

SCIENTIFIC
OCEAN
DRILLING



White Paper

USSSP IMPACT Workshops

Spring 2023

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01

Executive Summary

Collectively, the Scientific Ocean Drilling IMPACT workshop series aimed to chart the future course of science communication and outreach for scientific ocean drilling. This effort is in direct support of the [2050 Framework for Scientific Ocean Drilling](#) and its call to "communicate far-reaching scientific ocean drilling knowledge to the broader community." IMPACT's goal is to build relationships and collect information from an array of different voices. For all of these workshops, we sought a diverse group of participants across many demographics, experience/levels, geographic locations and career areas.

Convened during the COVID-19 pandemic, the Steering Committee felt it was necessary to hold the initial IMPACT workshop series virtually. In collaboration with the Science Education SERC (Science Education Resource Center at Carleton College), the Committee designed three two-day online workshops with distinctive themes designed to gather community input to further science communication and outreach, the number one Enabling Element of the 2050 Framework goals. The summer 2021 IMPACT workshop themes were as follows:

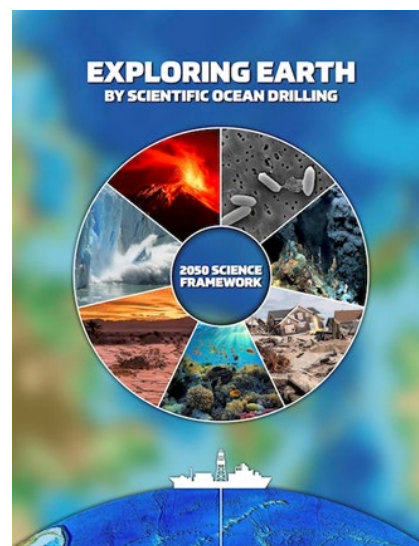
- Engaging the Public, held June 22 and 24, 2021
- Informing Policymakers, held July 19 and 21, 2021
- Preparing the Next Generation, held August 2nd and 4th, 2021

Ideas shared during the virtual series inspired the possibility of new collaborations across the Earth and ocean sciences, and the deep connections made to diverse community-based programs would not have occurred without the ease of online meeting. Workshop agendas, notes, and a wide range of documents produced during the meetings and used in support of workshop activities are the SERC site and shared in abbreviated form in this report, <https://serc.carleton.edu/IODP/>. Also within the report, overviews of each virtual workshop, driving questions, and key challenges are presented. The workshops were further informed by a priorities survey that can help to guide funding, planning, and programming next-steps. The workshop series effectively laid the groundwork for a face-to-face workshop held at AGU headquarters in Washington, DC on June 14-15, 2022. The in-person workshop was framed around the "Big Ideas" drawn from synthesis of the virtual workshops. The work of breakout groups was an effective means towards shaping ideas in support of broader and more diverse outreach, and science communication designed to better inform audiences about the importance and relevance of scientific ocean drilling. An overview of the project descriptions is provided in this report in hopes it will seed and inspire active partnerships, educational materials development, and a new style of messaging that welcomes greater representation and participation of all disciplines and cultures in support of the scientific ocean drilling endeavor.

02 Introduction and Overview

The 2050 Science Framework for Scientific Ocean Drilling guides multidisciplinary seafloor research into the interconnected processes that characterize the complex Earth system and shape our planet's future. The Vision is to be globally recognized as the authoritative source of information about ocean and Earth system history and its links to society, through the international scientific community pioneering global-scale interdisciplinary research below the seafloor of the world ocean.

- WE RESEARCH the processes that connect the solid Earth, ocean, life, climate, and society.
- WE EXPLORE the interconnected Earth in places that can only be accessed and understood through scientific ocean drilling.
- WE TRAVERSE TIME to reveal the many interactions that shaped Earth's geologic past to illuminate our future.
- **WE COMMUNICATE knowledge gained through scientific ocean drilling to the global community. ***This is the topic of IMPACT.*** Science communication and outreach is Enabling Element #1 in the Framework.



The Framework further delineates that the scientific ocean drilling community will:

- | Actively partner with education initiatives globally to ensure incorporation of drilling data into curriculum modules
- | Broadly educate the public about scientific ocean drilling and disseminate information about exciting discoveries.
- | Use the 2050 Science Framework to develop common story themes, graphics, and educational materials as a basis for consistent messaging across the platforms
- | Provide the public with an inspiring bird's-eye view of how science is conducted and what the results might mean for the planet.
- | Strive to advance participation of traditionally underrepresented groups and promote a more diverse group of students and researchers to become future leaders in the scientific community; vigorously expand on our efforts to broaden the representation and participation in all aspects of the scientific ocean drilling endeavor.

- | Expand the suite of available educational resources for all age levels. Partnering with other programs and organizations that have experience and influence in the schoolchild and undergraduate arena will broaden distribution and use of these valuable materials.
- | Because scientific ocean drilling covers and integrates so many science, technology, engineering, and mathematics (STEM) areas, **the possibilities for developing successful programs and relationships are immense.**
- | Use the archives from multiple expeditions to capture and document the scientific process of discovery, personal stories, and post-cruise findings and inform the public, inspire future generations, and educate everyone about the Earth system.
- | Build strong, mutually beneficial collaborations with other fields, such as engineering, astrobiology, and space sciences.

How to translate the 2050 Science Framework mission and vision into science communication? So began IMPACT. The need and charge for this community-based workshop was articulated by the U.S. Advisory Committee (USAC) for IODP in 2020 and planned by a steering committee with assistance from USSSP.

The IMPACT workshop series began in the summer of 2021 with three two-day online workshops. This laid the groundwork for the primarily face-to-face June 2022 workshop at AGU headquarters in Washington, DC.

The website for the workshop series includes agendas for all the workshops as well as a wide range of documents either produced in the meetings, or used in support of workshop activities. See the IMPACT site: <https://serc.carleton.edu/IODP/>.

Summer 2021:

- Engaging the Public, June 22 and 24, 2021
- Informing Policymakers, July 19 and 21
- Preparing the Next Generation, August 2nd and 4th, 2021

Summer 2022:

- June 14 and 15 at AGU headquarters in Washington, D.C.

03

Virtual Workshops, Summer 2021

The U.S. Science Support Program (USSSP) for the International Ocean Discovery Program (IODP) organized a virtual workshop series for community input to help shape a later face-to-face workshop on Education and Outreach as an Enabling Element of the 2050 Scientific Ocean Drilling (SciOD) Science Framework. The objective of the virtual workshops was to listen to IODP community members as well as people outside of IODP to help focus priorities for the in-person workshop. Here we present the results of the virtual meetings and the in-person meeting, all offered in partnership with the Science Education Resource Center (SERC). Individual workshop breakout sessions and discussions are captured on the SERC site here:

<https://serc.carleton.edu/IODP/index.html>

A. ENGAGING THE PUBLIC

Overview

This first workshop was held on June 22 and 24, 2021, with 50 people participating. Each session was two hours and 15 minutes long.

Driving Questions

- | [What tools of engagement work best](#) (e.g., videos, social media, curricula, books, events, etc.) in your community/organization?
- | [What questions do you \(your community\) have](#) about deep ocean exploration and how the Earth works?
- | [How do the people in your community connect science and cultural world views?](#)
- | [How can we foster partnerships and collaborations](#) between your community and scientific ocean drilling?

The questions were addressed in randomly generated Zoom breakout rooms each using JamBoards to capture and organize emerging themes. The results were then shared with the entire group and discussion continued with posts in our virtual workspace.

Key Findings

In response to the guiding questions that we asked during the virtual workshops, some clear findings began to emerge:

What tools of engagement work best (e.g., videos, social media, curricula, books, events, etc.) in your community/organization?

- | A clear signal that rose to the top of most breakout group's lists was that of the importance of storytelling
- | Importance of social meeting, in-person presentations, community events, and opportunities to interact with artifacts
- | Note specific social media vehicles have specific types of audiences and we need to be mindful when communicating with different groups
- | Diversity of strategies is important
- | The need to foster authentically inviting spaces for people who may not identify yet with the research drilling community, followed by maintaining those spaces through embracing the changes that emerge

What questions do you (your community) have about deep ocean exploration and how the Earth works?

- | Concerns that the drilling process itself might pose environmental risks
- | Relevance of SciOD to society?' These questions highlight opportunities for SciOD to more widely educate society about both how the work is done, and how the results have societal implications
- | Climate change issues

How do the people in your community connect science and cultural world views?

- | Emphasizing the time and effort to build meaningful partnerships with communities with whom we have not been effectively engaged before
- | Seek out mechanisms to engage more stakeholder communities in the face-to-face workshop.
- | Two animating topics emerged that should help the community find success in these efforts: (1) stewardship of Earth transcends many community boundaries and as such should be leveraged to engage citizens, and (2) economic realities must be considered when reaching out to the public. The latter was encapsulated by the question "what do people value?"
- | Need to highlight relevance

How can we foster partnerships and collaborations between your community and scientific ocean drilling?

- | Emphasize societal relevance
- | Develop a brand that is durable, e.g., as NASA has.
- | Leverage existing partnerships
- | Apply for collaborative grants with PI groups that include members of the communities we want to reach
- | Going into communities across the country

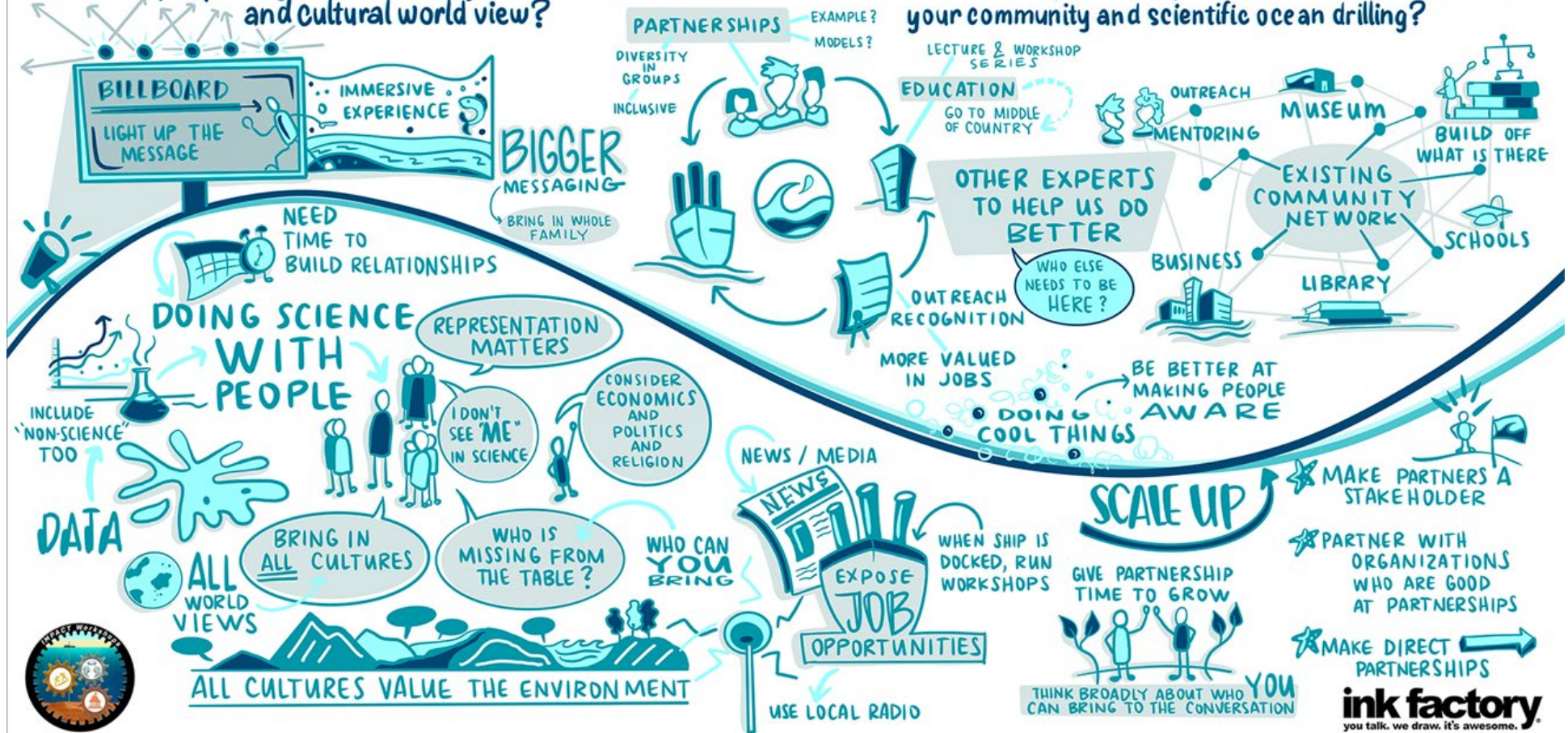
Summary of Emerging Themes

The marginalized communities on the front lines of rising sea level noted above highlight important opportunities. SciOD must look for mechanisms to engage such communities, perhaps leveraging other stakeholders (e.g., tourism sector, fisheries) or collectives (e.g., NSF's Coastlines and People projects [CoPE], NOAA's Sea Grant project) and those with pre-existing links into coastal communities, in order to engage in meaningful dialogues.

IMPACT: ENGAGING THE PUBLIC

How do people in your community connect with science and cultural world view?

How can we foster partnerships and collaboration between your community and scientific ocean drilling?



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you talk. we draw. it's awesome.

B. INFORMING POLICYMAKERS

Overview

This second workshop was held on July 19 and 21, 2021, with 50 participants. Each session was 3 hours long.

How do you make your program-related information stand out from the average 6,000 other briefing notes received weekly by the staffers of federal representatives? The Advancing Scientific Ocean Drilling Impact through Policy (IMPACT-Policy) included two days of virtual panels and discussion where the opportunities for SciOD to build, strengthen and expand connections to policy were discussed. In addition, the workshop attendees discussed what SciOD can be doing to facilitate and support current and future policies relating to the critical understanding of the oceans as part of Earth science. Presenters and panelists included Congressional staff, and representatives from geoscience societies (American Geophysical Union (AGU) and Geological Society of America (GSA)) and the Office of Ocean Leadership, all with experience in current demands on policymakers and staffers, science communication and policy.

Driving Questions

During this workshop, we considered three main questions:

- | What research and programs does Scientific Ocean Drilling conduct that have policy implications? E.g. geohazards, earth climate history, marine resources, school of rock.
- | How does Scientific Ocean Drilling currently convey information about these topics to policymakers and into policy and how can those efforts be strengthened? What is the best mechanism to reach policymakers and what are they interested in?
- | How can scientists and policy makers work together to help lower some of the barriers to cross fertilization across science agencies and international partners?

The IMPACT Policy workshop was designed to understand how the Scientific Ocean Drilling Community can work with policy makers to advance our science. We addressed three policy-related questions:

- | What policy themes exist in scientific ocean drilling?
- | What are the best mechanisms to reach and engage policymakers in Scientific Ocean Drilling?
- | How best can we open an information exchange with local policymakers about research that addresses local interests?

We also considered messages that the scientific ocean drilling community would like to convey to policy makers, particularly the critical need for a new drillship and resources for workforce training. In advance of the workshop, the organizers wrote a list of policy implications of Scientific Ocean Drilling that was based on policy-related themes in the 2050 Science Framework. This information, along with videos describing drilling-related marine science, was presented to the workshop participants in advance of the workshop itself. The workshop was virtual, and participants met for three hours on two days—July 19 and 21st. The format consisted of moderated panel discussions followed by breakout groups to discuss the second and third questions listed above, and summary of breakout group discussions captured in text and in a summary sketch. What follows is a summary of the main findings of the workshop. The following recommendations and challenges are synergistic across all guiding questions from the IMPACT-Policy workshop.

Key Findings

- | When talking to policy makers, it is best to ask for specific support, ideally for something very concrete-- be that funding, championing a bill, co-sponsorship, or engaging an agency. Many scientists lead with research results, which are only indirectly related to an "ask".
- | Make sure any "ask" is relevant to a given member, as indicated by their current support of legislation, their historical support of similar bills, or being a direct benefit for their state / constituents.
- | Reach out using the channels that are preferred by the staffer / official. For example, effective means of being noticed are opinion pieces, social media and articles in local news media, because these are picked up by news clipping services that are seen personally by members. These news pieces become especially noticed if they call out the local official, or comment positively on something they are doing. In-person visits or approaches in collaboration with another organization can also be effective.
- | Form long-term working relationships with elected officials and their staff, working through government relations staff on our campuses, and developing coalitions to carry our "asks".
- | Make your "ask" easy, requiring no additional work by the official's staff to assess budgetary impacts, source background information, or how your ask can be put into action.

Key Challenges

- | Establish a coordinated effort for policy engagement that can support the SciOD community, including Establish a coordinated effort for policy engagement that can support the SciOD community, including:

- a. A clearinghouse of legislator contact information and background for each scientist's home district.
- b. Identify key issues that officials routinely champion or are already advocates of, including the bills they have supported and committees / caucuses they are involved in.

- | Develop a series of talking points that can help guide interactions with the policy arena.

- | Make the initial contact with the right staffers and build relationships that have longevity.

Making an "Ask" - an Example

Clear "asks" about physical things, like a new drill ship, have potency because they are concrete with definable impacts. Conversely, other "asks" the community might want, such as funding for students, and resources for public engagement are highly distributed between mission agencies and levels of government, making them more challenging to identify for discrete funding.

1. We need a new ship to continue US leadership in Ocean Exploration.

- | We could lose this leadership position, built over five decades, if we do not invest.

- | US expertise will be lost if we do not try to maintain it or if there are long delays in obtaining a new ship.

- | The expertise is not only in ocean technology, but also database architecture, program organization, and "enduring principles" that govern how international collaboration works.

- | If the ship is built in a US port = jobs.

- | US research vessel will support research in many universities (list the ones in your state)

- | Make your "ask" easy, requiring no additional work by the official's staff to assess budgetary impacts, source background information, or how your ask can be put into action.

2. The new ship will allow us to:

- | **Assess and predict threats to human society**—from tracking the threats from large earthquakes and tsunamis, tipping point behavior in ecosystems and climate, and testing models to understand likely future environmental change on a warmer Earth.

- | **Discover new resources**—from evaluating genetic resources and making novel discoveries in the "deep biosphere" to assessing the nature and size of energy reserves such as gas hydrates. The ship can also evaluate the economic potential of deep-sea mineral resources and identify reservoirs for carbon sequestration in the ocean. The expertise is not only in ocean technology, but also database architecture, program organization, and "enduring principles" that govern how international collaboration works.

| **Capture the public imagination and understanding of Earth**—on such topics as the origin of life, the most extreme forms of life, Earth analogs for life on other planets, and an unparalleled view of Earth's past.

| **Diversify and position the US for future leadership**—increasing diversity in STEM fields and interdisciplinary training in Earth and Life sciences, marine engineering, data architecture and integration, and collaborations with the space sciences.

The IMPACT Policy workshop identified themes in the 2050 Science Framework that could be developed to engage policy makers, whether to make a case for further funding, political support or public messaging. Working with policy makers involves identifying areas with intersections to Scientific Ocean Drilling where elected officials can be champions for us. Elected officials are more likely to support our community if we can identify specific, concrete "asks", have built coalitions of support and personal relationships with their staff. Like space exploration, Scientific Ocean Drilling has an advantage in not having natural legislative opponents. Further, some of our "asks", like a new drillship, are concrete and can be fit into narratives about leadership in international research, construction jobs, and "showing the flag".

IMPACT: INFORMING POLICYMAKERS

? HOW CAN SCIENTISTS & POLICYMAKERS WORK TOGETHER to HELP LOWER SOME OF THE BARRIERS to CROSS-POLLINATION ACROSS SCIENCE AGENCIES?

? WHAT ARE OUR KEY MESSAGES to POLICYMAKERS AND WHAT SUPPORTING INFO DO WE PROVIDE WITH EACH?



C. PREPARING THE NEXT GENERATION

Overview

This third workshop was held on August 2 and 4, 2021, with 80 participants. Each session was three hours long.

To address the future research goals of scientific ocean drilling, particular attention needs to be given to preparing and broadening the next generation of the scientific workforce. This will involve: (1) building greater awareness of Scientific Ocean Drilling-related career opportunities; (2) developing and compiling Scientific Ocean Drilling-science-related educational resources; (3) creating opportunities for undergraduate research that involves Scientific Ocean Drilling data and samples; (4) providing professional development for college and university STEM faculty and K-12 teachers; (5) identifying and adopting effective mentoring strategies for graduate students, postdocs, and tenure-track faculty; and (6) expanding training programs (e.g., short courses and workshops) to further develop critical scientific and transdisciplinary skills.

The overarching question of the Preparing the Next Generation IMPACT workshop was ***How can scientific ocean drilling best prepare the next generation of Earth scientists?*** The primary intent of the two half-day workshop was to gather information from a wide range of perspectives to help USAC and the USSSP determine priorities and strategies for education and training-related broader impacts in the next operational (i.e. funding) phase of scientific ocean drilling.

The premise is to address the future research goals of scientific ocean drilling, as particular attention needs to be given to preparing and broadening the next generation of the scientific workforce. This will involve: (1) building greater awareness of scientific ocean drilling-related career opportunities; (2) developing and compiling scientific ocean drilling-science-related educational resources; (3) creating opportunities for undergraduate research that involves scientific ocean drilling data and samples; (4) providing professional development for college and university STEM faculty and K-12 teachers; (5) expanding training programs (e.g., short courses and workshops) to further develop critical scientific and transdisciplinary skills; and (6) identifying and adopting effective mentoring strategies for graduate students, postdocs, and tenure-track faculty.

Through invited presentations and participant discussions, we sought to identify community values and priorities with respect to education, training, and mentoring, as well as possible tools and strategies to help meet the broader impact goals of the [2050 Science Framework](#). We used diversity, equity, inclusion, and justice (DEIJ) as a lens to consider these topics. We intentionally sought contributions from those currently (or previously) involved in scientific ocean drilling, as well as external experts on different aspects of science communication, education, training, and mentoring. We also intentionally sought examples of activities and approaches that may be models to adopt and/or expand in the future scientific ocean drilling program.

Driving Questions

The two sessions on preparing the next generation of the Scientific Ocean Drilling workforce will explore a range of aspects relating to how scientific ocean drilling can best support education, training, accessibility, and retention of students and early career researchers across the Earth sciences. The answers to these questions will be the recommendations we take forward to the main INVEST workshop in the Fall:

- | How can we build greater awareness of Scientific Ocean Drilling-related career opportunities, especially for marginalized communities in STEM?
- | How can we expand, develop, compile and better promote Scientific Ocean Drilling-science-related educational resources?
- | How can professional development be better designed to develop critical scientific and transdisciplinary skills for all educators?
- | What are the best accessible practices for creating and expanding opportunities for undergraduate research that involves Scientific Ocean Drilling data and samples?
- | What are effective mentoring strategies for graduate students, postdocs, and tenure-track faculty within Scientific Ocean Drilling; and how can we expand on effective mentoring in the community, especially for marginalized communities in STEM?
- | How can we effectively expand training programs (e.g., short courses and workshops) for scientists involved with Scientific Ocean Drilling research?

Key Findings

- | Develop a coherent and continuing online program for professional development, training, and materials development for the next generation of Scientific Ocean Drilling (SciOD) scientists, researchers, and educators. The program will:
 - a. Develop and support targeted workshops and training activities related to SciOD 2050 framework priorities and other community needs identified in the IMPACT workshop for K-12, undergraduate, graduate, postdoc, and tenure-track faculty. [See identified needs in this report.]
 - b. Strategically compile, build, organize, and host workshops, training, and educational materials in an open access, more findable, more user-friendly, and better-maintained online database.
 - c. Customize all communication and outreach activities for the specific audience being targeted.
- | Increase online network presence (social media, databases, asynchronous networking tools) to build an online community and increase accessibility of targeted workshop materials, pair mentors with mentees, and continue building awareness of SciOD activities, workshops, and educational content in support of the 2050 Science Framework.
- | Prioritize programming, workshops, training activities, etc. to have justice, equity, diversity, inclusion, and accessibility (JEDIA) components to broadly expand participation of those with historically excluded identities in STEM.

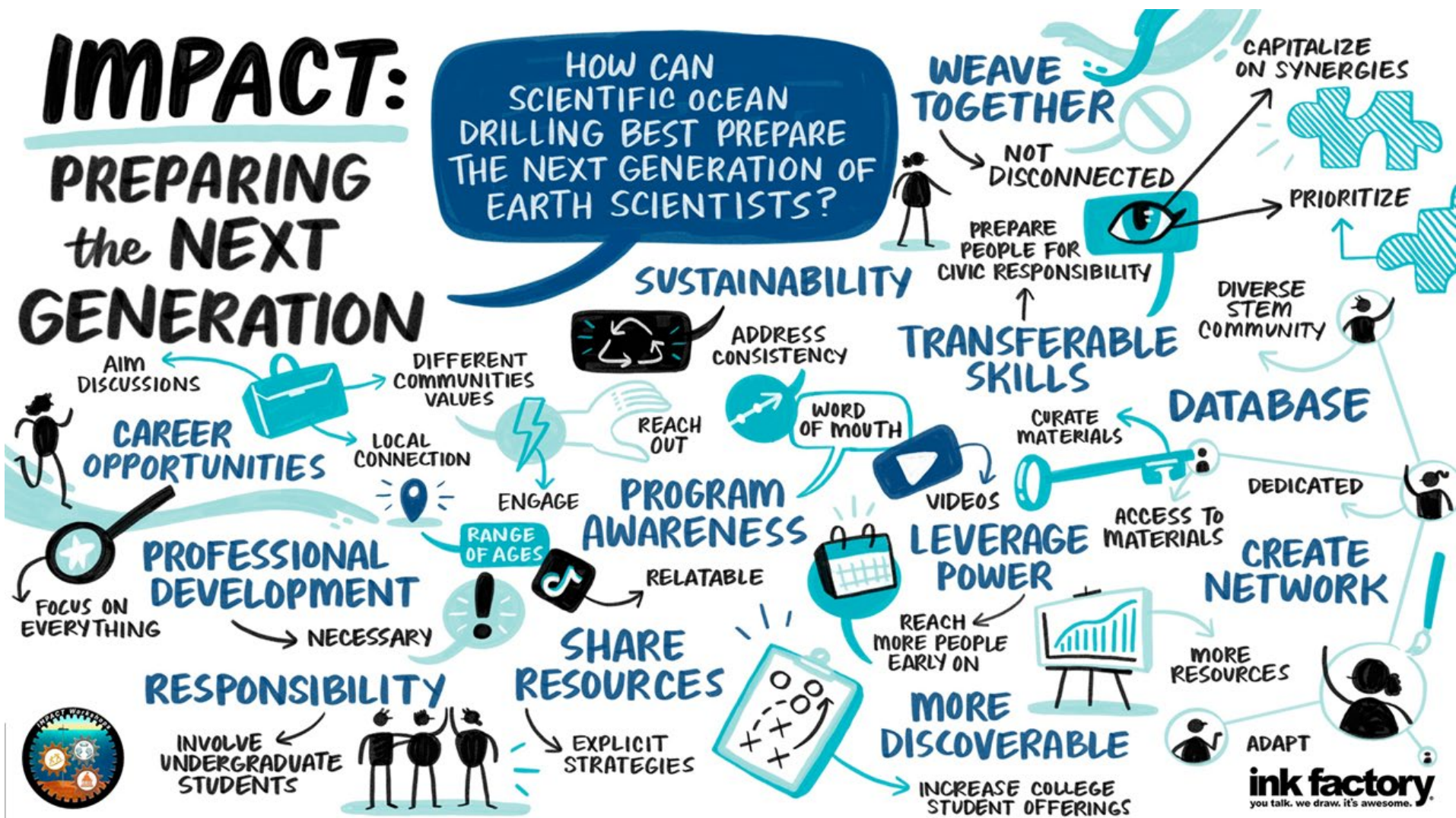
- | Develop partnerships with other organizations and groups to increase the visibility of SciOD, elevate the program and partner organizations, and expand programming for students, educators, scientists, and researchers.
- | Periodic evaluation of SciOD activities and impact on the community, mechanism for community feedback, and ability to make adjustments as necessary.

Key Challenges

- | Change is hard!
- | Honest assessments of funding and staff resources against short-term and long-term strategic priorities.
- | Further identify and assess target audience needs, and develop materials suitable for that audience, so as to gain maximum impact.
- | Define roles and responsibilities for new and ongoing SciOD activities (e.g., what are USSSP developed, USSSP funded, community developed, externally funded).

IMPACT: PREPARING the NEXT GENERATION

HOW CAN
SCIENTIFIC OCEAN
DRILLING BEST PREPARE
THE NEXT GENERATION OF
EARTH SCIENTISTS?



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you talk. we draw. it's awesome.

Priorities Survey, Spring 2022

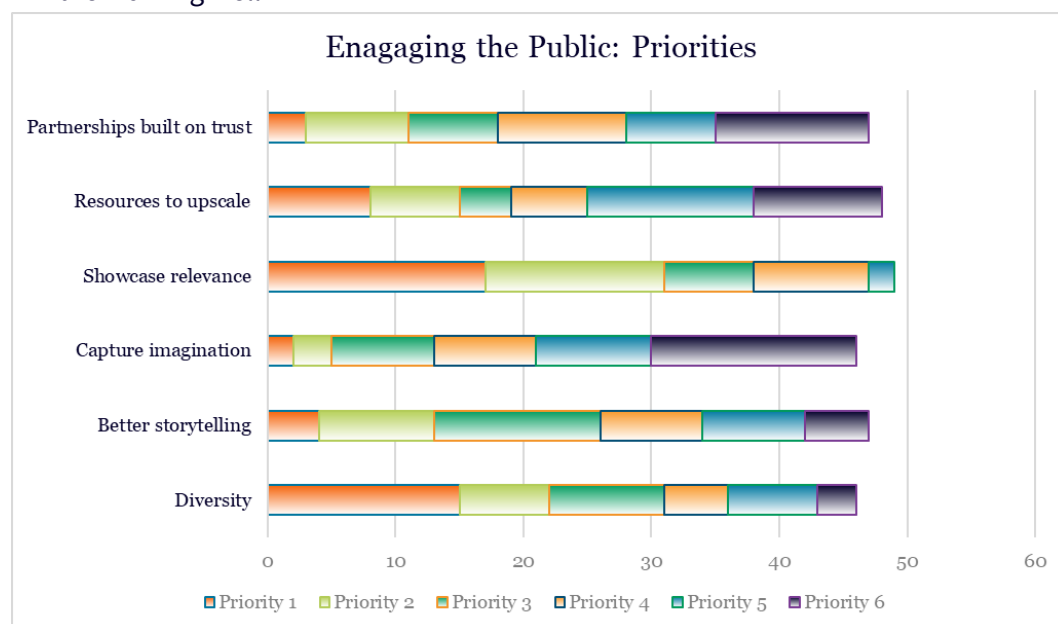
Each of the summer 2021 IMPACT workshops generated a list of key recommendations and priorities for next steps. We recognize there are synergies among these recommendations, such that working on one will positively impact the others. Nevertheless, we must prioritize our efforts to take strategic action in the short-term and the long-term. We therefore selected the top five or six recommendations coming out of each virtual workshop series and asked the community to rank these in order of priority. The results from this survey helped us guide discussions at the in-person workshop event in June.

ENGAGING WITH THE PUBLIC

Priorities

Here are the 6 key recommendations that emerged from the 2021 Preparing the Next Generation IMPACT workshop:

- | Importance of **showcasing the relevance** of our science
- | Critical need to capture imagination
- | As a community, need to become **better storytellers**
- | Centrality of getting more **diversity IN THE ROOM**
- | Need to work on developing authentic new partnerships based on trust
- | The need to work towards more resources to allow us to scale up existing programs that are working well



Showcasing the relevance of our science and increasing diversity came out as the highest ranked priorities, with finding ways to capture the imagination as the lowest. In the free text field to suggest **other key actions / recommendations**, the following were identified:

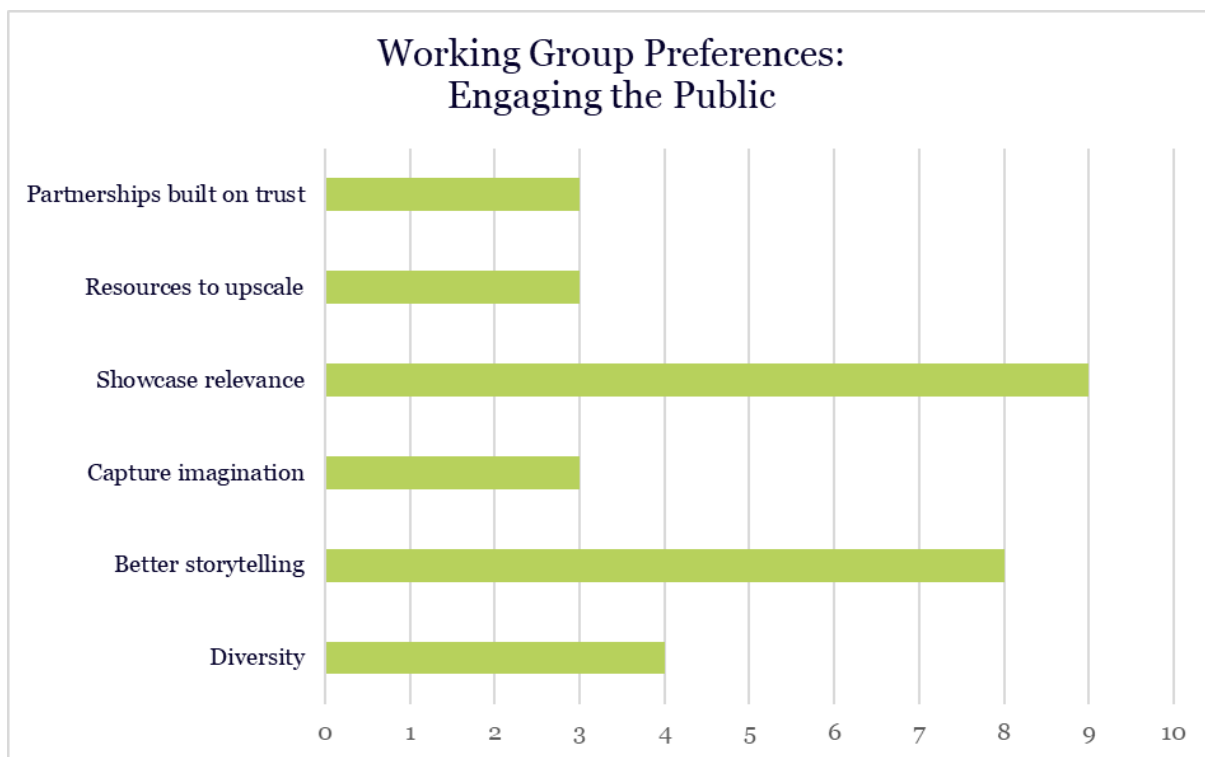
- | Acquiring **funding** to increase participation
- | Reaching out directly to students. Hold workshops that allow an educator to bring two of her students to an ocean drilling workshop. Give students the scientific relevance first hand
- | **Strategically plan** ways and means to reach different audiences
- | Something specific about working with a broader community on **communicating climate change**
- | Need to work on developing authentic new partnerships based on trust
- | List the diversity and value of the scientific disciplines included in the deep drilling program
- | Develop a **coherent program** with well-defined goals; 2) **Assess program activities and outcomes against those goals**. Without well-defined goals, the E&O efforts are scattershot. Without assessment, it's impossible to know what E&O efforts are achieving.
- | A priority related to public policy, such as engaging with the public to advocate for scientific ocean drilling legislation.
- | **Scientists--across the board--need to be engaged in some form of active sci-comm/outreach efforts**. No point in developing better storytelling skills or being good at forming new trust relationships if you're not actively using them.
- | Placing an emphasis on **integrating ocean drilling content into relevant secondary scientific curricula as well as instructional activities** (particularly problem-based learning and inquiry-driven investigations), to promote an understanding of ocean drilling among the next generation of scientists and explorers but also empower them to become critical thinkers and problem-solvers as they approach issues related to ocean drilling. Cross-disciplinary with Preparing the Next Generation?

We also invited people to comment on why they chose what they did as their highest ranking. These are some selected, pertinent, responses:

- | Without the **resources**, none of these priorities can be achieved. We need better delivery, and funding, to tell the stories
- | Tackle underfunding of SciOD, and create a **coherent plan and programmatic home**.
- | **Engaging a more diverse team** – not only on the science side, but right down from management levels.
- | To meet all six priorities, we need **longevity in SciOD** and to achieve that we need to be better at showcasing the relevance of SciOD and have a firm underpinning of funding.

- | First, we have to be able to **convince people that our science is of great relevance to them**, especially in landlocked regions
- | About half of the US population lacks **scientific literacy** as evidenced by belief systems that include a 6,000 year old Earth, dismissive attitudes toward human-induced climate change, and anti-evolution sentiments. We need to bring scientific literacy to THAT audience if we want to become a better country and affect the greater good. That will require authentic new partnerships based on trust.
- | **Impossible to rank between communication methods and relationships** as both are equally important.
- | **It feels like we are running out of time to help the public understand science and why it is vital to listen to scientists, so finding resources to expand programs that already work seems the most crucial and time-effective method to reach more of the public.**

Groups



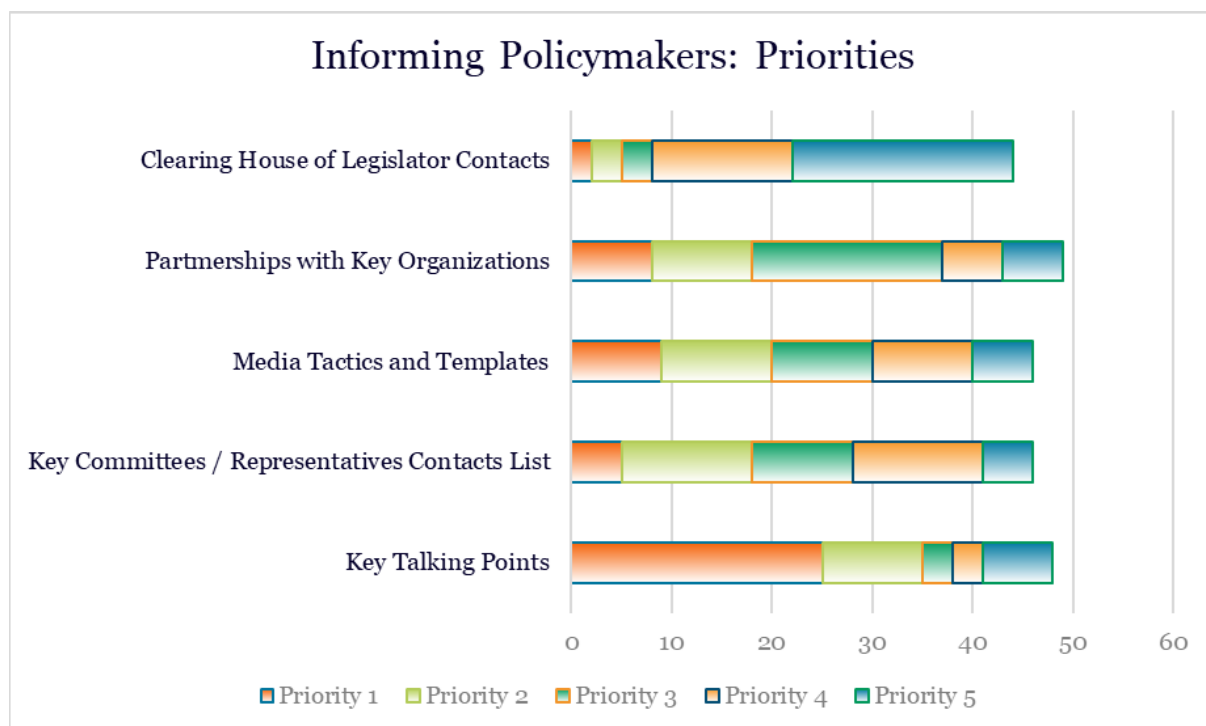
Interestingly, this was the only area where the top priorities did not fully match with the working groups people would most like to join. Although the top working group was focusing on how to better showcase the relevance of the science, the next highest group to join was focusing on better storytelling, with increasing diversity significantly behind that.

INFORMING POLICY

Priorities

Here are the 5 key recommendations that emerged from the 2021 Preparing the Next Generation IMPACT workshop:

- | **Develop a series of "Talking Points"** – key messages that will help our community maintain consistency across any communication efforts
- | **Develop a list of key Committees** (e.g., Commerce, Science and Transportation, Natural Resources, Education and Labor, Select Committee on Climate Crisis, Science, Space and Technology), Caucuses (e.g., Senate Oceans Caucus, Arctic Working Group, Career and Technical Education, STEM Education, Women in STEM, Youth Mentoring, Shipbuilding, Earth and Space Science [launched Jan 2022]), and representatives that we want to make contact with within the next 12 months;
- | **Develop a clearinghouse of legislator contact information and background** for the home area for each IODP scientist or ocean related partner organization;
- | **Develop a series of media tactics and templates** that can be used by scientists to raise the profile of their expedition / research within their local community so that the journalists can create a buzz around your participation which will reach the ears of the local representatives;
- | **Begin to build partnerships with key organizations** who could help amplify our voice and key messages (e.g., industry, philanthropic groups, ocean conservation groups, ocean research groups, aquariums, youth advisory groups.....).



Developing a series of key talking points came out as the highest ranked priority, with legislator contact information and backgrounds as the lowest. In the free text field to suggest **other key actions / recommendations**, the following were identified:

- | **Virtual advocacy days** similar to the AGU Science Policy organized ones;
- | **Partner with the influential** – and this doesn't have to be those within the stakeholder arena, it could be through philanthropy or personalities

We also invited people to comment on why they chose what they did as their highest ranking. These are some selected, pertinent, responses:

- | **Before communicating, you need to know what you want to communicate.** You need to know your audience and how to reach them through key organizations. You need to know who will be the spokesman, and lastly how the message will be communicated
- | I prioritized what I think will work with the way the current system is run. **To develop long-term relationships with legislators and key organizations requires a long-term commitment from specialists.** I know very few scientists that have the expertise and time to dedicate to that. If such a group of people were dedicated to this task, perhaps this could be more effective. Also, shouldn't this be the responsibility of NSF? Not Ocean Drilling? As is, enabling the masses and honing a message or story for all scientists to tell seems more functional with the current system.

Having an efficient and consistent set of talking points streamlines the efforts and helps guide those promoting the programs. **We need the "what do we want to say" before we decide "where do we want to say it."**

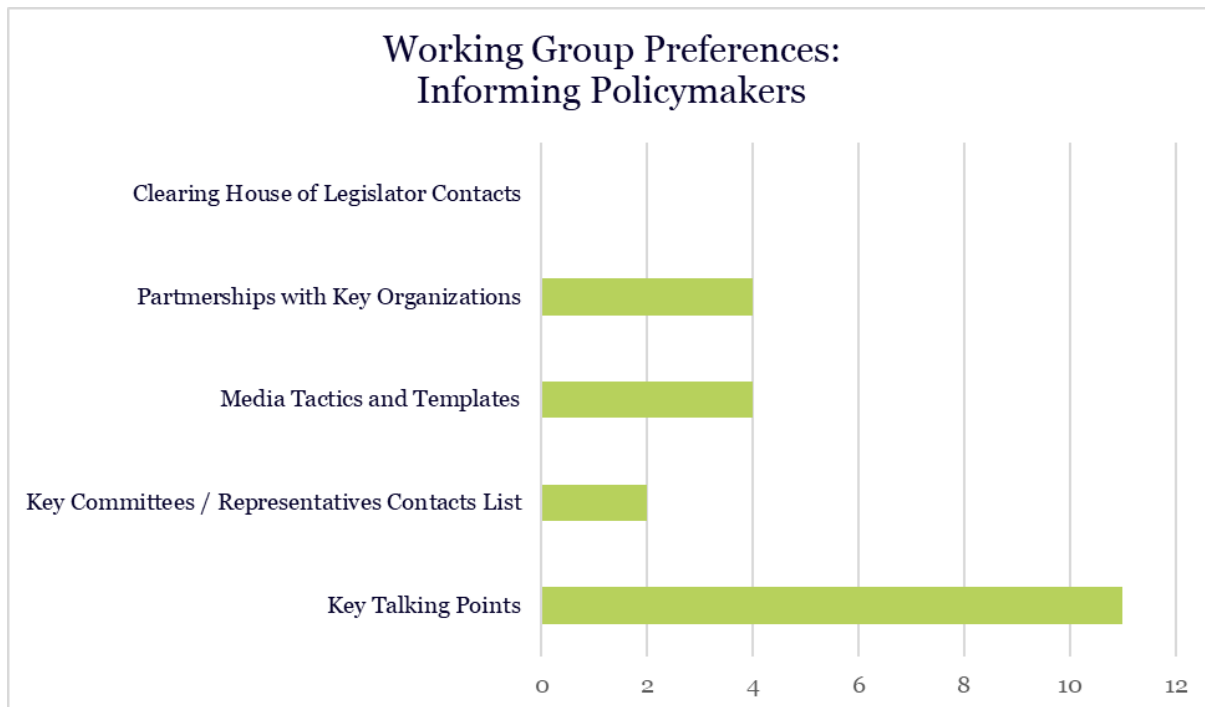
Communication consistency from the outset is fundamental to successful messaging.

The one area that requires the most attention here is to **build partnerships** with key organizations.

If we develop a clearinghouse of legislature contact info, **all IODP scientists can work on their own time meeting with their legislators.** Furthermore, developing a series of talking points would provide key information for us to have these individual legislative meetings. Following this, **developing a list of contacts, media tactics, and building relationships** will help support our individual efforts;

Groups

Of those five action areas, most people were interested in being on a working group to address developing a series of key talking points.



PREPARING THE NEXT GENERATION

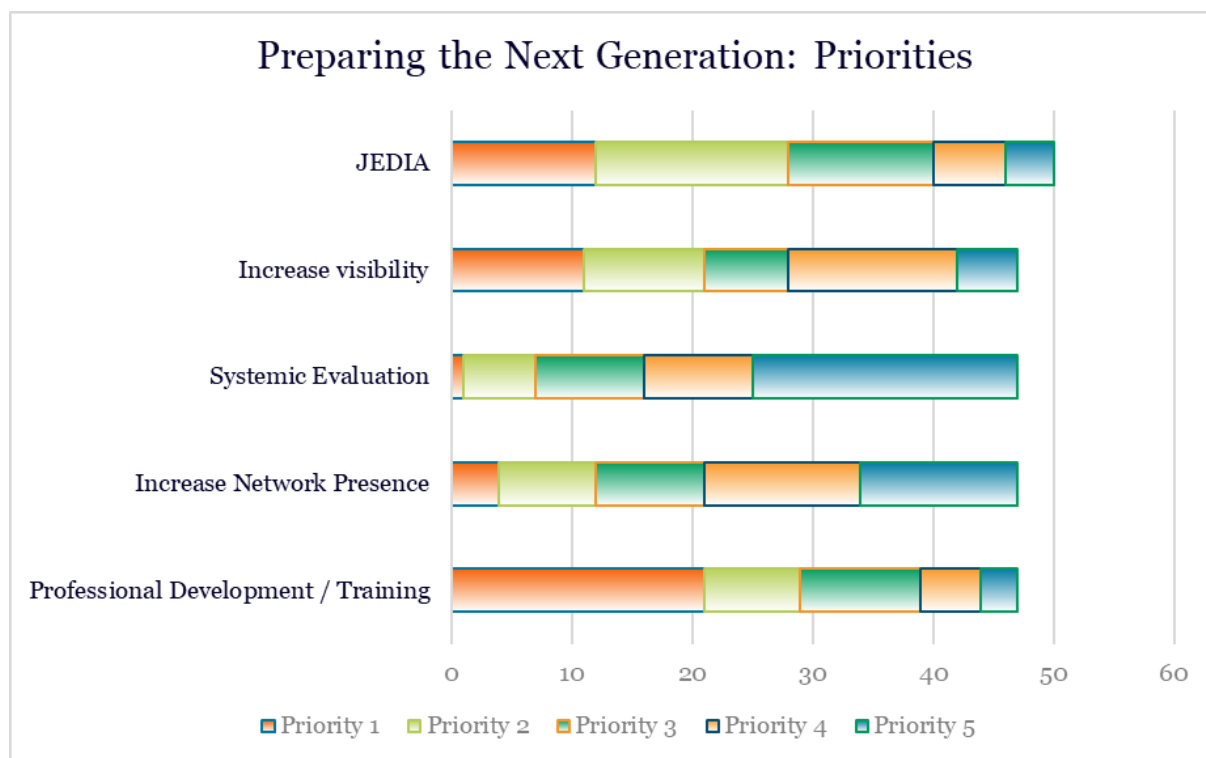
Priorities

Here are the 5 key recommendations that emerged from the 2021 Preparing the Next Generation IMPACT workshop:

- | **Develop a coherent and continuing online program for professional development, training,** and materials development for the next generation of Scientific Ocean Drilling (SciOD) scientists, researchers, and educators²⁶ have used IODP samples in their research
- | **Increase online network presence** (social media, databases, asynchronous networking tools) to build an online community and increase accessibility of targeted workshop materials, pair mentors with mentees, and continue building awareness of SciOD activities, workshops, and educational content in support of the 2050 Science Framework.
- | **Broadly expand participation in SciOD** for those with historically excluded identities in STEM through programming, workshops, training, and other activities.
- | **Elevate and increase the visibility of SciOD by developing and strengthening partnerships** with other organizations and expanding programming for students, educators, scientists, and researchers.
- | **Engage in periodic systemic evaluation** of SciOD activities and impact on the community, mechanisms for community feedback, and ability to make adjustments as necessary

Developing a coherent and ongoing program of professional development came out as the highest ranked priority, with systematic periodic evaluation lowest. In the free text field to suggest **other key actions / recommendations**, the following were identified:

- | Developing partnerships with organizations and communities within IODP's port cities – maybe modify to cities with institutions that have received IODP funding?
- | Training mentors and those who are preparing the next generation

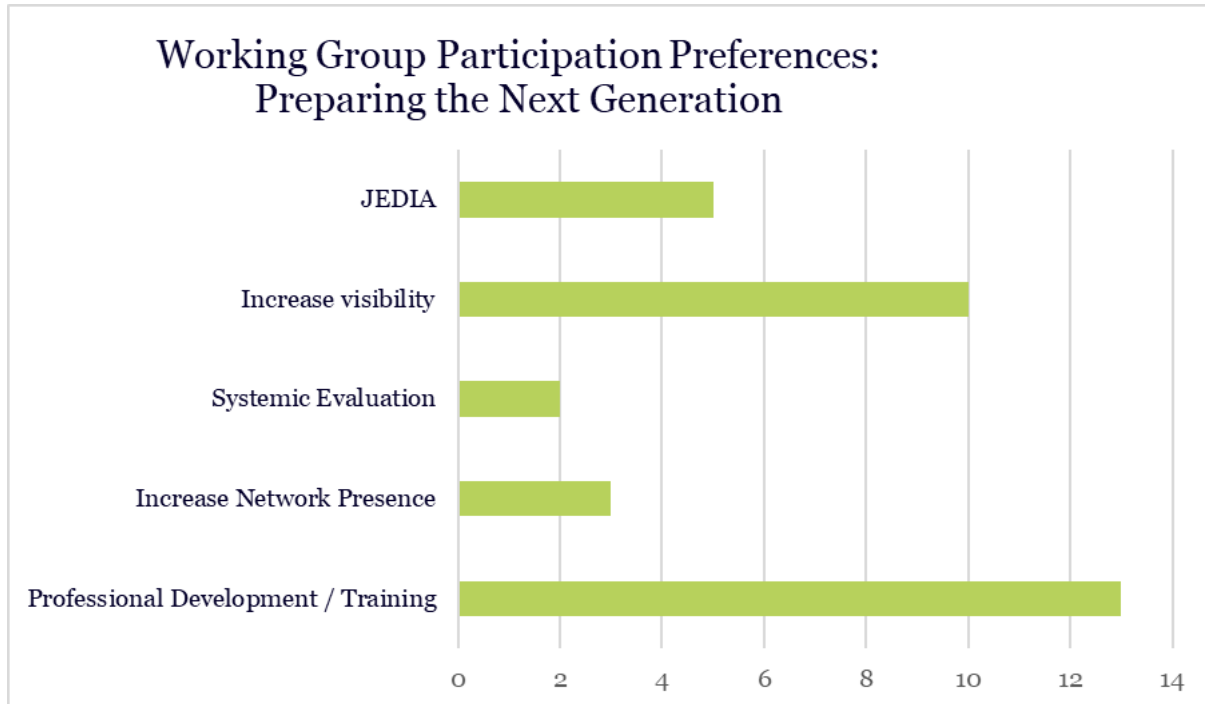


We also invited people to comment on why they chose what they did as their highest ranking. These are some selected, pertinent, responses:

- | **K-12 is the area where the seeds for the next science generation are sown.** It captures the broadest population, and many students will not forget what they learnt, even if they embark different careers
- | Earth science is possibly the least diverse field of science, and yet it deals with global problems that impact all communities. . . **better representation of the different communities that are affected by global environmental change.**
- | **The community is perhaps our main asset,** we should nurture and make it work for everyone.
- | Note that the training should not be online only but rather also in person at the SciOD facilities.
- | Every successful business or scientific investigation employs a detailed scope of work, time line, coordination of effort, and quality control program.
- | As a newcomer to IODP, having an **online professional development training** and other resources would be very helpful and supportive of my research endeavors. I have an advisor who has done a wonderful job explaining acronyms, sending IODP opportunities, etc., but for those who don't, **an online resource** could make the difference from them staying with IODP research or moving away from it

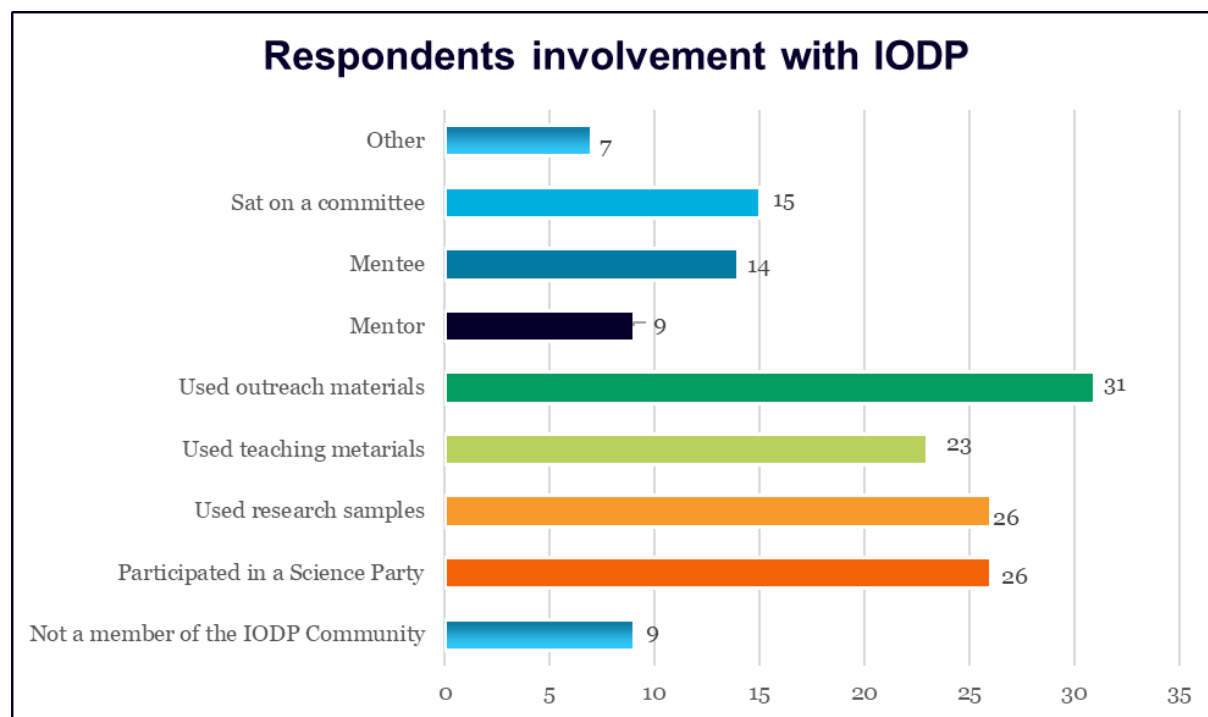
Groups

Of those five action areas, most people were interested in being on a working group to address professional development and training opportunities, with increasing visibility for SciOD second, and JEDIA third.



RESPONDANTS

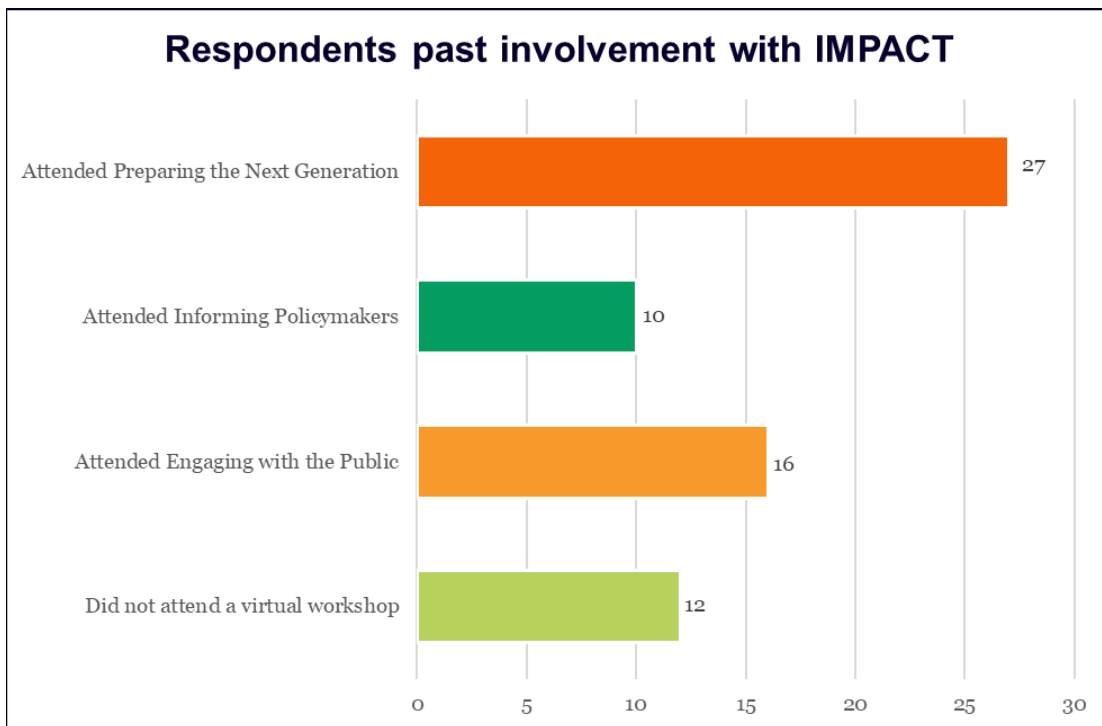
- | 26 have participated in a Science Party for an expedition
- | 26 have used IODP samples in their research
- | 23 have used IODP generated teaching materials
- | 31 have used IODP generated outreach materials
- | 9 have acted as a mentor
- | 14 have been a mentee
- | 15 have sat on IODP committees
- | 7 identified as other, including expedition proponent, past Director of USSSP, sailed on the JR with no science party, School of Rock participants, worked on the MSI-REaCH program, and an editor on the 2050 Science Framework.1 did not respond.



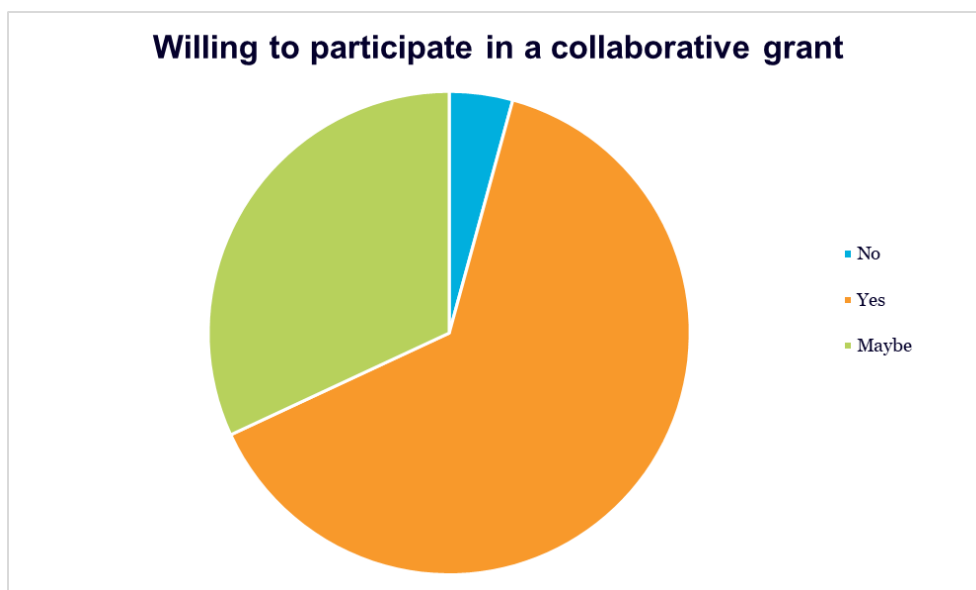
We also asked about their past involvement with the IMPACT Workshop process. Of the 49 responses received to date, 12 identified as having no prior involvement with the IMPACT Workshop series. Of the remaining 37 responses, they were divided as follows (noting that many respondents checked multiple options):

- | 12 have not previously participated in an IMPACT Workshop

- | 16 participated in Engaging with the Public
- | 10 participated in Informing Policymakers
- | 27 participated in Preparing the Next Generation



Ending on a very positive note, of the 47 respondents who answered this question, 44 said they would maybe (15) or definitely (29) join a collaborative grant, with only 2 saying no and 1 not responding.



GOALS

Building on the findings of the 2021 Virtual Workshops, the steering committee established the following goals for the in-person workshop in June 2022:

- | build on and draw from the Summer 2021 virtual IMPACT workshops to move the community forward in its approach to broader impacts for scientific ocean drilling
- | create a blueprint for a science communication strategy that is an integral part of implementation of the [2050 Framework for Scientific Ocean Drilling](#)
- | develop a set of strategies with actionable plans for the next 5 years and beyond, and establish working groups for each of these strategies
- | broaden the diversity of people working on all of the above, including but not limited to racial equity in STEM, community colleges, Historically Black Colleges and Universities (HBCUs), Minority Serving Institutions (MSIs), and especially people and communities who have traditionally not participated in scientific ocean drilling

We framed the workshop around the "Big Ideas" drawn from synthesis of the virtual workshops:

- | We must work to fortify strategies for [communicating relevance of our work](#).
- | We need to become better [science storytellers](#).
- | Building new (and leveraging existing) meaningful [partnerships](#) is fundamental to advancing our work.
- | Developing a coherent and continuing [program](#) for professional development, training and materials development is fundamental to the success of our work.
- | Maximizing the impact of our current digital resources and expanding our [online presence](#) is necessary.

Using these big ideas, workshop participants chose projects and worked in breakout groups to develop the abstracts listed in the Appendices as project ideas to take forward into the next generation of outreach/education/science communication around scientific ocean drilling. Keynote presentations also covered science storytelling, partnership opportunities, NSF funding opportunities, and social media skill-building.

04 Conclusions

As a package, the IMPACT virtual and in-person workshops took the pulse of the scientific ocean drilling community with regard to education, outreach and science communication. Voices from many sectors were heard and integrated. Priorities were identified and articulated. Project ideas and working groups showcased where the community would like its energy to be invested. As plans move forward for scientific ocean drilling overall, this set of projects will help to frame the path forward and provide people, ideas and momentum into the future.



APPENDICES

Participant List for the In Person Workshop

- [Natsue Abe](#), JAMSTEC
- [John Ajayi](#), University of Connecticut
- [Aixa Alemán-Díaz](#)
- [Armon Alex](#), Gulf Reach Institute
- [Daniel Babin](#), Columbia University in the City of New York
- [barbara balestra](#), American University
- [Wendy Bohon](#), IRIS Consortium
- [Raquel Bryant](#), Texas A & M University
- [Mackenzie Carr](#), Lamont-Doherty Earth Observatory
- [Denny Casey](#), Self-employed
- [Shamar Chin](#), University of Iowa
- [Jason Coenen](#), University of Wisconsin-Oshkosh
- [Jennifer Collins](#), Smithsonian National Museum of Natural History
- [Juliet Crowell](#), University of Chicago
- [Elena Cruz](#), Indiana University-Northwest
- [Rachel Culberson Lock](#)
- [Deepa Dwyer](#), Oregon State University
- [Sara ElShafie](#), University of California-Berkeley
- [Savannah Evans](#), College of Charleston
- [Carrie Ferraro](#), Rutgers University-New Brunswick
- [Corey Garza](#), California State University-Monterey Bay
- [Serena Gayles](#)
- [Dave Grant](#), Brookdale Community College
- [Gianna Greger](#), Lafayette College
- [George Hademenos](#), Richardson High School
- [Heather Halstead](#), Reach the World
- [Mohammed Hashim](#), Woods Hole Oceanographic Institution
- [Laura Haynes](#), Vassar College
- [Sidney Hemming](#), Columbia University in the City of New York
- [Christine Hirst Bernhardt](#), University of California-Santa Barbara
- [Cailin Huyck Orr](#), Carleton College
- [Alondra Infante](#)
- [Victor Katz](#), University of the District of Columbia
- [Phyllis Katz](#), Independent
- [Yaiza Kinney](#), Wesleyan University
- [Christopher Kinsley](#), Massachusetts Institute of Technology
- [Karen Knee](#), American University
- [Chris Knowlton](#), University of Rhode Island
- [Kevin Kurtz](#), Children's Author and Educator (Independent)
- [David Lockett](#), Meharry School of Applied Computational Sciences
- [Joseph Mayala Nsingi](#), Montclair State University
- [Tiara Moore](#), [Black in Marine Science](#)
- [Miguel Moravec](#), Vanderbilt University
- [LINDSAY MOSSA](#)

- [Lucien Nana Yobo](#), Texas A & M University
- [Suraida Nanez-James](#), Gulf Reach Inst
- [Suzanne O'Connell](#), Wesleyan University
- [Leonard Pace](#), Schmidt Ocean Institute
- [Lynda Paquette](#), City of Seward, Alaska
- [Maggie Peacock](#), Gulf Reach Institute
- [Leslie Peart](#), St. James Episcopal School
- [Maya Pincus](#), NYCDOE
- [Troy Rasbury](#), SUNY at Stony Brook
- [Heather Renyck](#), Bolivar-Richburg Central School
- [Hailey Riechelson](#), Rutgers University-New Brunswick
- [James Ringlein](#)
- [Edward Robeck](#), American Geosciences Institute
- [Rebecca Robinson](#), University of Rhode Island
- [Jasmine Sarabia](#), Gulf Reach
- [Divya Saxena](#), Texas A & M University
- [Alhasan Sharbaf](#)
- [Brian Starks](#), BCS and Associates, Inc.
- [Rosalynn Sylvan](#), University of Southern California
- [David Thesenga](#), Alexander Dawson School
- [Emily Tibbett](#), University of Southern California
- [Chloe Todd](#), University of Southampton
- [Courtney Wagner](#), Smithsonian Institution
- [Karen Romano Young](#), none
- [Sarah "Sally" Zellers](#), University of Central Missouri

Leaders

- [Stefanie Brachfeld](#), Montclair State University
- [Carl Brenner](#), Lamont-Doherty Earth Observatory
- [Sharon Cooper](#), Columbia University in the City of New York
- [Carol Cotterill](#), USSSP
- [Sean Fox](#), Carleton College
- [Laura Guertin](#), Penn State Brandywine
- [Don Haas](#), Paleontological Research Institution
- [Kira Homola](#), University of Rhode Island
- [Brittany Hupp](#)
- [Adriane Lam](#), SUNY at Binghamton
- [Jon Lewis](#), Indiana University of Pennsylvania-Main Campus
- [Carol Ormand Ph.D.](#), Carleton College
- [James Spencer](#), Columbia University in the City of New York
- [Kristen St. John](#), James Madison University
- [Lisa White](#), University of California-Berkeley
- [Randi Wold-Brennon](#), Hawaii Academy of Arts & Science/Texas Tech University

Project Descriptions

Project Title	Scientific Ocean Drilling Course-Based Undergraduate Research Experiences (SciOD CUREs)
Participants	Kristen St John (Project Lead, James Madison University), Barbara Balestra (American University), Jason Coenen (University of Wisconsin-Oshkosh), Sidney Hemming (Columbia University in the City of New York), Miguel Moravec (Vanderbilt University), and Gianna Greger (Lafayette College).
<p>The proposed project 'SciOD CUREs' focuses on undergraduate teaching and learning in a workforce development context. There are two primary goals: (1) to use course-based undergraduate research (CUREs) as a mechanism to train and diversify the next generation of scientists; and (2) to create models and resources to support and sustain CURE opportunities in SciOD at multiple scales. These goals will be met via a suite of interconnected activities (A-D) by the project team. We will: (A) develop an undergraduate research community of practice in SciOD. We will (B) assemble a collection of existing CURE resources to support educators in the design and development of CUREs. We will (C) share adaptable models and develop 'how to' guides for creating and facilitating CUREs that utilize SciOD legacy data and samples. Activities B and C will constitute a SciOD CUREs Toolbox in the SERC platform. We will (D) organize and facilitate professional development workshops for faculty to design and implement SciOD CUREs for introductory labs and upper level majors' courses. Implementing CUREs supports 2050 Science Framework Enabling Element #1 'Broader Impacts and Outreach' by expanding SciOD training of the next generation of Earth scientists to the undergraduate level. Establishing a community of practice around SciOD CUREs will strengthen and diversify the pipeline of students entering graduate programs and becoming involved in scientific ocean drilling. Seed funds from USAC Novel Projects can support Year 1 activities to demonstrate proof of concept. Results will be used to apply for NSF IUSE funds to support scaled-up activities in Years 2-4.</p>	
Unknown Status	

Project Title	Professional Development for Educators: Student Ambassador Program
Participants	Maggie Peacock, Serena Gayles, Maya Pincus

Though it has been a known problem for many years, equal and diverse representation in the geosciences remains limited. One factor that contributes to this is the lack of exposure and continued support to young people from underserved and marginalized communities. Core Student Educators Association (Core-SEA) is an ambassadorship program that would address this issue by providing access to cutting-edge ocean drilling research for elementary and upper level high school students, while also providing mentorship to those populations of learners. In this proposed plan, high school students would work directly with IODP scientists to learn about their research and participate as research assistants. These high school ambassadors would then partner with schools serving younger populations, to introduce them to novel science, and serve as mentors in support of their burgeoning science education. In the experience of those in the field, disengaged youth benefit more from repeated interactions with science role models than a one-time event. By incentivizing long-term relationships between professional scientists, rising post-secondary students, and youth, Core-SEA will lay the foundation for a dedicated, diverse, next generation of ocean-drilling scientists. This partnership is ideal for IODP scientists, through the assistantship of their high school researchers, and clear demonstration of contribution to the community. High school ambassadors will be offered the opportunity to earn college credits or a competitive stipend. Through early exposure to authentic science, young learners will be more likely to pursue STEM careers.

Unknown Status

Project Title	Voices of Scientific Ocean Drilling: Geospatial Stories from the Sea
Participants	<i>Laura Guertin, Maya Pincus, Maryalice Yakutchik (former JR Onboard Outreach Officers)</i>
<p>This project will document the stories of those that have sailed on <i>JOIDES Resolution</i>, and the scientists that supported the science objectives on land, via recorded audio conversations. The audio interviews will be modeled after existing programs such as StoryCorps, with the edited files placed in a geospatial context through an ArcGIS StoryMap. Accessibility and inclusion will be key features of the project through diverse interviewees that will be allowed to speak in their first language and posted audio transcripts, allowing us to match the 2050 Science Framework Enabling Element for broader impacts and outreach. The program Listenwise will be used as a model for the development of teacher resources to assist with teaching through podcasts and growing student listening skills, including formative and summative assessments for the audio files. The first year of the project will be focused on interviewing participants in the three expeditions of the three Onboard Outreach Officers proposing this project, with the potential to increase and expand the number of interviews on future and prior expeditions. Funding needs are minimal (equipment, dissemination, conference travel) and will be requested as a USSSP Novel Project. The organizing</p>	

team will meet in August 2022 to finalize the project planning and begin collecting interviews this year, during Expedition 397(T), the sampling party for Exp 390/393, the 2022 AGU Fall Meeting, and via Zoom.

ACTIONED and in development

Project Title	Improving scientific ocean drilling outreach through storytelling and community engagement
Participants	Armon Alex, Randi Wold-Brennon, Jennifer Collins, Sara ElShafie, Dave Grant, Don Haas, Suraida Nanez-James, Kevin Kurtz, Leonard Pace, James Ringlein, Rosalynn Sylvan, Emily Tibbett, Chloe Todd, Courtney Wagner
<p>The Geosciences, including scientific ocean drilling, are one of the least diverse STEM fields. The 2050 Science Framework emphasizes broader impacts and outreach as enabling elements to increase diversity in STEM. To support broader interest in scientific ocean drilling, it is critically important to work together with traditionally underrepresented groups across the country in addressing issues around diversity. It is also necessary to create outreach materials that reflect the values and interests of underrepresented communities. We propose to host regional workshops targeting four distinct geographic regions, both rural and urban, across the U.S. (West Coast/Hawaii/Alaska, Midwest, Southern, Northern). During the workshops, participants will work together with members of the scientific ocean drilling community to explore the intersection of storytelling, science, culture, and JEDIA in connection to scientific ocean drilling. Ultimately these workshops will create guidelines on how to generate community-focused outreach material, develop skills in crafting IODP stories that are relevant to diverse audiences, build authentic and lasting partnerships with local communities, identify gaps in current IODP outreach, and identify new outreach material to be developed that is relevant to the values and important issues specific to various communities. The focus will be to create guidelines on how to foster partnerships with communities to ensure that outreach efforts and materials are relevant to different cultures and value systems. To generate funding for this project, we will submit the proposal as a USSP workshop proposal. We will apply for additional funding through the Schmidt Ocean Institute for stipends to alleviate any financial burden participating might incur, therefore encouraging broader participation from underrepresented groups.</p>	
Unknown Status	

Project Title	SciOD Ambassadors with Live YouTube Q&A Series
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Participants	Kira Homola, khomola@uri.edu , Mayala Nsingi, mayalansingm1@montclair.edu , Christopher Knowlton, cknowlton@uri.edu
<p>The available records of the Scientific Ocean Drilling (SciOD) activities in the archive have been identified as viable sources of information to be put in good use and made accessible to the public (non-scientists) and SciOD community (scientists) through a series of marketing campaigns in the form of community outreach activities identified during the DC workshop. These activities will evolve around an annual ambassadorship program with live YouTube Question and Answer sessions hosted digitally at the identified community of interest such as university, community college, public library, high schools, town hall, etc. Moreover, during the IMPACT workshop, participants emphasized the importance of including various background voices that represent the diverse SciOD community. As such, the selection of ambassadors to address the identified community outreach activities should take into consideration the background of the community to be addressed during the activity. The IODP community is made of wonderful volunteer scientists committed daily in the upliftment, support, and development of their community through their scientific engagement whether within the academic or non-academic sector. This ambassador program would be funded annually, with support for the live YouTube sessions, production of a short highlight reel from each, a stipend for each ambassador, and staff to manage the program logistics.</p>	
Unknown Status	

Project Title	Maximizing Access to SciOD Digital Resources Workshop
Participants	Kira Homola, khomola@uri.edu , Mayala Nsingi, mayalansingm1@montclair.edu , Divya Saxena, divya2490@tamu.edu , Christopher Knowlton, cknowlton@uri.edu , Kristen St John, stjohnke@jmu.edu , David Lockett, dlockett@mmc.edu , Alhasan Sharbaf, alhasan.sharbaf@gmail.com
<p>The Scientific Ocean Drilling (SciOD) community produces and maintains a variety of digital resources for educators, scientists, and the general public. This includes multimedia produced in real-time from current SciOD collaborations alongside a wealth of legacy information that has been collected for over 50 years of research, education, and outreach. We propose a USSSP workshop to evaluate the existing distribution of SciOD digital resources, who they target, how accessible they are to that audience, and what interfaces and platforms would maximize access to each.</p> <p>Pre-workshop surveys of the SciOD community, our target audiences, and digital design specialists will be used along with a comprehensive search of similar databases and websites to inform an in-person workshop that would occur in Summer or Fall of 2023. During the in-person workshop, survey results would be used to identify key resource topics, their audience, and the appropriate platform to interface with that audience. An organizational structure and timeline will be produced for each resource topic, including what funds, staff, or external support will be needed to</p>	

implement and maintain the planned resource. We will partner with SERC to support the activities of the workshop, including pre-workshop planning, community surveys, online information sharing, and in-person workshop logistics. Workshop participants would include people from all parts of the SciOD drilling community (shipboard scientists, scientists & students using ODP data/samples), people who would use the website and digital resources (educators, university non-IODP affiliated, students), and experts in website design, digital cataloging, user interfaces, etc. To support this workshop, we (named above) will submit a workshop proposal to USSSP by Dec 1, 2022.

PARTIALLY ACTIONED. USSSP have hired a digital communications officer

Project Title	Climate's of Earth's Past Scientists and Artists in Residence Fellowship
Participants	Daniel Babin, Carol Cotterill, Savannah Evans and Karen Romano Young
Enhance dissemination, accessibility, and emotional impact of paleoclimate research and methods. Building on Antarctic Artists and Writers Collaborative/Antarctic Artists and Writers Program (NSF), Sant Ocean Hall Art Exhibits, Polar TREC (educators in the field with scientists, model for application process), Corps of Exploration	
Unknown Status	

Project Title	Social Science Research for Ocean Justice
Participants	Brian Chad Starks, Lisa White, Jon Lewis, Mackenzie Carr, Elena Cruz, Raquel Bryant
<ul style="list-style-type: none"> • strive to advance participation of traditionally underrepresented groups and promote a more diverse group of students and researchers to become future leaders in the scientific community; vigorously expand on our efforts to broaden the representation and participation in all aspects of the scientific ocean drilling endeavor. build strong, mutually beneficial collaborations with other fields, such as engineering, astrobiology, and space sciences. • To serve as a central repository for resources and research to address climate and ocean justice 	
Unknown Status	

Project Title	Building A Formal Network and 2YC-4YC-R1 Partnerships for SciOD REUs:
Participants	Hailey Riechelson, Laura Haynes, Troy Rasbury, Lucien Nana Yobo, Adriane Lam
4YC-2YC partnerships to get 2YC students involved in SciOD research • Two-summer REU that is bridged over the spring and fall semesters between • Summers include sampling at GCR, conducting research, synthesizing data • Professional development during the year • In person and remote component	
Unknown Status	

Project Title	How to Create Science Stories Resources
Participants	Sara ElShafie and Kevin Kurtz
Unknown Status	

Project Title	JR Museum
Participants	Sharon Cooper, Leslie Peart, George Hademenos, Denny Casey Elena Cruz, Savannah Evans & Carrie Ferraro
<ul style="list-style-type: none"> • To repurpose the JR as a floating museum. • A broader mission to be more inclusive of people and Earth Science topics • Removing barriers, putting diverse learners in authentic STEM learning setting <p>Building on All of our prior educational/outreach experience, In Search of Earth's Secrets, and evaluation data</p>	
Workshop proposal submitted	

Project Title	Training and resource development for future chief scientists
Participants	Stefanie Brachfeld, Sally Zellers, Corey Garza
This project aims to train the next generation of chief scientists and staff scientists who will design and lead future expeditions, empowering them to build productive teams for successful scientific endeavors.	
Unknown Status	

Project Title	Early Career Workshop: Demystifying Scientific Ocean Drilling
Participants	John Ajayi, Shamar Chin, Mohammed Hashim, Brittany Hupp, Christopher Kinsley
<ul style="list-style-type: none"> • Broadening participation through more accessible resources and community building • Provide training on: <ul style="list-style-type: none"> ○ Applying to Sail; Sailing duties/roles; Sailing experiences from other ECRs ○ Applying to Schlanger Fellowship ○ Applying to IODP "Schools" (e.g., School of Rock; GLASS, ECORD-sponsored summer school, Urbino, IsoCamp, PaleoCAMP) ○ Navigating archive material: How to sample, How to determine what samples are available, Resources at the core repository ○ How to Request Samples ○ Demystifying the shore-based scientist role and application process ○ Accessing legacy data and IODP databases ○ Mentoring network • Creating accessible resources available to ECRs on the IODP website • Collaborate with USSSP staff to create a consistently conducted set of webinars regarding the skills addressed in the workshop <p>Building on a previous IODP workshop for early career scientists which reviewed the IODP Cruise Proposal Process. This would be a follow up workshop that focuses on demystifying other involvement opportunities for ECRs in IODP</p>	
Actioned	

Project Title	CORE (Climate and Ocean Researchers and Educators) Partnerships
Participants	Heather Halstead; David Thesenga; Christine Hirst Bernhardt
<ul style="list-style-type: none"> • To maximize the potential of each field researcher to contribute to K-12 learning through deep partnerships with educators • To ensure balanced outreach to elementary school, middle school, high school, and the general public • To develop means for field researchers to partner with K-12 teachers that are both (i) replicable and sustainable for the field researcher and (ii) directed by educators' voices, in order to be immediately useful within the K-12 curriculum • To ensure that resources co-created by researchers and teachers are "evergreen," by building a web-based system that dynamically aggregates past content to new field research • To seek to engage communities that have been historically or systemically excluded from, or underrepresented in, such programs • To increase students' understanding and engagement in the scientific ocean drilling and interest in oceanic-related STEM careers 	
Unknown Status	

Project Title	Building on and creating an exemplary professional development program for K-16 educators
Participants	Victor Katz, Lindsay Mossa, Heather Renyck, Ed Robeck
<ul style="list-style-type: none"> • Review existing materials • Edit existing materials to make them accessible at different levels (age groups, knowledge base, familiarity with the overall science of SciOD) • Provide a roadmap for use of the materials • Develop (and communicate) the rationale for why the teacher would want to engage with SciOD materials • Emphasize the wonderful and inspirational qualities of Sci-OD to engage young people and build enthusiasm • Support teachers as they adapt materials for their own classroom use (e.g., provide key words, databases) 	

- Disseminate materials through various channels and in various ways (e.g., newsletters, conference presentations, webinars, workshops)

ACTIONED. A two year USSSP funded project is now ongoing to review all educational materials with AGI

Project Title	Cereal Science
Participants	Phyllis Katz, Lynda Paquette, Carol Cotterill and Karen Romano Young
To recognize science in everyday activities and see yourself doing science. Making science relatable to families. To recognize and appreciate the culture within which science has been developed or is being done within the home / everyday life. Building on examples like Trader Joes and dairy consortiums, and localized examples like Milk Cartons.	
Not Actioned Yet	

Project Title	Science In Our Lives – Family Photo Stories
Participants	Phyllis Katz, Lynda Paquette
Families seeing themselves doing science in their cultures. Developing scientific identity and literacy. Developing an awareness of ocean science and its effects on their lives. What does a child geoscientist look like? Building on PhotoVoice project that has been used in medical context; anthropology use of photographs for cultural descriptions.	
Not Actioned Yet	

