

The PIER Review

Welcome to the June 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 and job opportunities, as well as recently published open-access publications. Please send ideas and feedback for future Pier Review editions to Alicia Cheripka (alicia.cheripka@noaa.gov)

P2P FEATURE



Pictures from various GOA-ON Kit Trainings in Fiji and Mauritius

The IAEA Environment Laboratories in Monaco was a bustling place to be this May and June. The [Ocean Acidification International Coordination Centre \(OA-ICC\)](#) held two trainings, the first of which was a workshop to assess needs and issues faced when undertaking ocean acidification monitoring and research in different regions, and to develop practical resources to

help respond to those needs. The meeting brought together 15 participants from 7 countries, IOC-UNESCO, the IAEA, and The Ocean Foundation. During this meeting, the participants worked on a list of tools useful for [“GOA-ON in a Box”](#) users and those starting ocean acidification research. The plan is to release these resources as a package for the community. [Click here](#) for a list of items in development or planned to be included in this product.



Attendees at the workshop on designing multi-stressor experiments at the IAEA Environment Laboratories in Monaco. (Credit: Francois Oberhaensli, IAEA)

The second event, held 24-28 June at the IAEA Environment Laboratories and hosted by the Ocean Acidification International Coordination Centre (OA-ICC), was a course on best practices for ocean acidification experiments in multi-stressor scenarios. The course taught 16 participants from 16 countries, including many from the Pier2Peer program, how to design and conduct multi-stressor experiments, including through using the Multiple Environmental Driver Design Lab for Experiments ([MEDDLE](#)), produced by the Scientific Committee on Oceanic Research (SCOR) [Working Group 149](#).

MEDDLE provides learning material and experimental design tools to help create accurate and statistically meaningful multistressor experiments. The aim is to provide guidance in supporting best practices for oceanic research. MEDDLE can be used to design and simulate single and multi-driver experiments online, the simulated results of which can then be used to determine whether or not a proposed experiment may help to answer the questions being asked. Some of

the materials available with this product includes a handbook, decision support tools, an experiment simulator, and video tutorials.

Participants were able to use these new tools to plan their own experimental designs and research questions. An interdisciplinary lecture team, including members of the SCOR Working Group 149, led this course: Dr. Christina McGraw (University of Otago, New Zealand), Dr. Sam Dupont (University of Gothenburg, Sweden), Dr. Marcello Vichi (University of Cape Town, South Africa), Dr. Steeve Comeau (Institut de la Mer de Villefranche, France), and Dr. Christian Pansch-Hattich (GEOMAR, Germany).

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, 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. And thanks!

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 (IMCaN)

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:

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

Several other activities are also being discussed, including a workshop on Multi-disciplinary Marine Management, a special issue in *Frontiers in Marine Science*.....

To join the IMECaN, please click [here](#).

NEWS

GOA-ON welcomes a new co-chair, Dr. Jan Newton

The GOA-ON Executive Council is pleased to welcome Dr. Jan Newton as a new co-chair. Dr. Newton is a senior principal oceanographer and associate professor at the University of Washington Applied Physics Laboratory where she is steering numerous ocean acidification and ocean observing projects in the Pacific Northwest, including the Washington Ocean Acidification Center ([WOAC](#)) and the Northwest Association of Networked Ocean Observing Systems ([NANOOS](#)). She has served on the GOA-ON Executive Council for 7 years as one of the network's founding members and has been heavily involved with GOA-ON's activities through organizing international workshops, supporting the website and data portal, mentoring early-career scientists, collaborating with important stakeholders, and helping to lead the North American regional hub. We look forward to utilizing Dr. Newton's leadership and motivation to advance GOA-ON's efforts in the years to come. The GOA-ON community must also thank Dr. Libby Jewett who has been acting as GOA-ON co-chair since the network's inception in 2012. Dr. Jewett has been instrumental in many of GOA-ON's successes throughout the years, including organizing the network's first meeting and implementing the GOA-ON data portal as well as capacity building activities. Although her role as co-chair has come to an end, Dr. Jewett will continue supporting this network as a member of the GOA-ON Executive Council member.

Help share information and collaborate on ocean acidification research!

Would you like to know about on-going and planned ocean acidification research activities? Would you like to promote others to work with you? One of the goals of the Ocean Acidification International Coordination Centre (OA-ICC) is to promote collaborative research projects, such as joint experiments and access to research facilities. To this end, the OA-ICC is looking to compile a list of ongoing and planned research projects on ocean acidification where there is a possibility for other researchers to participate. The list will be shared online to promote information exchange and collaboration.

To contribute to this effort, please send an email including the information below to:

Lina Hansson & Marine Lebrec, OA-ICC Project Office, IAEA Environment laboratories
(oaicc(at)iaea.org)

Information needed:

location

contact (name, institute, email)

brief research focus

potential collaborator focus

start date

end date

web link (if available)

OA-ICC bibliographic database is now available on Zotero!

The OA-ICC bibliographic database currently contains more than 5,630 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

[27th International Union of Geodesy and Geophysics \(IUGG\) General Assembly](#) will be held in Montreal, Canada from **8-18 July 2019**. Section **P08-Coastal Ocean Acidification**, along with various other sessions, are relevant to ocean acidification. This symposium will highlight new research in coastal acidification, including changes in biogeochemistry; complexities associated with other ocean processes (e.g., freshwater mixing; hypoxia; multiple stressors); impacts on ecosystems and economies; and modeling and projection of future OA.

[OceanObs'19](#) is part of a decadal conference series on setting ocean observation priorities to be held on **16-20 September 2019** in Honolulu, Hawaii, U.S.A. The OceanObs'19 conference will celebrate tremendous progress across regional, national, and global ocean observation networks and strengthen user connections to enhance these systems over the coming decade. Strategic working sessions and network functions during the conference will enable oceanographic researchers, technology operators, data experts, early career scientists, policy-makers, and end-users to chart the future of ocean observing.

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

The [SOLAS-IMBER Working Group on Ocean Acidification \(SIOA\)](#) is pleased to announce that the 5th International Symposium on the Ocean in a High-CO₂ World will be held in Lima, Peru, from **7-10 September 2020**. The lead organizers are Drs. Wilmer Carbajal (Pedro Ruiz Gallo National University, Peru) and Michelle Graco (Institute of the Sea of Peru, IMARPE) together with their colleagues, based on their successful bid that was submitted to the SIOA.

The previous symposia in this series were held in Paris in 2004, Monaco in 2008, Monterey in 2012, and Hobart in 2016, each proving to be essential for the international and multidisciplinary community of researchers studying ocean acidification. The same is expected for this 5th symposium, the first to be held in South America. Please save the dates! More detailed information will soon be available from the organizers.

[CERF 25th Biennial Conference](#) will be held from **3-7 November 2019** in Mobile, Alabama USA. The theme of the conference this year is Responsive, Ready, Relevant. Taken from the website: "With this year's conference theme, we endeavor to connect science and society in the collective goals of preserving the coastal and estuarine habitats, resources, and heritage. Through the conference, we will discuss the nature of research agendas that are directed at finding and solving problems, and how to engage stakeholders in that process. Our goal is to balance a natural and social scientific agenda with the food, music, and art emblematic of the Gulf Coast. In keeping with tradition, we hope to create a seriously fun and memorable 25th Biennial CERF Conference." There is an OA session: Ocean acidification in a multiple climate change stressors context: science--based tools for management at the 2019 CERF Biennial Conference. Early Registration deadline: **May 15, 2019**.

[The Santiago Climate Change Conference \(COP25\)](#) - the Blue COP. 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 Santiago, Chile. The meeting 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. The abstract submission deadline is 31 July 2019. 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**.

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 a Pier2Peer partnership and applying to use funds to support this collaboration.

Amount: USD 5,000

Application Deadline: Current quarter deadline: 31 August 2019; Applications are accepted on a continuing basis; submit to Alicia Cheripka (alicia.cheripka@noaa.gov) and Alexis Valauri-Orton (avalauriorton@oceanfdn.org).

Application Details: [Funding Announcement](#)

Job Opportunity: Seawater carbonate chemistry technician- CIMAS

The Cooperative Institute for Marine and Atmospheric Studies (CIMAS) at the University of Miami invites applications for a Research Associate I to work closely with scientists at RSMAS and NOAA's Atlantic Oceanographic and Meteorological Laboratory's Ocean Chemistry and Ecosystem Division (AOML/OCED) on carbonate chemistry analysis associated with the National Coral Reef Monitoring Program that is co-funded by NOAA's Coral Reef Conservation Program and Ocean Acidification Program.

The successful candidate's duties will include, but are not limited to the following: 1) Laboratory analysis and interpretation of carbonate chemistry including pH, total alkalinity, pCO₂, and dissolved inorganic carbon, 2) Data QC and management for carbonate chemistry, environmental data, and coral reef ecological data, and 3) Maintenance and calibration of scientific instruments.

Applicants must possess a bachelor's degree in marine science, chemistry, or a related field from an accredited university and some research experience gained during education/training or in employment in a research position. They must be highly motivated, detail-oriented, organized, and have the ability to adapt to a dynamic lab environment. Strong analytical and laboratory skills are required. Preference will be given to candidates who possess a close familiarity with coral reef ecosystems, carbonate chemistry (analysis and interpretation of data), and ocean acidification. Proficiency with computers is preferred, including MS Excel, MS Access, ArcGIS, and image analysis software packages.

Apply online at: www.miami.edu/careers. Position number is R100032827. Curriculum Vitae, a letter of interest, and the contact information for 3 persons who can provide letters of recommendation are required.

Please contact Ian Enochs (Ian.Enochs@noaa.gov) with any questions.

Postdoc Opportunity: Coral Reef CaCO₃ Budget Modeling- CIMAS

The position is for one year, with the potential for continuation up to three years based on satisfactory performance and availability of funds. The position is within the Acidification, Climate, and Coral Reef Ecosystems Team (ACCRETE, <http://www.coral.noaa.gov/research/accrete.html>), a subunit of the Coral Health and Monitoring Program (CHAMP, <http://www.coral.noaa.gov/>). The successful application will assist with the development of an evaluative, web-based and easily interpretable tool for managers to gauge present day reef accretionary state, forecast future conditions, as well as plug-and-play specific management actions that can alter future states. The goal of the evaluative tool is to allow managers to: 1) determine if their reef(s) are presently eroding or accreting, structurally complex, and if/when they may become erosional in the future with climate change and ocean acidification, and 2) assess the possible efficacy of counteractive measures to maintain reef structure. This research will complement and leverage ongoing ACCRETE projects and personnel. Preference will be given to candidates with an exemplary track record of peer-reviewed publications.

Applicants must possess a Ph.D. in marine science or a related field from an accredited university.

Apply online at: www.miami.edu/careers. Curriculum Vitae, a letter of interest, and the contact information for 2 persons who can provide letters of recommendation are required. For further information contact Derek Manzello (Derek.Manzello@noaa.gov)

Other Postdoc and Research assistant positions are available at CIMAS as well and can be found on the Miami University Careers page.

Postdoctoral Call 2019 for the Millennium Institute of Oceanography (IMO) in Chile (Dr. Cristian A. Vargas & Dr. Peter Von Dassow)

Full-time postdoctoral positions are available starting between September 1st 2019 and January 31st 2020 at the Millennium Institute of Oceanography (IMO) to undertake innovative research and to develop questions in three proposed topics within IMO's larger research lines. Candidates will have to demonstrate experience and motivation to do research in their preferred research line, using observational, experimental and/or modelling approaches. Successful candidates will be expected to develop their research topics in association with two or more of IMO's Associate Researchers, to publish their research as first author in high impact journals, to write and help write grants for external funding, and contribute collaboratively to related research projects.

Proposed Topics and Lead IMO Researchers:

- **Topic 2a:** The impact of oceanographic processes on speciation processes and the ability of local adaptation in eukaryotic phytoplankton. Peter Von Dassow
- **Topic 2b:** Adaptations of phytoplankton in a variable and changing ocean. Cristian A. Vargas & Peter Von Dassow

Applications will be received until 31 July 2019. The appointment will be for a minimum of one year with extensions of up to four years, pending progress. The annual gross salary is

approximately USD 26,000 after taxes and, for foreign candidates, a gross installation fund of app. USD4,200.

Postulation requirements include:

Degree completed before taking up the appointment and received no earlier than January 2014.

Curriculum Vitae, with a minimum of two first-author publications in ISI-ranked journals.

A letter expressing the motivation of the candidate for applying for the position, referring to the research topic and IMO's general research themes.

Names of three scientists with whom the candidate has previously worked or interacted including emails and telephone numbers.

Candidates are strongly encouraged to contact IMO Associate Researchers with whom they are interested in working, prior to submitting their applications (contact info below).

Please send completed application materials to: Ms. Francisca Osses, Secretary, secretaria.imo@imo-chile.cl, Millennium Institute of Oceanography (IMO), University of Concepcion - www.imo-chile.cl P.O. Box 1313, Concepcion 3, Zip Code: 4030000, Chile.

Funded PhD for Pacific Island Nationals

A PhD scholarship is being offered to work with The Secretariat of the Pacific Regional Environment Programme (SPREP) alongside leading coastal and marine scientists at the University of Newcastle to examine ocean acidification, adaptation actions and reef resilience through coral restoration in two Pacific Island nations. The research seeks to build capacity to deal with ocean acidification as part of adaptation and resilience strategies for Pacific communities.

Closing Date: 26 July 2019

- Tuition Fee Scholarship for 4 years, up to AUD \$38,840 per annum
- Living Allowance Stipend for 3.5 years. Currently AUD \$27,596 per annum
- Overseas Student Health Cover (OSHC) if applicable
- Relocation allowance if applicable
- A HDR laptop
- Direct research cost allowance
- Applicants must be a citizen of a Pacific Island nation

<https://www.newcastle.edu.au/research-and-innovation/graduate-research/phd-scholarships/phd-scholarships/understanding-coral-reef-ecosystem-adaptation-to-ocean-acidification-in-the-pacific>

MS Assistantship in Marine Biology (Ocean Acidification) at University of Alaska Fairbanks

Position: Research Assistantship (MS in Marine Biology) at the University of Alaska Fairbanks. One MS student is sought to study the physiological impacts of future ocean change multi-stressors (OA, increased temperature, reduced salinity) on key marine invertebrates in coastal Alaska. Taking an integrative approach, this project includes biochemical, microscopy and

carbonate chemistry analyses with the opportunities for seasonal fieldwork. This position is funded through the National Science Foundation's EPSCoR Program <https://www.alaska.edu/epscor> Coastal Margins research group.

Qualifications: The Kelley lab is seeking a self-motivated, independent, and creative thinker that is excited about pursuing a graduate degree in the study of marine biology in Alaska. Preferably (but not a prerequisite) the successful candidate has experience with the following: Microsoft Office suite, R or Matlab, molecular biology laboratory skills, as well as an understanding of the fundamentals of chemical oceanography as it relates to ocean acidification. Minimum Qualifications: a BS degree in Biology, Environmental Science, Oceanography or a related field. The position starts Fall (Aug) 2019, with the potential to delay until Spring 2020.

Stipend and tuition and fees: This position includes full support in the form of a graduate assistantship, tuition and fee waiver, and health insurance for a minimum of two years.

Application instructions: Please send via email in a single file attachment (include your last name in the file name): a cover letter, a statement of your interest in this graduate position, qualifications and career goals, a CV with the names and contacts for 3 references, copies of transcripts (unofficial are O.K.) and GRE scores and percentiles (not combined) to Amanda Kelley (email: alkelley@alaska.edu). Please put "MS EPSCoR application" in the subject line. Applications will be reviewed as they are received until a candidate has been identified and accepted into the graduate program at UAF.

Dr. Amanda Kelley, Assistant Professor, College of Fisheries and Ocean Sciences
University of Alaska Fairbanks
(907) 474-2474
Kelley Lab webpage: <https://kelleylabatuaf.weebly.com/>
College of Fisheries and Ocean Sciences <https://www.uaf.edu/cfos/>

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 Associated (WIOMSA)

Description: The award is designed to enhance the capacity of scientists in the Western Indian Ocean region to conduct marine research. There are three tiers (MARG I, II, III) that vary in duration and amount. MARG I and II applications are closed.

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.

Requirements: Applicants should be young scientists studying the Western Indian Ocean region

Amount: USD 3,000 (MARG III)

Application Deadline: No deadline for MARG III

[Application Details](#)

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](#)

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 article on OA

- Behbehani, M., Uddin, S., Dupont, S., Sajid, S., Al-Musalam, L., & Al-Ghadban, A. (2019). [Response of Corals *Acropora pharaonis* and *Porites lutea* to Changes in pH and Temperature in the Gulf. *Sustainability*, 11\(11\), 3156.](#)
- Davis, K. L. (2019). [Fifty years of sporadic coral reef calcification estimates at One Tree Island, Great Barrier Reef: Is it enough to imply long term trends?. *Frontiers in Marine Science*, 6, 282.](#)
- Gao, K., Beardall, J., Häder, D. P., Hall-Spencer, J. M., Gao, G., & Hutchins, D. A. (2019). [Effects of ocean acidification on marine photosynthetic organisms under the concurrent influences of warming, UV radiation and deoxygenation. *Frontiers in Marine Science*, 6, 322.](#)
- Moltmann, T., Zhang, H. M., Turton, J. D., Nolan, G., Gouldman, C. C., Griesbauer, L., ... & Burger, E. F. (2019). [A Global Ocean Observing System \(GOOS\), delivered through enhanced collaboration across regions, communities, and new technologies. *Frontiers in Marine Science*, 6, 291.](#)
- Orselli, I., Goyet, C., Kerr, R., de Azevedo, J. L., Araujo, M., Galdino, F., ... & Garcia, C. A. (2019). [The Effect of Agulhas Eddies on Absorption and Transport of Anthropogenic Carbon in the South Atlantic Ocean. *Climate*, 7\(6\), 84.](#)
- Spagnoli, F., Penna, P., Giuliani, G., Masini, L., & Martinotti, V. (2019). The AMERIGO Lander and the Automatic Benthic Chamber (CBA): [Two New Instruments to Measure Benthic Fluxes of Dissolved Chemical Species. *Sensors*, 19\(11\), 2632.](#)
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- Yue, F., Gao, G., Ma, J., Wu, H., Li, X., & Xu, J. (2019). [Future CO₂-induced seawater acidification mediates the physiological performance of a green alga *Ulva linza* in different photoperiods. *PeerJ*, 7, e7048.](#)
- Zebral, Y. D., da Silva Fonseca, J., Marques, J. A., & Bianchini, A. (2019). [Carbonic Anhydrase as a Biomarker of Global and Local Impacts: Insights from Calcifying Animals. *International Journal of Molecular Sciences*, 20\(12\), 3092.](#)