

The PIER Review

Welcome to the December 2019 issue of the PIER Review, the monthly [GOA-ON Pier2Peer](#) newsletter! This edition showcases accomplishments of the Pier2Peer members, provides updates for our members, and shares funding, job opportunities and recently published open-access publications. Please send ideas and feedback for future Pier Review editions to Alicia Cheripka (alicia.cheripka@noaa.gov)

P2P FEATURE

Measuring Ocean Acidification in Panama

This month's story was written by Steve Paton, Director of the Office of Bioinformatics at the Smithsonian Tropical Research Institute and a recent GOA-ON kit recipient (Text edited by GOA-ON).



Workshop participants learning how to take water samples. Photo Credit: Steve Paton

“In a world destined for climate change, if you aren’t monitoring it, you won’t know the train is coming until it hits you...”

As the director of the Smithsonian Tropical Research Institute’s (STRI) Physical Monitoring Program, it is my responsibility to provide STRI’s staff scientists, as well as thousands of visiting researchers and students, with the environmental monitoring data that they need in order to carry out their research. For marine researchers, this means that I need to be able to characterize the oceanographic chemistry of Panama’s coastal waters. Among the many variables that we monitor, ocean acidity stands out for its importance; not only for its immediate importance to a wide range of biological systems, but also for how it is expected to be impacted by global climate change.

Before the training provided by The Ocean Foundation, we knew little about measuring ocean acidification. Like most, we believed that with a good sensor measuring pH, we had the issue covered. Fortunately, the training that we received allowed us to understand that pH alone is not enough, nor was the accuracy that we were measuring pH good enough. We were originally scheduled to participate in the training session offered in Colombia in January 2019. Unfortunately, events made it impossible to attend. We are grateful that The Ocean Foundation was able to organize a special training session just for us in Panama. Not only did this allow my program to receive the training that we needed, but also allowed additional students, technicians, and researchers the opportunity to attend.

The first day of the 5-day course provided the necessary theoretical background in ocean acidification chemistry. The second day introduced us to the equipment and methodologies. The final three days of the course were designed specifically to provide the members of my Physical Monitoring Program intense, hands-on experience with every single detail covered from calibration, sampling, measurements in the field and in the laboratory, as well as data management. We were given the opportunity to repeat the most complicated and critical steps of the sampling and measurements multiple times until we were confident that we could carry everything out by ourselves.



Workshop participants discussing ocean acidification monitoring in Panama. Photo Credit: Steve Paton

What surprised me most about the training was the degree of our ignorance about monitoring ocean acidification. There was much that we didn't even know that we didn't know. Hopefully, we know enough to be able to measure the phenomenon correctly. We also now know where we can find sources of information and individuals who can help us make sure that we are doing things properly and to make improvements in the future.

Finally, it is also difficult to sufficiently express our gratitude to The Ocean Foundation and the training organizers and the trainers themselves. The course was well organized and executed. The organizers and trainers were knowledgeable and very friendly. Every attempt was made to adjust the content and organization of the training to suit our particular needs.

It is impossible to overstate the importance of the donation of the equipment and the training provided by The Ocean Foundation. STRI is the only organization in Panama that carries out high quality, long-term ocean chemistry monitoring. Until now, ocean acidification monitoring had only been carried out at one location in the Atlantic Ocean. We are now able to carry out the same monitoring at multiple locations in both the Atlantic and Pacific Oceans of Panama. This will be of critical importance to both the scientific community, as well as the nation of Panama.”

- Steve Paton

To learn more about The Ocean Foundation's Ocean Acidification Initiative (IOAI), visit their [IOAI Initiative Page](#).

Do you have an exciting accomplishment or experience with the Pier2Peer program you would like to share? Send it to Alicia Cheripka (alicia.cheripka@noaa.gov) and you could be featured!

BECOME A Pier2Peer RECRUITER

We are recruiting senior and experienced OA observing experts to serve as mentors. If you know someone who would be a good mentor, direct them to the [Pier2Peer website](#) or put them in contact with Alicia Cheripka (alicia.cheripka@noaa.gov).

If you are attending a meeting or event, or are interested in sharing a few slides on the program and disseminating sign-up information, please email Alicia and we will send you communication materials and sign-up sheets for your upcoming event.

JOIN THE OA INFO EXCHANGE

The OA Information Exchange (OAIE) is a place to swap ideas, share resources, and interact with people in a variety of disciplines across many regions. This includes your mentor or mentee!

Members can:

- post updates and comments with questions, answers or announcements
- share papers, media files, presentations and links
- add events and host webinars
- join teams based on regions and topics of interest
- meet new people from a variety of fields

Scientists, citizen scientists, educators, NGO and government employees, resource managers, fishers, aquaculturists, concerned citizens, and others are all welcome to take part in the OA Information Exchange community! You can join [here](#).

Join the Interdisciplinary Marine Early Career Network (IMECaN)

IMECaN aims to:

- Provide a networking platform for early career marine researchers to develop collaborations;
- Provide training and development in areas not traditionally provided through formal education and training programmes; and
- Provide leadership opportunities for ECR marine researchers, particularly from developing nations.
- IMECaN was officially launched at the IMBeR Future Oceans2 Open Science Conference in Brest, France on 16 June 2019

IMECaN activities:

Before officially launched, members of the newly formed IMECaN Organising Committee undertook two very successful early career events.

- In June 2018, a workshop was convened in Losinj, Croatia, to teach EU-based ECRs how to work efficiently at the Science-Policy-Society interface. Thirty students and early career researchers participated in the workshop.
- The IMBeR ClimEco6 summer school was held in Yogyakarta, Indonesia and brought together 50 transdisciplinary ECRs to consider Transdisciplinary Approaches towards Sustainable Oceans.

Interdisciplinary Marine Early Career Network at COP25: Meet other IMECaN members who are attending COP25 in Madrid. Fill in your email ([here](#)) and find others who are there and arrange to meet!

Plans are now underway for the ClimEco7 summer school that will be held in Mindelo, Cabo Verde in June 2020.

Join the IMCaN [HERE](#)

NEWS

NEW YEARLY PIER2PEER REPORTS

In an effort to encourage communication and engagement between mentors and mentees, the Pier2Peer program will be starting a mandatory annual report. Mentor/mentee pairs should work together to give a short report on activities to date and plans for the coming year. These reports should include:

- Brief overview of activities over the past year (January, 2019-February 2020) in which you and your mentor/mentee have been involved. (<500 words)
- Plans for the coming year (<400 words)
- Commitment to check in (weekly, biweekly, monthly)
- Were you able to raise additional funds to support your work together? If so, where?
- Any feedback for us?

The deadline for this report is **February 1st, 2020**. Reports should be sent to alicia.cheripka@noaa.gov no later than February 1st 2020. Any pairs that do not turn in a report annually will be removed from the program.

OA-ICC bibliographic database

The OA-ICC bibliographic database currently contains more than 5,800 references related to ocean acidification, and includes citations, abstracts and assigned keywords. In addition to being available in [Mendeley](#), this bibliographic database is now freely available on the platform [Zotero](#).

In order to access this database, go to the Zotero homepage and create a free account. Click on the Groups tab, search for the group “OA-ICC”, and join this group. For more information on how to access the database and its functions, please see the “[User instructions](#)”.

UPCOMING EVENTS and CONFERENCES

[5th International Symposium on the Ocean in a High-CO2 World \(Lima, Peru\)](#)

The 5th Symposium on the Ocean in a High-CO2 World will take place in **Lima, Peru from 7-10 September 2020**. The Symposium is the place to share cutting-edge science in a rapidly developing frontier of research dealing with the science of ocean acidification and related stressors. The Symposium will feature keynote talks by some of the leading experts in the field, as well as special events on ocean acidification and aquaculture, carbonate chemistry and the Latin American Ocean Acidification Network (LAOCA). As with past symposia in this series, we anticipate GOA-ON to play an important role in presenting advancements in ocean acidification research.

For more information on the Symposium themes, abstract submissions and meeting details, please visit the Symposium website at <http://www.highco2-lima.org>.

Key dates:

6 March 2020, abstract submission deadline

15 April 2020, abstract and travel support applicants notified

5 June 2020, early registration closes

21 August 2020, registration closes

7 September 2020, on-site registration

[2019 GOA-ON North American Hub Meeting](#) -The priorities for the GOA-ON North American Hub are to help support the development of synthesis products, facilitate data exchanges, support the observing system via training, develop uniform quality control procedures, and develop OA messages for policy makers and the general public. The hub will be having their annual in person meeting in Huatulco, Oaxaca, México, **December 16-18**.

[CHANGE: The Climate Change Conference \(COP25\) in Madrid, Spain](#) - This is the 25th Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC) and this year the meeting is taking place from **2-13 Dec 2019** in Madrid, Spain. The conference, referred to as the “Blue COP”, will focus on highlighting the response to climate change, including a need to consider how the ocean mitigates climate change and how marine ecosystems are in turn impacted by ocean acidification and other stressors such as warming and deoxygenation. The pre-session period will run from **26 November-1 December 2019**.

[American Geophysical Union Fall Meeting](#)

9-13 December 2019, San Francisco, California

As AGU marks its Centennial in 2019, we return to San Francisco, the home of the AGU Fall Meeting for more than 40 years. Join our diverse community at the newly renovated Moscone Center as we collaborate across borders and boundaries to explore and develop our research.

Don't miss this once-in-a-lifetime opportunity to participate in Centennial presentations and special events that will bring to life the past, present and the future of our science.

Today we stand at the intersection of history and our future. Fall Meeting 2019 will prepare you for what's ahead: rapid developments in our science, new approaches to observing our Earth and beyond, the introduction of new data streams, growing demand for accessible science, the expansion of convergent science, and more. AGU will celebrate our past and inspire the future by bringing together the people, the imagination, and the science that will ignite our next hundred years to make our planet safer, cleaner, and more sustainable.

This year's AGU Fall Meeting will include a session entitled "Marine-Based Management of Atmospheric Carbon Dioxide and Ocean Acidification", which will include presentations on methods of restoring, enhancing, or augmenting naturally-occurring marine processes for regulating oceanic and atmospheric CO₂ and ocean acidity levels. More information is available [here](#).

[Ocean Sciences Meeting, San Diego, CA](#)

16-21 February 2020

The Ocean Sciences Meeting (OSM) is the flagship conference for the ocean sciences and the larger ocean-connected community. As we approach the UN Decade of Ocean Science for Sustainable Development, beginning in 2021, it is increasingly important to gather as a scientific community to raise awareness of the truly global dimension of the ocean, address environmental challenges, and set forth on a path towards a resilient planet. The Ocean Sciences Meeting 2020 is co-sponsored by AGU, the Association for the Sciences of Limnology and Oceanography (ASLO), and The Oceanography Society (TOS). Through the combined power of these three organizations, along with the broader conservation-focused community, this meeting provides attendees the opportunity to bridge disciplines, connect communities, and make lasting partnerships.

The Ocean Sciences Meeting will include nine sessions related to the theme titled "Ocean Change: Acidification and Hypoxia". These sessions will focus on human impacts, interactions of multiple stressors, modeling, mitigation techniques, and other relevant topics. For more information on these sessions, visit [here](#). Abstract submissions will open 10 July 2019 and close **11 September 2019, 11:59 PM EDT**.

[International Indian Ocean Science Conference \(IIOOSC\)-2020](#)

March 16-20, 2020

The International Indian Ocean Science Conference 2020 (IIOOSC-2020) sponsored by Ministry of Earth Sciences (MoES), Govt. of India, will be held during 16-20 March, 2020 at Goa India co-hosted by National Institute of Oceanography (NIO) Goa, National Centre for Polar Ocean Research (NCPOR) Goa, Goa University and Indian National Centre for Ocean Information Services (INCOIS) Hyderabad, India. The conference aims at assessing the progress and scientific knowledge gained during the last 4 years of IIOE-2 (during 2016-2020). It is also an opportunity for scientists working on different facets of the Indian Ocean to present their ideas and discuss

the outstanding issues, identify the knowledge gaps and plan a way forward to address such issues.

Scientists and colleagues who are interested in the Indian Ocean may kindly take note of this and freeze their dates for the conference.

Venue: CSIR-National Institute of Oceanography (NIO) – Goa, India

Website: <https://iiosc2020.incois.gov.in/>

More information: [PDF](#)

[A Changing Arctic Conference](#)

June 2-5 2020

Clarion Hotel The Edge, Tromsø, Norway

Robust evidence now exists for anthropogenically-forced shifts in the Earth's environment. Observations in the Arctic reveal dramatic reductions in the extent and thickness of the sea ice, rising atmospheric temperatures, widespread permafrost degradation and ocean acidification. These changes bring with them implications for biology, ecosystem services and society in general.

Full understanding of current and projected Arctic environmental change is becoming an imperative in order to minimize and manage corresponding impacts. This conference aims to provide a forum for the three main themes of:

Land - incorporating ecological impacts, permafrost, and landscape evolution

Ocean (coastal and open) - incorporating physical changes, ocean acidification, and ecological impacts

The Future — covering social aspects and including mitigation, adaptation, exploration, and management

Abstract submission is now open

FUNDING and JOB OPPORTUNITIES

The Ocean Foundation Pier2Peer Scholarships

Organization: The Ocean Foundation

Description: Small grant program providing funds to Pier2Peer matches to collaborate on a project, conduct training visits, collect data for GOA-ON submission, etc.

Requirements: Applicants must be in an active Pier2Peer partnership and applying to use funds to support this collaboration.

Amount: USD 5,000

Application Deadline: Current quarter deadline: 31st January 2020; Applications are accepted on a continuing basis; submit to Alicia Cheripka (alicia.cheripka@noaa.gov) and Alexis Valauri-Orton (avalauriorton@oceanfdn.org).

POGO Shipboard Fellows

Organization: The Partnership for Observation of the Global Ocean (POGO)

Description: POGO offers a number of shipboard fellowship opportunities on ocean research vessels. Normally, specific calls for fellows working in certain sub-disciplines are issued six

months before a cruise begins. However, POGO also fills available berths with qualified applicants on shorter notice. They have issued an open call for early career scientists, technicians, postgraduate students, and post-doctoral fellows involved in oceanographic work at centers in developing countries and countries with economies in transition. Qualified applicants will be contacted if an appropriate shipboard fellowship becomes available.

Requirements: Applicants must be involved in oceanographic work in a developing country or a country with an economy in transition. They must provide a fellowship proposal, intentions to build capacity for ocean observing, and a summary CV.

Amount: Round-trip ticket from home institute to the host institution; up to two months' stay at home institution to train prior to cruise; accommodation at ship port; ship messing fee; seafaring medical and sea survival course.

Application Deadline: Open call with no stated closure.

[Application Details](#)

Western Indian Ocean Marine Science Association Marine Research Grant Programme

Organization: Western Indian Ocean Marine Science Association (WIOMSA)

With support from the Swedish Government and WIOMSA, the Marine Research Grant (MARG) Programme seeks to enhance capacity to conduct research and increase our understanding on various aspects of marine sciences, and offer opportunities for researchers from the WIO to present their results in different regional and international fora. In addition provides opportunities for targeting wider audiences and opportunities to learn special skills.

The MARG Programme covers all subject areas of marine science and technology. MARG is a competitive grant system managed by a special Committee that selects proposals for research in those areas that are designated as being high priority within the development plans of the WIO member states. The funds can be used at the discretion of the grantee to enable the proposed schedule of work to be carried out, which must take place within 1 year of the award being made. The grants are available for researchers within WIO institutions.

MARG-I: Intended to provide opportunities for emerging research scientists including MSc and PhD students wishing to turn their ideas into real research projects by carrying out well-defined research activities in their countries/institutions. MARG-I Research Grants are awarded for a duration of 1 year. The maximum amount offered is US\$ 10,000 per year. Proposals for MARG I Grants are due **14 February 2020**.

MARG-II: Intended to provide opportunities to individual research scientists to share their work, or gain technical experience by working in a specific laboratory. MARG II grants are also available for data analysis and manuscript write-up within the WIO region or where necessary, outside the region. The maximum duration of MARG-II is 3 months, and the maximum amount offered is US\$ 6,000. Proposals for MARG II Grants are reviewed continuously through the year as long as funds are available.

MARG-III: Intended to provide opportunities for individual researchers to travel to attend scientific meetings and conferences for the purpose of presenting their work and learning from others. The maximum amount offered is US\$ 3,000. Proposals for MARG III Grants are reviewed continuously through the year subject to availability of funds. MARG III grants are provided for the purchase of return tickets, accommodation or daily subsistence allowance.

For detailed instructions for applying for these grants, download the call for proposals and to apply visit <http://proposals.wiomsa.org>

For more information contact the WIOMSA secretariat: secretary@wiomsa.org

EMBO Short-Term Travel Fellowships

Organization: European Molecular Biology Organization

Description: The fellowship funds research exchanges of up to three months between laboratories in [eligible member countries and cooperation partners](#).

Requirements: Applicants must be from one of the member or cooperation countries and traveling to a lab in another member or cooperation country. Research must be related to life sciences. The travel must be associated with a larger project and not just limited to training in a technique, though it can include that type of training.

Amount: Travel and living costs of the traveling fellow

Application Deadline: Three months before proposed starting date of travel

[Application Details](#)

PhD position in ocean biogeochemical modeling and data analyses

Application Deadline: **15 December 2019**

The Environmental Physics Group is a vibrant interdisciplinary team of researchers studying climate change with a focus on the interaction between the Earth's biogeochemical cycles and its climate system. An aspect of growing concern is the possibility that Earth's climate system might reach or even cross critical thresholds. To study such thresholds and tipping points in the ocean, we are offering one PhD position in ocean biogeochemical modeling and data analyses within the framework of the COMFORT project funded by European Commission (<https://comfort.w.uib.no>).

The PhD student will be supervised jointly by Prof. Nicolas Gruber, Dr. Meike Vogt and Dr. Matthias Münnich. The Ph.D. candidate is expected to collaborate closely with the "Extremes" team of the Environmental Physics Group (3 Ph.D. and 1 postdoc) and to take advantage of the many networking opportunities within the COMFORT project. The starting date of this position is early 2020. Funding is guaranteed for four years.

[Apply Here](#)

PhD opportunity: physiological and evolutionary responses of marine copepods to Arctic climate change

Application Deadline: **15 December 2019**

The Norwegian Polar Institute (NPI) in Tromsø, Norway invites applications for a three-year PhD student fellowship investigating the physiological and evolutionary responses of marine organisms to climate change and ocean acidification in the Arctic. The position is linked to NPI's ongoing research on the effects of ocean acidification on marine zooplankton and will be a key component of the larger project "EvoCal, Arctic Marine Evolution: using local adaptation to infer future evolutionary responses of Calanus copepods to a changing environment", which has several Norwegian and foreign collaborators. Climate change and ocean acidification are presenting marine organisms with significant physiological challenges. Arctic regions are expected to undergo the fastest changes with regards to warming and acidification. The degree to which evolutionary processes can help marine organisms survive these changes in the environment is an important and timely focus of research.

[Apply Here](#)

Ph.D. position in ocean acidification, Corpus Christi, Texas

Application Deadline: **11 December 2019**

Ph.D. graduate assistantship is available to study ocean acidification in the northwestern Gulf of Mexico at Texas A&M University-Corpus Christi. This position is supported by a project funded by the NOAA's Ocean Acidification Program. Anticipated tasks include participating in ocean going cruises for shipboard sample collection, in-situ sensor deployment and retrieval, ship- and lab-based sample analysis and data interpretation/modeling, and accomplishing a hypothesis-driven dissertation. Because of the collaborative nature of this project, the student will have ample opportunities to interact with scientists from NOAA's Atlantic Oceanographic and Meteorological Laboratory, Texas A&M University, Harte Research Institute for Gulf of Mexico Studies, and Gulf of Mexico Coastal Ocean Observing System. The student will primarily work with Dr. Xinping Hu (Carbon Cycle Lab) and will enroll in the Coastal and Marine System Science (CMSS) Graduate Program

[Apply Here](#)

Jobs Lists:

[The Global Marine Community Newsletter & Jobs List](#)

[Ocean Opportunities](#)

[Josh's Water Jobs List](#)

[International Ocean Carbon Coordination Project Jobs](#)

[OA-ICC Job News Stream](#)

Links to new OPEN ACCESS ARTICLES on OA

Cohen-Rengifo, M., Agüera, A., Bouma, T., M'Zoudi, S., Flammang, P., & Dubois, P. (2019). [Ocean warming and acidification alter the behavioral response to flow of the sea urchin *Paracentrotus lividus*](#). *Ecology and Evolution*.

Dee, S. G., Torres, M. A., Martindale, R. C., Weiss, A., & DeLong, K. L. (2019). [The future of reef ecosystems in the Gulf of Mexico: insights from coupled climate model simulations and ancient hot-house reefs](#). *Frontiers in Marine Science*.

Henehan, M. J., Ridgwell, A., Thomas, E., Zhang, S., Alegret, L., Schmidt, D. N., ... & Huber, B. T. (2019). [Rapid ocean acidification and protracted Earth system recovery followed the end-Cretaceous Chicxulub impact](#). *Proceedings of the National Academy of Sciences*, 116(45), 22500-22504.

Lymbery, R. A., Kennington, W. J., Cornwall, C. E., & Evans, J. P. (2019). [Ocean acidification during prefertilization chemical communication affects sperm success](#). *Ecology and Evolution*.

Reith, F., Koeve, W., Keller, D. P., Getzlaff, J., & Oschlies, A. (2019). [Meeting climate targets by direct CO2 injections: What price would the ocean have to pay?](#). *Earth System Dynamics Discussions*.

Wall, M., Prada, F., Fietzke, J., Caroselli, E., Dubinsky, Z., Brizi, L., ... & Falini, G. (2019). [Linking internal carbonate chemistry regulation and calcification in corals growing at a Mediterranean CO₂ vent](#). *Frontiers in Marine Science*.

Wisshak, M., Neumann, H., Rüggeberg, A., Büscher, J. V., Linke, P., & Raddatz, J. (2019). [Epibenthos Dynamics and Environmental Fluctuations in Two Contrasting Polar Carbonate Factories \(Mosselbukta and Bjørnøy-Banken, Svalbard\)](#). *Frontiers in Marine Science*, 6(667).