Message à la communauté IODP

Devenez acteur du prochain programme IODP !
INSCRIVEZ-VOUS au Workshop PROCEED à Vienne (6-7 avril 2019 - avant EGU)
+ Venez participer à la réunion Pré-PROCEED à Montpellier (mars 2019)

Programme 2013-2023

Programme 2023-2033

Workshop pré-PROCEED -“Imaginez le prochain Programme IODP 2013-2033”, 12-13 mars 2019 à Montpellier

Une réunion Pré-PROCEED se tiendra à Montpellier sous l’égide de Marguerite Godard et d’Adélie Delacour, membres du comité PROCEED afin de permettre à la communauté française d’exprimer leurs besoins pour construire le prochain Programme IODP (2023-2033). Ce sera l’occasion de mener une réflexion commune concernant l’avenir du Programme IODP et le positionnement des chercheurs français dans les domaines chers à IODP : CHANGEMENTS CLIMATIQUES, DYNAMIQUE INTERNE, RISQUES NATURELS ET BIOSPHÈRE PROFONDE. Tous les chercheurs français sont invités à participer à cette réflexion avant
The workshop PROCEED organised at Vienna on April 6-7, 2019.

Ouverture des inscriptions en ligne sur le site IODP-France (http://www.iodp-france.org/pro) : bientôt disponible
Infos Contacts : iodp-france@get.omp.eu
stephanie.cuven@get.omp.eu

Workshop PROCEED - Expanding frontiers of scientific ocean drilling. Vienna (Austria), on April 6-7, 2019 (avant EGU !)

Dear ECORD friends and colleagues,

IODP will soon successfully enter its second phase (2019-2023). However, based on the preparatory phase of the current IODP (2013-2023), it is already time to think of a potential scientific ocean drilling programme beyond 2023. However, the challenges to build a successor programme to the current IODP are huge.

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 -, will be held at the Austrian Academy of Sciences, Vienna (Austria), on April 6-7, 2019, i.e. right before the 2019 EGU.

The PROCEED Organizing Committee is composed of several ECORD representatives and the members of its Scientific Committee have been nominated by ESSAC and have accepted to serve on this committee.

The final format of the PROCEED workshop will be defined by its Scientific Committee, which will also consider propositions submitted by the ECORD science community.

The objective of the PROCEED workshop will be to produce a White Paper, which will summarize the scientific, technological and programmatic goals for ECORD beyond 2023. This document will constitute the foundation for interactions with our IODP partners who will also start to get organized in 2019 at their national/consortium level. The coordination of all these actions to build a new programme is still to be defined.

I invite you to attend the PROCEED workshop and take part in the building of the ECORD’s future.

Best regards,
Gilbert CAMOIN,
Director of the ECORD Managing Agency, ema@cerege.fr
on behalf of the PROCEED Organizing Committee

Details: http://www.ecord.org/framing-a-successor-programme-to-iodp-beyond-2023/

Deadline for registration: 17 February 2019
Registration by email to ema@cerege.fr

Appels à candidature - Expéditions

Il est important que vous informiez de votre candidature les représentants français au sein de l’ESSAC, Georges Ceuleneer (georges.ceuleneer@get.omp.eu) et Anne Le Friant (lefriant@ipgp.fr)
Les candidatures des thésards et post-doc, assorties d’une lettre de soutien de leur laboratoire, sont les bienvenues.

Les missions des participants rattachés à un laboratoire français au moment de l’expédition seront prises en charge par le bureau IO-DP-France, ainsi que les missions relatives aux réunions post-cruise. À l’issue de l’expédition, vous aurez la possibilité de déposer une demande de crédits auprès du bureau IODP-France pour les premiers traitements de vos échantillons et données.

**Expedition 387 : “Amazon Margin”**

**Thématique principale :** CHANGEMENTS CLIMATIQUES. Ce forage en Atlantique équatorial va permettre de générer un enregistrement continu de l’évolution climatique et océanique au Cénozoïque dans la région amazonienne.

**Dates de l’Exp. 387 :** 26 avril au 26 juin 2020 à bord du JOIDES Resolution

**Objectifs principaux :** Expedition 387 (based on IODP Proposals 859-Full2 & 859-PRL) will drill the upper portion of the Foz do Amazonas basin of the equatorial margin of Brazil to recover a complete, high-resolution sedimentary sequence spanning nearly the entire Cenozoic. This expedition is the marine complement to the Trans-Amazon Drilling Project transect of continental drill sites, and will address fundamental questions about the Cenozoic climatic evolution of the Amazon region, the origins and evolution of the neotropical rain forest and its in-comparable biodiversity, the paleoceanographic history of the western equatorial Atlantic, and the origins of the transcontinental Amazon River. Core and log data from sites on the uppermost continental slope will be used to: (1) generate a continuous record of climate and biodiversity in Cenozoic South America at unprecedented resolution; (2) reconstruct the oceanographic conditions of the western tropical Atlantic; (3) provide critical marine biostratigraphic control for correlation with the Trans-Amazon Drilling Project; (4) determine the onset and history of trans-continental drainage of the proto-Amazon River into the Atlantic; and (5) test major hypotheses about the originations and extinctions of tropical South American biota.

**Compétences recherchées :** carbonate sedimentology, corals, sedimentology, paleontology, palynology, organic geochemistry, inorganic geochemistry, structural geology, paleomagnetics, microbiology, physical properties, geophysics, geodynamics, glacial isostatic adjustment, stratigraphic correlation and downhole logging.

**Plus de détails :** [http://iodp.tamu.edu/scienceops/expeditions/amazon_margin.html](http://iodp.tamu.edu/scienceops/expeditions/amazon_margin.html)

**Infos pour candidater :** [http://www.ecord.org/expeditions/apply-to-sail/](http://www.ecord.org/expeditions/apply-to-sail/) [http://iodp.tamu.edu/participants/applytosail.html](http://iodp.tamu.edu/participants/applytosail.html)

**Date limite pour candidater :** 1er mars 2019

**Expedition 388 : “Equatorial Atlantic Gateway”**

**Thématique principale :** DYNAMIQUE INTERNE et CHANGEMENTS CLIMATIQUES. Ce forage va générer un enregistrement continu de l’évolution tectonique, sédimentaire, climatique et biologique de l’Atlantique équatorial au Crétacé supérieur et va permettre d’approfondir nos connaissances sur l’ouverture de l’Océan Atlantique.

**Dates de l’Exp. 388 :** 26 juin au 26 août 2020 à bord du JOIDES Resolution

Expedition 388 (based on IODP proposals 864-Full2 & 864-Add) will study the tectonic, climatic, and biotic evolution of the Equatorial Atlantic Gateway (EAG) at three sites on and near the Pernambuco Plateau (northeastern Brazilian continental shelf). These will target Late Cretaceous-Recent sediments and oceanic crust and are strategically located both near the continental margin and at paleo-water depths that are shallow enough (<2000 m) to provide well-preserved organic biomarkers and calcareous microfossils for proxy reconstructions of greenhouse climates. Core and log data will address four key themes: (1) the early rift history of the Equatorial Atlantic; (2) the biogeochemistry of the restricted Equatorial Atlantic; (3) the long-term paleoceanography of the EAG; and, (4) the limits of tropical climates and ecosystems.
under conditions of extreme warmth. This expedition will constrain the long-term interactions between tectonics, oceanography, ocean biogeochemistry and climate, and the functioning of tropical ecosystems and climate during intervals of extreme warmth.

Compétences recherchées : carbonate sedimentology, corals, sedimentology, paleontology, palynology, organic geochemistry, inorganic geochemistry, structural geology, paleomagnetics, microbiology, physical properties, geophysics, geodynamics, glacial isostatic adjustment, stratigraphic correlation and downhole logging.

Plus de détails : [http://iodp.tamu.edu/scienceops/expeditions/equatorial_atlantic_gateway.html](http://iodp.tamu.edu/scienceops/expeditions/equatorial_atlantic_gateway.html)
Infos pour candidater : [http://www.ecord.org/expeditions/apply-to-sail/](http://www.ecord.org/expeditions/apply-to-sail/)  
[http://iodp.tamu.edu/participants/applytosail.html](http://iodp.tamu.edu/participants/applytosail.html)

**Date limite pour candidater : 1er avril 2019**

**Deadlines**

**Soumettre un Projet de forage ICDP :**

The program focuses on challenging themes of global geoscientific importance underpinning socio-economic challenges, including climate & ecosystem evolution, sustainable georesources and natural hazards. ICDP invites Earth scientists to submit pre-proposals, workshop proposals and full proposals in which drilling is required to achieve critical research goals

[https://www.icdp-online.org/proposals/prepare-and-submit-a-proposal/](https://www.icdp-online.org/proposals/prepare-and-submit-a-proposal/)

**Date limite pour candidater : 15 janvier 2019**


**MagellanPlus Workshop :** to assemble a core working group to initiate an IODP or ICDP proposal for drilling

The MagellanPlus Workshop Series Programme is co-funded by ECORD and ICDP and designed to support scientists in developing new and innovative science proposals to meet future challenges in Earth, life and environmental sciences. For this purpose the MagellanPlus Workshop Series Programme funds workshops and/or scientists that are expected to lead to or foster high-quality and innovative scientific drilling proposals for submission to IODP and ICDP.

*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.*

**Deadline for submission : 15 janvier 2019**

Contact: Lucas Lourens – magellan.plus@uu.nl  
ECORD Managing Agency – ema@cerege.fr

Infos : [http://www.ecord.org/science/magellanplus/](http://www.ecord.org/science/magellanplus/)

**ECORD Research Grants 2019 :** Bourse de mérite pour la mobilité des Jeunes Scientifiques (Ph.D, Post-Doc) : recherche innovante en relation avec le Programme IODP (sur du matériel de forage ou des données provenant de campagnes anciennes DSDP/ODP, récentes ou futures IODP).

Date limite pour appliquer : **31 January 2019**

Lien internet : [http://www.ecord.org/education/research-grant/](http://www.ecord.org/education/research-grant/)

Contact : essac@plymouth.ac.uk

**Soumettre un Projet de forage IODP :**

Infos : [https://www.iodp.org/proposals/submitting-proposals](https://www.iodp.org/proposals/submitting-proposals)

Date limite pour candidater : **1er avril 2019**
Science Evaluation Panel, January 8-10 2019, La Jolla CA, USA
Environmental Protection and Safety Panel, February 12, 2019, College Station TX, USA
ECORD Facility Board, March 21-22 2019, Bremen, Germany
JOIDES Resolution Facility Board, May 7-8 2019, Washington DC, USA
ESSAC meeting, May 27-28, Bergen, Norway
Chikyu IODP Board, June 11-12 2019, Kobe, Japan
Science Evaluation Panel, June 25-27, 2019, Edinburgh, Scotland
Environmental Protection and Safety Panel, Sept 4-5, 2019, College Station TX, USA
IODP Forum and Program Member Office meetings, Sept 11-14, 2019, Osaka, Japan
ECORD-Council meeting, Nov 5-6, Dublin, Ireland

SAG, Mid-March, 2019 in Muscat, Oman
EC & AOG: May 20-24, 2019 in Kastanienbaum, Switzerland

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<tr>
<th>Expedition Name</th>
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<td>Return to Hole U1503A (South China Sea) -- tentative</td>
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<tr>
<td>Arctic Ocean Paleooceanography</td>
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<td>Cape Town / Rio de Janeiro</td>
<td>JRSO</td>
</tr>
</tbody>
</table>

* these expeditions may switch time slots depending on funding decisions by the ECORD Council.
Expéditions en cours et scientifiques français sélectionnés :

- **Expédition 358** – NanTroSEIZE Deep Riser Drilling (7 October 2018 to 21 March 2019)
  - Marianne Conin - Université de Lorraine, Nancy
  - Jade Dutilleul - Université de Lorraine, Nancy
  - May-Linh Doan - ISTerre, Grenoble

- **Expédition 368X** – Return to Hole U1503A (South China Sea) (Nov 15 - Dec 8, 2018)
  - Anne Briais (Petrophysics (Physical Properties) Specialist) – GET, Toulouse
  - Michael F.R. Nirrengarten (Structural Geologist) – IPG, Strasbourg

Expéditions à venir et scientifiques français sélectionnés :

- **Expédition 379** – Amundsen Sea West Antarctic Ice Sheet History (18 January to 20 March 2019)
  - Margot Courtillat (Paleontologist - foraminifers) - CEFREM, Perpignan

- **Expédition 382** – Iceberg Alley and Subantarctic Ice and Ocean Dynamics (20 March to 20 May 2019)
  Lien internet: [http://iodp.tamu.edu/scienceops/expeditions/iceberg_alley_paleoceanography.html](http://iodp.tamu.edu/scienceops/expeditions/iceberg_alley_paleoceanography.html)

- **Expédition 378** – South Pacific Paleogene Climate (3 January to 4 March 2020)
  Lien internet: [http://iodp.tamu.edu/scienceops/expeditions/south_pacific_paleogene_climate.html](http://iodp.tamu.edu/scienceops/expeditions/south_pacific_paleogene_climate.html)

- **Expédition 385** – Guaymas Basin Tectonics and Biosphere (16 September to 16 November 2019)
  Lien internet: [http://iodp.tamu.edu/scienceops/expeditions/guaymas_basin_tectonics_biosphere.html](http://iodp.tamu.edu/scienceops/expeditions/guaymas_basin_tectonics_biosphere.html)
  - Martine Buatier (Sedimentologist) - Chrono-Environnement, Univ. Bourgogne Franche-Comté, Besançon
  - Swanne Gontharet (Sedimentologist) - ULCO, LOG, Wimereux
  - Lucie C. Pastor (Inorganic Geochemist) - IFREMER, Plouzané
  - Armelle Riboulleau (Organic Geochemist) - LOG, Univ. de Lille, Villeneuve-d’Asq
  - Laurent Toffin (Microbiologist) - LM2E, IFREMER, Plouzané

- **Expédition 383** – Dynamics of Pacific Antarctic Circumpolar Current (DYNAPACC) (20 May to 20 July 2019)
  - Elisabeth M.L. Michel (Physical Properties Specialist/Petrophysics) - LSCE, Gif/Yvette
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...
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

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

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

“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
Lien “Demande de soutien financier Post-Cruise IODP-France” :

Workshops / Publications / Annonces diverses

Workshops ou congrès en rapport avec les programmes IODP et ICDP

Workshop for IODP community

••• “ New Caledonia Peridotite Amphibious Drilling Workshop “
Conveners: Julien COLLOT – Service Géologique de la Nouvelle-Calédonie, New Caledonia ; Marguerite
**ICDP Workshop on Probing the Late Paleozoic Icehouse-Greenhouse Transition (DeepDust)**

This ICDP workshop will be held to develop scientific and logistical plans for coring Permian records in Oklahoma and Western Europe. The workshop will include summaries of the tectonic and paleogeographic settings of these sites, presentations on climatic and environmental issues of the Permian, and key questions; articulation of both primary and auxiliary scientific objectives of a deep drilling project; and a discussion of scientific collaboration and responsibilities, potential drill sites, operations, outreach, logistics, funding and permitting.

**Dates et lieu :** 7-10 mars 2019 à Norman, Oklahoma  
**Infos :** [https://www.icdp-online.org/fileadmin/icdp/projects/doc/deep-dust/DeepDust_Wksp_Ad.pdf](https://www.icdp-online.org/fileadmin/icdp/projects/doc/deep-dust/DeepDust_Wksp_Ad.pdf)

**ICDP at EGU 2019 General Assembly: Call for Abstracts**

The EGU General Assembly 2019 will taking place in Vienna (Austria) on 7-12 April 2019. We kindly invite for abstract submission for the IODP-ICDP Session.

- SSP1.2/CL1.32/EMRP3.11/GD2.9/GMPV1.7/NH5.12/TS1.4 Achievements and perspectives in scientific ocean and continental drilling  

Please consider submitting also contributions to the sessions:

- EOS4.2 Outreach in Geoscience: what does it mean to you?  

- ER6.6/EMRP1.91/NH4.7/SM6.4 Hydraulic testing, frac operations and induced seismicity in geoenergy projects  

- SSP3.1/BG4.4/CL1.29 Limnogeology - reading the geological record of lakes  

**ICDP : International Conference on Ophiolites and the Oceanic Lithosphere: Results of the Oman Drilling Project and Related Research**

La prochaine conférence internationale sur les ophiolites et la lithosphère océanique sera organisée en janvier 2020 à l’Université Sultan Qaboos (Sultanat d’Oman) sous l’égide de l’UNESCO. Elle fait suite à l'Oman Drilling Project de l'International Continental Drilling Program (ICDP). Les thématiques abordées au cours de cette conférence incluent :
- Genesis of Ophiolites and oceanic lithosphere
- Geodynamics and hydrothermal processes of ophiolites at spreading ridges
- Chemical and physical processes within oceanic magma chambers
- Formation of ore deposits related to ophiolites
- Tectonics of ophiolite emplacement and metamorphism
- CO2-sequestration, fluids and diagenesis within oceanic crust and shallow mantle
- Geochemical cycles and geobiological studies related to ocean crust formation
- Hydrogeology of ophiolite
- Result of the Oman Drilling Project ([https://www.omandrilling.ac.uk/](https://www.omandrilling.ac.uk/)).

**Dates et lieu :** 12-14 janvier 2020 à Muscat, Oman  
**Date limite pour soumettre un résumé :** 1er août 2019  
**Date limite pour s’inscrire :** 30 nov 2019  
**Infos :** [https://conferences.squ.edu.om/icool/](https://conferences.squ.edu.om/icool/)
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 24 is available online.
Lien internet: http://www.scientific-drilling.net/index.html
https://www.sci-dril.net/24/index.html

Parution des derniers Proceedings IODP
Lien internet: http://iodp.tamu.edu/publications/proceedings.html

New !
Expéditions 380: NanTroSEIZE Stage 3: Frontal Thrust Long-Term Borehole Monitoring System (LTBMS) - 20 décembre 2018

Expéditions 367/368: South China Sea Rifted Margin - 28 September 2018

Expédition 363: Western Pacific Warm Pool - 8 June 2018

Expédition 366: Mariana Convergent Margin and South Chamorro Seamount - 7 February 2018

Expédition 364: Chicxulub K-T Impact Crater - 30 December 2017

Liens pour télécharger le rapport IODP-France 2003-2016
Vous y trouverez les dernières statistiques sur la participation française au Programme IODP et les résultats majeurs des expéditions récentes.

Liens pour télécharger le Science Plan IODP 2013-2023 :

**annonces diverses / jobs**

- IODP abstracts at AGU: The term “IODP” appears in 194 abstracts in 76 different sessions across 13 AGU sections at the Fall Meeting, from Biogeosciences to Union. Download statistics and a session list [Lien: https://iodp.org/about-iodp/announcements](https://iodp.org/about-iodp/announcements)
- Expedition 378, South Pacific Paleogene Climate, has been further delayed into 2020. [Lien: http://www.iodp.org/expeditions/expedition-378-delayed](http://www.iodp.org/expeditions/expedition-378-delayed)
- Results from the JRFB Meeting: An updated schedule / ship track and other consensus items are now available from the May 15-16 meeting of the JOIDES Resolution Facility Board [Lien: https://iodp.org/jrfb1805-schedule-and-ship-track/file](https://iodp.org/jrfb1805-schedule-and-ship-track/file)  
- EFB Minutes: Meeting minutes from the March 2018 meeting of the ECORD Facility Board are now available [Lien: http://www.ecord.org/resources/reports/meetings/](http://www.ecord.org/resources/reports/meetings/)
- New IODP Forum Chair selected: Dick Kroon, Regius Chair of Geology at the University of Edinburgh, has been selected as the next chair of the IODP Forum. Dick will replace outgoing chair Jamie Austin effective October 1, 2018 for a three-year term. [Lien: https://iodp.org/program-organization/dick-kroon-selected-as-3rd-iodp-forum-chair](https://iodp.org/program-organization/dick-kroon-selected-as-3rd-iodp-forum-chair)
- New SEP Co-Chair selected: The JOIDES Resolution Facility Board has confirmed Professor Lisa McNeill of the National Oceanography Centre Southampton, University of Southampton as the next co-chair of the Science Evaluation Panel. Lisa will replace outgoing co-chair Professor Ken Miller effective April 1, 2019 for a three-year term. [Lien: http://www.iodp.org/program-organization/science-evaluation-panel](http://www.iodp.org/program-organization/science-evaluation-panel)
- Keeping Our Focus on the Subseafloor: Eos opinion page on the value of marine seismic facilities [Lien: https://eos.org/opinions/keeping-our-focus-on-the-subseafloor](https://eos.org/opinions/keeping-our-focus-on-the-subseafloor)

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**Vidéos**

- New and eye-catching videos of *Expedition 381 Corinth Active Rift Development* are posted on our Youtube channel. [Lien: https://www.youtube.com/user/ECORDESO](https://www.youtube.com/user/ECORDESO)
"How are IODP cores taken? How do scientists gain data from these rocks and sediments? And what happens to the cores after an expedition? This documentary shows the exciting journey of hard rock cores recovered during Expedition 364 Chicxulub K-Pg Impact Crater: the drilling process, core description, the sampling and finally the archiving in the IODP core repository."

Lien : Watch the video on the ECORDESO Youtube channel: https://youtu.be/v4fgoW5b564
Oman Drilling Project : Etude de la transition manteau/croûte océanique de l’ophiolite d’Oman à bord du Chikyu

Objectifs : Décrire la structure pétrologique, géochimique et physique et les phénomènes d’altération du Moho sous les océans

De nombreux scientifiques rattachés à des labos français ont embarqué sur le navire océanographique Chikyu dans le cadre du projet international Oman Drilling Project. Parmi eux, Mary-Alix Kaczmarek et Mathieu Rospabé (laboratoire Géosciences Environnement Toulouse, Université de Toulouse III) ont embarqué au mois de juillet 2018. Cette campagne s’est déroulée à quai dans le port de Shimizu au Japon et avait pour but la description (caractères magmatiques, d’altération et structuraux) et l’analyse géochimique d’échantillons collectés le long des deux carottes CM (Crust-Mantle Transition). Le forage de la zone de transition manteau-croûte océanique de l’ophiolite d’Oman (hiver 2017) avait permis l’échantillonnage d’une section complète à travers cette unité, de la base des gabbros lité sur la partie la plus supérieure du manteau, le long des deux puits CM1A et CM2B sur une épaisseur totale d’environ 700 m (CM1A ~ 400 m, CM2B ~ 300 m). L’objectif affiché du forage de ce site est de mieux caractériser la nature pétrologique, géochimique et géophysique de cette transition de quelques centaines de mètres d’épaisseur et qui fait l’interface entre deux enveloppes majeures du système Terre. Les scientifiques embarquant ont pu procéder à un échantillonnage personnel qui leur permettra dans les années à venir de mener plus en détail l’étude de ces carottes CM. Ce projet amènera également à une meilleure définition des instruments géophysiques utilisés sur site par le JAMSTEC à travers la comparaison de données issues des différentes disciplines impliquées.
Chicxulub K-Pg Impact Crater - an overview

Expedition 364 was a joint IODP and ICDP Mission Specific Platform (MSP) expedition (Morgan et al., 2017). In April and May 2016, it drilled and cored a single borehole (Hole M0077A) at a shallow water depth in the Chicxulub impact crater currently buried below the surface of the Yucatán continental shelf (Mexico) (Figure 1). The Chicxulub crater is the best preserved of the three largest impact structures on the earth. It has an intact, unequivocal topographic peak ring (a mountainous ring of smashed rocks inside its outer rim, Figures 1 & 2-A), is associated with a global ejecta layer, and has been directly linked to the K-Pg mass extinction.

Figure 1 – Hole M0077A is shown with a yellow triangle superimposed to the Bouguer gravity anomaly map (gravity data courtesy of A. Hildebrand and M. Pilkington) over the Chicxulub impact crater. The coastline is displayed with the white line. b) Regional setting, with red rectangle outline the region shown in panel a. c) Close-up of Hole M0077A location showing position of well with respect to seismic profiles. After Christeson et al., (2018).
Hole M0077A drilled during Exp 364 penetrated through post-impact carbonates of Eocene and Paleocene age (0–617.33 meters below sea floor (mbsf)), suevite and impact melt rock of the upper peak ring (617.33–747.02 mbsf) and granitoids, pre-impact dikes, suevite, and impact melt rock of the lower peak ring (747.02–1334.69 mbsf) (Figure 2-B). Excellent quality cores were recovered from 505.7mbsf to the total depth. High-resolution downhole logs were acquired in open hole with slimline tools over almost the entire depth. Details on both scientific objectives and operations of Expedition 364 can be found in Morgan et al., (2017).

Several scientific papers have been published since the offshore drilling operations of Expedition 364 in 2016, and are briefly presented hereafter. They are the first of a long series of ongoing studies that, we hope, will unravel several of the mysteries associated to large impact crater formation, including their role in planet resurfacing processes, their impact on global climate, and the ancient or modern microbial life they could host.

Asteroid strike made “instant Himalayas”

Large impacts provide a mechanism for resurfacing planets through mixing near-surface rocks with deeper material. Central peaks are formed from the dynamic uplift of rocks during crater formation. As crater size increases, central peaks transition to peak rings. The mechanisms surrounding the peak-ring formation and their depth of origin are still debated. Expedition 364 sampled for the first time the rocks forming a peak ring, thus offering a unique opportunity to test the existing hypothesis.

In their first study published in “Science” (Morgan et al., 2016), the Expedition 364 scientists showed that the peak ring is formed from uplifted, fractured, shocked, felsic basement rocks, cross-cut by dikes and shear zones (Figure 2-C). The varied observed features (ex. Shatter cones, shock metamorphic features, increased porosity and density reduction in the peak-ring rocks, …) are consistent with the existing “Dynamic collapse model” that postulates that a single over-heightened central peak collapsed into the multiple-peak-ring structure.
The peak-ring rocks have an unusually low density and seismic velocity (Figure 2-C). Large impacts therefore generate vertical fluxes and increase porosity in planetary crust. The validity of this model has implications for far-ranging subjects, from how giant impacts alter the climate on Earth to the morphology of crater-dominated planetary surfaces.

Acoustic fluidization: when rock behaves like a viscous mass

Topographic rings emerge from uplifted target (crustal) rocks within minutes of impact. At Chicxulub, a mountain higher than Everest was thus thrown up before collapsing back into the peak ring on the scale of minutes. The impacted rocks flow like liquid for a crucial few minutes after the impact, under a mechanism known as “acoustic fluidization”. Several theories have been proposed about what mechanism allows this fluidization to happen. To flow rapidly over large distances, the target rocks must have weakened drastically, but must also have subsequently regained sufficient strength to build and sustain topographic rings. The mechanisms of rock deformation that accomplish such extreme change in mechanical behavior during cratering are largely unknown and have been debated for decades.

Riller et al (2018) recently put together a detailed picture of the minutes following the giant impact via the recognition of distinct deformation mechanisms corresponding to the various stages of the cratering process. Expedition 364 cores produced a record of brittle and viscous deformation within the peak-ring rocks (Figure 4). The authors thus demonstrate that the catastrophic rock weakening upon impact is followed by an increase in rock strength that culminated in the formation of the peak ring during cratering. These observations are strongly supportive of the dynamic collapse model of peak-ring formation and point to quasi-continuous rock flow (acoustic fluidization due to strong vibrations shaking rock blocks constantly enough to allow them to flow) as the dominant physical process controlling initial cratering, followed by increasingly localized faulting.

Figure 3 – Dynamic collapse model of peak-ring formation (Morgan et al., 2016). (A to F) Numerical simulation of the formation of Chicxulub at 0, 1, 3, 4, 5, and 10min tracking the material that eventually forms the peak ring [indicated by the arrow in (A)] and records the maximum shock pressure (blue color scale) to which the peak-ring rocks were exposed during passage of the shock wave. The red color indicates zones of impact melt, for which shock pressures have exceeded 60 GPa. The pre-impact target rocks are composed of sediments (light gray), crust (medium gray), and mantle (dark gray). (G) Depth converted, time-migrated seismic profile ChicxR3. IODP/ICDP Site M0077A is shown.

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Figure 4 – Deformation structures in target rock at site M0077A. Riller et al. (2018).
A target rock with unusual petrophysical properties

The energy released during the asteroid impact was equivalent to that of one Hiroshima explosion on every square kilometer of the entire Earth’s surface (~100 million megatons of TNT). The peak ring originates from mid-crustal basement and was lying at ~8- to 10-km depth before the impact (Morgan et al., 2016). The peak ring rocks were subjected to shock pressures of ~10 to 35 GPa. Unsurprisingly, Christeson et al. (2018) reveal unusual physical properties of the peak-ring rocks from Hole M0077A. The uplifted granitic peak ring materials have values of 4000–4200 m/s, 2.39–2.44 g/cm³, and 8–13% for velocity, density, and porosity, respectively. These values differ significantly from typical unaltered granite and indicate considerable rock damage. They are also consistent with numerical model predictions for peak-ring formation where the lithologies present within the peak ring represent some of the most shocked and damaged rocks in an impact basin. Integrating borehole data with existing seismic datasets also allowed the authors to map the suevite (Figure 2-B and Figure 5) below the Paleogene sedimentary rock over the entire floor of the impact ba-

Figure 5 – Seismic reflection profiles converted to depth using the 1D Hole M0077A VSP velocity profile. Upper dashed line is the interpreted base of the post-impact section, and thus the equivalent of the crater floor post-impact. The lower dashed line is the base of the suevite, with two possible interpretations on the peak ring. Blue shading are slump blocks, pink shading are granitoids of peak ring capped by impact melt rock, and orange shading is potential area of thickened impact melt rock beneath the central basin (Christeson et al., 2018).
sin. Sdevite thickness is 100–165 m on the top of the peak ring but 200 m in the central basin, suggesting that sdevite flowed downslope from the collapsing central uplift during and after peak-ring formation, accumulating preferentially within the central basin.

**Release of climate-active gases by the Chicxulub crater formation**

Large impact might be locally devastating, with the emission of high levels of thermal radiation from the impact plume, the generation of hurricane-force winds, and potential to cause tsunamis and landslides. However, for an impact to cause a mass extinction, it must have much more global consequences. The cause of the K-Pg mass extinction thus remains a matter of some debate, and several kill mechanisms have been proposed (short-term cooling and darkness produced by dust, soot, and sulfur in the atmosphere; long-term warming from the release of massive volumes of CO2; ocean acidification; and global firestorms ignited when ejecta heats up as it reenters the Earth’s atmosphere and emits thermal radiation). The environmental effects of climatically active gases (CO2, S-bearing gases, and water vapor) released in the atmosphere from sedimentary rocks at the Chicxulub impact site (porous carbonates and evaporites) is still one of the widely favored kill mechanisms.

Artemieva et al. (2017) reexamine this mechanism using a hydrocode. They model ejected materials for a sufficient time after impact to realistically quantify the volume of gases that reach high enough altitudes (> 25 km) to have global consequences. Using new constraints on the Chicxulub impact angle and target composition, they estimate that $325 \pm 130$ Gt of sulfur and $425 \pm 160$ Gt CO2 were ejected and produced severe changes to the global climate. These numbers are important inputs to be used in global climate models for models of temperatures at the Earth’s surface and within the ocean after the impact and for quantifying ocean acidification. This suggests that surface temperatures were likely to have been significantly reduced for several years and ocean temperatures affected for hundreds of years after the Chicxulub impact.

**Life Recovered Rapidly at Impact Site**

The impact of the asteroid at the origin of the Chicxulub impact crater is known to have triggered the Cretaceous/Palaeogene mass extinction linked to the eradication of 76% of species on Earth, including the dinosaurs. After the mass extinction, the recovery of the global marine ecosystem was geographically heterogeneous; export production in the Gulf of Mexico and North Atlantic–western Tethys was slower than in most other regions, taking 300 thousand years (kyr) to return to levels similar to those of the Late Cretaceous period.

Lowery et al. (2018) focus on the recovery of life in the crater after the impact. In this study, the authors present a record of foraminifera, calcareous nannoplankton, trace fossils and elemental abundance data from within the Chicxulub crater, dated to approximately the first 200 kyr of the Palaeocene. They show that life reappeared in the basin just years after the impact and a high-productivity ecosystem was established within 30 kyr (faster than that at many other sites, including those in the Gulf of Mexico) which indicates that proximity to the impact did not delay recovery and that there was therefore no impact-related environmental control on recovery in marine ecosystems.

**Downhole logging as a tool to understand drilling**

During Expedition 364, high-resolution downhole logs were acquired by Geosciences Montpellier with slimline tools over almost the entire depth. Due to favorable borehole conditions, the recovery in open hole and overall good quality of the logs allow to resolve up to sub-cm scale features. Downhole wireline logging tools are commonly used to measure a suite of in-situ physical properties within the rocks surrounding the borehole as well as to image the borehole wall. These logs provide critical geological information about the
rock formations close to the borehole, including their lithology, fluid content, porosity, and structural data such as the presence of faults and fractures. Where core recovery is incomplete, log data provide an invaluable way to characterize the geological formation. They can also be used to assess borehole quality and trajectory (Figure 8) and can provide assistance with decision support during drilling and coring operations. When making geological interpretations of downhole logs, it is essential to be able to distinguish between in situ natural geological features, generally also visible on cores, and features that are operation-related. Lofi et al., (2018) examined carefully the Expedition 364 logging data and evidence a series of drilling-induced and logging-related features, visible mainly on acoustic borehole images. These features include the following: effects caused by the presence of casing and metal debris in the hole, logging-tool eccentering, drilling-induced corkscrew shape of the hole, possible re-magnetization of low-coercivity grains within sedimentary rocks, markings on the borehole wall, drilling-induced borehole oversizing and change in borehole trajectory. The authors show how downhole logs can be critical to improve the post-operation understanding of the drilling and coring operation history.

As shown by the above published works, IODP/ICDP Expedition 364 has been an extremely successful expedition so far. Many other studies are currently actively performed by the Science party and are expected to be published in the coming months. From the French participant point of view, Elise Chenot will start a post-doctorate at Géosciences Montpellier in January 2019. The position is funded by IODP France and will be dedicated to the study of the post-impact deposits at the drill site M0077.

Johanna Lofi

Références


Communiqués de presse du cnrs et nouvelles INSU:
http://www2.cnrs.fr/presse/communique/4781.htm
http://www.insu.cnrs.fr/node/9236

Liftboat Myrtle seen from the crew boat (Credit : L. Perez-Cruz, ECORD/IODP)

Johanna Lofi (Petrophysics Staff Scientist) presents downhole logging operations and data to the media people visiting the Platform (Credit: A. Rae, ECORD/IODP)

Group photo on the L/B Myrtle (Credit: ECORD/IODP).

Group photo onboard the L/B Myrtle (Credit: ECORD/IODP).

Group photo of the Expedition 364 science party, ESO and BCR teams (Credit: V. Diekamp, ECORD/IODP)

CoreWall system with CT scans and cores (Credit: E. Le Ber, ECORD/IODP)

Cores on deck: impact melt rock (left) and shocked granitoid (right) (Credit: M. Mowat, ECORD/IODP)
**Récemment dans les News**

**IODP ••• This deep-sea mystery is changing our understanding of life, TED talk**

Lien : https://www.ted.com/talks/karen_lloyd_this_deep_sea_mystery_is_changing_our_understanding_of_life#t-760565

**IODP Exp. 371 ••• Scientists reveal secrets of lost continent Zealandia, EarthSky.org**


**IODP Exp. 376 ••• Digging for gold inside a submarine volcano, Earth Magazine**

Lien : https://www.earthmagazine.org/article/drilling-gold-inside-submarine-volcano

**IODP Exp. 360 ••• Keep Digging, BBC radio**

Lien : www.bbc.co.uk/programmes/b08kv3y6

**IODP Exp. 364 ••• Drilling into the Chicxulub crater, Ground Zero of the dinosaur extinction, New York Times**


**IODP Exp. 364 ••• Asteroid strike made 'instant Himalayas,' BBC**

IODP Exp. “NanTroSEIZE” ••• Some like it hot: scientists drill off Japan for sizzling life, Reuters


IODP Exp. “NanTroSEIZE” ••• Deep-sea drilling expedition to look for life’s limits in scalding environment, Science


IODP Exp. 364 ••• Scientists hit pay dirt in drilling of dinosaur-killing impact crater, Science.


IODP Exp. 364 ••• SoundCloud: Interview from the impact crater, Texas Standard.

Lien : https://soundcloud.com/texas-standard/dino-crater-04252016

IODP and IODP Exp. 360 ••• A Decades-Long Quest to Drill Into Earth’s Mantle, Smithsonian.com.


IODP Exp. 362 ••• Floating lab drills 1.5km below sea floor to study megaquakes, New Scientist.

Lien : https://www.newscientist.com/article/2102382-floating-lab-drills-1-5km-below-sea-floor-to-study-megaquakes/