

SCIENTIFIC
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Digital Newsletter

the Drilling Dispatch

December 2023

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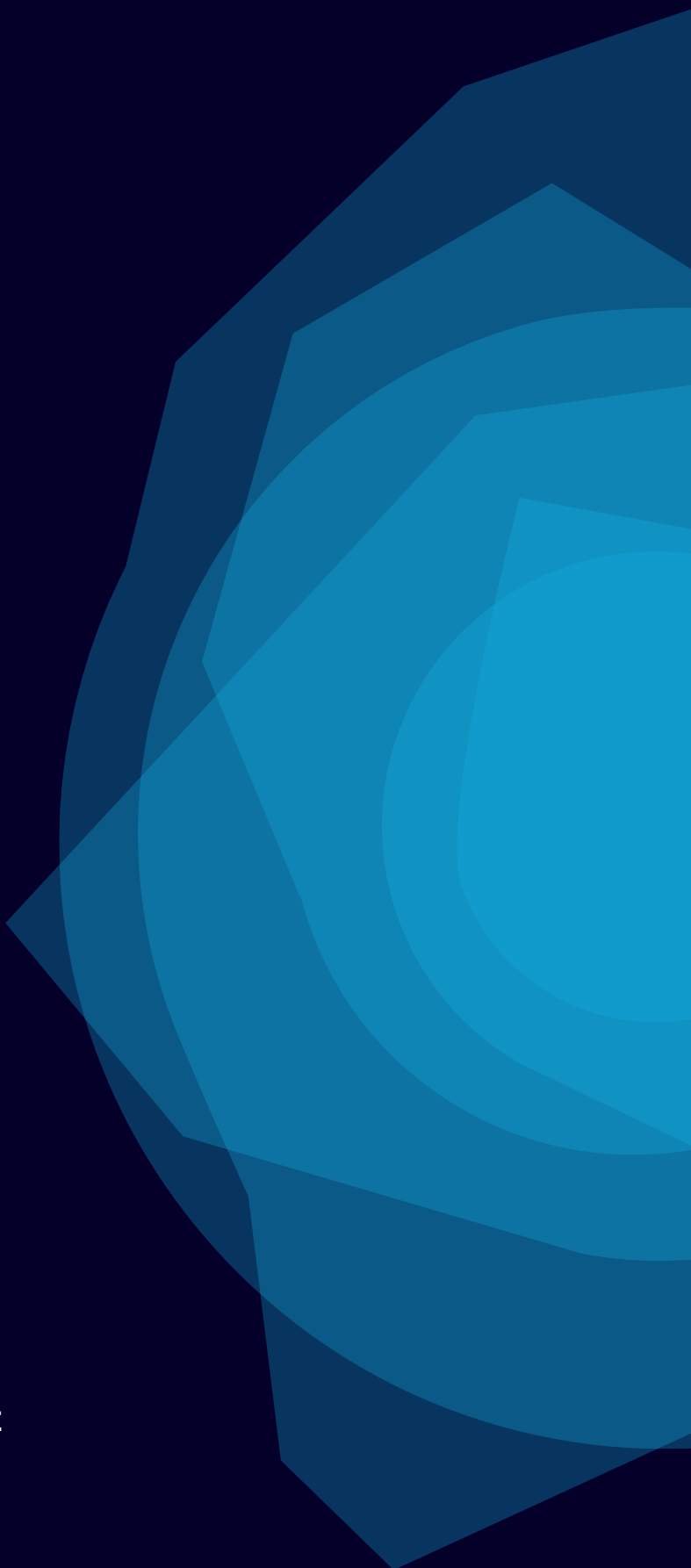
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Expedition 400: Northwest Greenland Glaciated Margin

Paul Knutz and Anne Jennings,
Expedition 400 Co-Chief Scientists;
Laurel Childress, Expedition 400 Project Manager

written by Elizabeth Doyle and Michelle Pratt, Expedition 400 Onboard Outreach Officers



LEFT: Tracy Frank and Lara F. Perez discuss the features in a fresh core (Credit: Beth Doyle & IODP). RIGHT: Sami Cargill prepares a piece of core to be sampled for paleomagnetic analyses (Credit: Erick Bravo & IODP JRSO).

Coring into Greenland's Past IODP Expedition 400 launched from Reykjavík, Iceland on August 13, 2023. Almost nine rewarding and at-times pitching and rolling weeks later, the research vessel returned to Skarfabakki Harbour carrying fresh insights into the history of the vast northern Greenland Ice Sheet.

The *JOIDES Resolution* drilled into the sedimentary record of Melville Bugt, off the coast of Northwest Greenland. This region of the larger Baffin Bay was once occupied by the ice sheet, whose sediment deposits record past advances and retreats, providing clues about the impacts of fluctuating global climates. Expedition 400 scientists set out to undertake a comprehensive analysis of these sedimentary archives which could span around 30 million years, covering warm and cold periods, including times when greenhouse gas levels were even higher than they are today. The six drilling sites, reaching depths of approximately 300 to 1,000 meters below the seafloor, were strategically chosen along a transect across the northwest Greenland continental shelf and slope.

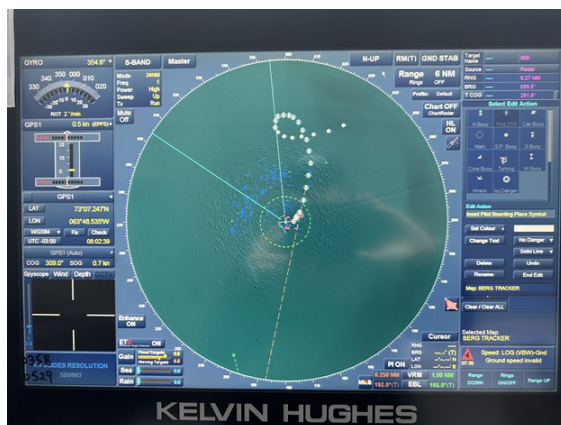
The drilling sites tapped into a composite stratigraphic succession that encompasses preglacial settings and exposes the initial growth of the northern Greenland Ice Sheet as well as its cycles of glaciation and

interglaciation. These cycles range from the ice sheet reaching its maximum position at the shelf edge to a retreat toward the land that potentially approached a near-complete melting.

Successful drilling operations led to the recovery of more than two kilometers of sediment and geophysical logging data. Scientists pored over sedimentary features within the sand, silt, and mud, and around the varied glacial drop stones. Equally intriguing were the corkscrew burrows and other signs of bioturbation, fossilized bivalves and gastropods, wood fragments, and ikaite, a mineral named after Greenland's Ika (now Ikka) Fjord and stable only at freezing temperatures. High resolution analyses of the composition, physical properties and age of the sediment cores will fill in knowledge gaps about the Greenland Ice Sheet's response to past climate warming and establish the timeline of its inception, growth and periods of melting and regrowth.

Iced Out Expedition 400 marks the first time that the *JOIDES Resolution* explored this Arctic region, and it rewarded the crew with midnight suns early on. As the daylight hours waned, vivid sunsets seem to chase stunning sunrises. Early morning sun dogs and brilliant auroras ribboning the dark night sky drew excited observers on all decks.

And icebergs; the crew can never forget them. Icebergs of all sizes and shapes shadowed the ship through most of its stay in Baffin Bay. Taking roundabout routes at times, they seemed to taunt the JR. We named them. First came "Dennis the Menace," followed by the larger and longer lingering "Fred." The icebergs dictated the pace of operations and demanded unwavering vigilance of the expedition's two ice navigators and the captain. During the second week, one of two nearby icebergs entered the "Red Zone," meaning it was within three nautical miles of the vessel. Not good! The crew raised the drill string from a significant depth to a shallower level. As the ice navigators closely monitored the icebergs, one entered the ominously named "Termination Zone," marking an area within one nautical mile of the vessel. The drill string was pulled up and the vessel moved south. Once the meddlesome berg had wandered off, the vessel was able to return to the site to continue drilling in a new hole.



FROM TOP: From left, Vikash Kumar, Fawz Naim, and Volkan Özen pose for a photo at sunrise (Credit: Erick Bravo, & IODP JRSO). Waves crash on an iceberg passing close by the *JOIDES Resolution* early in the expedition (Credit: Erick Bravo & IODP JRSO). An iceberg's winding path as seen through marine radar with enhanced target detection. The JR is in the center (Credit: Beth Doyle & IODP).

The next week saw further ice-related challenges as drilling operations had to be halted repeatedly when ice entered the Red Zone. Additional drill string raises and waiting-on-ice (WOI) situations followed. This Arctic duel, pitting the JR against its icy hosts, persisted well into the fifth week. Additional WOI situations arose, but thanks to the watchfulness of the navigators and drilling crew, operations proceeded and the safety of both the crew and equipment prevailed.

Goodbye Icebergs, Hello Gales We left Baffin Bay’s trail of “bergy bits” and “growlers,” names given to smaller, though no less hazardous icebergs, only to run into a strong gale. This made for a rocky start in our transit back to Iceland, and the tumult grew. The final blow, a literal one, came when a wave that the captain estimated to be between 10-to-12 meters high walloped the ship just in time for dinner. The smackdown tossed dishes, jars, and the microwave oven off of counters and shelves in the galley. That dinner was delayed by less than half an hour is a testament to the unflappability of this expedition’s kitchen crew.

Outreach Prior to Expedition 400, the two Outreach Officers traveled to Denmark and Greenland to meet with community and organization representatives, learn about the educational systems and share news of the expedition ship-to-shore tours. A blog about onshore outreach activities and an expedition video trailer were posted before departure. During the expedition, two open houses were hosted and sixty virtual tours were conducted. These included tours for the Copenhagen International School as well as those facilitated for the ECORD Summer School, Geological Survey of Denmark and Greenland, the National Centre for Polar and Ocean Research in Goa, India and IODP China. Scientists co-led tours in French, Danish, Chinese and Japanese. These ship-to-shore events combined reached approximately 2,394 participants, plus approximately 2.5 million for two IODP China events.

The outreach officers, each taking responsibility for a 12-hour shift, disseminated images, videos and text via Twitter, Facebook and Instagram. The Ship’s Log was updated with blog entries ranging from a profile of the onboard baker to features on ice navigation and the expedition’s paleoecologist. Four related Discovery on Deck videos were posted on the *JOIDES Resolution* YouTube channel. A collaboration with Reach The World, a non-profit organization that takes the amazing adventures of travellers and turns it into a learning resource for K-12 classes, included three live broadcasts and four blog-style articles. Twenty-

eight classrooms registered and several participated in live broadcasts. Blogs, photos and videos continue to be viewed, even after the end of the expedition.

Media coverage included social media posts with GNS Science in New Zealand and scientist Georgia Grant, interviews with Georgia Grant, Brian Romans and co-chief scientist Anne Jennings, and an article to be published by the University of Colorado at Boulder.



Expedition Project Manager Laurel Childress (left) stands with Co-Chief Scientists Anne Jennings and Paul Knutz on the bow of the JR (Credit: Beth Doyle & IODP).

From the field...

Drilling Into the Depths of Discovery: *In Search of Earth's Secrets* Traveling Exhibit

written by Catherine Diaz (Oregon Museum of Science and Industry)

I've been fortunate to be involved with the [Oregon Museum of Science and Industry](#)'s (OMSI) traveling exhibits program for the last eight years. OMSI has toured dozens of traveling exhibits since the program's inception in the early 80's but never one like *In Search of Earth's Secrets*. I'm excited to share the opportunity to bring the magic of deep-sea research and the mysteries of our planet to cultural centers around the country.

The *In Search of Earth's Secrets* traveling exhibit, developed by a team that included IODP staff and researchers at Columbia University, Rutgers University, University of Hawaii, Texas A&M University, Consortium for Ocean Leadership, and a group of independent freelancers; and supported by an independent grant from the National Science Foundation, is a testament to the pioneering spirit of scientific exploration. After its grant period concluded, this engaging exhibit was recently transferred to OMSI for management into the future. It provides audiences of all ages with a unique hands-on experience, allowing them to dive into intriguing science topics researched by the celebrated drilling ship, *JOIDES Resolution* (JR).

OMSI has a history spanning almost 40 years of producing and touring exhibits that travel across North America. Our organization's commitment to informal science education and the dissemination of scientific research distilled for easy access by the public has long been at the forefront of our mission. The exhibits developed and toured by OMSI are not just informative; they're experiential learning opportunities, connecting people from all walks of life to the wonders of science.

The research from IODP that forms the basis of *In Search of Earth's Secrets* represents the pinnacle of scientific ocean drilling. The ship, with its state-of-the-art research facilities, has been a beacon of discovery, shedding light on some of the most intricate and crucial aspects of our planet's history and geology.



In Search of Earth's Secrets is a versatile traveling exhibit that engages audiences of all ages in the wonders of scientific ocean drilling (Credit: Sharon Cooper).



A traveling exhibit like *In Search of Earth's Secrets* is more than just a temporary show; it's a mission. With a projection of reaching more than 300,000 cultural and community center visitors over the next five years, this exhibit aims to disseminate groundbreaking scientific research to communities all across North America. It offers a gateway to understanding our planet better, inspiring the next generation, and fostering a deeper appreciation for the tireless endeavors of scientists.

The exhibit offers a hands-on experience, revealing ancient events and deep-sea wonders. It ignites curiosity, enhances understanding of global events like tsunamis, and showcases the planet's interconnected systems. Aimed at inspiring the next generation, it highlights the realms of geology, oceanography, and biology, while celebrating human ingenuity and perseverance in scientific exploration. Beyond immediate knowledge, it invites visitors to reflect on the broader implications of human actions on Earth's future.

In addition to the pop-up exhibit itself and included in the rental fee, JR researchers and scientists offer programming support to organizations that host the exhibit. Bringing the experts behind the *In Search of Earth's Secrets* exhibit to your institution adds a layer of enrichment to the visitor experience. These dedicated researchers can provide in-depth insights, engaging discussions, and perhaps even hands-on demonstrations related to the deep-sea research and geological discoveries featured in the exhibit. By fostering direct interactions between scientists and the public, we aim to bridge the gap between academia and the broader community, encouraging a deeper appreciation for scientific exploration and nurturing curiosity about the mysteries of our planet. This collaboration offers a unique opportunity for cultural institutions to offer their audiences a truly immersive and educational experience that goes beyond the exhibit itself.

Since the exhibit has been on display at OMSI I've witnessed firsthand the awe, fascination, and wonder it sparks in visitors. This exhibit doesn't just display information; it ignites imaginations, and it beckons all to embark on an unforgettable journey into the heart of Earth's most profound mysteries.

Don't miss this chance. Let's come together, share the wonders of our planet, and delve deep in search of Earth's secrets. To learn more about how you can bring *In Search of Earth's Secrets* to your institution, visit the [OMSI website](#).

Visitors can explore hands-on kiosks and talk to IODP researchers to learn how scientific ocean drilling has contributed to a deeper understanding of geology, climate change, Earth's history, and the origins of life (Credit: Sharon Cooper).

How to... Tell your science story

written by Carol Cotterill (USSSP)

Once Upon A Time...

The art of storytelling can be traced back thousands of years to cave paintings, before evolving to include oral and written versions. It is an intrinsic human characteristic to tell and listen to stories—they help us make sense of complex information and the world around us. Stories are consistent across cultures and time, transporting us to another time and place, and are often the first forms of communication we are exposed to.

Research has shown that stories can teach, evoke emotion, elicit memories, develop the imagination, provoke deeper thinking, and prompt reflection. Your heart rate changes, your facial expressions shift, your brainwaves alter, and areas of your brain linked to processing complex information light up. When we read stories, areas of the brain connected to imagination and deciphering actions activate. And as we imagine, we can start to see the storyline from different perspectives. If you then repeat the story that engaged you to others, you begin to reinforce the memory of that story, which can drive a change in behaviors if different perspectives were activated in the imagining process. We can also see our own experiences in stories, and this relevance has power to cause action. So how can science harness the power of storytelling?

There is a traditional narrative arc behind every story, shown in Figure 1. Essential elements in your story are the protagonist—make them human, fallible, flawed—and thus appealing and relatable! You need a setting and an initial obstacle(s), with defined stakes for not defeating the obstacle to add some tension. There is an inciting incident, and a catalyst or call to action before your climax and falling action when you reach your resolution. Figure 2 shows how this narrative arc can be translated to a science topic.

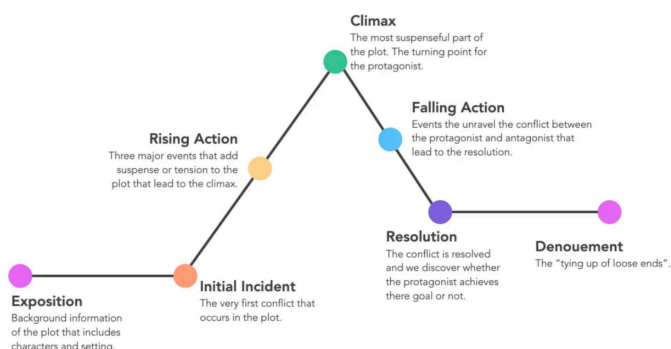
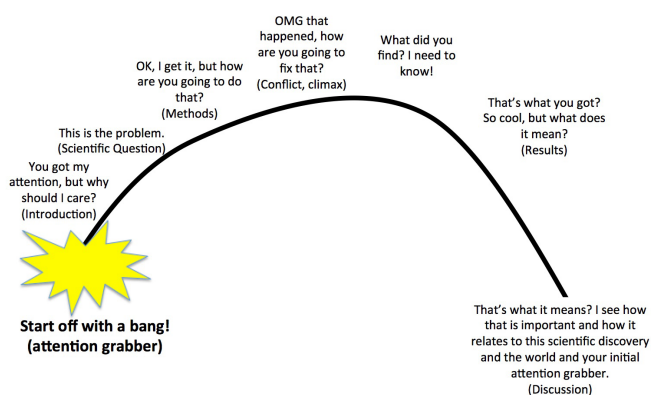


Figure 1: Narrative arc (based on Freytag's Pyramid).



When writing your story, think about your tone and theme. Traditionally there are seven types of stories: Coming of Age, Quest or Journey, Rags to Riches, Comedy, Tragedy, Overcoming A Monster, and A Stranger Comes to Town. In a similar vein, there are seven types of conflict that can bring the tension into your story: Man versus Man, Society, Nature, Technology, Supernatural, Fate, and Self.

Figure 2: Science story arc (Credit: Stephanie Schuttler).

There are some useful storytelling conventions to bear in mind:

- **Setting the Stage** – Think big and broad here. Tell your audience how your research connects to something in their lives. Form that hook, spark their interest and make them care.
- **Setting the Scene** – Now take your audience away with you. Are you in a lab or in the field somewhere?
- **Plot** – This is the problem your research is looking to solve. Make sure there is an urgency to solving it, as well as including why it is essential to solve it.
- **Characters** – You are the biggest character in your story as the main protagonist. But you might have research colleagues or even villains, be that the weather or someone opposing you.
- **Arc, Finale, and Full Circle** – Make sure your story comes full circle. Reiterate why it is important and tie it back to your stage setting. What are your results? Why are you so excited about your research findings? Channel your enthusiasm.

There are also some recognizable formats for stories. The first is the Pixar Method, which follows the narrative arc most closely (Table 1). The ABT (And, But, Therefore) method, commonly used in “South Park” for example, concentrates on different aspects of your story, and is a good model to follow when trying to influence an audience, especially a non-specialist audience (Table 2). And the third is The Hero’s Journey, an example of which is “Shrek,” where the hero’s journey takes him (and the reader) into an unfamiliar world before returning to the known world (Figure 3). This is a great one for describing fieldwork scenarios to an audience.

Table 1: The Pixar Method

The Story Spine	Structure	Function
Once upon a time ...	Beginning	The world of the story is introduced, and the main character’s routine is established.
Every day ...		
But, on day...	The Event	The main character breaks the routine.
Because of that ...	Middle	There are dire consequences for having broken the routine. It is unclear if the main character will come out alright in the end.
Because of that ...		
Because of that ...		
Until finally ...	The Climax	The main character embarks upon success or failure.
And, ever since then ...	End	The main character succeeds or fails, and a new routine is established.

Table 2: The A, B, T Method

And, But, Therefore Formula	How to use when talking with policymakers
Common ground	Common ground
AND some details	Your research/work
BUT a problem	A problem the policymaker Faces
THEREFORE, a solution	The solution you/your work offers

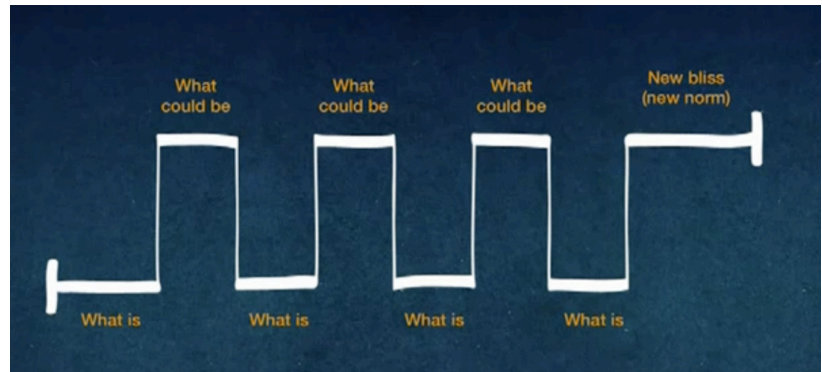
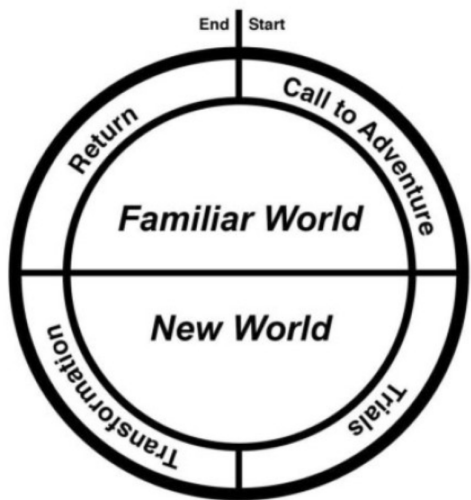


Figure 3 (LEFT): The Hero's Journey (Credit: Carol Cotterill). Figure 4 (RIGHT): The What Is / What Could Be gap (Credit: Nancy Duarte).

A good storyteller creates a “gap” between what is and what could be, with their story filling the gap for the audience. Start with the “What Is”—the facts or research that currently exists. The “What Could Be” is where your research can take us all. The gap between the reality and the potential new normal is the start of your call to adventure, the start of your story. Good presentations will alternate between the What Is and What Could Be phase numerous times in the telling of a story, creating a sense of rhythm but also not overwhelming people with too much information at once!

And some final hints and tips for crafting your perfect science story:

- Put a human face to your story—make it personal
- Create dramatic tension—challenge and resolution
- Connect with your audience
- Be concise and use details and facts
- Give an authentic delivery and be enthusiastic
- Create believable characters
- Create suspense and conflict

Happy storytelling!!

The End

“Data makes you credible. Stories make you memorable.” —Elizabeth Bailey
“Stories have more influence than facts alone.” —Nancy Duarte

FEATURED VIDEO

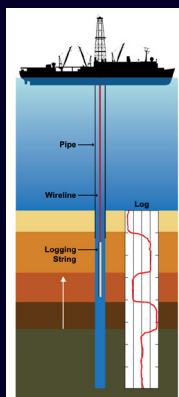
In Search of Earth's Secrets Preview

In Search of Earth's Secrets is an interactive traveling exhibit that immerses visitors in the wonders of scientific ocean drilling. Though the exhibit is now permanently hosted by the Oregon Museum of Science and Industry, it is still available to rent. Bring *In Search of Earth's Secrets* to your institution today!

For your calendar

- **Future Ocean Drilling in the U.S. (FOCUS) Introductory Workshop**
(4 December 2023 at 14:00 EST; [learn more here](#))
- **Submit a workshop proposal**
(Deadline: 4 December 2023; [learn more here](#))
- **American Geophysical Union Fall Meeting**
(11-15 December 2023; San Francisco, CA, USA; [learn more here](#))
- **Apply for a Schlanger Ocean Drilling Fellowship**
(Deadline: 22 December 2023; [learn more here](#))
- **Science Evaluation Panel Meeting**
(10-11 January 2024; La Jolla, CA, USA; [learn more here](#))
- **U.S. Advisory Committee Meeting**
(29 Jan - 1 Feb 2024; La Jolla, CA, USA; [learn more here](#))

SCI COMM RESOURCE OF THE MONTH



In this activity, students read about “down-hole logging” technology, in which instruments are lowered from the drilling ship into the hole after cores have been removed to measure physical properties that reveal more about sea floor sediments and rocks.

It's Not Just the Core that Tells the Story

Spotlight on...

Dr. Jonathan Lewis

written by Maya Pincus (USSSP)

Imagine a geologist immersed in his craft: Hand lens at the ready, he will navigate to an outcrop, ready to explore the most intricate small-scale features, then step back to consider these observations in the context of the larger scale. Back in the lab, he will patiently turn samples over in his hand to determine the most effective way to connect analyses that will tell their story. Over time, he weaves these discrete pieces together into a narrative that leaves little doubt as to why things are the way they are.



Credit: IUP

This process of carefully curated discovery is not unlike the way in which 2023-2024 Ocean Discovery Lecturer Dr. Jonathan Lewis examines the series of events and decisions that brought him to this point in his life and career. Although he humbly insists he has only been part of the scientific ocean drilling community for “a relatively short time,” it is indisputable that he is making big waves, especially in some lesser-known aspects of the program. Like many, his journey is not so straightforward, sinuous like the fabrics of the metamorphic rocks he studies, but what resonates are his profoundly intellectual and deeply altruistic contributions to the field.

From a young age, Jon immersed himself in nature. He hiked, mountain-biked, and rock-climbed along the Potomac River. When he got to college, a tiny school in West Virginia outside of Washington, D.C., he considered a career in environmental science, and was even “precocious enough to schedule an appointment with someone in the U.S. Forest Service to learn about careers.” Though the response was not what he expected, it determined the course of his future. The officer told him, “Forestry is saturated.

The only people getting jobs out of college right now are geologists and hydrologists.”



So geology it was. Jon hurried back to the campus career center where “I looked up what geology was all about, and was completely floored because I didn’t know.” In hindsight, he was the only one though—“My childhood friends later told me, ‘Oh we always knew you were going to become a geologist,’ because apparently I had always

In the summer of 1995, Jon traveled to the Muroto Peninsula in southwest Japan for field work (Credit: Jon Lewis).

been fascinated with the natural world.” This is but one example of the determination that has driven Jon’s career. He soon transferred to the University of Vermont, which had a geology program, and immediately “I knew I was in the right place.”

The next steps fell quickly into place. He earned his master’s degree at the University of Tennessee, spent six years working in environmental geology and consulting, then continued to the University of Connecticut for his PhD. His first exposure to scientific ocean drilling was by way of the long absences of his academic advisor, Dr. Tim Byrne, who was frequently traveling for expeditions at sea and in service to IODP.

The way he tells it, Jon actively resisted a direct relationship with IODP for many years. His involvement in scientific ocean drilling was “only very tangential,” as his research interests—structural geology and convergent tectonics—were decidedly land-based. Still, he was pulled into the field when Dr. Byrne offered him samples from Site 808, collected from an accretionary prism during Ocean Drilling Program Leg 131: Nankai Trough. Though Jon was able to publish a paper through this work, he thought little of it for the next three years as he established himself as a professor at Indiana University of Pennsylvania.



Jon participated in Expedition 315 aboard the D/V *Chikyu* as a structural geologist (Credit: Jon Lewis).

Everything changed when he received an “unsolicited email that changed my life profoundly, which I am grateful for.” Dr. Mike Underwood, who had reviewed Jon’s paper about the on-land geology of southwest Japan and happened to be a co-chief scientist on an upcoming expedition to the region, reached out from the blue to encourage Jon to apply to sail as a structural geologist on Expedition 315 (NanTroSEIZE Stage 1 – Megasplay Riser Pilot) aboard the *Chikyu*. After he received the invitation and helicoptered on board, he discovered that the ship was “brand spanking new” and the thrill of pulling up cores at sea was unbeatable. Fully aware of the irony, Jon said, “After having avoided IODP for years because I didn’t want to have to make the commitment, of course after five weeks I wanted to stay.”

Energized by the experience, Jon dove into the community by asking another mentor, Dr. Mark Leckie, what he could do to give back to the IODP community. It is worth noting here that Jon may be the perfect embodiment of the three pillars of academia. As readers will learn in the coming paragraphs, he conducts rigorous *research* into convergent tectonics, *teaches* with a passion that only grows as he helps students “understand what scientists do more broadly because it’s such an incredibly large portfolio of kinds of work and important tasks,” and fully devotes himself to *service*. Under Dr. Leckie’s guidance, he applied to serve on the U.S. Advisory Committee, where he spent three years on the staffing subcommittee.

His time with USAC led to another seismic shift. It was through colleagues there that he learned about the education and outreach component of scientific ocean drilling, and was soon invited to sail as an instructor on the 2012 School of Rock: Ship-to-Shore Science. In that setting, he was inspired: “What got me was the experience of teaching teachers and seeing how blown away they were... I thought, ‘Wow if we could do that with undergrads, it would be quite powerful.’” From there, the [Science, Technology, Engineering, and Math Student Experiences Aboard Ships](#) (STEMSEAS) program was born.



LEFT: Jon's 2018 field work in eastern Taiwan benefited from the help of river guides (Credit: Jon Lewis). RIGHT: As part of his class "Geology of Southwest America" at IUP, Jon brings students to the Animas River canyon near its confluence with Molas Creek. Pictured is undergraduate student Morgan Spatz (Credit: Amelia DeLeonibus).

Though Jon denies a conscious motivation to break down barriers in the geosciences before this, he admits that "perhaps there was always something in me that knew we had to do a better job of reaching more people." Now he has thrown himself into leveraging experiences at sea to bring underrepresented groups into the community. He divides his research equally between STEMSEAS and his quest to increase inclusivity and accessibility in science, and active mountain building processes in Taiwan. With the former, his team of highly engaged mentors help students through their first field and research experiences, and he investigates the positive effects of opportunities like this on their careers. In the latter, he studies small-scale features recorded in rocks from shear zones to uncover the history of coupling along convergent tectonic boundaries, endeavoring to explain the processes that can bring deeply buried rocks to the surface in geologically short periods of time.

He has published several papers about both lines of research, and is currently sharing his work around the country, making the rounds as a USSSP Ocean Discovery Lecturer. While most Ocean Discovery Lecturers choose to focus on a specific aspect of their research, Jon's talk is "arguably different from most." It is unique in that he leverages "a vignette of subduction zone behavior" as a way to "highlight a little bit of [IODP] science and quite a bit about the conditions that enabled it. It will be a glimpse under the hood." So far, he has been "having a blast doing it," and "feels honored to have been asked."

Even when he is not immersed in his university work, Jon makes a constant effort to learn and grow. Every weekend he and his wife wake up before 4:00 AM to take long walks and listen to podcasts (he has some great recommendations!), and talk about how they can make the world a better place. As evidenced by his many projects, "one of my high priorities personally is community resilience. I am trying to find ways to get many more people to understand what kind of careers are possible so that we can have communities... of local people who can respond to local problems, with solutions that can respond in real time."

Though obviously disappointed by the impending loss of the *JOIDES Resolution*, Jon is proud of his work toward the "cultural shifts" that have led to the prioritization of education and outreach within scientific ocean drilling, and fully committed to continuing the effort. "I have a great enthusiasm for what I do, which is a blessing," he acknowledges, "That's why I try to bring that to my students and the community."

Spotlight on...

Dr. Adriane Lam

written by Maya Pincus (USSSP)



Credit:
Adriane Lam

While it might be appropriate to claim there is no such thing as a *typical* paleontologist, Dr. Adriane Lam could be as close as a person could get. She has “always been fascinated by the natural world,” her childhood rich with stories of collecting dead insects with her brother, searching for shark teeth from the banks of the Potomac River with her dad, and making plaster casts of coyote footprints in the wilderness surrounding her rural Virginia home. She now teaches a geology course for non-majors about Earth’s five major mass extinctions. She exudes enthusiasm for the field in a matter that is entirely welcoming and in no way pedantic—Adriane is a reminder that paleontology is the *cool* branch of geology.

Despite the clues early on, it was never clear to Adriane that she would grow up to be a scientist. Actually, for someone who spent most of her senior year of high school cutting class to drive trucks and ride horses, she has come quite a long way in academia. After high school, Adriane begrudgingly went off to a two-year community college, well aware that it would offer her the best chance to make money and find a career that would allow her to explore the world. The only reason she took a geology class was to fill a science credit—but we all know how that goes. For the first time in Adriane’s academic history, it all clicked. At the end of her second year she transferred to James Madison University, where she would be able to pursue a geology major.

It all clicked again in her first invertebrate paleontology course. Going into geology, she originally planned to be a hydrologist (“and I probably would be making more money now if I had,” she added without remorse), but this class made it immediately obvious that paleontology would be her path. While she struggled to put her finger on exactly what it was about that class that rocked her world, she thought back to her childhood and observed, “I just love fossils and dead things.”

Another of her early geology classes was a course-based undergraduate research experience led by the scientific ocean drilling veteran Dr. Kristen St. John, who regaled students with stories of life and science at sea. Required to complete a research project as part of her degree, Adriane was motivated to pursue scientific ocean drilling. Though “still very shy and introverted at the time,” she worked up the courage to ask Dr. St. John to work on a project involving deep sea drilling samples. As she developed her thesis about planktic foraminifera biostratigraphy in the Gulf of Mexico, she learned more and more about the *JOIDES Resolution*. Again, she was hooked: “I looked at the ship and was like ‘I wanna do that! I want to go on that ship and I want to sail with IODP. That’s so frickin’ cool!’”



TOP: Adriane and her lab group held a “paw-ty” to celebrate the 10th birthday of her recently adopted dog, Katie (Credit: Adriane Lam). Adriane sailed aboard the *JOIDES Resolution* as a paleontologist during Expedition 371: Tasman Frontier Subduction Zone. Here she is seen discussing a newly split core (Credit: Tim Fulton & IODP JRSO).



It would be several years before Adriane finally had her chance to sail, but the story is a lesson in the power of ambition and determination. As part of her undergraduate studies, she worked for a few days in the lab of another IODP VIP, Dr. Mark Leckie. Adriane knew she wanted to pursue a PhD with him, so she set up a meeting with him during a conference and asked him to take her on as a student. Despite her enthusiasm and clear qualifications, “He crushed my dreams!” she lamented. His lab was full and he had no room to take on another mentee. She put on a brave face and thanked him for his consideration, but “then I went back to my hotel room and cried.”

This setback was not the end of the line for Adriane. She went to Ohio University to pursue a Masters degree with Dr. Alycia Stigall, continuing to work with shallow water invertebrates. As that project wrapped up, she began to consider a career in oil, before remembering her dream. She reached out again to Dr. Leckie about a PhD, and was rewarded when he responded, “The timing’s perfect!” It was also the perfect time for Adriane to make her way to the *JOIDES Resolution*. As a paleontologist aboard Expedition 371: Tasman Frontier Subduction Initiation and Paleogene Climate, she collected samples that she is still investigating today. A few years later, she was selected to sail on Expedition 393: South Atlantic Transect II, but after three days of canceled flights at the start of the expedition, she instead participated as a shore-based scientist.

Adriane now works as an assistant professor at Binghamton University, a State University of New York. As the department’s first paleontologist in over 25 years, she is shaking things up, having used her prolific grant-writing ability to purchase a new fossil collection for the department, including a T-rex skull cast (which she plans to offer up to a naming contest next semester). She is also one of the U.S. Science Support Program’s 2023-2024 Ocean Discovery Lecturers, touring the country with her lecture “She Sieves Sea Shells from the Sea Floor: Plankton Fossils Reveal Oceanic Evolution and Dispersal Processes.”

Hearing Adriane speak about her work, it is obvious that this is her passion. She has so many projects going on—many of which involve undergraduates, masters, and PhD students—that her mouth can hardly keep up with her brain when she lists them all. These projects revolve around paleontology, paleobiogeography, and paleoceanography, analyzing isotopes preserved in foraminifera shells to interpret past climates

based on distribution, dispersal, and diversity of certain species through time. Her projects can be boiled down to two questions: “What are drivers of evolution?” and “How can we utilize the past to say something about the future, in some way that can help society?”

Research is not the only way in which Adriane is striving to help society. When the 2016 elections came around, Adriane found herself getting increasingly annoyed with the non-scientific way climate change was so often portrayed in the media. One day, “I was in the shower—this is where I get all my good ideas—I thought, ‘I should just make a website!’” She called up a friend from grad school, Dr. Jen Bauer, and together they developed [Time Scavengers](#). At first it existed solely as a resource to educate the public about climate change and evolutionary theory. On one hand, Adriane and Jen thought, “If other people had this information maybe they would understand [climate change] too.” On the other, it was “a really good outlet to funnel our anger into something positive.” Due to their joint passion and ambition, the project quickly transformed into something much bigger, earning non-profit status in 2021.

Beyond education, the organization’s goal is to make science welcoming and accessible to everyone. In the “[Meet the Scientist](#)” section, they profile researchers from diverse backgrounds who prove that anyone can be a scientist. They pay students to participate in a [virtual internship program](#), learning about science communication from advocates and activists, and writing blogs for the website. They also offer the [Tilly Edinger](#) grant, which covers travel and registration costs to send students and amateur scientists to conferences. This is one of the only programs that covers costs up front, protecting applicants from the credit card debt that so often comes with reimbursement systems.

As exciting as her journey has been up to this point, there’s no doubt Adriane’s future holds just as many interesting endeavors. She and her husband recently bought a house and adopted a 10-year-old Australian shepherd, so even her home life is full of interesting new projects. And although this phase of IODP is winding down, Adriane’s research is ramping up, as she will be one of the lucky scientists sailing on Expedition 403: Eastern Fram Strait Paleo-Archive. But what will make this expedition extra-special for Adriane is one of the co-chiefs scientists, who is none other than her undergraduate advisor, Dr. Kristen St. John. This brings Adriane’s story “very full circle.”



TOP: Adriane displays fossil specimens in her Science 1 lab (Credit: Jonathan Cohen). BOTTOM: Adriane poses with a Triceratops fossil at the Smithsonian Museum of Natural History (Credit: Adriane Lam).

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 Program), 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 January 20, 2023 to be featured in next month's newsletter.

See you next month!