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SPOTLIGHT ON
Dr. Lisa White
What can be done when the situation changes, and the pre-existing model is no longer an option? Innovate, of course!

Since 2005, IODP has offered professional learning and development opportunities for educators under the moniker School of Rock. Past workshops have taken place aboard the JOIDES Resolution during tie-ups and transits, in the Gulf Coast Repository, and at institutions of higher learning around the United States. However, as this phase of the International Ocean Discovery Program comes to a close, it is necessary to rethink the current program and find creative new ways to continue scientific ocean drilling education. Enter Expedition 402T: School of Rock May 2024. In just twelve days, a dedicated group came together to brainstorm, experiment, and pioneer new School of Rock models.

The Team  This School of Rock was supported by a powerhouse of instructors and participants from all around the country, working together under the goal of making ocean drilling science exciting, accessible, and inclusive to all learners. Instructors included experienced IODP researchers, leaders from the Atlanta University Center Consortium, and the USSSP education and outreach team. Participants represented the full spectrum of education, including university and community college professors, middle and high school teachers, graduate students, children’s book authors, an artist, and an astronaut; and brought insight and knowledge from all STEAM fields.

The Ship  School of Rock aboard the JOIDES Resolution offers the absolutely unique experiencing of living on the legendary drillship and witnessing firsthand how its design has enabled decades of
discovery. Participants were spoiled by JOIDES Resolution Science Operator technicians and SEA1 Offshore crew members, who patiently volunteered their time to walk us around the ship and answer our [seemingly endess] questions.

Educators experienced core flow from start to finish, as a team of technicians modeled the process using an empty core liner and play cores from long past expeditions. We even made smear slides from a sedimentary core and learned how to identify microfossils such as foraminifera and diatoms under the microscope. Having engaged in ocean drilling science in the same way that researchers do throughout expeditions, School of Rock participants now have the experiential knowledge that will allow them to translate what happens aboard the JOIDES Resolution into their own classrooms.

Over the course of several days, participants also had the opportunity to tour the ship’s operations, exploring the rig floor, engine room, and everything in between. We were dazzled by the feats of engineering that make scientific ocean drilling possible, and even though we couldn’t see the full extent of operations in action, our imaginations were in overdrive, allowing us to picture everything in full swing.

**The Science** This workshop was jam-packed with science, both on and off the ship. We launched our time together with a tour of Amsterdam’s canals, learning from a local guide how the Dutch were able to engineer a city that functions below sea level.

On board, we dove into deep sea science, learning what ocean cores can reveal about biostratigraphy and magnetostratigraphy, structural geology, and understanding global change. Participants
analyzed real cores and fossil data to interpret geological history, and collaborated to develop models of changing oceanic and atmospheric conditions over time.

The Future  Beyond introducing a new group of educators to IODP, the goal of this particular School of Rock was to bring together a brain trust that would develop actionable proposals for the future of scientific ocean drilling-based professional development. Participants worked tirelessly (seriously, the conference room was never completely empty, no matter the time of night) to not just ideate but to make action plans that could turn into funded grants over the next several months.

In total, thirteen proposals emerged from the eight working teams, blending elements of research and workforce development to expose new and underrepresented communities to scientific ocean drilling. Ranging from two-day workshops to year-long ambassador programs, the planned projects will ensure diverse opportunities to educate and train learners in the geosciences at all stages of their lives. A common phrase that came up during the workshop was “from K to gray!”—referring to understanding that scientific ocean drilling and STEM education is for everyone, from children just starting school all the way to seasoned professionals.

Over the next several months, School of Rock May 2024 participants will continue working in their teams to finalize and submit their proposals. Stay tuned to discover what new opportunities await!
It was windy and a bit drizzly when the Expedition 402 science party stepped off a bus at the cruise port to start boarding the *JOIDES Resolution*. For veterans and rookies alike, it was an awesome sight to see the ship after months of Zoom meetings, and emails preparing us for the two-month-long expedition. We finally were seeing each other in person and on the ship!

The 402 scientists unpacked and immediately went into onboarding meetings where we learned how to access our ship-board emails, connected to the ship’s wifi, and were trained in laboratory instrumentation and safety. You could feel the energy coming off everyone as our excitement and anticipation to get started grew.

Expedition 402 set out to build a better understanding surrounding the exposed mantle that was recovered during ODP Leg 107, and interpret what happened as the crust was stretched and the mantle below it was exposed to the seafloor during the opening of the Tyrrhenian Sea. There were three main locations that we wanted to drill: the Campania terrace, the Cornaglia terrace, and the Vavilov Basin. Before we could get any mantle rocks or sediment cores, we had to build the drill string by connecting sections of drill pipe, which, depending on the site, could be as short as 2700m or as long as 3800m (the water depth at these locations). The incredibly talented Siem Offshore crew seamlessly assembled and disassembled the drill string every time we moved onto another drilling site.

Our first drilling site provided a rough start, where the large amount of material from regional volcanic eruptions in sediment made operations more challenging and required some modifications to our original plan. One change was that we needed to install reentry
cones and casing. These special devices, typically 2.3m tall and 4m in diameter and painted with a bull’s eye, sit on the seafloor and help the crew re-enter the same hole multiple times. They also help stabilize the borehole so that it does not collapse in on itself over time like boreholes normally do. How does the crew find this cone with a drill string over two kilometers long? Outstanding question! With the help of a Vibration Isolated Television frame that holds an underwater camera that wraps around the drill string and is capable of transmitting the footage in real time from the deep all the way up to the skilled operators on the vessel. The Siem crew may be the ones in charge of the action, but the entire ship can enjoy the show from monitors located on every deck! That’s right, while the drillers and captain are working together to carefully line up the end of the drill string with the cone, thanks to the dynamic positioning system, the entire ship is on the edge of their seats watching! The dynamic positioning system includes an impressive set of twelve propellers, all working together to hold the ship in place despite the winds and ocean currents that can move the vessel away from the target site.

One thing you can depend on is that fieldwork is full of surprises. Seismic surveys are incredibly useful to give us an estimate of how deep basement rock lies under the sediment, but it is only when you start to drill that the real depth is determined. Sometimes we found the basement to be more than 100m deeper than predicted. Due to the difference of basement depths and core recovery, Expedition 402 had its work cut out for the sedimentologists, while the petrologists waited patiently for their time to shine. The day we retrieved our first core of mantle rocks there were applause and literal cheers of joy on the core deck.

As the expedition carried on, cheers of joy turned to curiosity and hard work from the petrologists. Throughout the expedition, we successfully cored at all three locations, were even able to return to one of the sites to get more core. This gave us an opportunity to obtain more basement samples. There is not much downtime on the ship, especially when each site was within a few hours of each other. The longest break we ever had between cores was the twelve hours it took to build the drill string, or the 2-8 hours it took to move...
between our sites. During that transit time, one of the physical properties scientists studied data generated by the sonar system, an instrument the ship utilizes while navigating to map out the seafloor. Scientists are always looking for an additional piece of data to solve the puzzle. By comparing the new data and samples collected during Expedition 402 with the seismic data collected a few years earlier, scientists can better understand similarities and differences among the drill sites and answer the main question, what happened when the Tyrrenian sea opened.

**Outreach** Tessa Peixoto and Larkin Bohn sailed as Expedition 402 Onboard Outreach Officers. By the end of the expedition Larkin and Tessa had hosted 104 ship-to-shore broadcasts, providing up to four tours per day for international audiences, some featuring scientists speaking other languages. Forty-eight of the 104 tours were delivered in Italian, to the point that Tessa now falls asleep to the phrase *Ci senti?* which means “Do you hear us?” in Italian. The reason we were able to give tours so frequently during Expedition 402 is due to the enthusiasm of the science party. This dedicated group loved to share their experiences with the audience, and the Outreach Officers were thrilled to facilitate such conversations. Word of mouth is a powerful factor in the number of broadcasts delivered. In one case, a broadcast scheduled by an Italian teacher ended up having over 200 students join, because other teachers in the school wanted to participate as well!

This expedition, broadcasts were not just for virtual audiences abroad, but were held for some of the ship crew! These were a very different kind of tour, since the JOIDES Resolution staff know the ship better than the science party. The “tour” was more of a Q&A style chat where Entier staff shared real life experiences with earthquakes as we discussed plate tectonics, and SIEM staff connected the dots when it came to why one hole can be harder to drill than another after seeing the samples up close!

One of Larkin’s goals was to showcase the scientists’ passion and turn the notion that science is stuffy or...
sterile upside down, proving it is anything but. One way she did that was to conduct six LIVES on Instagram to present an immediate look into daily life and provide a “behind the scenes” feel to the public. She also made a moving, longform video for YouTube, featuring interviews with scientists as they reflected on their careers and the importance of the JOIDES Resolution.

At the same time Tessa’s goal was to combine science and art as a way to make science more approachable and accessible to the public. Tessa conducted two Science & Art broadcasts in which she and the metamorphic petrologist, Eirini Poulaki, guided viewers through drawing a thin section while discussing why those key features are important for scientific interpretation.

With all the joy and excitement of Expedition 402 came the understanding that it would be the penultimate expedition aboard the JOIDES Resolution within the International Ocean Discovery Program. Despite uncertainty surrounding the next phase of U.S.-based scientific ocean drilling, every single person involved in the expedition gave their all to ensure that the quality of work never wavered. As normal operations continued on, teams behind the scenes identified what on the ship could be removed before the last expedition, such as the New Year’s ball and the radioisotope van (affectionately known as the Rad Van).

But there is still one more expedition to look forward to! Be sure to follow the JOIDES Resolution on social media (X, Instagram, and Facebook) to stay involved and support the scientific community as we strive to continue ocean science research!

The Expedition 402 group photo (Credit: Tiffany Liao & IODP JRSO).
How to...
Use the MerlinOne IODP Digital Photo Archive

written by Jennifer Hertzberg (IODP / JRSO) and Maya Pincus (USSSP)

Are you looking for high quality images of ocean sediment and rock cores, the JOIDES Resolution, scientists doing research at sea, drill ship operations, or some amazing sunsets? Or maybe you sailed on the JOIDES Resolution and are hoping to relive those memories through photos from your expedition? Look no further than IODP’s new digital photo archive, MerlinOne!

With MerlinOne, you can browse and search through an extensive archive. Available content extends from the current expedition as far back as the Deep Sea Drilling Project, and ranges from photos and videos at sea to user guides and policies. Follow the simple steps below to find what you need from MerlinOne:

• **Step 1:** Navigate to the MerlinOne website ([https://iodp.merlinone.net/MX/Profiles/en/landing/](https://iodp.merlinone.net/MX/Profiles/en/landing/))

• **Step 2:** Click “Click here for guest access”

• **Step 3:** Look for images using the tools on the left side of the page
  • Use the drop-down menus to browse the curated collections
  • Use the search bar to find specific content based on keywords
  • Use the icons at the top to download or print images

• **Step 4:** When using content from MerlinOne, make sure to credit the original author and source. Read the JRSO licensing statement here: [http://iodp.tamu.edu/about/copyright.html](http://iodp.tamu.edu/about/copyright.html)

For questions or more information, contact the IODP JRSO Digital Asset Management Administrator Dr. Jennifer Hertzberg ([DAM@iodp.tamu.edu](mailto:DAM@iodp.tamu.edu)).
**FEATURED VIDEO**

**IODP in the Virtual Pub**
This month, the Paleontological Research Institution hosted IODP for its Science in the Virtual Pub series. Hear different perspectives on scientific ocean drilling, from research to education and outreach, in this enlightening and emotional panel discussion.

**For your calendar**

- **Sail as an Onboard Outreach Officer**  
  (deadline: 15 June 2024; [learn more](#))
- **Submit an abstract to GSA Connects’24**  
  (deadline: 18 June 2024; [learn more](#))
- **Glacial Sedimentation School**  
  (14-19 July 2024; College Station, TX, USA; [learn more](#))
- **Plankic Foraminiferal Biostratigraphy and Taxonomy workshop**  
  (19-23 August 2024; Amherst, MA, USA; [learn more](#))
- **Future Directions for Scientific Ocean Drilling Interstitial Water Research workshop**  
  (apply by 25 May 2024; Put-In-Bay, OH, USA; [learn more](#))
- **Provide input on Future Ocean Drilling in the US (FOCUS)**  
  (open deadline; [learn more](#))

**SCI COMM RESOURCE OF THE MONTH**

Human activities and non-human processes interact to shape the world around us. Whether you are interested in formal education or self guided exploration, use this website to explore the causes of and solutions to climate and environmental change, and to construct models that explain what drives global changes.

**Understanding Global Change**
If you put a group of inclusion-focused geoscientists together in a room for long enough, it’s inevitable that eventually the braided river analogy for STEM workforce development will make an appearance. Sometimes this applies to the field as a whole, charting the interconnectedness and overlap of different skills and positions within the field, but sometimes it is best applied to a single person’s journey as they weave their way towards the future. The latter is certainly true of Dr. Lisa White, whose path in hindsight seems inexorable, but is rich with meanders that have deposited her exactly where she needs to be.

Lisa’s path to scientific ocean drilling has an unlikely start. Enrolled as an art and photography major at San Francisco State University, it was her plan to become the “Black, female, Ansel Adams.” She was drawn to large format black and white landscapes, but “honestly, I wasn’t that great of a photographer.” Determined to improve her work, she thought “let me take a geology class so that I can learn about landscapes, maybe then I can make a different connection.” All on her own, she intuited that forcing her brain to think about her surroundings in a novel way could improve her ability to see and capture the world on film, all while filling that pesky physical science requirement. In a sentence, “Between my love of maps and somehow wanting to connect to landscapes differently, I figured I could learn about the evolution of mountains and get this general education class out of the way.”

Of course, as happens to so many of us, that first geology class set in motion the rest of her career. She fell in love with the content, especially for its obvious relevance to the San Francisco Bay Area where she grew up. In particular, she found herself drawn to carbonate sedimentology, both because she found the professor to be “really encouraging,” and also “I just thought those rocks were super cool.”

While still an undergraduate student, she and some other students in her cohort were selected for internships with the
U.S. Geological Survey, based out of the California Western Region office in Menlo Park. There, under the supervision of the first female mentor she had ever met in the geosciences, Lisa dove into micropaleontology as a tool to interpret the fine-grained deep marine rocks that she encountered in cores from the bay and exposed as coastal outcrops. She was grateful for the opportunity to “open [her] eyes about local rocks” and enthralled by the ways in which those rocks served as ancient analogues to the modern ocean, in terms of upwelling and coastal circulation.

The more time she spent immersed in the radiolarian- and diatom-rich exposures of her hometown and the greater Bay Area, the more she honed in on her future. Just a little wryly, she recounted that it took her longer to complete her bachelor’s degree than the doctoral program she started right after. But once she found her motivation, there was nothing that could get in the way of her determination. She became an expert on the stratigraphy of the Monterey Formation, publishing some of the first age dates in diagenetically altered chert sections based on microfossils preserved in unusual carbonate beds, and interpreting both the tectonic and climatic history of the region during the Miocene. Even before she ever anticipated sailing on the JOIDES Resolution, she was using data from the ship to make broad climate connections in terms of oxygen records and temperature.

Lisa had her first opportunity to sail as a PhD student at University of California, Santa Cruz. As the lone micropaleontologist in a sedimentology lab, her advisor suggested she apply for Ocean Drilling Program Leg 127: Japan Sea, to better round out her education and work with samples that would be “a really good contrast to the areas she was studying in California.” When she was invited to sail, Lisa “considered it a really great honor to sail as a grad student,” especially because she had read so much about the Deep Sea Drilling Program and the Glomar Challenger in textbooks, and was eager to supplement her content knowledge in an applied setting.

Because this first expedition took place during the final year of her doctorate, she did not have much time to work it into her dissertation. However, she made a point to stay engaged with the expedition’s science party, and as she transitioned to a full-time faculty position at her alma mater, San Francisco State University, she continued to publish her findings. As time since her first expedition passed, she saw herself drifting away from active ocean drilling research and assumed that that chapter of her life was coming to a close. She was surprised when she was invited to sail again on ODP Leg 170 along the Costa Rica Margin, and could not resist another chance to develop her skills and build community with ocean scientists.
It was during these years that Lisa’s commitment to education and outreach began to assert itself in her career. Anyone who’s met Lisa (and many who haven’t) know her as a backbone of education in the geoscience community. Even as a PhD student she volunteered some of her time to outreach, occasionally judging a science fair or visiting a local classroom. Though this method was “a little hit or miss,” she found it to be a valuable strategy “to balance my professional experience” and give back to the community she loved and felt responsible for. The argument could even be made that education and outreach is in her blood, as she comes from a family of educators and activists. Her father was a professor who published some of the first articles about Black psychology and advocated for the availability of ethnographic disciplines such as African American, Latin American, and women’s studies; her mother worked in community programs and public health; and her two older sisters were always involved in community events. With her “whole family always educating and mentoring others,” reframing her career towards communication eventually “seemed like a natural thing to do.”

Sailing a second time as an early career researcher cemented the need in her mind to put more effort into diversifying the geosciences. With no education officer on board, she and young peers joked that “maybe we were the broader impacts” of the project. When she returned to SF State after her sabbatical, Lisa shifted her attention to more administrative roles, first serving as department chair before taking on the role of associate dean. It was not without trepidation that she moved away from her research, and admittedly, “I was an accidental administrator, kind of like I was an accidental geologist.” But she always tried to look at the big picture to figure out how she could make things better for faculty and students, and even when she got frustrated she reminded herself, “at least I’ll learn something new and have a skill I didn’t have before.”

This mindset, along with the resolve that has rocketed her through every project she takes on, has established her as a driving force in the development of a more inclusive, diverse geoscience collective. As an administrator, she shifted her attention toward earning larger scale outreach grants, primarily focused on partnerships with teachers. Settling into this more broad-reaching work, “one thing after another I was not research active any more.”

So when her next sabbatical came around, this new mindset led Lisa to the University of New Orleans, where she joined a cohort of faculty members working to expose underrepresented students to the geosciences through field experiences. This time in her life was transformative not only from her work “getting kids out of the city” but also because she formed a relationship with New Orleans right before the devastation of Hurricane Katrina. Suddenly she was in the epicenter of environmental racism and a city’s inability to cope with predictable change. Without a doubt, the experience “contributed in more ways to my dedication to education and outreach.”

Lisa has now had many opportunities to sail aboard the JOIDES Resolution, twice as a micropaleontologist during Ocean Drilling Program expeditions, and several times more as a School of Rock instructor (Credit: Lisa White).
When Lisa returned to California, she found herself thinking “Where do I want to put my energy as an Earth scientist?” She felt herself leaning towards educating people about the true nature of modern environmental change, especially with the knowledge that people living in coastal communities like her own were “sitting ducks.” As if the stars had aligned, it was around this time that Lisa was approached by the University of California Museum of Paleontology (UCMP), and offered the position of Director of Education and Outreach. She was hesitant, as she “had not thought about leaving my very comfortable faculty position at SF State,” but couldn’t resist the pull of a deeper connection to outreach. Something in her said “alright, it’s a risk, but go for it.” She hasn’t looked back.

It was in this new role that Lisa had the chance to reconnect with scientific ocean drilling. Though “I didn’t really identify as an IODP scientist anymore,” Lisa made a point to stay involved in the community, meeting up with former colleagues at conferences and staying up to date through IODP town hall functions. It was in this setting that Lisa met Sharon Cooper and was invited to participate as an instructor in the 2014 School of Rock: Deep Dive at the University of Delaware. She has made this sort of professional development for educators one of her priorities, finding it “really inspiring and encouraging to think I can be part of that education and outreach network now and really have something to offer given my motivations and sharing science broadly and having had experience as a shipboard scientist.” It was the perfect complement to UCMP’s work on the Understanding Global Change online module, a tool designed for educators and learners alike to “explore the causes of and solutions to climate and environmental change, and to construct models that explain what drives global changes.”

Over the next several years, Lisa had several more opportunities to participate in School of Rock, bringing her knowledge of IODP science and expertise in micropaleontology and geoscience research to educators who could then turnkey it in their own classrooms. She also became involved with the STEMSEAS program, working directly with undergraduates to provide shipboard experiences and workforce training. Most recently, Lisa participated as an instructor in the May 2024 School of Rock, where she worked with a team with public school teachers to plan a post-JOIDES Resolution professional development program.

The range and reach of Lisa’s accomplishments are overwhelming, especially considering that she is still solidly a “mid-career professional.” Her dedication to Earth science education, and to the wider impacts of the discipline, ensure that underrepresented young learners will have new and engaging pathways to the geosciences for many years to come.
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](mailto:mpincus@ldeo.columbia.edu) no later than **Jun 20, 2024** to be featured in next month’s newsletter.

See you next month!