery Program* (IODP).

I partecipanti hanno scoperto quali strumenti Scienze della Terra forniscono agli scienziati p ricostruire il Clima del Passato, comprenderne meccanismi e fare previsioni sul cambiamer naturale del Futuro. A chiusura della scuola docenti hanno partecipato ad una riflessione come la società civile può e deve affrontare Cambiamenti Climatici in un'ottica di adattamer e mitigazione.

Gli insegnanti hanno così sperimen un'esperienza immersiva di ricerca:

"Con gli scienziati come scienziati"

ECORD School of Rock, 2018
«Comprendere il Sistema Climatico attraverso i sedimenti marini profondi»

La caratteristica principale di "ECORD School of Rock" è la partecipazione di scienziati e addetti alla comunicazione e divulgazione scientifica che siano stati a bordo della nave *Joides Resolution* e abbiamo partecipato ad almeno una delle spedizioni IODP.

Per questa edizione, le attività laboratoriali e i seminari sono stati tenuti da:
Angelo Camerlenghi, Co-Chief Scientist (capo spedizione) Spedizione ODP Leg 178 (Antarctic Peninsula); Tecnico a bordo Spedizione ODP Leg 115 (Indian Ocean); Sedimentologo a bordo Spedizione ODP Leg 146 (Cascadia Margin).

Alessia Cicconi, Outreach and Education Officer (Ufficiale per divulgazione e relazioni con le scuole) Spedizione IODP 367 (South China Sea).

Laura De Santis, Co-Chief Scientist (capo spedizione) Spedizione IODP 374 (Ross Sea West Antarctica).

Patrizia Ferretti, Sedimentologo a terra Spedizione IODP 359 (Maldives Monsoon); Sedimentologo a bordo Spedizione IODP 344S (Baffin Bay); Sedimentologo a bordo Spedizione IODP 306 (North Atlantic).

Claudia Lupi, Specialista in Nannofossili Calcarei a bordo Spedizione IODP 367 (South China Sea).

Hanno collaborato alla buona riuscita della scuola Sergio Castellari, Esperto Nazionale distac dell'Istituto Nazionale di Geofisica e Vulcano (INGV) presso l'Agenzia Europea per l'Ambiente (a Copenaghen (Danimarca).

Florence Colleoni, specialista in modellistica processi climatici dei climi passati.

Nicoletta Mancin, Specialista in Foramir planctonici e bentonici.

La scuola ha beneficiato del contributo di:
IODP Italia
ECORD
Piano Lauree Scientifiche (PLS) Geologia Pavia
Istituto Nazionale di Oceanografia e di Geofisica Sperimen
Dipartimento di Scienze della Terra e dell'Ambiente di Pav
Collegio Fraccaro, EDiSU, Università degli Studi di Pavia

Programma completo: http://orientamentogeologia.unipv

http://www.iodp-italia.cnr.it/index.php/it/eventi/notizie/item/113-ecord-school-of-rock-2018-pavia-24-27-luglio-2018-comprendere-il-sistema-climatico-attraverso-i-sedimenti-marini-profondi

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ECORD Teachers at Sea
Expedition 374 Ross Sea West Antarctic Ice Sheet History

Agnès Pointu*

"Climate change"? This is probably one of the hottest topics of these last years. All media are talking about it: we are now living in a world in which the climate is being substantially modified by human activity and it is happening at a pace that the Earth has not experienced before. It is not so often that the general public feels so involved in a scientific topic and there is a real need to draw the public's attention to the science hidden behind the headlines and the breaking news.

These thoughts were in my mind when I joined **IODP Expedition 374 Ross Sea West Antarctic Ice Sheet History** as an Education Officer during January and February 2018 *(photo right)*. Sailing on board the *JOIDES Resolution* is probably one of the best ways to pass on to a general audience not only how scientists acquire knowledge about past climates, but it is also a unique opportunity to make the science more concrete.

Isabela de Sousa (Sedimentologist) and Agnès Pointu, right (photo Juliane Müller & IODP)

Antarctica has the largest ice sheet on the planet and it plays a vital role in the global oceanic and climatic systems. The Ross Sea is an ideal location for studying past climates because it is a wide continental shelf that has preserved thick paleoclimate archives in the sediments deposited during the past ice sheet advances and retreats during glacial and interglacial times. Expedition 374 has looked back in time to understand how the largest ice sheet on the planet responded to past climate changes, particularly during warmer-than-present climates (*e.g.* the early Pliocene and middle Miocene).

During two months, I was part of a group of 30 scientists from 14 different nationalities. Expedition 374 drilled five sites, two on the continental shelf and three along a slope-to-rise transect, recovering more than 1300 metres of sediments - **http://iodp.tamu.edu/scienceops/expeditions/ross_sea_ice_sheet_history.html**.

The Education & Outreach team was composed of two educators (Rosa Hughes Carrie from New-Zealand and myself) and a videographer, Kim Kenny from the US. During the expedition, our team conducted 65 live broadcasts with schools, museums, and institutions from 15 different countries in the United States, Australia, New Zealand, Korea and Europe (France, United Kingdom, Italy, Spain, Sweden, Australia, Portugal, Ireland, Romania, Belgium) and Uruguay, and reached an estimated audience of 2,416 students.

Besides conducting broadcasts, I focused on writing 15 science blog posts about the scientific goals of the expedition - **http://joidesresolution.org/author/agnes-pointu/**. I wanted to open the black box of the science of "Climate Change" and explain in simple words some of the main ideas sustaining climate sciences. For example, how do scientists know that Earth has experienced climate changes? Why do we need to look into the past in order to have a better idea of the future? Why is Antarctica's ice sheet so important in climate regulation? What are the relationships between climate changes and ocean properties? How do numerical models need to be fed by geological data and how it will increase their accuracy?

I also wrote a sequence of posts explaining the numerous steps when studying in the ship's labs, including original graphics intended as teaching tools (*e.g.* "Paleomagnetism for Rookies", "The time lords of Expedition 374", "Tracking the age of the core", "Do you want to be part of the physical property's team?"). Kim Kenny, the videographer on board, made a series of videos linked to these general blog topics that teachers can use in class at any time. We also achieved a virtual ship tour in French, freely accessible on Youtube - **https://www.youtube.com/watch?v=ivjgB8JSoTM**.

Developing new teaching resources using data from Expedition 374 will be one of my main post-cruise projects. Sailing on an IODP expedition is a unique opportunity for a teacher to meet some enthusiastic scientists, happy to share their passion and their knowledge! The many rewarding talks that we had on board will be crucial to producing new teaching materials and maybe starting more sustainable collaborations.

I would like to thank Georges Ceuleneer, Stéphanie Cuven (IODP France), and Patricia Maruejol (ECORD), for their friendly and constant support. I am also very grateful to my supervisors, Cyril Hostater and Françoise Ribola who made my joining this expedition technically possible. I also benefited greatly from thoughtful reviews for my blog posts by the Co-chiefs scientists, Laura De Santis (OGS, Italy) and Robert M. McKay (University of Wellington, New Zealand) and by the Expedition Project Manager, Denise K. Kulhanek. I would also like to thank all the science party of Expedition 374 who made this expedition an unforgettable and rewarding experience.

*Lycée Louis de Broglie, Marly-le-Roi, France - agnes.pointu@gmail.com

ESSAC News

Antony Morris

Hanno Kinkel

The summer began for ESSAC with a very productive meeting (#10) in Toulouse (France), where Georges Ceuleneer and his team at the Observatoire Midi-Pyrénées kindly hosted the ESSAC delegates and liaisons. In addition to standard ESSAC business, extensive discussions were held on starting the ECORD planning process for a successor ocean drilling programme to IODP. We recognised the need for this to involve a bottom-up approach involving the diverse community of scientists interested in ocean drilling across the ECORD nations, including contributions from early-career scientists who have most to gain from the continuation of ocean drilling post-2023. It was also recognised, however, that a top-down initiative was required to facilitate this broader community involvement. The outcome of these discussions and subsequent actions is the **PROCEED "Expanding Frontiers of Scientific Ocean Drilling" meeting** - **http://www.ecord.org/science/proceed** - that will take place in the Austrian Academy of Sciences, Vienna, on 6 and 7 April 2019, immediately preceding the EGU General Assembly *(page 3)*, aimed at framing a successor programme to IODP. The Scientific and Organising Committees for PROCEED have now been established and will meet in London in November to plan the format of the Vienna meeting. A draft schedule should be released to the community shortly afterwards.

For the PROCEED meeting to succeed, we need to ensure that the voices of all those interested in scientific drilling are heard, especially those of young scientists who represent the future of IODP. Registration for the event is now open and requires just an email to **ema@cerege.fr** by **17 February 2019** to express your intention to attend. However, we recognise that not everyone will be in a position to come in person - if this is the case then please get in touch with members of the PROCEED Scientific Committee to pass on your views and ideas. Similar initiatives are also being planned by other IODP Program Member Offices around the world, and the intention is for the outcomes of these separate meetings to be presented, discussed and synthesised during and following the next IODP Forum meeting in Japan in September 2019.

On the **IODP Advisory Panels** *(page 18)*, ECORD will have six members of the Science Evaluation Panel (SEP) reaching the end of their terms of service in 2019. SEP is responsible for

IODP Expedition Drilling Schedule

Expedition	Exp #	Drillship	Dates	Co-chief Scientists
NanTroSEIZE Plate Boundary Deep Riser 4	358	*Chikyu*	10 Oct 2018 - 21 March 2019	T. Hirose, M. Ikari, K. Kanagawa, G. Kimura, M. Kinoshita, H. Kitajima,D. Saffer, H. Tobin, A. Yamaguchi
Return to Hole U1503A (South China Sea)	368X	*JR*	15 Nov. - 8 Dec. 2018	
Amundsen Sea West Antarctic Ice Sheet History	379	*JR*	18 Jan. - 20 March 2019	K. Gohl - J. Wellner
Iceberg Alley Paleoceanography & S Falkland Slope Drift	382	*JR*	20 March - 20 May 2019	M. Weber - M. Raymo
Dynamics of Pacific Antarctic Circumpolar Current (DYNAPACC)	383	*JR*	20 May - 20 July 2019	F. Lamy - G. Winckler
Panama Basin Crustal Architecture (504B) & Restoring 896A	385T	*JR*	18 August - 16 Sept. 2019	*tbd*
Hawaiian Drowned Reefs	389	*MSP*	September-October 2019	J. Webster - C. Ravelo
Guaymas Basin Tectonics and Biosphere	385	*JR*	16 Sept. - 16 Nov. 2019	A. Teske - D. Lizarralde
South Pacific Paleogene Climate	378	*JR*	3 Jan. - 4 March 2020	D. Thomas - U. Röhl
Amazon Margin	387	*JR*	26 April - 26 June 2020	*tbd*
Equatorial Atlantic Gateway	388	*JR*	26 June - 26 August 2020	*tbd*
South Atlantic Transect 1	390	*JR*	5 Oct. - 5 Dec. 2020	*tbd*
Walvis Ridge Hotspot	391	*JR*	5 Dec. 2020 - 4 Feb. 2021	*tbd*
Agulhas Plateau Cretaceous Climate	392	*JR*	4 Feb. - 6 April 2021	*tbd*
South Atlantic Transect 2	393	*JR*	6 April - 6 June 2021	*tbd*

JR: JOIDES Resolution, MSP: mission-specific platform. tbd: to be determined. ECORD Co-chief Scientists are marked in blue.

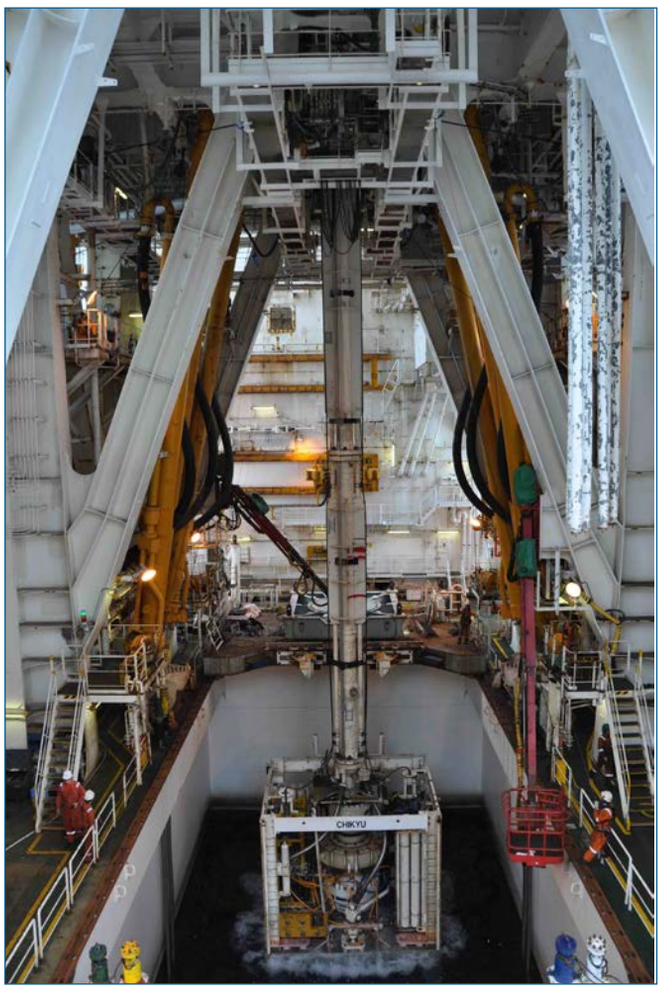
http://www.iodp.org/expeditions/expeditions-schedule

the evaluation of all IODP proposals and lies at the heart of the IODP system. We will shortly be issuing a call for applications for new ECORD SEP members (three for the Science sub-panel, three for the Site sub-panel), so if you feel that you have the right background and experience to contribute to the continued success of this key component of IODP then please watch out for this call in the near future.

In other news, we have now reached the end of the 2017-2018 **ECORD Distinguished Lecturer Programme**, and ESSAC would like to thank Marianne Conin, Gretchen Früh-Green, Mark Lever and Bridget Wade for their enthusiasm and hard work in delivering excellent talks at over 25 institutions collectively during their tenure as lecturers. ESSAC has now selected four new inspirational speakers for the next phase of the programme (2018/19), covering all four themes of the IODP Science Plan *(page 16)*. The initial call for requests to host one of our new speakers has now closed, but additional applications are welcome from eligible institutions and we will do our best to schedule these (subject to budget levels). To apply, send an email to **essac@plymouth.ac.uk**, including a list with more than one choice of speaker (this increases your institution's chances of hosting a lecture) and the details of a contact for communication with the ESSAC Office and the lecturers.

The selection of ECORD scientists to participate in **upcoming expeditions operated by the *JOIDES Resolution (JR)*, the *Chikyu* and MSPs** *(table page 14)* has been finalised until Expedition 385 and the call for the MSP Expedition 389 Hawaiian Drowned Reefs is currently under way with a **deadline for applications to sail of 23 November 2018** *(ESO, page 7)*. So far, four IODP expeditions have been completed in 2018, three using the *JR* and one the *Chikyu*. Expedition 358 NanTroSEIZE Plate Boundary Deep Riser 4 *(photo above right)* is currently underway and will be an extraordinary endeavour targeting a subduction plate boundary fault system and its wall rocks at seismogenic depths for the first time and involving 164 days of operations at sea. Science party members will rotate from onshore during this time, and **15 ECORD scientists** will be involved over the duration of the expedition, including Matt Ikari from MARUM in Germany, who is sailing as one of the Expedition 358 Science Leaders. Due to an extended dry dock visit and associated rescheduling of Expedition 378 to January 2020, the *JR* will now be able to make a brief return to the South China Sea (scheduled as Expedition 368X) to finish off coring and logging operations in IODP Hole U1503A. This did not involve a new call for participants, and the science party for this brief expedition has been drawn from scientists who previously participated in Expeditions 367 and 368.

ECORD and ESSAC remains committed to providing opportunities for young scientists to sail on IODP expeditions. Of the 329 ECORD participants sailing since Expedition 347 in late 2013, **52% have been PhD students and postdoctoral fellows/early-career scientists**, forming the largest staffing



Expedition 358 NanTroSEIZE Plate Boundary Deep Riser 4: Running Blow-out Preventer (BOP) into the water (photo JAMSTEC/IODP)

category ahead of senior scientists (41%) and those selected to act as Co-chief Scientists (7%). In addition, ESSAC continues to support initiatives to train the next generation of ocean-drilling scientists through the **ECORD Summer Schools** *(photos and reports pages 19-21)*, with more than 120 young scientists participating in three events related to marine science research and drilling in 2018 and sponsored by ECORD:

- **ECORD Petrophysics Summer School,** University of Leicester, UK, 30 June - 2 July 2018,
- **15th Urbino Summer School in Paleoclimatology**, Urbino, Italy, 11 -17 July 2018,
- **ECORD Bremen Summer School on Sub-seafloor Fluid Transport and Gas Hydrate Dynamics**, Bremen, Germany, 3-14 September 2018.

ESSAC awarded **15 scholarships** to young scientists to attend these events, selected from a pool of 27 applications.

In 2018, ESSAC also approved **seven awards through the ECORD Research Grants** scheme to young researchers in five

ECORD INVITES YOU TO HOST A LECTURE

ECORD
EUROPEAN CONSORTIUM FOR OCEAN RESEARCH DRILLING

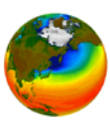
Luc Beaufort
CEREGE, France

Verena Heuer
MARUM, Germany

Marguerite Godard
Geosciences Montpellier, France

Rebecca Bell
Imperial College, UK

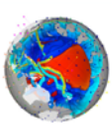
THE ECORD DISTINGUISHED LECTURER PROGRAMME



Climate & Ocean Change

Biosphere Frontiers

Earth Connections



Earth in Motion

The **ECORD Distinguished Lecturer Programme** (DLP) is designed to bring the exciting scientific discoveries of IODP to the geosciences community in ECORD and non-ECORD countries. Distinguished Lecturers will give lecturers in each of the four main thematic areas of IODP Science Plan 2013-2023. http://www.iodp.org/Science-Plan-for-2013-2023/

HOW TO APPLY?

Apply via electronic mail to: **essac@plymouth.ac.uk**

The application should include: 1) a list with more than one choice of speaker (1st, 2nd, optionally 3rd choice) – this provides more flexibility in scheduling and increases your institution's chance of hosting a lecture; and 2) the name, address, telephone number and email address of a contact person in your institution for communications with the ESSAC Office and the lecturer. Distinguished Lecturer will then liaise directly with you to decide a suitable date. ECORD funding will cover the speaker's travel expenses; host institutions are asked in turn to provide local transportation, housing, and meals for the speaker. Only one lecture per institution will be funded. The schedule of the lecturers will be principally based on the applications received by **15 October 2018**, although later applications can also be considered.

different ECORD member countries, for projects covering a wide range of topics - http://www.ecord.org/education/research-grant. This scheme is designed to maximise the benefits of the fantastic archives of core samples and data that have accumulated over 50 years of scientific ocean drilling by funding innovative projects that draw upon these resources *(report by Jakub Ciazela, pages 23-25)*. These awards at the same time help research students and early-career researchers to build personal networks that will benefit their future careers by enhancing their mobility within the ECORD nations.

Antony Morris, ESSAC Chair, and Hanno Kinkel, ESSAC Science Coordinator - essac@plymouth.ac.uk

Call for abstracts

EGU 2019, 7-12 April, Vienna, Austria

SSP1.2/CL/EMRP3.11/GD2.9/GMPV1.7/NH5.12/TS - Achievements and perspectives in scientific ocean and continental drilling (co-sponsored by JpGU)

https://meetingorganizer.copernicus.org/EGU2019/session/31032

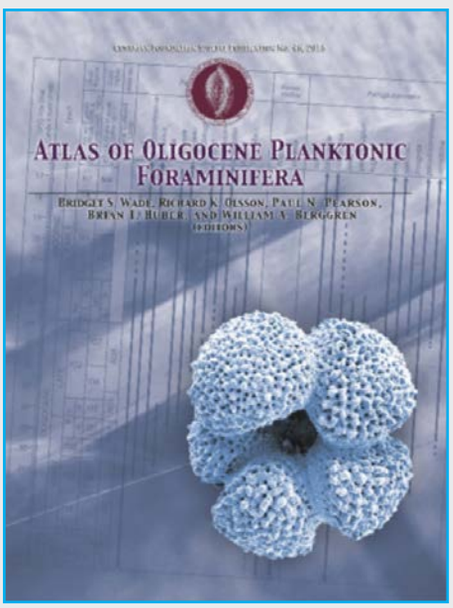
Deadline: 10 January 2019

http://www.ecord.org/science/get-involved/
http://www.ecord.org/education/

IODP in the press

Ocean drilling archives and their importance to planktonic foraminiferal taxonomy, biostratigraphy and evolution

Bridget S. Wade*



The International Ocean Discovery Program (IODP) and its predecessors have made a major contribution to the understanding of planktonic foraminifera evolutionary history through the recovery of expanded sedimentary successions, rich in microfossils. Ocean drilling cores allows the examination of how planktonic foraminifera responded through time, document their stratigraphic range and their reaction to climatic perturbations. The Paleogene Planktonic Foraminifera Working Group (PPFWG) of the International Subcommission on Paleogene Stratigraphy, International Union of Geological Sciences, has been active over 30 years dealing with comprehensive revisions to the taxonomy and biostratigraphy of Paleogene taxa. The **Atlas of Oligocene Planktonic Foraminifera** presents a thorough diagnosis of the stratigraphic ranges, phylogeny, taxonomy and paleobiology of all planktonic foraminifera and their synonyms from the Oligocene epoch, including many early Miocene species that become key components of the Neogene. Our aim was to establish a clear and workable taxonomy for all Oligocene planktonic foraminifera.

Through re-analysis of ocean drilling cores we have been able to assess and test taxonomic concepts and variability within a morphospecies and examine the paleogeographic distribution of each species. Most importantly, the records from ocean drilling have allowed us to build the phylogenies and constrain the biostratigraphic ranges of 128 morphospecies. As part of our work we have sampled and re-studied foraminifera from 49 ocean drilling sites, including some of the earliest records collected by DSDP. Our work emphasizes the importance for these archives for ongoing taxonomic and phylogenetic research. The Atlas of Oligocene Planktonic Foraminifera contains over 800 scanning electron microscope (SEM) images from DSDP, ODP and IODP records. We have assessed the distribution, stratigraphic ranges and phylogeny of each morphospecies, as well as the literature on their stable isotope paleobiology. The Atlas of Oligocene Planktonic Foraminifera will be invaluable to those studying the paleoceanography of the Oligocene ocean and anyone undertaking Oligocene and early Miocene planktonic foraminiferal biostratigraphy or geochemistry.

Wade, B.S., Olsson, R.K., Pearson, P.N., Huber, B.T. and Berggren, W.A., 2018 (eds.), Atlas of Oligocene Planktonic Foraminifera, Cushman Foundation

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http://www.iodp.org/program-organization/science-evaluation-panel
http://www.iodp.org/program-organization/environmental-protection-and-safety-panel

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http://www.ecord.org/about-ecord/management-structure/essac/

ECORD Summer Schools 2018

Petrophysics Summer School, 30 June - 6 July 2018

Aurea Vanessa Domingos Caetano*

The third edition Petrophysics Summer School 2018 (PSS18), held at the University of Leicester, was sponsored by ECORD, UK IODP, EPC, and organised by Sally Morgan from the host university. With 22 participants from different countries and distinct backgrounds, the summer school started on Saturday, 30 June, at Kings Richard III visitor centre, where we had an introductory meeting to greet and meet each other and share our academic, professional and personal experiences. The PSS218 had its proper commencement the day after on Sunday, 1 July

Sunday. As in the following days the first day started with an early morning bus ride from the accommodations to the Campus and a mild walk to the Geography, Geology and Environment Department. We were welcomed by Sally Morgan who gave us a brief introduction about the course and what we should expect during the week. It then followed by Angela Slagle (IODP), Gilles Guérin (Lamont-Doherty Earth Observatory of Columbia University) and Erwan Le Ber (EPC, University of Leicester), who gave us a brief introduction about the history of IODP, its offshore drilling operation as well as the logger's perspective.

We were asked to bring with us scientific posters which reflected our working projects. The research findings presented on the posters *(below left)*, covered a variety of areas in the field of earth science and the contents were very impressive and mesmerising, includeing fish evolution, fracture modelling, seismology, and isotope geochemistry. We then had our first Petrophysics 101 class with Peter Fitch (Imperial College, London), where we learnt the very basics after being submitted to an informal test. The afternoon went on with our "elevator pitches" - consisting on a two-minute talk where we introduced ourselves and things we like to do apart from our researches. In that moment we realised that we all had something in common, we all like ice creams!

Monday. In the 2nd and 3rd part of the 101 Petrophysics class, we learnt how to integrate several wireline logs to interpret and understand the sub-surface geology. It involved interpretation from sonic, resistivity, gamma ray, caliper, pixar, including density logs, and by the end of the day, we were able to interpret what type of rocks we were dealing with and estimate the volume of in place hydrocarbons just by looking at real example log data provided by IODP and by Sam Matthews from BP. We also were taught by Tim Pritchard (University of Leicester), how important is the use of statistics in Petrophysics. The day culminated with a vist of the New Walk Museum, where we had the opportunity to know more about Pre-Cambrian fossils found in Charnwood Forest (Leicester).

Tuesday. In my perspective, this was the best day of the course. We had the opportunity to visit Weatherford, a downhole logging service company, and went on a tour to see the types of log tools they use and how they measure the physical properties of the rocks *(back cover)*. After a long break in the beautiful garden of the British Geological Survey, we headed inside of the most beautiful core store I could ever see *(below right)*. We looked at a range of different core sections reflecting different types of depositional environments during Carboniferous and then compared to borehole log data. The field trip ended in the BGS shop where most of us lost our minds (well, me) by the beauty of geological souvenirs encountered there.

Wednesday & Thursday. These days were more computer oriented *(page 20)*. We learnt the basics of Tech-log, a software developed by Schlumberger to interpret log data, and with help from Rudi Mathers and Gillles Guérin, we were able to overcome the difficulties. We ended the night on Indian Restaurant to celebrate the end of the Petrophysics course.

Friday. The last but not the least important day. Gilles provided us with further and more complex knowledge on Tech-log by teaching us how to use velocity data to tie boreholes to seismic reflection data. This was well linked with the next talk on physical properties of rocks, given by Erwan Le Ber, where we attempted to measure P-waves velocities and thermal conductivities. After being

(photos Erwan Le Ber, EPC)

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armed with the basic knowledge of Tech-log, we spent the rest of the afternoon applying all the skills we have learnt throughout the two days of Tech-log. By the end of the afternoon, we were all reunited in the main room for our "graduation" ceremony, where we received lollipops, prizes and well-deserved certificates.

The PSS18 was a wonderful experience and a magnificent opportunity for me, I have learnt a lot about the subject I intend to work on in the future. At the beginning I though it would be terrible, but it turns out to be the best experience of my entire academic life. With a closure note, I would like to thank Sally Morgan for giving me the opportunity to attend the PSS18 and ECORD for sponsoring all my expenses.

(photo Erwan Le Ber, EPC)

Urbino Summer School in Paleoclimatology, 11-27 July 2018

Libby Robinson*, Swaantje Brzelinski*, Shuzhuang Wu*, Anta-Clarisse Sarr*, Lorna Kearns*, Martina Vannacci*, Reem Zrida*, Frida Hoem*, Andy Mair*

In July this year a small town in Italy began seeing its annual deluge of paleoclimatologists, arriving in small groups, looking slightly lost and confused whilst dragging their wheelie suitcases along the cobbled streets. These travellers all had one purpose in mind, the 15th Urbino Summer School in Paleoclimatology!

The Urbino Summer School in Paleoclimatology (USSP) represents one of the most important summer schools in this scientific field. ECORD generously funded 9 scholarships for students from ECORD member countries to attend this fantastic event, comprising 60 students and over 20 world-leading scientists of the paleoclimatologic research community. We delved into the world of paleoclimate systems, paleoceanography, paleoecology, astrochronology, biogeochemical cycles, biotic and geochemical proxies, climate modelling, cryosphere dynamics and future climate change. Quite an intense schedule for two and a half weeks, but the lectures kept us gripped to the very end (…also, there was also a lot of coffee!).

The power of USSP 2018 was not just in the lectures however. The international character of the programme and the diverse and representative group of students from all over the world created a cultural, creative and inspiring exchange on a scientific as much as on a personal level. The cogs really began turning outside of the lecture theatre during the coffee breaks, the lunches and drinks in the Piazza after a full day of learning. A rather informal setting opened the table for great discussions, exploring future collaboration opportunities, expanding the academic network and, of course, making new friendships.

The field trip organised by USSP 2018 brought us to the beautiful area of the Contessa Valley. We visited the quarry in Gubbio that is located about one hour south of Urbino. It was an added bonus to the fantastic scenery that we enjoyed in Urbino, a town that is uniquely situated to teach paleoclimate. The stories contained within the nearby outcrops begin back in geological time from the records of sea-level and climate change in the Cretaceous, and meet us here today in the present as we learnt about the famous 20th Century geologists who visited this area. The quarry in Gubbio holds one of the most famous outcrops of Oceanic Anoxic Event 2 (OAE 2) of the Cenomanian-Turonian boundary (upper Cretaceous) *(below)* - a time of near global deoxygenation in the world's oceans - which was a highlight of the trip for some of the Cretaceous geeks. Getting to see the locations that are frequently photographed and referenced in papers really brings the subject to life.

USSP was an incredible learning experience, improving our scientific communication and expanding collaborative opportunities. Powered by pizza and pasta, we built relationships with like-minded young researchers, who we are looking forward to meeting in our future careers as paleoclimate researchers.

We made our way home enriched, full of ideas and hopefully, less lost and confused than we arrived. Many of us would not have the possibility to participate had it not been for the ECORD Scholarship and we thank ECORD for the sponsorship that made this trip possible!

* ECORD Scholarship Awardees

Bremen Summer School on Sub-seafloor Fluid Transport and Gas Hydrate Dynamics, 3-14 September 2018

Ursula Roehl*

On the afternoon of Sunday 2 September, 24 young scientists (PhD students and Postdocs) from eight different countries in Europe, Australia and America arrived in Bremen. They came together to learn about the numerous processes relating sub-seafloor fluid transport and gas hydrate dynamics during the twelfth ECORD Summer School, which took place at the MARUM - Center for Marine Environmental Sciences and the IODP Bremen Core Repository (BCR) at the University of Bremen in Germany. The school combined lectures with practicals and laboratory exercises on state-of-the-art IODP-style shipboard methodologies. By the "virtual ship experience" at MARUM, the participants gained insights into how the samples and measurements in publications or use for own research are actually acquired. Moreover, the participants had the opportunity of presenting their own research projects to exchange their most recent findings and ideas regarding sub-seafloor fluid transport and gas hydrate dynamics.

(photo Volker Diekamp, ECORD/MARUM)

The lectures addressed "sub-seafloor fluid transport and gas hydrate dynamics", the general topics of the summer school, from various disciplines. Topics ranged from continental margins and cold seeps to fluid rock interactions of the oceanic lithosphere, hydrothermal circulation at ridge flanks and seamounts as well as hydrothermal vent fields, from geochemistry to seismics and modelling, and from gas hydrate general dynamics to pore water and climate interactions. Certainly, the participants got to know about IODP in general, its organisational structure and world of acronyms, application processes, importance and procedures of outreach, proposal writing, current planning and future trends that all might pave the way toward involvement in future IODP expeditions.

(photo Volker Diekamp, ECORD/MARUM)

The Bremen Core Repository reefer and labs tour and MARUM workshop was crucial part in the beginning. Many aspects of a typical core workflow during an IODP expedition were addressed in practicals: the fun of recognising composition and structures in a core section or a smear slide, the measurement of physical properties or the acquisition of pore water incl. initial analyses for example. A one-day *R/V Alkor* cruise *(photo below left)* to seeps in the Baltic Sea, the Eckernförde Bay pockmark field, was another highlight. Coffee, tea, and lunch breaks as well as socialising "after shift" in the evenings or the organised weekend tours provided numerous opportunities for discussions and networking with a number of new colleagues and potential future collaborators.

For a detailed programme see:
http://www.marum.de/en/ECORD_Summer_Schools.html

Some of the comments we received from participants, when they were asked which aspect of the summer school they liked most:

"Thanks to everyone who was involved and organised the Summer School! I think I learnt really a lot, it was a great experience and fun, too!"

"Hard to point out one thing. I loved it!"

"Covering every discipline about gas hydrates with very experienced professors."

"I really loved the lecture content and the lab activities."

"I especially liked the diversity of topics & lecturers, that there were so many experts involved (first-hand experience)."

"Lots of internationally important scientists/lecturers."

"Apart from the amazing group of people I met, the best thing of the summer school was the ship experience."

"Interdisciplinary lectures and scope of networking with peer researchers."

http://www.ecord.org/education/summer-schools/

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ECORD Training Course 2018
23-28 April 2018, Bremen, Germany

Ursula Roehl*

For the next generation of IODP scientists the MARUM (Center for Marine Environmental Sciences, University of Bremen) is an important hub. The Bremen Core Repository (BCR) located at MARUM, is one of three IODP repositories in the world, here scientists can access cores for description, analyses and sampling, as well as being trained at an early stage in their career.

From 23 to 27 April 2018, the fourth ECORD Training Course building on the success of previous years was held at the BCR with 31 participants from 14 different countries, including non-ECORD IODP member countries. This five-day course started with an introductory session on the structure and objectives of ECORD and IODP, and a general tour of the MARUM and BCR, before focusing on the IODP core-flow and typical expedition laboratory procedure practicals in smaller groups *(photos below)*. These IODP-style lab exercises formed the foundation of the course, following the pattern of the unique "Virtual Ship" approach developed for the popular Bremen ECORD Summer Schools *(page 21)*.

(photos Volker Diekamp, ECORD/MARUM)

The course was customised to prepare the participants for sailing on an IODP expedition, and to give them an appreciation of the high standards required for all kinds of coring projects. The detailed programme is posted on:
http://www.marum.de/en/ECORD-Training-Course-2018.html

The course concluded with an IODP proposal writing exercise on the last day. The brainstorming in breakout groups was great fun and has already resulted in several promising new ideas that may evolve into pre-proposals in the future. The participants were exceptionally lively, taking part in practical exercises and contributing to discussions, gaining first-hand insights into the multidisciplinary team effort that is a crucial part of the success of any ocean drilling programme.

Some comments we received from participants, when they were asked which aspect of the summer school they liked most:

"Fantastically run course giving real insight into the operations of MARUM and IODP as a whole."

"My overall Impression on the course is very positive with a fair balance between practical activities and lectures."

"Varied programme which provided hands on experience of working with a variety of cores and gave valuable experience."

"I liked the stories about life on board and the information on how/who can apply."

"I liked that we were split up into smaller groups, which made the lab turns really interactive."

"Getting to meet that many interesting and open-minded people, width of topics covered."

"Learning about the job roles onboard and the applications of different methods. It has also been very good for my studies and helped improved my understanding of different concepts."

"The multidisciplinary approach. The experience of a wide spectrum of analytical techniques that take place during an IODP expedition. The opportunity of relate with experts and colleagues from different fields of study and backgrounds."

"Seeing behind the scenes. Getting a proper look into IODP practice. Networking."

"The opportunity to get inside into areas outside of my personal expertise and the chance to meet other early career scientists in Earth Sciences."

"In general the course is an incredible opportunity to obtain an approach to real work aboard a research ship, I congratulate you for the excellent work."

http://www.ecord.org/education/training-course/

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ECORD Research Grants 2017

Sulfide-rich interval discovered deep in the lower crust (U1473A, Atlantis Bank, SWIR)

Jakub Ciazela*

Introduction

During the recent International Ocean Discovery Program (IODP) Expedition 360 SW Indian Ridge Lower Crust and Moho *(Dick et al, 2016)* we discovered a long interval of fresh sulfide-and-oxide-rich gabbro at a depth of 615 to 730 mbsf (metres below seafloor) of the 810 m-deep IODP Hole U1473A into the Atlantis Bank OCC (57.3°E, 32.7°S). We investigate exceptionally large sulfides (up to 8 mm) from this interval to understand how they could have formed. In addition, we are interested in the role of sulfides for microbial activity in the lower oceanic crust, and in developing reliable method for in situ measurements of sulfur isotopes in pyrrhotites and chalcopyrites, which are common sulfides in many tectonic settings. An ECORD Research Grant supported our analyses of the sulfur isotopes at the national Sensitive High Resolution Ion MicroProbe (SHRIMP) lab in Warsaw in September 2017.

Description of laboratory work

In June 2017, we selected twelve thin sections from the sulfide-rich interval based on microscopic investigation and whole-rock sulfur isotope measurements. To save time for sample exchanges during SHRIMP analyses (associated with long time to build the high vacuum), we decided to collect more sulfide grains from different samples into two mounts. We tried two methods to separate the sulfides, **(1)** magnetic separation of crashed material followed by picking up sulfides under a binocular, and **(2)** cutting 5x5 mm minislabs from thin section billets using a diamond saw. The former method allowed us to only obtain only small 0.3-0.5 mm grains. Thanks to the latter method we managed to cut out the largest sulfide grains identified in our thin sections (1-7 mm grains). The latter method has thus been better for our purpose as we needed these large sulfide grains to find large chalcopyrites. Chalcopyrite makes up only ~5-20% of sulfide grains *(table below)*.

From left to right, Henry Dick (Woods Hole Oceanographic Institution, USA), Jakub Ciazela, and Juergen Koepke (University of Hannover, Germany) (photo Bill Crawford, IODP JRSO).

After the sulfide separation finished in August, we sent our samples along with reference materials (Sudbury pyrrhotite and Cpy-1 chalcopyrite) to Warsaw. The sulfides were then embedded in two epoxy mounts and polished. The SHRIMP lab in Warsaw has also prepared the photographic documentation of the entire mounts (reflected light A3 images in a resolution of 3000 dpi) and single sulfide grains (back-scattered electron images). Shortly before

The $\delta^{34}S$ signatures of the U1473A sulfides measured using Secondary Ion Mass Spectrometer

Sample	pyrrhotite			chalcopyrite			% in sulfide grain		bulk $\delta^{34}S$
	$\delta^{34}S$(‰)	SE (‰)	N	$\delta^{34}S$(‰)	SE (‰)	N	pyrrhotite	chalcopyrite	(‰)
70R-6-W 92/101	0.5	0.4	11	-1.7	0.6	11	75	20	0
73R-1-W 88/97	2.2	0.2	9	-2.0	0.4	7	75	20	1.2
74R-7-W 72/81	1.3	0.2	9	-1.5	0.7	4	80	15	0.8
75R-1-W 44/52	0.9	0.2	11	-2.0	0.6	3	75	20	0.3
75R-8-W 19/29	0.2	0.4	7	-1.7	0.7	3	80	15	-0.1
76R-3B-W 86/93	0.6	0.3	15	-1.7	0.3	13	85	10	0.3
80R-7-W 90/100	1.4	0.3	10	n/a	n/a	0	85	10	n/a
80R-8-W 18/24	1.8	0.4	10	-0.5	0.3	2	83	5	1.5
82R-6-W 74/84	0.9	0.3	10	n/a	n/a	0	84	5	n/a
82R-7-W 14/24	2.0	0.2	14	-1.1	0.3	10	75	18	1.3
13R-1-W 26/33	1.9	0.5	14	-1.7	0.5	7	82	16	1.3
13R-1-W 40/50	1.7	0.4	11	-1.2	0.5	4	85	11	1.3

$\delta^{34}S$ represents deviation of $^{34}S/^{32}S$ from Vienna Canyon Diablo Troilite. Bulk $\delta^{34}S$ does not take into account pentlandite, which is minor (1-5%). SE - standard error. n/a - not available. N - number of measured grains.

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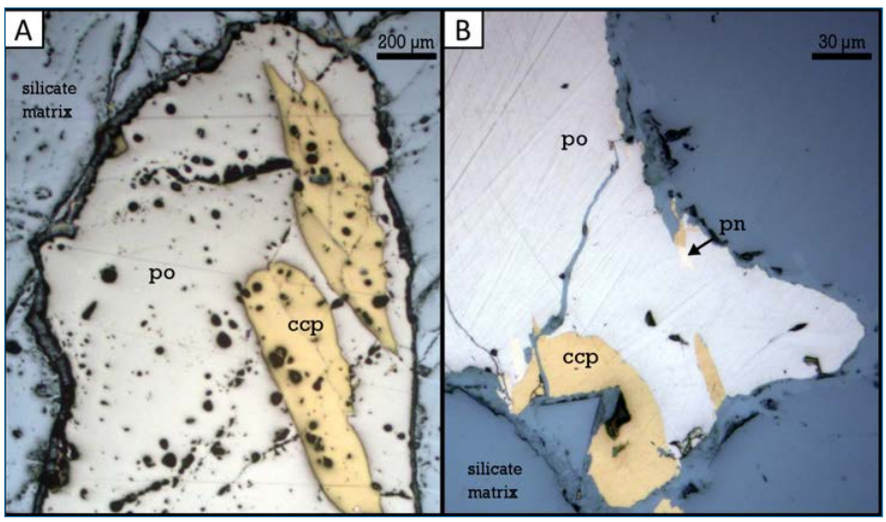
the SHRIMP analyses, our samples have been coated with gold. Major element composition and sulfide homogeneity were yet controlled using energy dispersive X-ray spectroscopy (EDX). We have used the planned 48 hours of the SHRIMP instrument time thanks to possibility of automatic measurements during nighttime. All in all, we have performed 195 analyses in 12 samples, including 131 pyrrhotite analyses and 64 chalcopyrite analyses. We have processed and interpreted data between October 2017 and January 2018.

Preliminary results and conclusions

Average $\delta^{34}S$ signatures for the 12 measured samples range from +0.2 ± 0.4‰ (1SE, Standard Error of the mean) to +2.2 ± 0.2‰ in pyrrhotites and from -2.0 ± 0.6‰ to -0.5 ± 0.2‰ in chalcopyrites *(table page 23)*. Bulk signatures calculated taking into account the proportion of pyrrhotites and chalcopyrites in the sulfide grains range from -0.1 to 1.5‰ *(table page 23)*. Pentlandites are not taken into account but their influence on the bulk signatures would be minor considering low modes of pentlandites (1-5%) in our sulfide grains *(table page 23 and photos above)*.

The obtained $\delta^{34}S$ range confirms a magmatic origin of the sulfides consistent with typically magmatic origin of sulfides throughout the U1473A Hole *(Ciazela, 2018)*. While the $\delta^{34}S$ value of magmatic S (mantle S) is usually close to 0‰, hydrothermal sulfides exhibit positive values, most typically in a range between 2 and 9‰ *(Peters et al, 2010)*. In this view our sulfides are clearly magmatic. However, there could be an addition of seafloor-sulfur to the sulfide-forming melt by interactions with the country rocks. Sulfur isotope data from sulfide sulfide minerals are a powerful tool for identifying S contamination of the magma through interactions with the country rocks, if the S isotope composition of the country rocks is significantly different from the magma *(Seal, 2006)*. The Atlantis Bank sulfates show $\delta^{34}S$ signatures up to 20‰, and pyrites up to 7‰ *(Alt and Anderson, 1991)*. Using this information we can model the degree of crustal assimilation for the melt that yielded the sulfides in the sulfide-rich interval. The degree of assimilation seems to be rather low. Even the sample showing the highest $\delta^{34}S$ signature of +1.5‰ can be composed of only ~30% pyrite-S (assuming a $\delta^{34}S$ signature of 5‰ in the pyrite) or ~15% sulfate-S (assuming a $\delta^{34}S$ signature of 10‰ in the sulfate), consequently containing 70-85% of mantle S. The percentage of mantle S would be of course yet higher for the other samples (with lower $\delta^{34}S$ signatures). We therefore conclude that the large sulfides from the investigated sulfide-rich gabbro interval were formed thanks to a purely or almost purely magmatic process, and the size of sulfides is unlikely owed to any additional source of S.



Typical sulfide grain from the 615-730 mbsf interval of IODP Hole U1473A. Po, pyrrhotite. Ccp, chalcopyrite. Pn, pentlandite. Sample U1473A-75R-1-W 83/91-CIAZ. Reflected light.

We have tentatively assessed role of magmatic sulfides on microbial activity in the deep lower oceanic crust. Some microbiological shipboard samples collected from the sulfide-rich interval are populated by microbes *(MacLeod et al, 2017)*. To determine whether or not our magmatic sulfide grains may be involved in microbial S cycling we looked for diagnostically ^{34}S-depleted sulfur isotope values *(Delacour et al, 2008; Rouxel et al, 2008; Alt and Shanks, 2011)* among 195 measured sulfide grains. We have not found microbial $\delta^{34}S$ in any of the 131 measured pyrrhotites. However, we have found one chalcopyrite with a distinct $\delta^{34}S$ of - 11.8‰, and four chalcopyrite with moderately lowered $\delta^{34}S$ signature between -6 and -4‰ among the 64 measured chalcopyrites. We will investigate these chalcopyrites in details in cooperation with the shipboard microbiologists, Virginia Edgcomb and Jason Sylvan, to look for potential microbial activity.

On top of the petrological applications, our research could become a reference work for similar sulfur isotope studies. Due to the paucity of suitable standards, the small sizes and high degree of alteration of the pyrrhotites and chalcopyrites from the oceanic gabbro, their sulfur isotope compositions were rarely determined. In contrast, our large magmatic sulfides enabled reliable analysis with many measurements per sample. These results seem to be in very good agreement with our bulk rock data, which also indicated mantle signatures of local S and suggested higher $\delta^{34}S$ values for pyrrhotites than chalcopyrites *(Ciazela, 2018)*. The higher $\delta^{34}S$ in pyrrhotites compared to chalcopyrites are also predicted by thermodynamic calculations *(Kajiwra and Krouse, 1971; Li and Liu, 2006)*. To monitor the accuracy and precision of our SHRIMP measurements, we used standards with known S isotope compositions, the CPY-1 chalcopyrite and the Sudbury pyrrhotite. CPY-1 has the $\delta^{34}S$ reference value of +1.4 ± 0.2‰ (1σ) measured in two independent labs using secondary ion mass spectrometry

(SIMS). The Sudbury pyrrhotite has the $\delta^{34}S$ reference value of +2.4 ± 0.2‰ (1σ) that was measured in solution using Kiba extraction method *(Ripley et al, 2011)*. During our measurements we obtained values of +2.39 ± 0.06 (1SE, n=21) for the Sudbury pyrrhotite and +1.42 ± 0.09 (1SE, n=14) for the CPY-1 chalcopyrites indicating high accuracy and precision. High precision reflects excellent isotope homogeneity of the used reference materials.

Prospective

We are currently working on two manuscripts that include the results obtained thanks to the ECORD Research Grant. The first one is based on the ten proposed samples from the sulfide-rich interval *(top ten samples on table page 23)* and was presented at the Goldschmidt conference in Paris in August 2017. These first results are now completed with S, Cu and Fe isotope data and will be submited to *Geochimica & Cosmochimica Acta* in early fall 2018. The methodic aspects of these pioneering chalcopyrite and pyrrhotite SHRIMP measurements will be presented at the Mineralogical Society of Poland (PTMin) meeting in Brunów, Poland, in October 2018, and will be developed into a methodical paper to be submitted to *Geostandards and Geoanalytical Research Journal*.

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From left: Henry Dick (Co-chief Scientist, Woods Hole Oceanographic Institution, USA), Virginia Edgcomb (Microbiologist, Woods Hole Oceanographic Institution, USA), Christopher MacLeod (Co-chief Scientist, Cardiff University, UK), Antony Morris (Paleomagnetist, University of Plymouth, UK), Peter Blum (Expedition Project Manager/Staff Scientist, IODP JRSO), Benoît Ildefonse (Structural Geologist, University Montpellier II, France), and Stephen Midgley (Operations Superintendent, IODP JRSO) holding the record core (photo Bill Crawford, IODP JRSO).

Calendar of Workshops and Conferences

2018

4 - 7 November
GSA 2018
Indianapolis, IN, USA
www.geosociety.org/meetings/2018/

30 November - 1 December
Swiss Geosciences Meeting
Bern, Switzerland
geoscience-meeting.ch/sgm2018/

3 - 14 December
COP24
Katowice, Poland
www.cop24.katowice.eu/

10 - 14 December
AGU 2018
Washington DC, USA
fallmeeting.agu.org/2018/

2019

22 - 24 January
MagellanPlus Workshop New Caledonia Peridotite ADP
Montpellier, France
www.ecord.org/science/magellanplus

18 - 22 March
LPSC 2019
The Woodlands, TX, USA
hou.usra.edu/meetings/lpsc2019/

6 - 7 April
PROCEED
Vienna, Austria
www.ecord.org

7 - 12 April
EGU 2019
Vienna, Austria
https://egu2019.eu

26 - 30 May
JpGU 2019
Chiba, Japan
www/jpgu.org/meeting_e2019

18 July - 2 August
AOGS 2019
Singapore
www.asiaoceania.org/aogs2019/

18 - 23 August
Goldschmidt 2019
Barcelona, Spain
goldschmidt.info/2019/

10 - 13 September
IAS
Rome, Italy
iasroma2019.org/

22 - 25 September
GSA 2019
Phoenix, AZ, USA
www.geosociety.org/gsa

9 - 13 December
AGU 2019
San Francisco, CA, USA
meetings.agu.org

2020

2-8 March
IGC #36
Delhi, India
36igc.org/

3-8 May
EGU 2020
Vienna, Austria
https://egu2020.eu/

24 - 28 May
JpGU 2020
Chiba, Japan
www.jpgu.org

5-10 July
ICRS 2020
Bremen
www.icrs2020.de/

18 June - 4 July
AOGS 2020
Gangwon, South Korea
www.asiaoceania.org/

7 - 11 December
AGU 2020
San Francisco, CA, USA
sites.agu.org/meetings-events/

2021

13 - 17 December
EGU 2021
Vienna, Austria
www.egu.eu/meetings/general-assembly/meetings/

Calendar of ECORD & IODP Meetings

ECORD Outreach #14
5 November 2018
The Hague, The Netherlands

Operational Review Committee Expedition 381
6 November 2018
The Hague, The Netherlands

ESSAC #11
6 November 2018
The Hague, The Netherlands

ECORD Council-ESSAC #6
6-8 November 2018
The Hague, The Netherlands

SEP
8-10 January 2019
La Jolla, CA, USA

ECORD Outreach #15
28 February - 1 March 2019
Aix en Provence, France

EPSP
12 February 2019
College Station, TX, USA

ECORD Facility Board
21-22 March 2019
Bremen, Germany

***JOIDES Resolution* Facility Board**
7-8 May 2019
Washington DC, USA

***Chikyu* IODP Board**
11-12 June 2019
Kobe, Japan

SEP
25-27 June 2019
Edinburgh, UK

EPSP
4-5 September 2019
College Station, TX, USA

IODP Forum
11-13 September 2019
Osaka, Japan

Program Member Offices
14 September 2019
Osaka, Japan

ECORD Council-ESSAC #7
5-6 November 2019
Dublin, Ireland

http://www.ecord.org/about-ecord/events-calendar/
http://www.iodp.org/

Reports of MagellanPlus Workshop Series Programme

Fjord Sediment Archives in the Northeastern Atlantic

7-8 April 2018, Vienna, Austria

Convenors: Jacques Giraudeau, Jochen Knies, Simon Belt, Matthias Forwick, Berit Hjelstuen, Katrine Husum, Seung-Il Nam, James Scourse

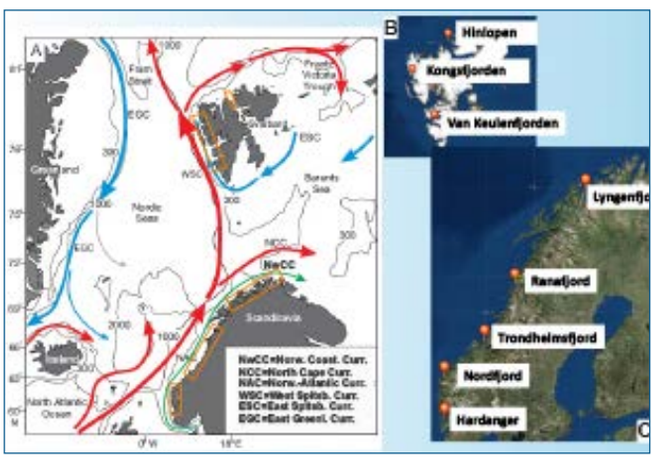
The MagellanPlus workshop "Fjord sediment archives in the northeastern North Atlantic" aimed at refining the scientific rationale and strategies for drilling/coring in Norwegian and Svalbard fjord systems as part of the FANA IODP 915-Pre initiative, and to stimulate the submission of a full IODP proposal for the October 2018 deadline. The location and timing of this workshop (7-8 April, 2018, Vienna, Austria), as a pre-EGU event, were selected in order to foster the participation of key scientists who planned to attend the General Union Meeting from 9 April. This workshop gathered a broad spectrum of scientists willing to share their expertise and develop original concepts on the identification and reconstruction of post-glacial paleoclimate changes and coastal geohazards based on fjord sediment archives. The workshop was attended by **23 scientists including 5 early-career scientists**, and a representative of the ECORD Science Operator. Kenynotes and open discussions covered a wide range of disciplines and topics related to the motivation and objectives of FANA. Break-out sessions wrre dedicated to discussing recommendations made by the IODP SEP (June 2017 meeting) and to finalise the agenda and tasks for the preparation of the full proposal.

Five main overarching themes were discussed:

- On the importance of bridging marine and continental climates using fjord sedimentary records;
- Lessons from initiatives in other polar/subpolar coastal and shelf settings;
- Past and present sedimentary processes in fjord systems: glacimarine vs. hemipelagic vs. mass transport deposits;
- Decrypting fjord sedimentary records: proxies and analytical developments;
- Developping the FANA full proposal: state of site survey, methods and shore-based analyses.

The main deliverables can be summarised as follows:

- Investigating carbon burial in fjord system, its evolution over the last deglaciation and Holocene, and the relative impact of climate changes, human activities and local fjord physiography upon the origin and amount of carbon stored in fjord basins have to be highlighted as one of the key FANA topic.
- Fjord sedimentary records offer a unique opportunity to investigate the influence of human activities on biogeochemical and sedimentary processes and sediment/carbon budgets in coastal environments. The existence of multi-decadal instrumental records in most Norwegian and Svalbard sectors investigated as part of FANA constitutes an important added value, which need to be clearly highlighted.
- The most recent works conducted on the topic of dating mass transport deposits (MTDs) and discriminating processes responsible for their triggering suggest **(1)** an overall synchronicity in the occurence of major MTDs in southern Norwegian fjord systems which needs to be tested in more northern setting, **(2)** the interest of combining physical and sedimentological parameters measured in sediment cores to discriminate types of MTDs, **(3)** the interest of high resolution swath bathymetry when investigating local processes which triggers MTDs.
- The development of robust chronologies is challenging in fjord settings and has to rely on the combination of ^{14}C dating and paleomagnetic data with implications on the choice of coring/drilling technologies, and on strategies for the determination of reservoir ages.
- Good to high quality seismic datasets are already available for most of the initially selected eight fjord systems. Efforts should concentrate on **(1)** collecting missing data for the northernmost Norwegian and Svalbard fjord sectors, **(2)** better advancing on identifying, in parallel to general objectives, specific scientific questions in relation to individual drilling/coring sites or fjord systems according to heterogeneities in fjord physiography and sedimentary processes.



Schematic view of surface circulation in the NE North Atlantic and FANA working area (orange boxes). Targeted fjords B and C.

Given the implication and enthusiasm of all participants, and the very productive discussions which took place throughout those two days, the workshop conveners agreed on the possibility to submit a full proposal by the fall 2018 deadline and to drastically extend the list of co-proponents according to inputs provided during the meeting as well as additional interests formulated by colleagues which, unfortunately, could not attend this gathering.

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Temporal evolution of Arctic gas hydrate and methane seepage systems - 4-5 June 2018, Tromsø, Norway

Convenors: Andreia Plaza-Faverola, Sunil Vadakkepuliyambatta, Jochen Knies, Stefan Bünz

The main objective of the workshop was to gather scientists from around the world to discuss potential proposals for scientific drilling in the Fram Strait. A pre-proposal was submitted in April 2018 focusing on the reconstruction of methane release to the oceans over geological time and the interaction between regional processes and the near-surface Earth system. The workshop will be a platform to explore further scientific questions in the Fram Strait, create interest among young scientists, discuss ocean drilling strategies with experts as well as preparing an action plan to develop and submit a full proposal in October 2018.

The workshop was hosted on 4 and 5 June 2018 at the Department of Geosciences, Faculty of Science and Technology, UiT-The Arctic University of Norway in Tromsø, Norway. It was organised by the Center of Arctic Gas Hydrate, Environment and Climate (CAGE) at the department with financial support from ECORD. The workshop was attended by **36 participants, of which 31 participants were officially registered and supported through an ECORD grant**. Since we ran the lectures in an open auditorium, we had five additional participants. The participants represented 16 different national and international institutions, including pioneering institutions in ocean drilling such as JAMSTEC in Japan and the US Geological Survey. A total of seven early-career scientists were actively involved in the workshop.

The workshop consisted of three sessions with 18 speakers in topics that ranged from regional geological processes relevant to the Fram Strait to specialised ocean drilling techniques and methods for reconstructing paleo methane emissions. A total of seven hours of group discussions on specific aspects for finalising an IODP full proposal were distributed through both days of workshop.

In the first session "Cross-disciplinary perspective - Earth systems in the Fram Strait", few key multi-disciplinary topics relevant to the Fram Strait were discussed after a general introduction to the Fram Strait methane seepage system. A second set of talks was dedicated to discussing drilling challenges in shallow gas and hydrate systems.The final session focused on proxies for reconstructing paleo fluid emissions (mainly methane). A representative of IODP who is the Expedition Project Manager for the *JOIDES Resolution (JR)* gave an overview of the tools and technical possibilities onboard the drillship. Similarly, the process of IODP proposal review and evaluation was discussed. sufficient time to achieve good results. Our proposal idea will most likely go through an additional evaluation phase by the Environmental Protection and Safety Panel (EPSP) for reviewing safety issues.

Group photo of the participants of the workshop.

A discussion session designed the following action plan:

- Once the feedback for the pre-proposal is received, a meeting will be organised between main proponents to discuss the comments from the Science Evaluation Panel and finalise key objectives as well as selection of alternative sites.
- Propose a meeting with LWD experts; including representative from the service companies providing the tools (Schlumberger, GeoTek?) to gain a clear and realistic view of the possibilities.
- Work on a detailed spreadsheet with the indication of intervals where pressure or piston cores will be collected (if they will be).
- Work on annexes with information about technical challenges like climate conditions in the area (ice, weather, seabed ecology, mammals, etc.).
- Use key IODP successful proposals as guidance (*e.g.*, Cascadia margin, New Zealand, etc.)

We are satisfied with the outcome of the workshop. Keeping the time schedule right as planned was challenging because all the speakers had significant content to share. In addition, large number of questions by the audience to the speakers resulted in longer sessions that panned. Nevertheless, we completed the full program. One of the speakers, Michael Riedel, got stocked at Hamburg airport and decided to cancel the whole trip to Tromsø. He sent his presentation and Tim Collette presented key points during the discussion session to a few of us. The input from the participants was substantial and will hopefully open doors of cooperation beyond the writing of the IODP proposal. We are grateful with ECORD for supporting and having this initiative of encouraging organisation of this series of international workshops.

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Full reports of MagellanPlus workshops are posted on:
http://www.ecord.org/science/magellanplus/

ECORD
EUROPEAN CONSORTIUM FOR OCEAN RESEARCH DRILLING

icdp

ECORD/ICDP MagellanPlus Workshop Series Programme

Call for Proposals

The **ECORD/ICDP MagellanPlus Workshop Series Programme** invites proposals to organise workshops to support the development of IODP/ICDP proposals.

MagellanPlus would particularly welcome proposals for workshops that integrate scientific marine and continental coring with scientific topics such as Earth's Surface Environmental Change, Processes and Effects; the Deep Biosphere & Sub-Seafloor Ocean, as well as Solid Earth Cycles & Geodynamics, as outlined in the science plans of IODP and ICDP.

The contribution of the MagellanPlus Workshop Series will not exceed 15,000 Euros per workshop. Proponents are encouraged to seek co-funding from other sources. Workshops will be held no later than 12 months after approval by the MagellanPlus Science Steering Committee.

Proposals must include:

1) Short summary (max 500 characters) stating the purpose of the proposed workshop, its location and expected impact;
2) Full description (max 2 pages) of the proposed workshop outlining the purpose, rationale, expected impact and number of participants;
3) Preliminary workshop programme;
4) List of keynote speakers;
5) Flyer of the workshop;
6) Full budget for the workshop;
7) CV (max. 1 page) plus a list of international, peer-reviewed publications for the last five years, of main applicant.

Proposals must be submitted as a single, combined pdf-document and email attachment to magellan.plus@uu.nl and to ema@cerege.fr

The deadline for applications is **15 January 2019**.

For further information, please contact **MagellanPlus via magellan.plus@uu.nl**.

http://www.ecord.org/magellanplus.html

Thomas Wiersberg

News and Views

Call for Papers for *Scientific Drilling*

Scientific Drilling is a multi-disciplinary, open access journal focused on bringing the latest science and news from the international scientific drilling programs (IODP and ICDP) and similar ventures to the geosciences community. Scientific Drilling publishes reports from all kinds of drilling-related scientific research, including sampling and monitoring the Earth at deep sea, shelf, lakes, continents and ice.

The journal delivers peer-reviewed science reports, reports on engineering and technical developments, workshop reports, progress reports, and news & updates from the community. The publication in Scientific Drilling is free of charge for authors. Scientific Drilling is published semi-annually.

The editorial board of Scientific Drilling invites scientists and engineers to submit scientific papers and progress and workshop reports on scientific drilling expeditions and projects, new drilling technologies and instrumentation development.

http://www.scientific-drilling.net

New ICDP Chair Marco Bohnhoff

The ICDP Executive Committee and Assembly of Governors have appointed **Marco Bohnhoff** as the Chair of the Executive Committee.

Marco Bohnhoff is Professor for Experimental and Borehole Seismology at the Free University Berlin and head of the Section 'Geomechanics and Rheology' at the GFZ German Research Centre for Geosciences. Marco has extensive knowledge in the field of scientific drilling and brings ICDP experience through

his role as Principal Investigator in various ICDP projects, including the Geophysical borehole Observatory at the North Anatolian Fault (GONAF), Deep Drilling at Koyna for Reservoir Triggered Seismicity, and a STrainmeter ARray in shallow boreholes of the northern Apennines (STAR).

Marco stated that he is far from being idealistic but a true believer that the ICDP philosophy of co-mingled international funding is the right way to go… and that ICDP is a blueprint of how to tackle ambitious challenges in a globalised multipolar world.

More information about ICDP:
https://www.icdp-online.org

News from ECORD Member Countries

Spain

IODP-ICDP Spain. Spanish researchers and students remain very active in IODP-ICDP. We are pleased that a young researcher, Margarita García García from the Instituto Andaluz de Ciencias de la Tierra, (CSIC-UGR) has been invited to join Expedition 382 Iceberg Alley and Subantarctic Ice Ocean Dynamics in March-May 2019. Not only is Margarita a Co-Proponent of the drilling proposal, a large part of the seismic data used in support of the drilling has been collected with Spanish National funding.

Two PhD students, **Ariadna Salabarnada Roset** and **Adrian López Quirós** *(right)*, who's research focuses on paleoclimate and ice sheet reconstructions using legacy Scientific Ocean Drilling (DSDP and IODP) cores, received 1st and 2nd place poster awards during the IX Symposium on Polar Studies held in Madrid, on 5-7 September 2018.

Carlota Escutia is one of the six guest editors for the Special Issue of Oceanography "Scientific Ocean Drilling: Looking to the Future", which aims to celebrate the 50 years of Scientific Ocean Drilling and to highlight how important IODP is for the next generation in the Earth,

Ocean, Climate and Life sciences. The volume is expected to be published in 2019

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Ireland

Ireland's engagement with IODP science continues at a strong pace. Following their participation in IODP Expedition 372, **David McNamara** (National University of Ireland, Galway) and **Aggeliki Georgiopoulou** (University College Dublin) have both received funding for PhD studentships working on IODP data. Funding was accessed through iCRAG (Irish Centre for Applied Geosciences) mechanisms and

represents contributions from both the Geological Survey Ireland and Science Foundation Ireland (a primary STEM funder in Ireland). The positions have been successfully filled and the students are actively engaged.

Aggeliki Georgiopoulou will continue her research through attending a post-cruise workshop in Kiel; while McNamara will be attending an Editorial Post-Cruise Meeting in Texas.

In early September, **Srikumar Roy** (iCRAG/UCD) attended the ECORD Summer School in Bremen, on Sub-seafloor Fluid Transport and Gas Hydrate Dynamics *(right and report page 21)* - reflecting further engagement of Irish early career researchers with IODP.

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Germany

Between March 14 and 16 the annual **Joint IODP-ICDP Colloquium 2018** was held successfully at Ruhr-University Bochum. About 180 conference participants shared their current research results on IODP and ICDP material, reported on expeditions and drillsite activities, and discussed future project opportunities *(right)*. As a special highlight for the colloquium, and in the course of celebrating 50 years of scientific ocean drilling, two keynote speakers were invited to the meeting: Paul A. Wilson and Benoit Ildefonse, who both gave very lively and enjoyable discourses on their shipboard experiences and key scientific results.

Again, in parallel with the colloquium, the well-established **science-show "Unterirdisch"** for school children took place at Ruhr-University Bochum. This year, about 700 pupils and their teachers visited the show to learn more about geology and scientific drilling in the oceans.

Poster session at the IODP-ICDP Colloqium 2018.

Furthermore, we are pleased to in inform you about two new team members in the German IODP office: **Lisa Egger**, Scientific Coordinator, and **Edith Uzar**, Coordination Assistant.

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Italy

An **IODP-Italia-ECORD booth** and a plenary talk aiming to promote various opportunities and funding schemes for Italian scientists, teachers and students in ECORD-IODP have become regular activities at the annual conference of the Italian Geological Society (SGI). During the 89th SGI-SIMP conference held in Catania last September, a session entitled "The role of Italian scientists and educators in the International Ocean and Continental Drilling Programs: major achievements and new perspective" was also organised. The role of educators in IODP was

presented by A. Cicconi, while in the session "Geosciences at school" C. Lupi reported on the **ECORD School of Rock 2018**, that was attended by 16 high school teachers at the Univ. of Pavia last July *(page 12)*. Details on IODP-Italia participation in the 89th SGI-SIMP conference can be found at http://www.iodp-italia.cnr.it/index.php/it/eventi/partecipazione-congressi-iodp-italia

Two mini-proposals submitted by PhD students from the Univ. of Bari were awarded in 2018 an **ECORD Research Grant**: "Response of coccolithophore calcification to past oceanic changes during the last deglaciation and the Holocene" by P. Bazzicalupo and "Millennial - submillenial scale climate variability during Marine Isotope Stage 19. ODP Site 980 (North Atlantic)" by O. Quivelli.

A. Garzarella (Univ. of Chieti-Pescara) and G. Dalla Valle (CNR-ISMAR) successfully participated in the **MagellanPlus Workshop Navigating the IODP Proposal System**. The proposal "Atlantic HEROES (Hydrothermal ElNino Restricted Oxygen Ecological Systems)" presented by A. Garzarella's working group *(above right)* won the internal contest.

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Finland

Finland is very pleased to announce that the Academy of Finland has confirmed our commitment to the **IODP programme until 2023**. This is great news and supports a closer collaboration between IODP and ICDP related research in Finland.

Outi Hyttinen (University of Helsinki) *(right)* and **Aarno Kotilainen** (Geological Survey of Finland), participants of the IODP Expedition 347 Baltic Sea Paleoenvironment continued their

Outi Hyttinen during Expedition 347 (photo A. Gerdes, ECORD/IODP)

work to publish the expedition material, including a new Fennoscandian Ice Sheet deglaciation age from the Anholt core.

Also we would like to inform the community that our Alternate Delegate, **Joonas Virtasalo** (Geological Survey of Finland)will participate in the coming meetings in lieu of our ESSAC Delegate, Outi Hyttinen, who will be on maternity leave. Joonas is an experienced marine geologist, currently focusing on sedimentary records of seafloor hypoxia, the influence of early-diagenetic processes on sulfide mineral isotopic composition, and submarine groundwater discharge.

Joonas Virtasalo, ESSAC Alternate joonas.virtasalo@gtk.fi

Norway

The Research Council of Norway has appointed **Helga (Kikki) Flesche Kleiven** (University of Bergen) and **Jan Sverre Laberg** (UIT The Arctic University of Norway) as ESSAC delegate and alternate for the next four years.

The Norwegian IODP community congregated on a **two-day colloquium** on 29-30 October 2018. The colloquium is the first edition of a conference for Norwegian scientists working

within relevant geoscientific fields of IODP. The colloquium was held at the Geological Survey of Norway (NGU) in Trondheim Norwegian scientists from academia and industry, students and program representatives are cordially invited to present achievements from recent IODP expeditions, new drilling proposals, and key scientific results based on IODP borehole material - **https://www.ngu.no/sites/default/files/Program_IODP.pdf**

Kikki (Helga) Kleiven, ESSAC Delegate - kikki@uib.no

United Kingdom

The UK recently hosted two very successful events organized and hosted by UK-IODP and ECORD scientists. First was a three-day **UK-IODP / ECORD-ICDP MagellanPlus early-career scientist workshop** held at the University of Southampton, geared towards equipping scientists to best exploit IODP opportunities and resources. This format has proved popular and a similar event has been held every couple of years since 2012. This year the UK-IODP workshop was given extra energy

Happy Birthday 50th birthday Scientific Ocean Drilling

with the participation of European researchers, thanks to the backing of an ECORD-ICDP Magellan-Plus award. Quickly following on from the ECR workshop was a two-day **"Celebrating 50 years of international collaboration in scientific ocean drilling"** conference at the Natural History Museum in London, with an excellent programme of keynote lectures, posters and discussions - https://nerc.ukri.org/research/funded/programmes/ukiodp/news/50years. Thanks to all who organised and participated!

It is a key time for IODP in the UK, with efforts ongoing to renew programme subscription

Dayton Dove - UK IODP Science Coordinator - ukiodp@bgs.ac.uk

Canada

John Jamieson (Memorial University of Newfoundland) participated as an Alteration Mineralogist on IODP Expedition 376 Brothers Arc Flux to Brothers volcano, north of New Zealand, onboard the *JOIDES Resolution* from May to July of this year *(right)*.

John Jamieson (left) and colleagues on the JR during Expedition 376 to Brothers volcano. (photo Andrew Martin & IODP).

Dominique Weis (University of British Columbia) was invited to help with the analysis and study of basement rocks that were recovered during IODP Expedition 362 Sumatra Seismogenic Zone in the Indian Ocean.

David Mosher (Geological Survey of Canada) and **Katherine Boggs** (Mount Royal University) participated in the Scientific Exploration of the Arctic and North Pacific (SEA-NorP) IODP workshop, sponsored by the U.S. Science Support Program, in Mt. Hood, Oregon, USA.

John Jamieson, CCOD Chair and Council Delegate and Dominique Weis, ESSAC Delegate
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Denmark

The Geological Survey of Denmark and Greenland (GEUS), Copenhagen, hosted a **MagellanPlus workshop on Greenland Ice Sheet evolution** from 12 to 14 September 2018. The workshop was organised by Paul Knutz, and 33 scientists from Europe, Canada and the USA participated *(right)*.

The primary purpose of the workshop was to revise IODP Proposal 909. The aim of this proposal is to retrieve a composite late Cenozoic sedimentary succession on the Baffin Bay - West Greenland margin that can elucidate the evolution and past dynamics of the Greenland Ice Sheet. The proposal takes advantage of an exceptionally high quality seismic data grid over a large, glacial mouth-fan system located on the West Greenland margin in northeast Baffin Bay. Drilling into the Quaternary and Neogene packages, and associated contourite deposits, will address the important questions of northern hemisphere cooling, as well as the late Cenozoic history of the Greenland Ice Sheet.

The workshop helped clarify linkages between hypotheses and methods, improved the integrated experimental design, and facilitate discussion of operational issues and selection of alternate sites. Moreover, the workshop helped identify knowledge gaps and address technical challenges related to drilling on the Greenland glaciated margins. As a result, 909-Full-2 (CENICE) was submitted on 1 October 2018.

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Switzerland

The **Swiss scientific drilling** community is pleased that the Swiss National Science Foundation has approved supporting the Swiss memberships in both ICDP and IODP for another 5 years starting in 2019. We are looking forward to Swiss participation in numerous international continental and ocean drilling activities.

At this year's Swiss Geoscience Meeting in Bern the Swiss community will celebrate the **50th anniversary of scientific ocean drilling** with a dedicated symposium. Swiss scientists have been very active in the planning and execution of the scientific drilling programmes during its 50-year history. Silvia Spezzaferri (University of Fribourg), Gretchen Früh-Green, Mark Lever, Judith McKenzie, Helmut Weissert (ETH Zurich), Flavio Anselmetti (University of Bern), and Andrea Moscariello (University of Geneva) are convening presentations focusing on results stemming from the international ocean drilling programme in all fields, with a particular emphasis on the contributions of Swiss scientists.

16th SWISS GEOSCIENCE MEETING 2018 BERN

After nearly five years serving the SwissDrilling community, **Mareike Trauerstein** will leave as Coordinator of the SwissDrilling Office. We would like to sincerely thank Mareike for her untiring efforts and efficient running of the office, and we wish her all the best for the future.

We are very pleased to be able to welcome **Miriam Anders** as the new SwissDrilling Coordinator. Miriam is an enthusiastic supporter of scientific drilling and we look forward to working with her in the next five-year phase of SwissDrilling.

Marieke Trauerstein, SwissDrilling, Coordination Officer, Gretchen Früh-Green, Swiss ESSAC Delegate and Flavio Anselmetti, Swiss ICDP
http://www.swissdrilling.ch

Austria

Dominik Jaeger and **Jonas Keller**, Masters students from the Univ. Innsbruck, participated in the Core-Log-Seismic-Integration (CSLI@Sea) Workshop during IODP Expedition 380 onboard the *Chikyu (right)* in January 2018. Thank to this training, Domink Jaeger, together with Michi Strasser (Univ. Innsbruck) who has been involved in the Nankai Trough Seismogenic Zone Experiment (NanTroSEIZE) for several years, were invited to join the shipboard science party of IODP Expedition 358.

Michi Strasser and his group together with international colleagues also remain highly active in publishing results from site-survey cruises for the Japan Trench Paleoseismology IODP-MSP Proposal 866Full-2, led by Strasser), and now forwarded to the ECORD-Facility Board *(page 5)*.

Walter Kurz (Univ. Graz) participated in IODP Expedition 366 post-expedition science meeting at the University of Hawaii from 10 to 12 September 2018. The meeting was followed by a two-day sampling party (13-14 September) at the University of Hawaii at Mānoa to permit participants to obtain samples from the summits and upper flanks of Mariana forearc serpentinite mud volcanoes.

CLSI@Sea Mentor Michi Strasser presents a selection of cores from the NanTroSEIZE Sites C0006 and C0007 (IODP/JAMSTEC)

For the upcoming **ECORD PROCEED Workshop** in Vienna, 6-7 April 2109 *(page 3)* on the future of international scientific ocean drilling, Werner Piller was selected as member of the organising committee and local organiser together with Bernhard Plunger. Michi Strasser and Walter Kurz became members of the scientific committee.

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ESSAC - ECORD Science Support and Advisory Committee
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ESO - ECORD Science Operator
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Operations Manager: Dave Smith - djsm@bgs.ac.uk

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