This call seeks researchers (including graduate students) with the following research specialisms:

(1) two Palynologists
(2) one Physical Properties Specialist/Volcanic Stratigraphic Integrator with documented experience in integrating volcanic core description, core physical properties, and wireline logging image interpretation to build a complete volcanostratigraphy.

**Scientific Background:** Competing geodynamic end-member hypotheses exist for the formation of this excess magmatism, but their relative importance remains unresolved: (1) elevated mantle potential temperatures associated with mantle plume processes, (2) enhanced material flux through the melt window during rifting caused by small-scale convection at the base of the lithosphere, and (3) mantle source heterogeneity that may contribute to anomalously high melt production during continental breakup. Voluminous magmatism also coincides with the global greenhouse climate in the early Paleogene and has been proposed as a driver of both short-term (Paleocene-Eocene Thermal Maximum) and long-term (early Eocene Climate Optimum) global warming. However, the timing of the magmatism is not sufficiently constrained. Improved constraints on melting conditions, timing of magmatism, magmatic fluxes in time and space, eruption environment, sedimentary proxy data, and relative timing of climate events are required to resolve these linked controversies.

**Scientific objectives:** understand the nature, cause and climate implications of excess magmatism during the northeast Atlantic continental breakup.

- (1) determine the conditions of mantle melting; (2) determine spatial and temporal variations in along axis volcanic fluxes to test predictions made by fundamentally different geodynamic models for volcanic rifted margin formation including segmentation; (3) determine variations in the depositional environment (sub-aerial vs sub-marine) of inner and outer lava flows to test correlations between magma genesis and dynamic thermal support during late syn-rift, break-up, and early post-rift oceanic spreading; (4) assess the temporal evolution of the styles of volcanic and magmatic activity in relation to paleoclimate proxies to test the relationship between large-scale volcanism and climate change events; and (5) investigate the relative importance of environmental consequences of two key processes during the initial opening of the North Atlantic: direct volcanic degassing and explosive thermogenic gas release through hydrothermal vent complexes that expel fluids derived from contact metamorphism. The expedition will also address two important secondary objectives: (1) early Eocene hot-house and fresh water incursions into the Atlantic, and (2) carbon capture and storage in basalt provinces.

Deadline for submission: **January 4, 2021.**
Link: [http://www.ecord.org/expeditions/apply-to-sail/](http://www.ecord.org/expeditions/apply-to-sail/)
ICDP: Call for Proposals

The International Continental Scientific Drilling Program, ICDP coordinates and supports multinational endeavours in continental scientific drilling. The program focuses on themes of global geoscientific importance underpinning socio-economic challenges, including climate & ecosystem evolution, sustainable georesources and natural hazards, as outlined in the new ICDP Science Plan. The ICDP invites Earth scientists to submit pre-proposals, workshop proposals and full proposals in which drilling is required to achieve critical research goals.

Please note that ICDP provides operational support and allocates co-funding for drilling-related costs.

Deadline for submission: **January 15, 2021.**

Link: [https://www.icdp-online.org/proposals/](https://www.icdp-online.org/proposals/)  
[https://www.icdp-online.org/fileadmin/icdp/media/Calls/Call_for_2021.pdf](https://www.icdp-online.org/fileadmin/icdp/media/Calls/Call_for_2021.pdf)

ECORD/ICDP MagellanPlus: Call for proposals

A prominent role for Mission-Specific Platforms (MSP) is anticipated to achieve the goals of the 2050 Science Framework, which represents a new and innovative approach for conducting science using offshore drilling platforms. ([www.iodp.org/2050-science-framework](http://www.iodp.org/2050-science-framework))

**MagellanPlus** welcomes proposals for topical workshops aimed at generating MSP drilling proposals, either as stand-alone projects or as part of land-to-sea transects that integrate marine and continental coring. Scientific themes must be aligned with the Strategic Objectives defined in the 2050 Science Framework including, but will not be limited to:

- Earth’s Climate System (e.g., oceanic gateways, ice sheets and sea-level rise);
- Global Cycles of Energy and Matter (e.g., freshwater aquifers);
- Natural Hazards Impacting Society (e.g., slope stability, volcanic hazards, earthquakes);
- The Oceanic Life Cycle of Tectonic Plates (e.g., formation of oceanic lithosphere, intraplate magmatism, young rifts);
- Habitability and Life on Earth (e.g., deep biosphere).

Proposals that would use the JOIDES Resolution (JR) will not be taken into consideration. The JOIDES Resolution Facility Board has recently decided to no longer request any new proposals that would address the current Science Plan. The number of JR-related scientific drilling proposals that are currently active in the system are more than sufficient to schedule this platform through the end of 2024.

**MagellanPlus** workshops are normally expected to take place in ECORD/ICDP member countries, but exceptions can be made when justified.

A typical workshop is expected to take place over 2-4 days, and have 20-35 participants. Funding/participation: The contribution will not exceed 15,000 € per workshop. Priority is given to ECORD and ICDP member countries. The participation of young scientists is particularly encouraged.

Proposals must be submitted by email as a single, combined pdf document to magellan.plus@uu.nl and to the ECORD Managing Agency – ema@cerege.fr

Deadline for submission: **May 15, 2021.**

Link: [https://www.ecord.org/call-for-msp-proposals-related-to-the-2050-science-framework/](https://www.ecord.org/call-for-msp-proposals-related-to-the-2050-science-framework/)

IODP: Call for Proposals


Date limite pour candidater: **1er avril 2020, 23:59 UTC**

News IODP

- **SiO7 Back Online:** The Chiyku IODP data website SiO7 is back online after undergoing a security review. Please contact the Mare3 staff for more information: [mare3-exp.jamstec.go.jp](http://mare3-exp.jamstec.go.jp)
Release of the completed 2050 Science Framework "Exploring Earth By Scientific Ocean Drilling"

The 2050 Science Framework guides multidisciplinary subseafloor research into the interconnected processes that characterize the complex Earth system and shape our planet's future. The Framework is supported by Enduring Principles that discuss access to data, the proposal process, planning and safety, diversity and inclusion, and international collaboration.

Link: [https://iodp.org/2050-science-framework](https://iodp.org/2050-science-framework)

A new version of the IODP Proposal Submission Guidelines which describes the joint submission and review process for "Land 2 Sea" drilling proposals implementing jointly by IODP and ICDP was approved in July.


Expeditions schedule updated: The JR Science Operator has updated its operations schedule for 2021 and 2022 in light of decisions by the JR Facility Board and constraints due to COVID-19.

Link: [http://www.iodp.org/expeditions/expeditions-schedule](http://www.iodp.org/expeditions/expeditions-schedule)

IODP X377: ArcOP – IMPORTANT DEVELOPMENT will not be implemented 2021 (August to October).

In spring 2020, the ECORD Science Operator (ESO) opened a call to the commercial market to provide platform, drilling and ice management services for this expedition. The commercial bids received were evaluated at the end of May 2020. Unfortunately, it has been concluded that the procurement has failed to achieve its objectives. The primary and overriding reason for this is the combination of facilities and services required cannot be fulfilled within the expedition's available budget. At its recent spring meeting on 10-11 June 2020, ECORD Council confirmed the removal of Expedition 377 from the 2021 mission-specific platform expedition schedule. Later in June, the ECORD Facility Board will consider options for future MSP expeditions for 2021-2023. The Call for Scientists will now be stopped, and announcements on the future of Expedition 377 will be made via IODP-related channels in due course.

Link: [http://www.ecord.org/expeditions/apply-to-sail/](http://www.ecord.org/expeditions/apply-to-sail/)

IODP Town Hall: Join the conversation about the 2050 Science Framework and future planning at the town hall at the AGU Fall Meeting on December 15 at 4pm PST.

Link: [https://agu.confex.com/agu/fm20/meetingapp.cgi/Session/105256](https://agu.confex.com/agu/fm20/meetingapp.cgi/Session/105256)

NEW VIDEO: Introduction to ECORD - ECORD explained in 4 minutes

Link: [https://www.youtube.com/watch?v=A3ST56j3yJM&t=35](https://www.youtube.com/watch?v=A3ST56j3yJM&t=35)
Link: [https://www.ecord.org/about-ecord/about-us/ecdord-explained-in-4-minutes-video/](https://www.ecord.org/about-ecord/about-us/ecdord-explained-in-4-minutes-video/)

Rotation scheme for the ECORD Council

The ECORD Council core group consists of five members: the Chair, the Vice-Chair and three additional
Council delegates. The three major contributors will automatically belong to this core group. The current members of this core group are M. Webb (UK), G. Lüniger (GER), S. Guillot (FRA), M. Engelhardt (NOR) and B. Westerop (NLD).

M. Webb (UK) is the incoming ECORD Council Vice-Chair since 1 July 2020 and he will become ECORD Council Chair starting on 1 January 2021. B. Westerop (NLD) will be outgoing Vice-Chair during the first half of 2021.

**Further changes in the ECORD structure**

Angelo Camerlenghi (ITA) has been nominated as the incoming ESSAC Vice-Chair starting on 1 January 2021 and he will become ESSAC Chair on 1 January 2022 for two years. The term of Gabriele Uenzelmann-Neben (GER) as EFB Chair was extended by one year until 31 December 2022 as the EFB did not meet in 2020 due to the COVID-19 crisis. EFB Vice-Chair G. Lericolais (FRA) will rotate off on 31 December 2020 and he will be replaced by the new Science Board member Michele Rebesco (ITA). Marit-Solveig Seidenrantz will be the new ECORD Council member representing Denmark and she will stay as the Danish ESSAC delegate.

**Welcome:** Charna Meth has been selected as the new Executive Director of the IODP Science Support Office at Scripps Institution of Oceanography. We thank Holly Given for her service and commitment to the IODP, and congratulate her on her retirement.

[Lien](http://iodp.org/program-organization/science-support-office)

**Recently Completed (December 2020): South Atlantic Transect Reentry Installations**

The JOIDES Resolution is installing reentry systems at five sites in advance of future expeditions. The sites form a transect starting near the Mid-Atlantic Ridge and moving away into progressively older basaltic crust. Future expeditions will examine how crustal alteration proceeds over time.

[Link](http://iodp.tamu.edu/scienceops/expeditions/south_atlantic_transect.html)

**Recently Completed (September 2020): JOIDES Resolution Engineering Testing**

Expedition 384 performed engineering testing at sites of opportunity in the North Atlantic. Testing focused on deep (>1 km) drilling and coring in igneous ocean crust, following some recommendations made by the Deep Crustal Drilling Engineering Working Group and the JR Facility Board.

[Link](http://publications.iodp.org/scientific_prospectus/384/index.html)

**News ICDP**

**ICDP news: WINTER 2020**

“An in many aspects unusual year is slowly coming to an end. We all hope that the current restrictions caused by the ongoing pandemic will end at some point, better sooner than later. However, we all have to find a way to progress with our research as well as possible – even under these circumstances. Given the travel restrictions we will hold our annual AGU town hall meeting online and hope to catch up with you at least virtually in front of the well-known screen. It is a great achievement that the ICDP-JET project managed to get the drill bit into the ground despite the limiting boundary conditions and I congratulate the PIs on their great achievement. For those not able to attend our town hall: please already now accept my best wishes for a peaceful and healthy holiday season and a motivated start into 2021.” All the best, Marco Bohnhoff

[Link](https://www.icdp-online.org/fileadmin/icdp/outreach/doc/ICDPnewsletter2020-winter.pdf)
The JET project successfully started drilling in Prees, Cheshire Basin, UK, on the 7th of November with a first core arriving on the day after. The core recovery from ~50 to ~175 m (at time of writing, November 13th) is almost 100% and the quality of the cores is excellent. The rock is a variably shelly dark grey/brown mudstone containing a large number of ammonite, belemnite, bivalve, and brachiopod fossils. The cores will be used for astrochronology, biostratigraphy, chemostratigraphy, magnetostratigraphy, and geochemical palaeoceanography, amongst other applications. Despite current restrictions it was possible to assemble a core team of on-site scientists, including PI Steve Hesselbo and colleagues from Exeter, Leeds and Southampton universities, and the British Geological Survey. A small team from Exeter University and the British Geological Survey are working in parallel at the National Core Repository and Core Scanning Facility (CSF) in Keyworth, Nottingham, logging and scanning the core sections that are transported from Prees.

JET project: Passed 440 m deep! Good drilling progress at Prees...

At the Prees drill site, drilling now proceeds with good coring rates and the recovered rocks at depths of 350 m are exactly what the scientists hoped for: dark grey mudstones with many fossils and apparently rhythmical changes in color and grain size. Drilling passed 440 m.

More about the JET project:
https://www.icdp-online.org/projects/world/europe/prees-england/
More Daily News:
https://www.icdp-online.org/projects/world/europe/prees-england/daily-news/

First ICDP mDIS applications

The Drilling Information System (DIS) has been developed and successfully used for acquisition and curation of data and samples in ICDP over the last 20 years. To keep up with modern requirements, the OSG team developed the mDIS (mobile Drilling Information System) based on open-source software. The program is now platform-independent, responsive and easy adaptable to project specific needs.

The first two projects, COSC-2 and JET successfully apply the new “Expedition-mDIS” for sample and data management during drilling. Moreover, the OSG team started the data migration to mDIS of the long lasting and still highly active ICDP project “FAR-DEEP” as well as for the core repository of the Federal Institute for Geosciences and Natural Resources (BGR) for ICDP cores in Spandau, Germany.

Further information about the mDIS is available from the OSG data team at: dm@icdp-online.org.
Multiple expeditions postponed! Many expeditions have been postponed due to platform repairs, complications of drill sites in international waters, and the global health emergency. For more information see the Expedition Schedule or contact the platform science operator.


Lien : [http://www.iodp.org/expeditions/expeditions-schedule](http://www.iodp.org/expeditions/expeditions-schedule)

<table>
<thead>
<tr>
<th>Expedition Name</th>
<th>Dates</th>
<th>Ports</th>
<th>Operator</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Atlantic Transect Reentry Installations</td>
<td>390 Oct 5-Dec 5, 2020</td>
<td>Kristiansand / Cape Town</td>
<td>JRSO</td>
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<tr>
<td>Reykijanes Mantle Convection and Climate</td>
<td>395 June 6-Aug 6, 2021</td>
<td>Reykjavik / Reykjavik</td>
<td>JRSO</td>
</tr>
<tr>
<td>Mid-Norwegian Continental Margin Magmatism</td>
<td>396 Aug 6-Oct 8, 2021</td>
<td>Reykjavik/Kristiansand</td>
<td>JRSO</td>
</tr>
<tr>
<td>Malvin Ridge Hotspot</td>
<td>391 Dec 8, 2021-Feb 5, 2022</td>
<td>Cape Town / Cape Town</td>
<td>JRSO</td>
</tr>
<tr>
<td>Agulhas Plateau Cretaceous Climate</td>
<td>392 Feb 5-Apr 7, 2022</td>
<td>Cape Town / Cape Town</td>
<td>JRSO</td>
</tr>
<tr>
<td>South Atlantic Transect #1</td>
<td>390 Apr 7-Jun 7, 2022</td>
<td>Cape Town / Montevideo</td>
<td>JR SO</td>
</tr>
<tr>
<td>South Atlantic Transect #2</td>
<td>393 Jun 7-Aug 7, 2022</td>
<td>Montevideo / Montevideo</td>
<td>JR SO</td>
</tr>
<tr>
<td>Japan Trench Paleoseismology</td>
<td>386 Anticipated summer / fall 2021</td>
<td>TBD</td>
<td>TBD</td>
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<tr>
<td>Amazon Continental Margin</td>
<td>387 postponed</td>
<td>TBD</td>
<td>TBD</td>
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<tr>
<td>Equatorial Atlantic Gateway</td>
<td>388 postponed</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Rio Grande Rise Methane and Carbon Cycling</td>
<td>394 postponed</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Arctic Ocean Paleooceanography</td>
<td>377 postponed</td>
<td>TBD</td>
<td>TBD</td>
</tr>
</tbody>
</table>

Expedition News:

MSP Expedition 386 “Japan Trench Paleoseismology” is postponed to 2021. Expeditions 389 “Hawaiian Drowned Reef” ; 377 “Arctic Ocean Paleooceanography (ArcOP)” and 373 “Antarctic Cenozoic Paleoclima”e are postponed until further notice.

JR Expeditions 387 and 388 had to be postponed as permission for drilling in Brazilian waters has not been received. Expedition 378 “South Pacific Paleogene Climate” has been shortened due to problems with the derrick. At the JRFB meeting in August 2020 it has been decided to postpone all Southern Atlantic (Expeditions 390-394). JR will implement four expeditions in the Southern Atlantic from December to 2021 to August 2022 (see map below).

Read the update from the JR Science Operator on ship repairs and the outlook for a return to operations and the ECORD minutes reports.

Links : [https://www.ecord.org/resources/reports/meetings/](https://www.ecord.org/resources/reports/meetings/)

The JR will operate again in the Northern Atlantic later in 2022 and in 2023. The JR is behind the initial schedule due to the COVID-19 crisis, but also technical problems. At the moment the US is facing increasing maintenance costs for the JR and there is also a maximum number of expeditions per year due to the age of the vessel. There is a strong proposal pressure in the Northern Atlantic and the JRFB needs to decide how long the JR should stay in this region. Parts of expeditions that have not been implemented properly need to be rescheduled by the JRFB.

JRSO has produced a document called COPE - COVID Mitigation Protocols Established for Safe JR Operations - for implementing IODP expeditions during the pandemic.

Link: http://iodp.tamu.edu/index.html

Expéditions ICDP

ICDP: In 2020, there are about 6 projects where work is ongoing, or where fieldwork is scheduled.

1. Europe - Czechia (EGER): Drilling the Eger Rift: Crust, mantle, and deep biosphere processes in an active continental rift
4. Europe - United Kingdom (JET): Integrated Understanding of the Early Jurassic Earth System and Timescale (JET)
5. South America - Brazil (TransAmazon): Trans-Amazon Drilling Project
6. Europe - Italy (STAR): A Strainmeter Array Along the Alto Tiberina Fault System, Central Italy

Actualités FRANCE

Expéditions IODP et scientifiques français sélectionnés:

- Expédition 395 – Reykjaness Mantle Convection and Climate (26 June to 26 August 2020) (6 June to 6 August 2021)
  Lien internet: http://www.ecord.org/expedition386/
  - Anne Briais (Co-Chief Scientist) - GET Toulouse
  - Gabriel T. Pasquet (Petrologist) - University of Pau and Pays de l'Adour
• Expédition 391 – Walvis Ridge Hotspot (5 December 2020 to 4 February 2021)  
  (6 December 2021 to 6 February 2022)  
  Lien internet : http://iodp.tamu.edu/scienceops/expeditions/walvis_ridge_hotspot.html
  - Claire A. Carvallo (Paleomagnetist) - Institut de Minéralogie, de Physique des Matériaux et de Cosmochimie Sorbonne Université, Paris
  - Mark S. Zindorf (Inorganic/Organic Geochemist) - IFREMER, Plouzané

• Expédition 392 – Agulhas Plateau Cretaceous Climate (4 February to 6 April 2021)  
  (5 February–7 April 2022)  
  Lien internet : http://iodp.tamu.edu/scienceops/expeditions/agulhas_plateau_climate.html
  - Sietsje J. Batenburg (Physical Properties Specialist/Stratigraphic Correlator) - Géosciences Rennes
  - Sidonie Revillon (Igneous Petrologist) - SEDISOR / Laboratoire Géosciences Océan / IUEM, Brest

• Expédition 390 – South Atlantic Transect #1 (5 October to 5 December 2020)  
  (7 April–7 June 2022)  
  Lien internet : http://iodp.tamu.edu/scienceops/expeditions/south_atlantic_transect.html
  - pas de français sélectionnés

• Expédition 393 – South Atlantic Transect #2 (6 April to 6 June 2021)  
  (7 June–7 August 2022)  
  Lien internet : http://iodp.tamu.edu/scienceops/expeditions/south_atlantic_transect.html
  - pas de français sélectionnés

• Expédition 386 – Japan Trench Paleoseismology (Apr 27 - June 16, 2020)  
  (2021-2022)  
  Lien internet : http://www.ecord.org/expedition386/
  - Morgane Brunet (Sedimentologist and XCT specialist) - Geosciences Rennes
  - Antonio Cattaneo (Sedimentologist) - IFREMER, Plouzané
  - Chloé Seibert (Physical Properties Specialist) - Institut de Physique du Globe de Paris
  - Jean Noël Proust (Sedimentologist) - Geosciences Rennes

• Expédition 387 – Amazon Margin (26 April to 26 June 2020)  
  Lien internet : http://iodp.tamu.edu/scienceops/expeditions/amazon_margin.html
  - Germain Bayon (Inorganic Geochemist) - IFREMER, Plouzané
  - Florent J. Hodel (Paleomagnetist) - GET, Toulouse
  - Alberto Machado Cruz (Stratigraphic Correlator/Physical Properties Specialist) - ISTeP, Paris
  - Marina Rabineau (Physical Properties Specialist/Downhole Measurements) - IUEM, Brest

• Expédition 388 – Equatorial Atlantic Gateway (June 26 – Aug 26, 2020)  
  Lien internet : http://iodp.tamu.edu/scienceops/expeditions/equatorial_atlantic_gateway.html
  - Marie Laugié (Physical Properties Specialist/Stratigraphic Correlator) - CEREGE, Aix-en-Provence
**Soutiens financiers IODP-France :**

**Appel d’offres au fil de l’eau “Soutien Financier Post-Campagne” IODP-France**


Contacts : iodp-france@get.omp.eu
stephanie.cuven@get.omp.eu

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**“Sample Request” = valorisation des expéditions anciennes**

Vous pouvez à tout moment faire une **demande de rééchantillonnage** auprès des 3 carothèques IODP afin d’initier de nouvelles études sur des expéditions passées. Une aide financière pour réaliser votre projet scientifique pourra vous être attribuée par le Bureau IODP-France dans le cadre d’un “Soutien financier Post-Cruise - campagnes anciennes”, ceci après évaluation de votre projet par le comité IODP-France.

Lien “sample access” : [https://www.iodp.org/resources/access-data-and-samples](https://www.iodp.org/resources/access-data-and-samples)


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**Journées d’information “Porteurs de projet IODP” :**

Le bureau IODP-France organise actuellement des séminaires d’information dans toute la France sur le thème: “Historique et Fonctionnement du Programme IODP, comment participer, comment monter un projet d’expédition IODP ?”. Les scientifiques impliqués dans IODP en tant qu’embarquant seront invités à présenter leurs résultats et les scientifiques impliqués dans IODP en tant que porteur de projet ayant abouti à une expédition seront les bienvenus pour expliquer la procédure à suivre, donner des conseils sur le contenu et le format d’une demande “idéale”, sur les pièges rédactionnels à éviter, etc...

Si votre laboratoire est intéressé pour nous recevoir, veuillez nous contacter aux adresses suivantes : iodp-france@get.omp.eu
stephanie.cuven@get.omp.eu

En attendant de nous recevoir pour un séminaire, voici le lien pour télécharger le guide pour soumettre un projet de forage : [https://www.iodp.org/iodp-proposal-submission-guidelines-8-2016/file](https://www.iodp.org/iodp-proposal-submission-guidelines-8-2016/file)
Workshops ou congrès en rapport avec les programmes IODP et ICDP

**IODP Town Hall: AGU**
Join the conversation about the 2050 Science Framework and future planning at the town hall at the AGU Fall Meeting on

Dates et lieu : virtual AGU General Assembly **December 15 at 4pm PST**.
Infos : [https://agu.confex.com/agu/fm20/meetingapp.cgi/Session/105256](https://agu.confex.com/agu/fm20/meetingapp.cgi/Session/105256)

**IODP/ICDP: EGU**
ICDP and IODP conveners of the EGU session “Achievements and perspectives in scientific ocean and continental drilling” kindly invite you to submit abstracts related to research drilling.

Dates et lieu : virtual EGU General Assembly **April 19-30, 2021**
Deadline for submission of abstracts **13 January at 13:00 CET**
Infos: [https://meetingorganizer.copernicus.org/EGU21/session/40095](https://meetingorganizer.copernicus.org/EGU21/session/40095)

**Workshop "DriMMLOC Drilling the Mantle, Moho, and Lower Crust"** Postponed to this fall due to Covid-19 situation
Lieu : Tongji University, Shanghai, China
Infos : [http://www.iodp-china.org/DriMMLOC](http://www.iodp-china.org/DriMMLOC)

**MagellanPlus Workshop COSNICA : "The life cycle of a microplate at a convergent margin"**
Infos : [http://cosnica.uni-graz.at/](http://cosnica.uni-graz.at/)

**MagellanPlus SCYLLA Workshop "Serpentinite diapir in the Calabrian subduction sYstem return Lower plate mantle from eArth's odest ocean"**
Infos : [https://www.ecord.org/science/magellanplus/](https://www.ecord.org/science/magellanplus/)

**MagellanPlus "Belize Barrier Reef "**
Dates et lieu : **2021**, Frankfurt/Main, Germany - Postponed due to Covid-19 situation
Infos : [https://www.ecord.org/science/magellanplus/](https://www.ecord.org/science/magellanplus/)

**MagellanPlus "Mechanisms of rifting of large continental blocks - a case study at the Baltic Sea "**
Dates et lieu : **5-7 May 2021**, Helsinki, Finland -
Infos : [https://www.ecord.org/science/magellanplus/](https://www.ecord.org/science/magellanplus/)
36th International Geological Congress
Dates et lieu: August 16-21 2021 - Delhi, India
Infos: https://www.36igc.org/

MagellanPlus "IO:DIP - Indian Ocean: Delving Into the Past"
Dates et lieu: 19-23 September 2021 - Graz, Austria
Flyers here: https://www.ecord.org/science/magellanplus/
Infos: http://indian-ocean.uni-graz.at/

Publications
A fully designed, complete draft version of the 2050 Science Framework entitled “Exploring Earth by Scientific Ocean Drilling” is now available online on IODP.org and ready for community review and your comments.
Download: https://iodp.org/2050-science-framework?fbclid=IwAR1fCTngW6r7Pd9R6vup8yZ2iiwwZxscPCy UhOMr2dCfjA

ICDP Science Plan 2020-2030
Video: https://www.icdp-online.org/fileadmin/icdp/media/doc/ICDP_Science_Plan_Video.mp4
Link: https://www.icdp-online.org/media/icdp-science-plan/

ICDP Newsletter Summer 2020
Link: https://www.icdp-online.org/fileadmin/icdp/outreach/doc/ICDPnewsletter2020-winter.pdf

New!
ECORD Annual Report 2019
Download: http://www.ecord.org/resources/reports/activities/

ICDP Annual Report 2019
New Issue of Scientific Drilling, a multidisciplinary ICDP-IODP program journal delivering peer-reviewed science reports from recently completed and ongoing international scientific drilling projects. Issue number 26 is available online.

Lien internet: [http://www.scientific-drilling.net/index.html](http://www.scientific-drilling.net/index.html)
[https://www.sci-dril.net/26/index.html](https://www.sci-dril.net/26/index.html)

Parution des derniers Proceedings IODP

Lien internet: [http://iodp.tamu.edu/publications/proceedings.html](http://iodp.tamu.edu/publications/proceedings.html)


- Expedition 374: Ross Sea West Antarctic Ice Sheet History - 10 August 2019

- Expédition 376: Brothers Arc Flux - 5 July 2019

The Oceanography special issue "Scientific Drilling: Looking to the Future"


A new book "A Memory of Ice" - the story of DSDP Leg 28 to the Antarctic margin - is downloadable from ANU Press.


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A new automated radiolarian image acquisition, stacking, processing, segmentation, and identification workflow

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Radiolarians are planktonic marine micro-organisms whose shell is made of silica and are relatively well preserved in the fossil record. Their delicate siliceous remains have been proved important for decades in micropalaeontological studies focussing on biostratigraphy and palaeoenvironmental reconstructions from various oceanic areas such as marine productivity (e.g., Lazarus, 2002; Lazarus et al., 2006; Hernández-Almeida et al., 2013; Matsuzaki et al., 2019), sea surface temperature (e.g., Lazarus, 2002; Cortese and Abelmann, 2002; Kamikuri and Moore, 2017; Hernández-Almeida et al., 2017; Matsuzaki et al., 2019).

Figure 1: a. Upper view of the new 3D-printed decanter, showing 8 tanks. b. Cross-section of a single tank of the new 3D-printed decanter. c. Upper view of the slide guide.
Identification of microfossils is usually done by expert taxonomists and requires time and a significant amount of systematic knowledge developed over many years. These studies require manual identification of numerous specimens in many samples under a microscope, which is very tedious and time consuming. Furthermore, identification may differ between operators, biasing reproducibility. Recent technological advances in image acquisition, processing, and recognition now enable automated procedures for this process, from microscope image acquisition to taxonomic identification. For more than 20 years now, the CEREGE laboratory has been a pioneer in automated image acquisition and recognition for several microfossil groups such as coccoliths (Dollfus and Beaufort, 1999; Beaufort et al., 2001; Beaufort and Dollfus, 2004), planktonic and benthic foraminifera (Marchant et al., accepted), and pollens (Bourel et al., 2020).

A new workflow was developed for automated radiolarian image acquisition, stacking, processing, segmentation, and identification. The protocol includes a newly proposed methodology for preparing radiolarian microscopic slides. We mount 8 samples per slide, using 12x12 mm cover slides (adapted from Beaufort et al., 2014) on which radiolarians are randomly and uniformly decanted using a new 3D-printed decanter (Fig. 1a-b) that minimises the loss of material. The 3D file for this new decanter is available for free at https://github.com/microfossil/Decanter.

Once ready, the 8 samples of each slide are automatically and consecutively imaged using an automated transmitted light microscope. For each sample, 324 fields of view (FOVs) are imaged using a multi-focal technique. For each FOV, 15 images are acquired by incrementally stepping the Z focus position through the microscopic slide (step size: 10 µm) to cover a total focal distance of 150 µm, which corresponds to the thickness of most radiolarian species. For each FOV, the batch of 15 images is automatically stacked using Helicon Focus 7 (Helicon Soft) to improve their focus and sharpness. Every stacked FOV image is then processed (contrast, luminosity, background) and segmented to create a vignette for each individual specimen, using a custom plugin (AutoRa dio_Segmenter.ijm) developed for the ImageJ / Fiji software (V1.52n, Schneider et al., 2012). Each sample results in approximately 1,000 to 3,000 individual segmented vignettes.

Figure 2: Examples of radiolarian thumbnails generated by the automated acquisition, processing and recognition workflow. (a) Lamprocyclas maritialis. (b) Lamprocyclis hannai. (c) Theocorythium trachelium. (d) Pterocanium trilobum. (e) Pterocanium praetextum. (f) Eucryphiulus sestodiscus. (g) Eucrytidium acuminatum / hexagonatum (h) Acrosphaera spinosa. (i) Solenosphaera chierchiae. (j) Collosphaera tuberosa. (k) Didymocystis tetrathalamus tetrathalamus. (l) Hexactinium spp. (m) Stylactractus neptunus. (n) Heliodiscus asteriscus. (o) Tetrarype octacantha group. Scale bar 100 µm.
after the automated image processing and segmentation step.

In order to train a convolutional neural network (CNN) that can be used for automated image recognition, it is necessary to create a large database of images covering the most common species (about 100 out of 400 to 500 modern living species; Boltovskoy, 1998). Most of the samples (about 150 Middle Miocene to Quaternary samples) used for recovering radiolarian specimens to build the database originate from the West Pacific Warm Pool Hole U1488 (IODP Expedition 363; Rosenthal et al., 2018). A few samples (about 22 Miocene to Quaternary samples) originate from Hole U1483 (IODP Expedition 363), Core MD97-2138, and Core MD97-2140 (Marion Dufresne IMAGES III-IPHIS cruise in 1997; Beaufort et al., 1997).

The AutoRadio (Automated Radiolarian) database that results from all the images acquired from these samples is available for online consultation at https://autoradio.cerege.fr. It is currently composed of 17,065 images (Fig. 2), corresponding to 112 morphoclasses (of all these classes, 104 belong to Neogene to Quaternary radiolarian species or groups of species, and 8 to non-radiolarian classes such as “broken” specimens, air “bubble”, or event siliceous “particles”). Using this database, a CNN was trained using the custom software developed at CEREGE, ParticleTrieur (Marchant et al., accepted). This trained CNN can then be integrated into the radiolarian images acquisition, processing and recognition workflow. Using this CNN, individual vignettes of radiolarian specimens that are generated and saved during the ImageJ processing and segmentation step of new samples can now be automatically assigned to a class. This fully automated
Figure 4: Identification indices evaluated on 8 random samples recovered from cores MD97-2138 and MD97-2140.
ed and individual vignettes were automatically identified using the trained CNN. After a manual verification of every automated identification, 6 indices were computed: (1) the % of radiolarian images recognised as radiolarians (Fig. 4a); (2) the % of radiolarian images recognised as the correct radiolarian taxa (Fig. 4c); (3) the % of non-radiolarian images recognised as non-radiolarian particles (Fig. 4b); (4) the % of non-radiolarian images recognised as the correct particle class (Fig. 4d); (5) the % of non-radiolarian images recognised as radiolarian (non-radiolarian false positive; Fig. 4e); and (6) the % of radiolarian recognised as non-radiolarian (radiolarian false positive; Fig. 4f).

In this test, 10,288 vignettes were automatically generated, identified, and manually checked among the 8 samples. In average, the proportion of radiolarians recognised as radiolarian is very high, about 98 % (Fig. 4a) and the proportion of radiolarians identified as the correct radiolarian taxa is about 90% (Fig. 4b). Almost all radiolarian images are thus recognised as radiolarian with a 10% error regarding their species identification. Regarding the non-radiolarian images, more than 99% are recognised as non-radiolarian (Fig. 4c) and about 98% are assigned to the correct class (Fig. 4d). False positive identifications were also investigated and are relatively low. Among all the images identified as non-radiolarians, only 0.34% should be assigned to radiolarians, and among all the images automatically recognised as radiolarians, about 4% are non-radiolarian images.

In conclusion, a new automated radiolarian workflow was developed and consists of a sequence of six steps: (1) a new microscopic slide preparation protocol to enable an efficient automated image acquisition on transmitted light microscopes and decrease the loss of material; (2) the automated microscope image acquisition; (3) the automated FOV images stacking; (4) the automated image processing and segmentation to generate individual images for every radiolarian specimen; (5) the automated radiolarian recognition using a CNN; and (6) the automated export of census data and morphometric measurements for each sample.

The trained CNN has an overall accuracy of about 90%. This new workflow paves the way for the analysis of long-term, dynamical neural networks. Mar. Micropaleontol. 51, 57–73.

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