SCIENTIFIC OCEAN DRILLING

CREDIT: Agata Di Stefano & IODP

Digital Newsletter

the Drilling Dispatch

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SCIENTIFIC OCEAN DRILLING

In This Issue

In the works...

Expeditions 402T: JR Academy and 402P: School of Rock

written by Sharon Cooper, Carol Cotterill, Sarah Kachovich, and Maya Pincus

The *JOIDES Resolution* will pull into port in the first week of April, ushering Expedition 402: Tyrrhenian Continent-Ocean Transition to a close. With two full months before the start of the next expedition, one might suspect a quiet period for our typically busy drillship. However, this is not the case. As the *JOIDES Resolution* transits from Naples to Amsterdam, then remains tied up in port for schduled maintenance, two exciting programs will take place.

JR Academy: Bridging Indigenous and Western Science to Benefit First Nations Peoples

During Expedition 402T, the *JOIDES Resolution* will host its third JR Academy. The JR Academy provides an opportunity for undergraduate students to live and work aboard the ship, while learning about scientific ocean drilling, the exciting geoscience careers that surround it, and in this instance, a chance to use STEAM (science, technology, engineering, art, and mathematics) and science communication to explore bridging Indigenous and Western sciences. In addition to learning many aspects of Earth science through workshops, lectures and land-based field trips, students will learn about and conduct projects on science communication, sharing their science and arts with their schools and communities back home.

This JR Academy is being run in collaboration with our partners from Australia and New Zealand (ANZIC) and is a unique opportunity for participants to consider how science is conveyed and carried out in different cultures. It is also partially sponsored by the related NSF project, Ambassadors for STEM Training to Enhance Participation (A-STEP).

The International Ocean Discovery Program acknowledges and respects the diverse First Nations Peoples worldwide, whose enduring connections to the seas and deep-time geology enrich our understanding of our Earth's processes and history. In our global pursuits, we commit to the respectful acknowledgment of

traditional waters, cultures, and the vital role of First Nations Peoples in science, storytelling, meetings, and symbols, fostering inclusion and ending historical exclusion. As we extend our respect to our ancestors and descendants, IODP values the invaluable contributions of First Nations Peoples to global society and pays homage to Elders past, present, and emerging.

Participants will arrive in Naples, Italy on April 8th and embark the vessel on April 10th; then the group will disembark April 25th in Amsterdam, Netherlands. Prior to boarding the ship, the students will visit Pompeii and Mt. Vesuvius. Following arrival into Amsterdam, the students will undertake an urban hydrogeology tour of the city and one of its Polders before returning home.

School of Rock: Welcoming a New Era in Scientific Ocean Drilling Education

The School of Rock has been operating since 2005 as a professional development experience to engage educators in the science and engineering of scientific ocean drilling. Teachers who participate in this programming are then able to turnkey what they learn about ocean drilling research to their students and colleagues. In this way, hundreds of learners have been exposed to the International Ocean Discovery Program and its groundbreaking science over the course of more than 15 workshops over the years.

However, at the end of 2024 the current IODP program and the *JOIDES Resolution* platform as its U.S. vessel will be ending. We plan to take this last opportunity on the JR, Expedition 402P, to envision and plan creatively and out-of-the-box for post-2024 professional development programs (broadly defined) using legacy cores, scientific personnel, other relevant institutions and research vessels, and both existing and desired resources.

Participants will arrive in Amsterdam, Netherlands on May 17th and embark the vessel on May 19th after a day of geology- and culture-based field trips. The group will remain on the vessel for over a week, during which time they will utilize the JR's state of the art laboratory facilities to explore (1) scientific questions into cores and data, (2) what those tell us about Earth's history, and (3) how we use existing classroom resources on those topics. Participants will also take part in land-based geology field trips in the Amsterdam area and spend time brainstorming ideas for future professional learning and development on scientific ocean drilling in the post-JR era, including translating these ideas into actionable proposals.

Stay involved! You can stay up-to-date and follow the adventures of Expedition 402T: JR Academy and Expedition 402P: School of Rock on the *JOIDES Resolution* website.

In the repository... Expedition 401: Mediterranean-Atlantic Gateway Exchange

Rachel Flecker and Emmanuelle Ducassou,
Expedition 401 Co-Chief Scientists;
Trevor Williams, Expedition 401 Project Manager

written by Rachel Flecker, Erin Anthony, and Kellan Moss

After two months at sea aboard the *JOIDES Resolution* (JR), Expedition 401 came to an end in February. The expedition was focused on studying the connection between the Atlantic Ocean and Mediterranean Sea 8-4 million years ago. Scientists know changes to this gateway profoundly changed the Mediterranean. The question was, did those changes also impact the Atlantic and what happened in the gateway itself?

Today the Gibraltar Strait is the only Mediterranean-Atlantic gateway, but in the past, there were at least two other connections: one to the south in Morocco and one to the north in Spain. These closed and as they did so, the saltiness of the Mediterranean increased dramatically, leading to the accumulation of ~1.5 km of salt on the Mediterranean sea floor, also known as a salt giant.

Expedition 401's aim was to collect sediment cores to test two main hypotheses:

1. that this change in Mediterranean salinity changes the density of the water flowing out into the Atlantic, impacting the circulation of the global ocean, and
2. that the formation of a salt giant changes the chemistry of the global ocean in ways that impact the carbon cycle.

Both these mechanisms have the potential to drive global climate change.

Expedition 401 participants pose for a group photo (Credit: Erick Bravo & IODP JRSO).

The sediment cores the expedition needed were buried up to 1.5 km below the seafloor. It is unusual to be drilling for sediment archives of climate this deep because climate records need to be continuous, and deep drilling rarely results in recovering more than half of the sedimentary layers. However, the expedition was able to take advantage of new drilling technology and the expertise in scientific coring accumulated and honed over more than half a century by both the JR technical team and the drillers. As a result, Expedition 401 recovered unprecedentedly continuous core even from depths of more than 1 km down. The last core recovered from the Mediterranean site was at 1070m and had 96% recovery. In total the expedition collected more than 2.6 km of core at four different sites in the North Atlantic Ocean and the Mediterranean Sea.

What these complete records in the Atlantic show is a clear response to changes in the Mediterranean-Atlantic gateway at the same time that the salt giant formed, making it very likely that there was a physical change in ocean circulation (Hypothesis 1). Detailed analytical work on recovered samples will be required to test Hypothesis 2. The expedition will be holding its sampling party later this year in Bremen, Germany to select the samples needed for this additional analysis.

The big ship-board surprise came from drilling just inside the Mediterranean to the east of Gibraltar. This area, the Alborán Sea, was thought to be the main Mediterranean-Atlantic gateway both immediately before and after the salt giant formed. The cores recovered at this site contained beautiful sediments, exquisitely laminated in a variety of colors. This incredibly fine lamination requires very quiet, low energy conditions. This is not what the science team was expecting to see, because many of the models suggest that during salt giant formation, the Mediterranean Sea level dropped by hundreds of meters, causing major erosion of the margins including in the Alborán Basin. The co-chiefs were also anticipating a sedimentary signal caused by the catastrophic refilling of the Mediterranean, but found no compelling evidence of that either.

All of this means that there are still lots of outstanding questions around the evolution of the Atlantic-Mediterranean corridor 8-4 million years ago. Luckily, Expedition 401 is part of a bigger Land-2-Sea drilling project, IMMAGE, that will drill the fossil gateways now preserved on land. So even though ship-based drilling on the project has come to an end, the team is already starting to plan the next drilling expedition to Spain and Morocco.

LEFT: Expedition 401 curatorial specialist Carel Lewis marks a core liner to indcate where sections will be cut). RIGHT: The SIEM Offshore drilling crew poses as a group on the rig floor. (Credit: Erick Bravo & IODP JRSO)

How to...
Design an effective presentation

written by Maya Pincus (USSSP)

Whether at a conference or in a classroom, we are often tasked with conveying large amounts of information to large groups of people. The convention has become a lecture accompanied by a slideshow, because that combination allows us to both say what we need to say and anchor it all with visual examples. It also makes our work accessible to multiple modalities of audience learning—some people absorb information best when they see it, others when they hear it. While putting together a slideshow and talking about it is a pretty straightforward process, there is a big difference between a good presentation and a great one. The following tips will help you take your work to the next level and keep your audience engaged.

- **Tip #1: Tell a story.**

  If you frame your talk within a narrative arc, your audience will not only know why they are listening to you, but also will be committed to hear you through the end. A good story starts with a question or conflict (What is the science problem you are trying to solve? Why does it matter?), dynamic characters (Who is solving the problem? Why are they the ones who should be solving it?), and a satisfying resolution (What did you learn? How does it affect society? What will you do next?).

- **Tip # 2: Use compelling visuals.**

  Each slide should capture and hold your audience's attention. This can be an attractive color palette, an interesting image, or a well-designed chart. It should be immediately clear to the audience how the visuals relate to what you say, and how they support the point you are trying to make. Avoid graphs with titles and axes that are too small to read from the back of the room, or low-resolution images that appear blurry on a projector screen. It's also a good idea to check accessibility guidelines (ex: https://www.w3.org/TR/WCAG21/) to ensure that your slides cater to people of all abilities.

- **Tip #3: Limit text.**

  Very few people are able to read and listen at the same time. The words on your slide should be key points that emphasize what you say, rather than paragraphs that make viewers squint to concentrate. The written words that you do include should reinforce what you say and show in your graphics. They should not be new ideas that are not addressed by what you say.

- **Tip #4: Practice.**

  While it is normal to pause to think, and say "um" every now and then, when you speak in front of an audience you want to appear both competent and confident. The best way to do this is to practice what you are going to say. Doing a run-through (or several) will allow you to work out what flows and what doesn't, and prepare you to say what you need to say without filler sounds.

FEATURED VIDEO

DIY Resistivity Meter

What does downhole logging have in common with soda cans? Resistivity, of course! In this video, Schlumberger logging engineer Clay Furman explains how a DIY tool crafted aboard the *JOIDES Resolution* can act as a multimeter to learn more about the sediment and rock surrounding a borehole.

For your calendar

- **Submit a LEAP proposal**
  (deadline: 1 April 2024; learn more)
- **Submit a drilling proposal**
  (deadline: 1 April 2024; learn more)
- **Integrating Ocean Drilling and NASA Science Workshop**
  (2-4 April 2024; Washington, D.C., USA; learn more)
- **Submit an AGU24 session proposal**
  (deadline: 24 April 2024; learn more)
- **European Geophysical Union General Assembly**
  (14-19 April 2024; Vienna, Austria and online; learn more)
- **Provide input on Future Ocean Drilling in the U.S. (FOCUS)**
  (open deadline; learn more)

SCI COMM RESOURCE OF THE MONTH

Drilling rates are one of many indicators used by drillers and engineers to make important decisions about equipment choices and changes. In this activity, learners will calculate drilling rate to determine what factors can affect drilling.

Drilling Rates through Oceanic Crust

Spotlight on... Dr. Laurel Childress

written by Maya Pincus (USSSP)

Credit: Laurel Childress

If you have a question about the International Ocean Discovery Program, *JOIDES Resolution* Science Operator Staff Scientist Dr. Laurel Childress is the person to ask. Whether you're wondering when the last time the *JOIDES Resolution* was docked in the US, the best coring equipment to use at a certain depth in a certain lithology, or how to explain scientific ocean drilling to a group of fifth graders, Laurel has data to back up her answer.

Long before she became an expert on all things IODP, Laurel was a little kid who loved being outside. Thinking back, ending up in this role is a bit, but not far, off from what she expected from her life. "I don't think I always knew that I wanted to be *here*, but I wanted to do something science-y and outside," she remembers. How could she not? Between growing up in North Carolina with the best of the natural world at her fingertips—"sometimes that was the mountains, and sometimes that was the beach"—and coming of age at the same time Dante's Peak came out, she had a rough idea of what she wanted from her future. Still, comparing her understanding of an outdoorsy career then, "I don't think I realized completely that you could do this as a job, the way that I do it now."

That began to change when her high school started offering classes at 6:00 AM for ambitious students who wanted to earn additional credits. It was Laurel's chemistry teacher, a geologist by training, who first exposed her to that field as a profession. She came to love those early-hour experiments in sediment settling and dune formation ("We rigged up something with a trash bag and a hairdryer trying to make dunes, but I think we mostly just made a giant mess"), so when summer came around she set her sights on a STEM summer camp hosted by the local college.

When registering for the camp, Laurel was briefly stymied—how was she supposed to choose when there were twelve different options for classes? But on closer inspection of the catalog, she noticed a tiny asterisk next to the geology course. Unlike any of the other classes, two of the four weeks of the program

Whether the heights of the mountains, or the depths of a cave, Laurel loves exploring the outdoors (Credit: Patricia Beddows).

TOP: Inside the mass spectrometer (Credit: National Ocean Sciences Accelerator Mass Spectrometry Facility/Woods Hole Oceanographic Institution). MIDDLE: Overlooking the Waipaoa River in New Zealand (Credit: Neal Blair). BOTTOM: Laurel poses with the inflatable JR (Credit: Katerina Petronotis).

were devoted to field trips. Laurel thought, "A two-week field trip? Yeah!" So that summer she "drove around in a giant van and poked at rocks." At the encouragement of the course instructor, whose philosophy was to have his students just "go out and absorb information," "That was when I decided that this could be a job."

After that, Laurel went off to college, "as we were told to do," but once settled at North Carolina State University soon faced another obstacle: "I was a geology major for a while, and then I realized that I really enjoyed the oceanography classes that I was taking, so then I became a marine sciences major for a while, and I think I went back one more time." How could she decide between the two disciplines? Luckily, "someone boldly pointed out that you could be a marine geologist, which was… good information."

Sticking to the theme of going above and beyond, Laurel got a job working in a lab while a student at North Carolina University. As she was wrapping up her undergraduate degree, she was relieved when the lab supervisor invited her to stay and get her masters degree while continuing the work. As she got to the end of her masters, she came to the conclusion "Well, I'm really good at being a student, I don't know if I want to stop being a student." Still unsure what else she wanted to do with her life, "I just stayed in school longer" and went on to Northwestern University to begin a doctoral program in biogeochemistry with a focus on carbon transport from a source-to-sink perspective.

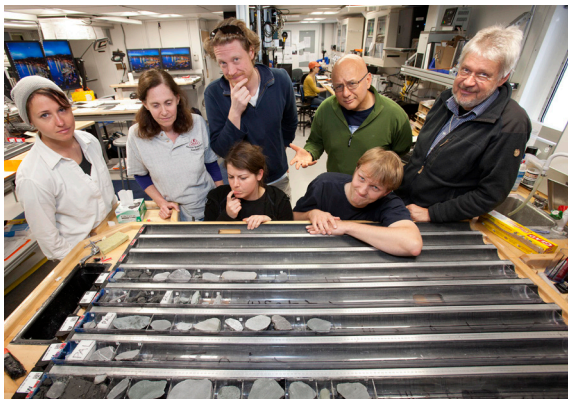
It was there that Laurel had her first encounter with scientific ocean drilling. In the typical IODP coming-of-age story, a student is introduced to deep sea drilling and ocean cores through the research of a professor, or when their advisor disappears on an expedition for several weeks. It was different for Laurel, who, if it wasn't already abundantly clear, is something of a self-starter. During her PhD, she discovered that "there was this group that somehow I got on their listserv, and they would send all these things like workshops and funding for students." That group? None other than the U.S. Science Support Program. So what did Laurel do? "I just started randomly applying for these things because it sounded exciting, like a free chance to go places and meet people." She found that each time she attended an event, she would learn about upcoming ones, turning her involvement into a chain reaction of new opportunities.

An anecdote exemplifies Laurel's mindset at this time: While at a workshop in College Station, she was chatting with someone who mentioned an upcoming UNOLS Chief Scientist Training Cruise. Laurel asked about the call for applications, and was told that the deadline was that day. As should no longer come as a surprise, "I went back to my hotel room, typed as fast as I could, and I got in!"

It was in this same manner that Laurel had her first opportunity to sail. She joined Integrated Ocean Drilling Program Expedition 341: Southern Alaska Margin and was immediately hooked. As she completed her dissertation, and even as she was offered a post-doc position in a radiocarbon lab at Woods Hole Oceanographic Institution, she kept IODP on her radar. She had applied for a staff scientist position with *JOIDES Resolution* Science Operator, and as she was waiting to hear back, she geared up to move ("I had rented a new apartment and all"). A month or so later she received the good news that JRSO wanted to hire her, so she reduced her post-doc to just a year before moving to Texas.

At JRSO, Laurel has earned the reputation of "only staffing the weird expeditions." When she was first hired in 2017, she was assigned Expedition 378: South Pacific Paleogene Climate, which was scheduled to sail in fall of 2018. However, when the propellers of the *JOIDES Resolution* broke and needed to be replaced, Expedition 378 was postponed. Instead, Laurel was reassigned to Expedition 368X: Return to Hole U1503C (South China Sea), a month-long expedition to deepen a hole which was able to take place "on the fly" after Expedition 378 was postponed. So Laurel's first expedition as a staff scientist involved only eight shipboard scientists on an improvised excursion to recover more core in a limited amount of time.

Laurel's next expedition was JR100, an NSF-funded, non-IODP expedition aboard the *JOIDES Resolution*, whose goal was to study the oceanographic and hydrologic history of the northern margin of the Antarctic Circumpolar Current and the South American continent, in order to extend the high-resolution paleoclimate record of that region deeper in time. After JR100, Expedition 378 was finally rescheduled for the next year, but was cut short due to repairs needed for the *JOIDES Resolution* to operate in deep water. Laurel and the participants of Expedition 378 arrived back to shore in February of 2020, ushering in a two-year period of uncertainty in the face of the COVID-19 pandemic. It wasn't until 2022 that Laurel managed her first two-month expedition, Expedition 392: Agulhas Plateau Cretaceous Climate, which *still* wasn't "standard" for an EPM, as she



Laurel has now sailed on five IODP expeditions. From top: Expedition 341 (Credit: John Beck & IODP/TAMU), Expedition 368X (Credit: Tim Fulton & IODP JRSO), Expedition 378 (Credit: Tim Fulton & IODP JRSO), and Expedition 400 (Credit: Erick Bravo & IODP JRSO).

inherited the expedition late in its development from an outgoing colleague. She didn't experience her first "normal" expedition until just a few months ago, with Expedition 400: NW Greenland Glaciated Margin.

Though at times harrowing, this string of misadventurous modifications ensured that Laurel is now prepared to handle *anything*. Admittedly, she has come to love these unconventional expeditions, "whether it's the time crunch, or a really different setup than normal, there's just something about it…" The result is that she is uniquely prepared to deal with the situation changing ("I learned to not work too far ahead").

Beyond this "series of strange expeditions," Laurel is known at JRSO for the effort she puts into making scientific ocean drilling data accessible and easy to find. It started during the COVID-19 pandemic—with expedition planning out on hold, Laurel found herself getting really into data mining, which could be put to good use in the context of scientific ocean drilling, with its decades-long acquisition of information and institutional knowledge. She spent the lockdown improving her knowledge of the programming language R, and used her new skills to build a website which houses several applications that address a big issue with ocean drilling data, which is that "it is technically all accessible, but there is a learning barrier or experience barrier with actually getting to what you want in a reasonable way."

Her most recent achievement is the LILY database, which links lithologic analyses to physical, chemical, and magnetic properties of cores collected over 42 expeditions. In other words, "the LILY database is designed to meaningfully merge IODP datasets in a way that will help scientists more easily access the often diverse datasets of expeditions." This is evidence not only of Laurel's meticulous attention to detail, but also her commitment to education and outreach. If you look at her *curriculum vitae*, it's obvious: Laurel has been teaching almost as long and she's been learning. As an Expedition Project Manager, her schedule makes it impossible to lead classes or advise students, so she jumped at the opportunity to step into the role of liaison for port call public relations, outreach, and K-16 education activities. This sort of community work is "a nice way to fill that void," especially because it keeps her busy with a variety of tasks: Some days it's visiting an elementary school classroom, others it's leading a tour of the Gulf Coast Repository. Laurel is even a trained docent of the *In Search of Earth's Secrets* pop-up *JOIDES Resolution* traveling exhibit.

Even when not at work, Laurel continues to be creative and productive, crafting and preparing elaborately designed IODP-themed baked goods. It's like her motivation never ends. If there's one thing for certain, we're all eager to find out: What will she think of next?

Some of Laurel's creative baking projects, from left to right: rotary core barrel drill bit cake, *JOIDES Resolution* cookies, and LILY cupcakes (Credit: Laurel Childress).

Spotlight on... Dr. Lucien Nana Yobo

written by Maya Pincus (USSSP)

Credit: Lucien Nana Yobo

There may be no one better equipped to tell the story of Earth's history than Dr. Lucien Nana Yobo. In his historical geology class, which he teaches to non-geology majors, he likens the Earth to Pride and Prejudice. While the latter is "the greatest love story of all time," the former is equally, if not more, dynamic, and through preservation in the rock record, is equally available to those who wish to follow its exposition.

As someone who researches catastrophic events and critical turning points in the Earth system, Lucien knows a thing or two about storytelling. He primarily identifies as an isotope geochemist, but will admit to being a stratigrapher as well. From his years of experience, he knows that "a lot of people focus on these critical intervals, but for us to really understand these big critical events, we have to look at three, four, five, million years leading up to this event." Enter ocean drilling.

Lucien started working with IODP samples when he was a doctoral student at the University of Houston. This wasn't his first exposure to scientific ocean drilling—one of his undergraduate professors from California State University, Fresno was absent for half a semester due to being at sea—but his research didn't bring him to the cores until he became interested in oceanic anoxic events. Specifically, he was interested in historical scientific ocean drilling in the Pacific, expeditions carried out on the Glomar Challenger by the Deep Sea Drilling Project. These core samples became Lucien's impetus: He was eager to get his hands on them to conduct his own investigations, but "of course, I wasn't able to get any material from this interval because they're old, they are critical, and a lot of it was depleted [by other scientists] so there is a not a lot left." Instead, he relied on the literature. But the more he read old reports from those expeditions, he "got more and more interested in core materials."

Lucien's had his first experience at sea as a geochemist during Expedition 397 (Credit: Sandra Herrmann & IODP JRSO).

LEFT: Lucien enjoys a *JOIDES Resolution* Sunday barbecue with members of the Expedition 397 science party (Credit: Sandra Herrmann & IODP JRSO). RIGHT: Adhering to tradition, Lucien stands on the catwalk ready to receive the last core of Expedition 397 (Credit: Kevin Grigar & IODP JRSO).

Looking back to his childhood, this fascination with Earth's geological history and cataclysmic events is no surprise. In fact, Lucien always knew he would grow up to be a geologist. His life began in Cameroon, alongside an active volcano that would erupt often enough that the consequences were disastrous. From witnessing these events with such frequency, he says, "I was intrigued to become a geologist." And it wasn't just volcanoes. "I learned about killer lakes as well in high school, the outgassing, these catastrophic events…" It's almost as though the decision to study geology was made for him.

Fast forward to the present, Lucien has been involved in not one but two expeditions. He participated in Expedition 392: Agulhas Plateau Paleoclimate as a shore-based scientist, and went to sea aboard the *JOIDES Resolution* with Expedition 397: Iberian Margin Paleoclimate. You can tell from the names of these expeditions that Lucien has a theme. He is fascinated not just by "catastrophic events," but by the changing global conditions that lead to the tipping points that force the events.

To interrogate Earth's past and reconstruct paleoclimate, Lucien employs isotope geochemistry. He primarily measures metal isotopes like calcium, strontium, and neodymium, but he also spends time analyzing other "non-traditional" isotopes like osmium. These chemical tracers help him uncover hints of Earth's volcanic past, and how these dynamic events can potentially lead to oceanic anoxia. He is trying to answer the questions: How did the anoxia grow? How did it develop? How were oceans able to recover? A large volcanic eruption is just one hypothesis.

Lucien does not solely focus on the oceanic anoxic events; he also considers other critical times in Earth's paleoclimate history such as the Paleocene-Eocene Thermal Maximum (PETM). By applying osmium isotope geochemistry to both of these periods in Earth's history, Lucien is attempting to understand not just the events themselves, but how scientists can best perform isotopic analyses to learn more about other changes in Earth's past. For example, the PETM is still poorly understood in terms of what caused it, but it is one of the closest to modern catastrophic climate events in Earth's timeline.

This comparison between events allows Lucien to "expand applications of [the osmium] isotope system," because it accounts for the "patchwork" nature of ocean sediment cores. When comparing one section to the next, across holes and drilling sites, it becomes difficult to calibrate age models and constraints,

making it challenging to identify and understand inflection points in the record. His goal is to develop an osmium isotope record for the global oceans, so that future scientists can apply these systems to better understand Earth's chaotic past. His greatest ambition is that he and his students "make major contributions to understanding Earth system processes."

While Lucien's methods and research interests are not uncommon among paleoclimatists, his motivations are what make him stand out. When he reflects on his work, his focus is not necessarily on the catastrophic events themselves, but what they signify for Earth and humanity. "In our solar system we're unique," Lucien reminded me. "We are a habitable planet, and we would like to keep it so." As he focuses on periods in Earth's past when the planet grew inhospitable, he can't help but dwell on what those times can tell us as Earth grows increasingly inhospitable today. The only difference is our role. He explains passionately: "Someone might wonder, 'Oh, why are you obsessed with inflection points and when things exactly happened?' I mean, the reason is because we live on a dynamic planet, and this planet has seen a lot of things. We are moving to a time where we expect some catastrophic events are about to happen—how soon are they going to happen? We have no idea. But if we can understand a lot about how these events have happened in the past and how the Earth system recovered from them, then it can give us better ideas in terms of remediation strategies."

As much as these past climates might be analogies for modern climate change, Lucien is insistent that humans are now an important factor. On top of our part in changing conditions, he is cognizant of the fact that we will be greatly affected by whatever happens. "Our planet has gone through a lot of things, and has always recovered from it. But now we are here, that's different." And it's not just about how our own experiences will change: "We just have that responsibility to see that we are good stewards and that in the next billion years, the next people who are going to inhabit Earth are going to have a good place to call home."

This urgent research is just one of the many means by which Lucien occupies his time. As an Assistant Professor at Texas A&M University, he teaches several classes in addition to historical geology, such as isotope geochemistry for undergraduate students, radiogenic isotope geochemistry for graduate students, and special topics graduate seminars. He makes a point to bring his students to the Gulf Coast Repository each semester so that they can see for themselves "what all these cores look like, and all the stories, and how we've been able to piece together these stories." Lucien has found that the experience is "eye-opening" for many of his students, as it is their first exposure to the samples that make so much research possible.

Lucien also volunteers a significant portion of his time to service in the community, for example by serving as a reviewer and as an early career director on the board of the Geochemical Society. Just last summer, he was one of the leaders of the Establishing Early-Career Scientific Ocean Drilling Learning Communities workshop, aimed at welcoming expansive participation in the scientific oceans drilling community and providing training to help participants leverage existing legacy assets. He and the other workshop organizers were motivated to create an inclusive and productive environment to counter the "hidden curriculum, things like 'I don't know, no one ever told me that' but people expect that you should know."

For someone who "never really envisioned that I was going to end up as a professor," Lucien has come a long way. What he loves most about his job is "the ability to think about being able to do things, sometimes things that have never been done, and trying to use applications of things that we know really well and try to apply them differently in Earth's history." It's clear that he is not only making strides in his research into our dynamic planet, but also in the support of a connected and supported community of researchers excited about this science.

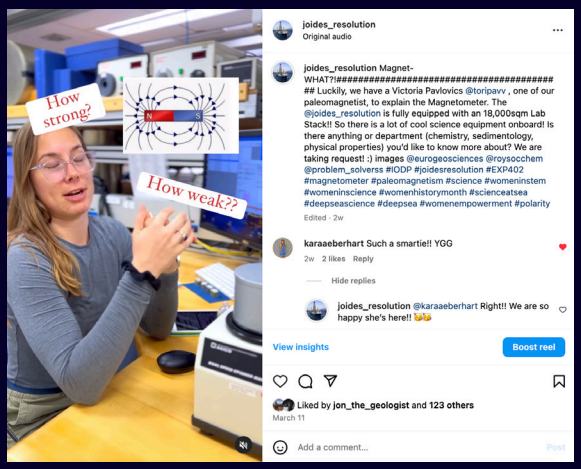
Creative COREner

Sketches of Expedition 401

Kellan Moss, who acted as an Onboard Outreach Officer during IODP Expedition 401, is a freelance visual artist and science illustrator. This project for Expedition 401 showcases the various science done aboard the JOIDES Resolution and the journey the scientists go through during their two month cruise.

Read more...

Find us on the web!



You don't need to wait for next month's newsletter to keep up-to-date with our adventures in science! We update our blog and social media regularly. Get involved, and stay in touch!

Twitter: **TheJR**

Facebook: **JOIDES Resolution**

Instagram: **joides_resolution**

Web: **https://joidesresolution.org**

Call for contributions

If there's one thing that can be said about the International Ocean Discovery Program (and the Integrated Ocean Drilling Program, and the Ocean Drilling Program, and the Deep Sea Drilling Project), it's that we are a tight-knit community. Just as much as this newsletter is for you, we want it to be from you, too! In future editions we will highlight our readers by featuring the following community contributions:

- **From the Field** - Have you had an experience with scientific ocean drilling that you want to share? Write a piece to tell us your perspective "from the field" for our next edition. Bonus points if you include some pictures!
- **Scientist Spotlight** - Do you know someone who's making waves in the ocean drilling scene, whether it's a grad student or accomplished scientist? Send us a nomination! Briefly tell us why this person deserves a shout-out, and ideally how to get in touch with them. Self-nominations are also accepted.
- **Photo Montage** - We'll take any photos you want to share!
- **Creative COREner** - Scientists are creators too! Send in your paintings, drawings, digital designs, poems, short stories, sculptures, or any other ocean science art you've made.

Send your contributions (and questions and concerns) to **mpincus@ldeo.columbia.edu** no later than Apil 20, 2024 to be featured in next month's newsletter.

See you next month!