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- NF-POGO Alumni Network for Oceans -

NF-POGO Alumni E-Newsletter – Volume 17, December 2019

Together we are an ocean

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pogo Partnership for Observation of the Global Ocean

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NF-POGO Alumni E-Newsletter – Volume 17, December 2019

This issue:

Cover photo by alumnus Lilian Krug

SoNoAT scholars preparing to deploy an ARGO float on-board the RV POLARSTERN

ERRATUM

The NF-POGO-PML Atlantic Meridional Transect Shipboard training fellowship was onboard the RRS *Discovery* and not on the RRS *James Clark Ross* as stated in the previous issue, NANO News 17 (pag. 8).

The RRS *Discovery* (Credits: National Oceanography Centre website)

From the Editorial Board

Welcome aboard the 17th NANO newsletter!

The sea of knowledge has no end! In this issue, we are going to take you with us as we sail through the Atlantic Ocean on RV POLARSTERN. The South North Atlantic Training Transect (SoNoAT 2019) gave 23 young researchers from different countries the opportunity to gain hands-on experience in collecting and processing environmental data. Another key objective of this training was to discuss hot topics in scientific research, such as climate change and microplastics. During SoNoAT 2019, Professor Peter Lemke, a Nobel laureate who helped put regulations in place to reduce the effects of climate change, was one of the main instructors on RV POLARSTERN. He discussed with the scholars the effect of all these anthropogenic pressures on the future of marine environments. You will also read about all the SoNoAT 2019 scholars' background and their feedback on this training.

A second NF-POGO shipboard training was part of a big project to monitor the changes in the environment of the Northeast Atlantic, the Porcupine Abyssal Plain. Vanessa Fernández Rodríguez from Colombia tells us how this training will shape her future career.

During this semester, the NANO Global Project held webinar lectures and made them available online. You can read more in the NGP update feature.

We also share news on outreach activities engaged in by members: Lilian Krug gave short courses in Observational Oceanography in two institutes in Angola; Priscila Lange gave a public talk about the new NASA mission called PACE (Plankton, Aerosol, Cloud, Ocean Ecosystem); and Frances Camille Rivera engaged with local communities to protect the mangrove habitat in Philippines.

We hope you enjoy the sailing!

Marwa Baloza

Editor-in-chief

POGO Visiting Fellowship for Shipboard Training

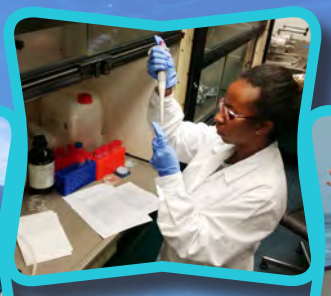

RV POLARSTERN

The South-North Atlantic Training Transect (SoNoAT 2019)

The training began in Punta Arenas, Chile, where the SoNoAT scholars, mentors and postgraduate students of the University of Magallanes were invited to a day-long lecture series on climate change. The take-away message from Nobel Prize winning climatologist, Professor Peter Lemke, was the large role consumerism plays in the amount of carbon being emitted due to the production of new goods, and the necessity for all nations to work together to reduce the current rate of CO_2 emissions. In keeping with the goals of SoNoAT, he also highlighted the need to assist developing countries in building capacity through education and training.

On the 2nd of June, the much anticipated expedition set off from the Falkland Islands, where the scholars and mentors boarded the famous Research Vessel POLARSTERN. For many of them, for whom this was the first time aboard a scientific expedition, the impressive POLARSTERN was indeed a humbling sight. From the Falkland Islands they travelled across the Atlantic, making several 'station' stops to collect environmental data. From the first day the scholars were thrown into an exciting whirlwind of activities starting with safety briefings for being on board. The course schedule for the next four weeks consisted of training in five successive modules: Oceanography, Data Crunching combined with Outreach and Marine Technologies, Climate Change, Microbiology combined with Microplastics, and Remote Sensing. The courses were structured with theoretical lectures, hands-on field training and activities offering exposure to various equipment for ocean and atmosphere monitoring. The scholars were trained in the use and handling of the CTD (Conductivity, Temperature, Depth) Profiler with a rosette carousel for water sampling at various depths, XBTs (Expendable Bathythermographs) for monitoring temperature within the water column, the use of a bucket thrown off the side of the ship as a quick reference sample, introductions to hand-held multi-spectral remote sensing equipment for *in situ* validation of remotely sensed satellite data, microbiological filtering processes, optical sensors for monitoring phytoplankton and water sample processing. In a cycle of mentorship, outreach activities in the form of Q&A Skype sessions with several schools from Brazil, Germany, Ireland, Japan and the United Kingdom offered the chance for scholars to contribute to education, answering some very intelligent questions posed by the young primary school students about the marine world and our expedition. While the scholars came from a wide range of backgrounds, the training provided a strong introduction to critical areas of oceanography and marine science and its linkage to climatic change. On a weekly basis, the scholars were given the opportunity to present what they learnt onboard, as well as to give presentations about themselves, their countries and their work. After 29 days at sea, the training culminated with a graduation ceremony in Bremerhaven, Germany, where the disembarking scholars presented oceanographic and atmospheric findings from the expedition.

What was gained during this month-long expedition, was more than just training. Connections across the globe, friendships and mentorships were fostered. Through discussions on the various challenges being faced in individual environments and countries, participants were able to gain a stronger sense of global community. One message the scholars have taken home after the SoNoAT training is the importance of ensuring and maintaining excellent marine science and ocean observation foundations. Equally, or perhaps even more important, is to participate in the extended network of scientists committed to raising awareness and understanding of climate-related threats to natural ecosystems and, ultimately, to human health and well-being.



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The Scholars

***Alumni profiles available at http://nf-pogo-alumni.org/programs/shipboard-training/floatingschool/sonoat-2019/**

Thodoris Karpouzoglou (Greece)

I am a climate physicist with a master's degree in Climate Physics (Utrecht University, 2019), and a special interest in Oceanography. I am experienced in biogeochemical and hydrological modelling, data analysis (Python, Matlab, R, Linux) and data collection (NF-POGO SoNoAT, 2019). Having a special bond to nature, I am concerned by the consequences of human intervention on the environment. Climate change is a great aspect of the problem. I am especially interested in polar amplification and its effects on global thermohaline circulation which are yet to be experienced. Currently, I am searching for a suitable Ph.D. in Observational Oceanography.

Anjana Aravind (India)

I boarded the POLARSTERN having never had first-hand experience being on the open ocean. Having lived near the coasts all my life, I was curious about the big deep blue but even so, I found myself a little scared at the thought of spending a month cut off from everyone and everything that was familiar. It turned out to be the best experience of my life, and I would do it again in a heartbeat. The knowledge gained, the people met and the experiences we shared were truly exceptional and I have become a better researcher, friend and student because of it. The expedition taught us about the magnitude of the problems that our oceans face, and it showed us exactly how important our role as young scientists is in the protection of this fragile system. What we learned on the ship was truly eye-opening and inspired me to start a marine science outreach program in schools in India. India is a peninsular country and I feel we are certainly not doing enough to create awareness about what surrounds our land. In short, this was a once-in-a-lifetime opportunity that I am proud to have been a part of.

Mohamed Ahmed (Kenya)

Mohamed is from the coastal region of Kenya He holds a master's degree in Marine and Lacustrine Sciences from Vrije Universiteit Brussels (Belgium). For his master's thesis, he focused on optical remote sensing using satellite images for mapping seagrass beds and cover change analysis in a bay in Kenya. Between his Bachelor's and Master's degree, he worked as a research assistant on blue carbon projects (Mikoko Pamoja) at Kenya Marine and Fisheries Research Institute. He has also worked with non-governmental organizations such as Earthwatch and Global Vision International in Kenya and the Western Indian Ocean region on marine conservation and scientific data collection on coral bleaching, carbon stocks in mangroves and seagrass beds.

Currently, Mohamed is working with the United Nations Environment Programme (UNEP) as a national volunteer and research assistant under the coral reef unit. His previous experience had been on tropical coastal ecosystems (mangroves, seagrass beds and coral reefs) and their role in carbon sequestration, ecosystem service provision, and climate change impacts, mitigation and adaptation. However, he has always been fascinated by deep sea research. Therefore, this NF-POGO shipboard training onboard the RV POLARSTERN gave Mohamed a chance to enhance his knowledge on ocean observation techniques, data collection, gain hands-on experience of handling state-of the-art ocean observation research tools under the supervision and guidance of renowned scientists.

Mohamed believes that this shipboard training across the Atlantic was a valuable experience and very successful for him. It motivated him so much that his future intentions are now to pursue a PhD in investigating ocean acidification and rising sea surface temperatures in response to changing climate. With trainings like SoNoAT 2019, he hopes to become a well-trained ocean scientist in the future.

He also believes that knowledge sharing and capacity building, especially to young emerging scientists from developing countries, are of key importance if we are to succeed in tackling global threats such as climate change and pollution that are affecting the world's marine ecosystems.

Vincent Valentin Scholz (Germany)

Vincent's interest is water, as it is the basis for life and plays a crucial role in climate change. He studied Water Science at the University Duisburg-Essen, Germany, to understand chemical and microbial processes in water. During his research project at the Climate Change Cluster in Sydney, it was his first opportunity to correlate changes of small-scale processes in the root zone of seagrass with global warming. Currently, he is a PhD student at Aarhus University, Denmark, where he can follow his ideas about an electric relationship between aquatic plants and electric bacteria, the so-called cable bacteria. The SoNoAT 2019 shipboard training has helped him to understand processes on a global scale and he is now determined to show that micrometre-scale processes mediated by electric bacteria can mitigate climate change.

Emma Kilcoyne (Ireland)

I am a marine science graduate from the National University of Ireland, in Galway. The SoNoAT expedition was an incredible opportunity where I met, learned and forged long lasting relationships with scientists from around the world. Our shared experiences and the outstanding teaching and support from the staff has provided me with the confidence and drive that will undoubtedly be indispensable to further studies and my path towards a research career.

Debra Ramon (Israel)

I am currently a Ph.D. student at the Leon H. Charney School of Marine Sciences at the University of Haifa, Israel. My M.Sc. dissertation focused on investigating the interactions of microplastics and the local fish species found in the waters of the Eastern Mediterranean Sea. Continuing into my Ph.D., I hope to additional investigate these interactions in order to gain further insight about the anthropogenic impacts of the marine environment. Additionally, I am investigating the bioaccumulation of heavy metals in the Israeli trophic system. The SoNoAT 2019 has given me a priceless experience, and I am eternally grateful for the time I was given to spend aboard the RV POLARSTERN learning about our oceans under a changing climate from such a highly accomplished teaching staff and my fellow scholars. Many doors have already been opened through this opportunity, and I am excited to have Professor Peter Croot, one of our mentors of this cruise, advising me in my dissertation.

Sian Seymour (South Africa)

Sian obtained her B.Sc. in Biodiversity and Ecology from the University of Stellenbosch where she looked at how changes in climatic and oceanic variables may have influenced marine species ranges since the Last Glacial Maximum to present. She then completed her M.Sc. in Applied Ocean Sciences from the University of Cape Town. Her master's project was in Operational Oceanography where she used remote sensing data to look at wind forcing in False Bay, South Africa, an area with important conservational, fishing and recreational value. She is currently working as a Marine Biology intern at the Two Oceans Aquarium in Cape Town. She hopes to continue pursuing a career that incorporates aspects from both marine biology and oceanography.

Ximena A Vega (Mexico)

Ximena is a Mexican MSc student in Antarctic Sciences from the University of Magallanes, Chile. Ximena's research is focused on understanding the impacts of glacial meltwater on the physical, optical, and biological properties of the ocean. Last year she participated in one of the overflights to Antarctica with NASA´s Operation IceBridge, and recently she participated in the Antarctic Scientific Expedition #55 (ECA 55), led by the Instituto Antártico Chileno (INACH) within the framework of the a project run by Dr. Gino Casassa and Dr. Carlos Cárdenas. Her current study aims to quantify the organic carbon stored in Antarctic glaciers using in situ measurement and remote sensing to identify its impact on the efficiency of the first phase of the biological carbon pump.

Luciana Shigihara Lima (Brazil)

Luciana is a Hydrology Technician (Federal University of Rio Grande do Sul, 2010), Water Resources Engineer (Federal University of Pelotas, 2016) and MSc. in Remote Sensing (National Institute for Space Research, 2019). During the technical and undergraduate courses, she had the opportunity to work with water quality, sediment transport in rivers, hydraulics and hydrology, with vast experience in fieldwork. During her undergrad, she had a one-year sandwich experience in Spain, studying Environmental Science at the University of Jaen. During this period, she was a collaborator student at the Ecology Laboratory, assisting on zooplankton identification and measurements of water quality in mesocosms and wetlands, and an intern at the Environmental and Water Agency of Andalusia, working with groundwater, and hydraulic and hydrology models. During the Masters, Luciana studied biophysical modelling. Through the hydrodynamical modelling, she downscaled the Tropical Atlantic Ocean using Earth System Model outputs from the 5th Coupled Model Intercomparison Project (CMIP5), using the Regional Ocean Model System (ROMS). She observed the climate changes between the end of the century projections and the present scenario over the Atlantic Ocean. Using these regional results, she simulated egg and larvae release of a specific gender of reef fishes (Sparisoma) over the future scenario, and observed their behavior through a Lagrangian Model to understand the connectivity impacts between Brazilian Marine Protected Areas and its effectiveness in a global warming ocean scenario.

The SoNoAT training opportunity made it possible to feel on the skin the oceanic fieldwork and the oceanic processes studied during the Master, and to learn more from different ranges of knowledge with professors and colleagues from different countries and experiences related to climate change and ocean sciences.

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Lucas de la Maza Fernandez (Chile)

I come from Chile and studied Marine Biology at the Pontificia Universidad Catolica de Chile. I am currently finishing my degree thesis and am in charge of two projects. One aims to explain dissolved oxygen variations in the nearshore off Chile, while the other is implementing a system to track drifters with a drone to estimate connectivity.

The training was an amazing experience and made me to grow both as a scientist and as a person. We got to learn from excellent scientists and experience many cultures, I am really grateful for that.

Yohan Louis (Mauritius)

I am a final year PhD student in the field of marine biology and ecology at the University of Mauritius. My PhD focuses on the resilience of coral reefs to global increase in sea temperature. In particular, my research aims to better understand the different strategies (physiology, genetics, ecology) that coral reefs employ to adapt to climate change, in an attempt to ameliorate the efficiency of conventional reef conservation techniques.

This summer school was a unique experience for me. I wanted to acquire additional skills to become a more complete marine scientist and experience life in the ocean. SoNoAT 2019 exceeded my expectations. We had brilliant teachers from prestigious universities and institutions from around the world who transmitted valuable skills to us. The SoNoAT was not only about science, it also taught us to work and live with other scientists from different cultures and countries. I have made amazing friendships on this expedition. I came back from this experience armed with new skills, as well as with memories that I will cherish forever.

Amabelle Gay Go (Phillipines)

Amabelle is a marine biologist hailing from the southern part of the Philippine archipelago. Paving the way for her early career in marine science, she took a marine biology undergraduate course and gained experience working on various environmental and coastal resources management projects in the Philippines. She obtained her master's degree in marine science at the Marine Science Institute, University of the Philippines – Diliman. For most of her career, she has been working in the academic sector. She has a strong background in seagrass ecology and coastal community interactions, and has relevant technical skills in coastal remote sensing and field methods for shallow-water marine habitats and fauna. Besides ocean-related outdoor activities like scuba diving and snorkeling, she is also fond of hiking and traveling the world. She is an NF-POGO Centre of Excellence in Observational Oceanography alumna 2018 where she acquired intensive training on interdisciplinary oceanography, but participating in SoNoAT2019 has equipped her on research cruise management, technical skills on methods of scientific expedition, and citizen science. The expedition has further led her professional growth and helped enhance her knowledge and understanding of global environmental climate issues and knowledge gaps with the help of ocean observation experts. This has also opened new doors in understanding and developing effective measures in mitigating and adapting to these challenges with the realization of the urgency of our actions in addressing what our community and our environmental need.

Hassan Al-Najjar (Palestine)

Hassan Al-Najjar is a Palestinian PhD candidate at the Institute of Natural Sciences at the Department of Civil Engineering at Sakarya University in Turkey. His major field of interests are marine hydrodynamic modelling, desalination of seawater, and water resources management. The SoNoAT cruise consisted of a lot of modules that enhanced Hassan's ability to understand the oceanographic conditions of marine environments. Moreover, the cruise gave him experience in collecting and measuring oceanographic data. Together, these added valuable knowledge to his career as he is preparing to perform a well-calibrated numerical model for the disposed liquid wastes in the marine environment.

Merrisa Naidoo (South Africa)

My name is directly translated as 'ruler of the sea' (Merrisa) and so, aptly, the field of Marine Biology chose me. The ocean represents everything I want to be: fearless! I was born in the heart of the beautiful coastal city, Durban, KwaZulu-Natal, South Africa. I am currently completing my Master's degree at the University of KwaZulu-Natal in collaboration with an NGO project (The Knysna Basin Project). My research involves assessing the levels of microplastic pollution in the Knysna Estuary.

I am one of the 23 privileged scholars that were selected to participate on the SoNoAT 2019 training. This once in a lifetime opportunity has broadened my horizons on making meaningful scientific observations in the face of a changing ocean. Being part of this training means that I wake up every day knowing that I have been and will continue to be part of a network that is making every effort to catalyze positive change in an ever-changing climate. I will always value the memories, life-long friends, incredible mentors and the exchange of knowledge and cultures that I inherited on board the RV POLARSTERN. With the knowledge and experience gained from this invaluable training, I now aim to encourage young and aspiring marine scientists in my country to make the most of such golden opportunities.

Stacy Ballyram (Trinidad and Tobago)

I am a marine biologist and GIS analyst currently working in Chilean Patagonia at the Huinay Scientific Field Station. My work involves using oceanographic data as proxies for species distribution models and biogeographic analysis, with the ultimate goal of using these models to improve marine spatial planning in the Patagonia region.

The opportunity to be one of the 23 scholars, a multicultural group learning together aboard the RV POLARSTERN, was truly a memorable and impressionable period in my career. I have gained a stronger sense of community, learning to think as a global nation!

Under the guidance and support of our incredible mentors, I have gained new perspectives, capacities and a network that encourages me to continue my work towards research and solutions in scientific field.

Stefani Peña (Argentina)

I'm currently working on my thesis as a master's student in Physical Oceanography at the Faculty of Exact and Natural Sciences at the University of Buenos Aires (Argentina). We are using a wide range of in situ observations, satellite data and high-resolution model outputs to analyze some large-scale dynamical mechanisms associated with the complex Antarctic Circumpolar Current structure in the Drake Passage.

The SoNoAT 2019 training cruise was a great opportunity to broaden my scientific background, develop my skills, and learn more about oceanographic analysis and about a wide variety of fascinating topics. I had the chance to meet and interact with other students and scientists who are working in different research areas that will stimulate fruitful discussions.

Yoania Povea Perez (Cuba)

I am a former diploma student in Earth System Physics at ICTP, where I attended basic and advanced courses on Physics of the Climate, given by experts in the field. I had the opportunity to work in a very stimulating and international environment and significantly improved my skills. During my stay in Italy I participated in several workshops hosted by ICTP. I developed my diploma thesis on the Representation of the Atlantic Warm Pool in the regional ocean-atmosphere coupled model RegCM-ES under the guidance of R. Farneti.

Currently, I work as a meteorologist in the Center for Atmospheric Physics of the Cuban Institute of Meteorology. My work is related to numerical modelling of the atmosphere and oceans. I am studying ocean-atmosphere feedbacks in the tropical Atlantic, and how these mechanisms may change under global warming. In addition, I am interested in Ekman dynamics in the Caribbean Sea, and I am studying this phenomenon in collaboration with two other colleagues.

Felaniaina Lantovololona (Madagascar)

Before participating in the SoNoAT 2019, I completed my master's in Marine Life Science at the Tokyo University of Marine Science and Technology. The coursework encompassed molecular biology, genetics and biochemistry, aquatic bioculture and more. During my degree, I had the opportunity to study genetic markers on local tilapia from Madagascar with a view to comparing its genetic biodiversity to that of the introduced tilapia. My master's research, however, was on the induction of bone deformity in the early developmental stage of Nile tilapia through different conditions of incubation, such as hypoxia, low pH level and high concentration of ammonium. I presented my results at the beginning of February 2018.

Now that I am back in Madagascar, my current job activity involves assisting the Chief of Marine Aquaculture Service within the Ministry of Halieutic Resources and Fisheries. My duties mainly encompass supervision and technical support of small scale farmers for seed production and aquaculture in general, as well as facility installation. I have also contributed to the elaboration of National documents on aquaculture such as laws, texts and National Strategy on Aquaculture Development.

Emmanuel Brempong (Ghana)

I am a postgraduate student in Marine Science at the University of Ghana. I have a strong background in remote sensing and GIS application, and my field of expertise is mainly in Physical Oceanography and Coastal Processes. I am very passionate about Coastal Science particularly impacts of physical processes such coastal erosion and flooding. My main research interest is the impact of climate change on the coastal environment. My undergraduate thesis focused on the use of remote sensing approaches for the assessment of shoreline changes at the Volta Estuary, Ghana.

My master's project seeks to contribute to improved coastal monitoring and management strategies in West Africa. I make use of modern technology such as video systems and Unmanned Aerial Vehicles (UAVs) to monitor different coastal environments on the coasts of Ghana and Benin, with different responses to oceanic forcing. Joining the SoNoAT 2019 cruise was an opportunity to learn and apply modern ways of research through advanced technology to contribute to quality research in Ghana and the sub-region.

During the SoNoAT 2019, I had the chance to increase my conceptual and practical knowledge of data collection, methods for processing these data, as well as the techniques for interpreting them.

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Marufa Ishaque (Bangladesh)

I am a first year PhD student at the department of Ocean, Earth and Atmospheric Sciences at the Old Dominion University, USA. I completed my master's degree at the Department of Oceanography at the University of Dhaka, Bangladesh. My dissertation was about the seasonal circulation in the northern Bay of Bengal. The Bay of Bengal is highly dynamic with huge sediment discharge from the Ganges-Brahmaputra-Meghna river system, whose circulations are strongly influenced by monsoon winds. I used satellite altimetry data to characterize sea surface heights, and to approximate geostrophic circulations in the northern Bay of Bengal. After concluding my master's, I spent two months in the Laboratoire d'Etudes en Géophysique et Océanographie Spatiales (LEGOS) in Toulouse, France, where I improved my skills in altimetry data and worked closely with French Scientists of IRD on estimating the tidal constituents of the Bay of Bengal from satellite altimetry. Moreover, before starting my PhD, I taught ocean sciences at Bangabandhu Sheikh Mujibur Rahman Maritime University for one and a half years in Bangladesh.

Lorena Neira (Colombia)

My name is Lorena Neira and I am a master's student at the Faculty of Sciences, Universidad de Los Andes, Colombia, and a teaching assistant for the Department of Biological Sciences. My research focus comprises ecological and evolutionary genetics and the impacts of a changing ocean as they relate to marine biology, fish ecology, and natural resources management. I am also passionate about making my research findings relevant to policy management, conservation, and science communication when possible. My current research includes the validation of the erosion rate of marine lime-boring algae Ostreobium sp. as a proxy of OA using materials engineering as well as remote sensing data. The main aim of my study will be to qualify and quantify erosion rates that may be leading to no three-dimensional calcium carbonate reef framework conformations in acidified ecosystems. The training onboard the RV POLARSTERN was a unique opportunity to gain experience in climate research tutored by prestigious researchers from all around the world who not only passed on their academic knowledge, but also essential skills and values for ethical science. Personally, also had the opportunity to get inside knowledge on marine technology transfer, which is a topic I am deeply interested and have not had the opportunity to pursue in my home university. This training experience opened a door for us to relate with different climate issues in the participant countries and to brush up on our personal knowledge of the carbon system. Getting support from organizations such as POGO and the Ocean Training Partnership will connect us better and ultimately provide support to make lasting impacts addressing climate problems around the globe.

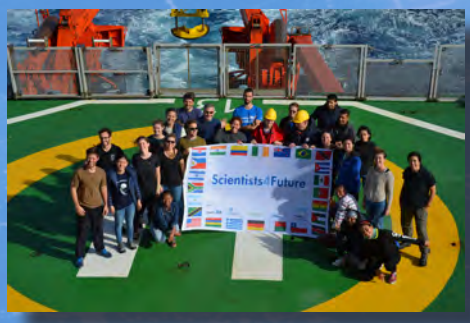
Juan Pardo (Brazil)

Juan Pardo is a marine biologist and coastal manager who graduated at the São Paulo State University (UNESP) with a sandwich period at the University College Cork (UCC). He obtained his master's degree in Zoology at UNESP with a research period at The University of Hong Kong (HKU) exploring the effects of climate-related stressors on potentially vulnerable stages of marine species. His background is in benthic ecology, behaviour and physiological ecology and ocean literacy research. Currently, he is a research associate at the Laboratory of Ecology and Animal Behaviour (LABECOM), UNESP, and a prospective PhD student aiming to better understand marine interactions in a changing climate as well as promoting science outreach activities.

Ángela Palomino Gaviria (Colombia)

I am a marine scientist interested in using remote sensing to study of movement patterns of highly migratory elasmobranchs. During my master's, I have the fortune of living between Quito and the enchanted Galapagos islands working with projects, using satellite telemetry to facilitate large-scale research.

The SoNoAT 2019 allowed me to gain new hands-on experience, learning more about the ocean and its processes, as well changes in the climate systems. It was an amazing experience that not just allowed me to learn more about oceanography, climate, microplastics, microbiology and remote sensing, but also gave me the opportunity to share with people around the world and contact with researchers interested in applying their knowledge to study the climate change.



POGO Visiting Fellowship for Shipboard Training

Porcupine Abyssal Plain (PAP) Cruise 2019

RRS Discovery

NF-POGO-NOC training fellowship onboard the *RRS Discovery* (21 June to 9 July 2019)

Vanessa Fernández Rodríguez (Colombia)

Alumnus profile: http://nf-pogo-alumni.org/profile/vannemar/

I hold a BSc in Biology from University of Antioquia (Colombia) and a master's degree in Marine Biology and Coastal Environments from Fluminense Federal University (Brazil). In my master's thesis, I developed expertise in marine ecology, pollution, benthic fauna, and meta-analysis techniques in ecology, focusing in the effect of organic matter on polychaetes assemblages. Currently, I am a lecturer and researcher in marine benthic invertebrates at University of Antioquia.

During this shipboard training, I had the opportunity to be part of the benthic biology team and actively participate in seafloor sampling activities. The main goal of the cruise was to continue various time-series observations of the surface ocean, water column, and seafloor in the area of the Porcupine Abyssal Plain Sustained Observatory (PAP-SO). The benthic sampling activities included the follow-up protocols for the extraction of deep-sea macrofauna and megafauna. Other, subsequent, analyses included metazoan meiofauna, bacteria, biogeochemistry, microplastics, phospholipids and fatty acids. Apart from the benthic sampling activities, I had the opportunity to learn the essential steps in the programming of a sediment trap carousel sampling system, which is used to study short- and long-term variations in carbon fluxes from the surface to the ocean depths. Other activities included observing the recovery and deployment of three different mooring systems: PAP1 (major multi-sensor system), Bathysnap (seafloor time-lapse camera system), and an amphipod trap (multiple batied traps).

For researchers from developing countries and economies in transition, the Shipboard Fellowship Programme is a great chance for building capacity. Finally, as part of the scientific divulgation program of Limnobase and Biotamar research group, a public talk was held on August 29th where the key aspects of the onboard experience, the fauna encountered, and their adaptations to the deep-sea environment were explained.

Vanessa preparing larvae (left) and colonisation (bottom) traps.

Vanessa's seminar announcement.

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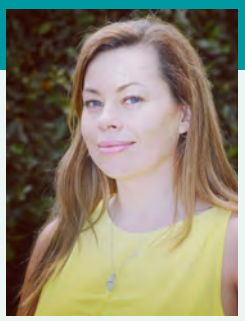
NANO RESEARCH PROJECTS

NANO Global Project Webinar Series

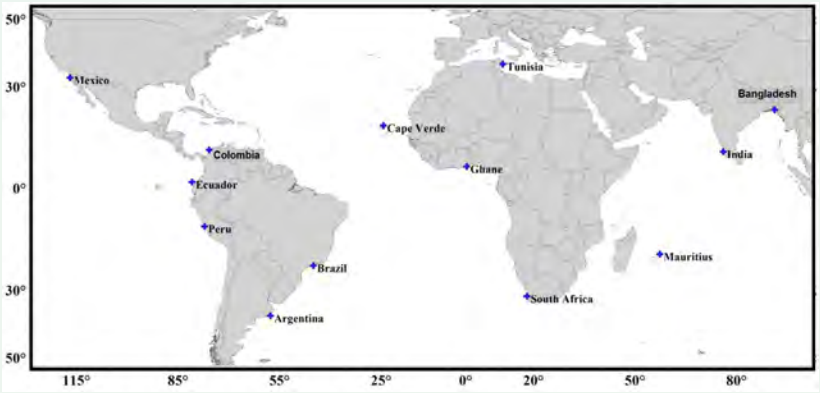
Lilian Anne Krug

Scientific Coordinator, Partnership for Observation of Global Ocean
Alumnus profile: https://nf-pogo-alumni.org/profile/Lica+Krug/



NANO Global Project (NGP) considers that the understanding of the ocean and coastal environment relies on an integrated observing system around the world. The objectives of NGP include supporting *in situ* measurements of selected essential oceanographic variables carried by the project participants in 13 countries in Latin America, Africa and Asia (see map), as well as offering capacity building activities to NANO members on observation and data analysis methods.

In line with these objectives, between September and October, the NGP organised a series of webinars (see below) presented by invited lecturers and members of the project. The webinar series was well received by members who actively participated with follow up questions. NANO members can access copies of the presentations and webinar recordings at the project's website, i.e. https://nf-pogo-alumni.org/projects/global. Recordings of the presentations are also available at POGO's youtube channel (https://www.youtube.com/user/POGOSec).



Location of NGP participating stations

Four seminars were conducted during the NANO Global Project Webinar series

Training courses in Observational Oceanography and Online Resources for Analysis of Marine Ecosystems

Lilian Anne Krug
Scientific Coordinator, Partnership for Observation of the Global Ocean
Alumnus profile: https://nf-pogo-alumni.org/profile/Lica+Krug/

As part of a project supported by POGO and led by the Centre for Marine Sciences (CCMar, Portugal) and the University of Algarve (UAlg, Portugal), this September I had the privilege to participate in capacity building activities in Angola by delivering trainings in Observational Oceanography.

The training entitled "Observational Oceanography and Online Resources for Analysis of Marine Ecosystems" aimed to give an introduction to observational oceanography and the variety of instrumentation that is currently available, as well as providing hands-on training for online visualization of satellite and drifter-derived data, and the download and processing of data from World Ocean Database and other sources, using free software.

A five-day short course was offered to 21 participants, mostly final-year Biology undergraduate from the Universidade Agostinho Neto and technicians from the Instituto Nacional de Investigação Pesqueira e Marinha (INIPM), in Luanda (Figure 1). A second, intensive, one-day training was delivered to 16 students, teachers and technicians from the Academia de Pesca e Ciências do Mar do Namibe (APCMN, in Namibe - south Angola) (Figure 2).

The feedback was very positive even though the time was very short. Over 90% of the students indicated that they would use what was learned during the training in the future (29% responded "likely" and 62% responded "very likely").

The courses integrated the capacity development objective of the Luana Waterfront project, which aims to develop a curriculum at the PhD level in natural sciences, with specialisation in marine sciences. This program will be offered by the Universidade Agostinho Neto, the APCMN, and the University of Algarve and aims to attract international students from other African regions.

Figure 1 - Scenes and participants of the training in Luanda (4-9 September 2019).

The Luanda Water Front project

Luanda Bay (LB) is the second largest coastal bay in Angola, located in front of Luanda, and protected by an island. The LB is a rich ecosystem providing a wide diversity of services, however multiple pressures are threatening this ecosystem. Solid waste and untreated domestic effluents are released daily into the Bay, hampering fishing, the practice of nautical sports, and of other leisure activities. The government recently approved the 'Luanda Waterfront Project', a programme to rehabilitate the area surrounding the LB. The prediction of the environmental responses to rehabilitation actions, as well as the mitigation of current threats to the LB, requires the analysis of water and sediment quality. This includes the detection of harmful algal blooms and the evaluation of trophic dynamics. The Luanda Water Front project will provide a biodiversity database and a deeper understanding of the cause underlying poor water quality, specifically the presence of toxic species in the LB, and will compare it to a reference site, the Mussúlo Bay. An ecosystem-based approach, which is crucial for planning the future development of the LB, is based on two principles: 1) maintaining and improving the ecosystem health, 2) balancing derived society values. To accomplish these objectives, an Ecological Risk Assessment will be developed for the LB to identify priority issues and management actions, with a view to enabling local society to become an active stakeholder of the project. The project ultimately aims to better understand the ecological dynamics of the LB and to recommend environmental mitigation strategies to improve water quality. This will, in turn, benefit local communities by improving understanding of environmental and human health risks associated with harmful algal blooms (e.g., Ciguatera Fish Poisoning-CFP) and by promoting the sustainable development of nature-related activities.

The proposal will develop and expand existing initiatives and on-going collaborations between academic and research institutions in order to lead to scientific capacity building in Angola, namely in the INIPM, Universidade Agostinho Neto University and environmental NGOs through collabo rations with UAlg and CCMAR, the coordinator of the proposal. To sustain future actions, a Collaborative Centre of Excellence in Marine Science for Africa (CCEMAR) will be established by the project partners at INIPM, aiming

to stand as a reference for international research in critical and/or emerging topics in tropical and subtropical marine research.

The establishment of CCEMAR also aims to facilitate integrating marine resources and the mitigation of environmental risks for increasing the Quality of Life, envisioning the sustainable development of the sea, which is a major goal of Blue Economy and Blue Society.

The Luanda Water Front project is funded by Aga Khan development Network and the Fundação para a Ciência e Tecnologia (Portugal).

To learn more visit: https://ccemarluandawaterfront.com/en/home_en/

Figure 2 - Scenes and certificate ceremony for the participants of the training in the Namibe (11 September 2019).

NANO Alumni in action: Outreach activities

Outreach in our backyard

Priscila Kienteca Lange
Ocean Ecology Laboratory, NASA Goddard Space Flight Center
GESTAR, Universities Space Research Association
Blue Marble Space Institute of Science
Alumnus profile: https://nf-pogo-alumni.org/profile/plange/

The word "scientist" still brings a lot of mystery to the general public. When a scientist is asked about her/his occupation or career and the answer is "I'm a scientist.", most people usually think "Then you must be smart!", but rarely relate the word "scientist" to a specific job that is useful to society. In my personal experience, the most common statements I hear when I say I'm a scientist, or a marine biologist, are: "So you swim with dolphins?", "So you live with the penguins?", "How are the fish?", "You travel to the weirdest places, do you dive there? Aren't you scared of sharks?", "I had this bacterial infection, how do I treat it?". When I say I study phytoplankton (or microalgae), it gets better: "Oh, algae? Nice." – meaning "So what?". At this point, I have about 30 seconds of attention to explain the importance of my research to whoever asked about my job. I felt this obligation growing over time as I realized my family became very proud of having a scientist in the family, the first one who could get a PhD, but had no idea of what this scientist actually does (or even what a PhD is!). The same family who fiercely supported me over the whole course of my career had no understanding of what exactly I was doing abroad for so many years, and why that is important.

Figure 1 - A picture with the education and outreach specialist Patricia Rocha, who is part of the AquaRio team.

One can spend a lot of time thinking about the reasons why the scientist career has such little value to society in a country like Brazil or, instead, think of ways to change the minds of as many people as possible, bringing some awareness about the importance of science to society. In March 2019, I had the opportunity to participate in an outreach activity at the Aquarium of Rio de Janeiro (AquaRio) as a "NASA Scientist". The AquaRio team (Fig. 1) was very kind to accept my offer to give a lecture at the venue about the importance of phytoplankton and the new NASA mission called PACE (Plankton, Aerosol, Cloud, Ocean Ecosystem), to be launched in 2022, of which I am currently part of as a post-doctoral fellow.

During this event, I could actually explain to people what a scientist does, what a marine biologist can be doing at NASA, the importance of phytoplankton and how these little algae affect their lives and the whole planet, and how satellites are used to study these microscopic organisms. Yes, people that were visiting the Aquarium had an extra attraction on their course that day: fish, jellyfish, sharks, sting rays, "NASA scientist", shark again. That was a golden chance to communicate science!

Bearing this in mind, I took the opportunity to invite all my family to the Aquarium: “Let’s go see some fish! And please support me for a minute or two during my presentation?”. On that day, more than 20 family members joined the diverse audience for more than 1.5 hours, watching me talk about phytoplankton, ocean productivity, harmful algal blooms, eutrophication, ocean optics, and satellites (Fig. 2). People in that diverse audience ranged from 4 to 86 years old, from scientists to cooks, artists, lawyers and samba song composers, some of which went there specifically to see the “suburban girl who studied in Oxford and works for NASA, how is that even possible?”. And they stayed all the way until the end!

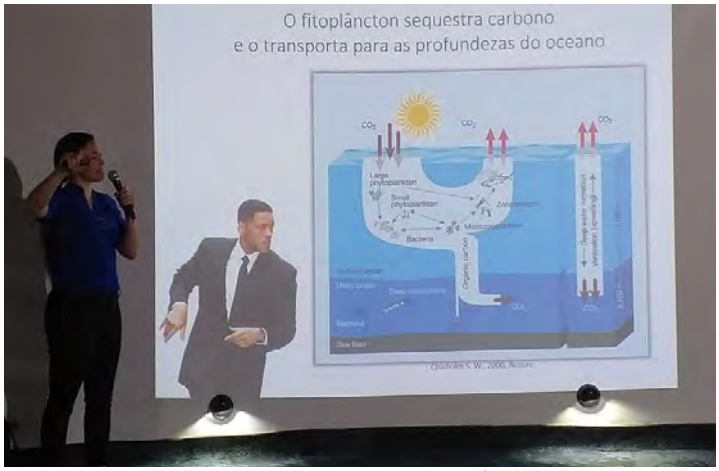


Figure 2 - The lecture at AquaRio. March 23rd, 2019.

After the end of the lecture, the audience kept the session going for another hour with questions and discussion. The topics of the discussion included the presented science (phytoplankton and carbon sink, harmful blooms, remote sensing of the Earth), the challenges of being a mother while being a scientist, gender equality, the value of representing your country abroad, the dilemma of studying/working overseas, climate change, plastic pollution, exobiology, and “How did I end up at NASA?”. At this point, I talked about the importance of being supported by POGO over a long time, and all the collaboration and friendships build under their foundation. I also highlighted the Brazilian National Council for Scientific and Technological Development (CNPq), which sponsored my studies over the whole course of my career, and is currently under a severe financial crisis. At the end, I showed the recent fellowship opportunities for students and young scientists of developing countries, offered by POGO and by the Blue Marble Space Institute of Science (BMSIS).

When the discussion was over, I had the opportunity to talk individually to people (Fig. 3) who were then filled with hope that they can get where they want if they study hard, no matter what the subject is. “You study so you are prepared when the opportunity comes.”. Most importantly, I could reinforce that my path was shaped with the help and support of many amazing people and institutions, and anyone can be much more productive when working in collaboration.

It felt very rewarding to see people leaving the venue with the sense of understanding better the world around them.

And as a bonus, the AquaRio team offered me a “dive with the sharks” in the big tank (Fig. 4). It seems I swam with sharks after all! The “icing on the cake” happened that night, over dinner, as my cousins and siblings made jokes about the food situation: “You eat so much you look like a zooplankton eating phytoplankton in a Spring bloom! Where is this carbon going to end up?”. Yes! They understand it all now, even my grandma! And me, I have never felt so thankful.


Figure 3 - The informal conversation with people from the audience after the lecture.


Figure 4 - Preparation to the diving session in the AquaRio big tank.

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Engaging communities for mangrove conservation

Frances Camille Rivera
Marine Conservation Philippines (MCP), Philippines
Alumnus profile: https://nf-pogo-alumni.org/profile/frivera/

Mangroves are salt-water tolerent trees and they are a vital ecosystem for conservation in the Philippines. These salt-water loving plants are actually very efficient in trapping sediment from upland before it reaches the sea. They are also home to our important juvenile fishes such as snappers and parrotfishes. Aside from their role as a fish nursery, and in keeping coastal waters clear - essential for coral health - mangroves are also important for local communities. In Tambobo Bay, located in the Municipality of Siaton, Negros Oriental, these trees protect the population from strong waves during the typhoon season. The mangrove forest in Tambobo Bay has approximately 23 species including the landward mangroves (Fig. 1).

Figure 1 - Aerial drone shot of the Mangrove Forest of Tambobo Bay, Siaton, Negros Oriental.

I am working as an education and community liaison officer in Marine Conservation Philippines, a non-profit organization based in Zamboanguita, Negros Oriental. Our mission is to use a science-based approach to understand how local and global factors affect the marine ecosystems, thus empowering and engaging local and national capacity to reduce and adapt to these pressures for the sustainability of the resources.

Figure 2 - Members of the people's association helping out building the mangrove boardwalk.

Since last year, I've been working together with the community and training them about the proper mangrove restoration and species identification in the area. The community has been in the area for more than 30 years making them the stewards of the mangrove forests (Fig. 2). Only by engaging them and empowering these people to learn more about their forests, can they become active in their protection. Last year, we started building a mangrove nursery and collected seedlings from the different species around the forests to rehabilitate some parts of the area that needs replanting (Fig 3).

Every now and then, we engage local and international volunteers and help restock the mangrove nursery with *Sonneratia alba*, *Avicennia marina* mangrove seedlings (local names "Pagatpat" and "Bungalon" respectively) (Fig. 4). Based on the zonation, these two species are adapted to harsh environmental conditions such as strong winds, waves and saline wedge, making them the perfect barriers between the land and sea. Since last year, we had volunteers planting about 800 mangrove seedlings with the help of the local community of high school science students and a few members of the people's organisation with whom MCP works to promote sustainable projects. These seedlings will remain in the mangrove nursery for roughly 7 months, until they achieve heights greater than 1 metre. Once seedlings grow taller than a metre, they are called saplings. Volunteers will plant these saplings out in the seaward area of the forest later in the year.

Figure 3 - Marine Conservation volunteers collected seedlings around the forest to be transferred to the mangrove nursery.

The largest project to date is the mangrove bamboo walk where we helped fund this project as an alternative livelihood for sustainable ecotourism in the future. We involved the community in building a 500-m boardwalk inside the mangrove forest (Fig. 5). We are aiming for these community members to do eco-tours in the future and to inform the society on the importance of these forests to the other ecosystems such as the seagrass meadows and the coral reefs. Through developing their capacity and knowledge, they become strong stewards in the protection of their habitat and in preserving this blue-carbon ecosystem for future generations.

Figure 4 - Collection of mangrove seedlings from the forest.

Check our other activities in Open Explorer National Geographic under the name Marine Conservation Philippines!

Figure 5 - The mangrove boardwalk in Tambobo Bay, Philippines.

Following the success of the **2019 Open Call for Shipboard Training**, which matched 10% of applicants with a training fellowship, we are pleased to announce a new **Open Call for 2020**.

Normally, specific calls are made a minimum of six months before the cruise begins, in order to allow time for large numbers of applications to be reviewed, shortlisted candidates to be interviewed, and for the the successful applicant to put the necessary paperwork in order, eg visas, travel documents, and essential medical/training certifications. However, sometimes the POGO shipboard training programme is offered an available berth at shorter notice.

The Call is open for applications from any early career scientists, technicians, postgraduate students (PhD or MSc) and Post-doctoral Fellows involved in oceanographic work at centres in developing countries and countries with economies in transition.

The application form asks about the candidate's background and specific training interests, including geographical areas and research/training topics. It also asks about availability to travel during 2020. The POGO secretariat will maintain a database of all qualified, interested candidates and, as training opportunities become available, will create shortlists by evalulating suitability for the particular project on offer.

For further information on the Open Call, and to apply, visit

http://www.oceantrainingpartnership.org/opencall2020.

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POGO marks 20th Anniversary

December 2019 marks the 20th anniversary of the first POGO Annual meeting, which was held at Scripps Institution of Oceanography, La Jolla, California, USA from 1-3 December 1999.

Over the next twelve months, we will be sharing stories of POGO's achievements and successes across our three main areas of focus, ie (i) Innovation in Ocean Observing, (ii) Capacity development and (iii) Outreach and Advocacy. Please follow the hashtag #20YearsofPOGO on social media to read our stories.

During 2020, we would particularly love to share stories from our Alumni, many of whom are members of NANO and avid readers of NANO News! Please get in touch if you have an inspiring tale of your time as a POGO scholar, or would like to share how a POGO fellowship has had an impact on your career. Did you made professional and personal contacts that resulted in research collaborations? Were you able to share the knowledge gained from your training with colleagues at your home institute? Perhaps your training sowed the seeds of an idea for a new project? Whatever your story, we'd love to hear it!

Please send your stories to Fiona Beckman, POGO Communications Officer (fbe@pml.ac.uk).

20 years of global ocean observations
(photo: Sean Whelan, WHOI)

Participants at the first POGO annual meeting hosted by Scripps Institution of Oceanography.

(Left to right) Howard Roe, Charlie Kennel and Jesse Ausubel special actors on the creation of POGO.

Over 850 trainees from 90 countries in 5 continents.

In loving memory of Dr Mirco Scharfe

AWI scientist, NF-POGO teacher

(1969 - 2019)

Dr Scharfe had been one of the teachers on-board the RV Polarstern, as well as a great supporter of the Centre of Excellence – teaching, supervising projects, as well as working "behind the scenes" on, for example, the selection process.

Mirco was a dear teacher and friend to several of our members and will be missed. The NANO family leaves here a tribute to his memory.

"I would like to let his friends and family know that as students we where really lucky to get to know him and learn from him, he had a way to make everything fun and easy and, in a teacher, that is priceless. Personally I'm really grateful for the moments we shared on the ship and for helping me with a project after the training, he was really supportive with all of us.
This is a huge loss, but he left us with great memories and that's what matters in the end."
- Lucas

"Mirco was a very special person. He had a way of making people feel comfortable and at ease, and he really cared about what people had to say, at both professional and personal level. It was a privilege to work with him and learn, even if just a little, from his remarkable knowledge. The oceanography world has lost a great collaborator and we all will mourn his death for a long time."
- Estela

"I was so sad to hear about Mirco sudden passing. I have been thinking about Mirco and his support during our stay in Helgoland for NF-POGO Centre of Excellence 2014-2015. I'll never forget him. My deepest condolences to his family."
- Hoa

"He was such a lovely person and so kind and a familiar figure.
At this moment, I remember him, his lectures, and his lab modules. He was a great teacher. I was so fortunate to attend his classes during the course time. Whenever I think about the departure from Helgoland, I also remember him, and He was also there in that sad moment to say bye to us. He was a gentle soul.
My deepest condolences on his passing and my hearts go out to his family during this trying time. He will never be forgotten, may his soul rest in peace."
- Ajin

"Though our words can do little, hope our prayers and support his family at this time. May God give them courage and strength to overcome this storm. May his Soul Rest In Peace."
- Sudheesh

"Mirco was one of our teacher, and also our housemate in Haggi Haus back in Helgoland. He was such a kind-hearted man, I wish nothing but peace and happiness for him in the afterlife, may God bless and comfort his family and friends during this difficult period."
- Akira

"Dr Mirco Scharfe, Vielen Dank!! I was indebted to you during lectures. I respect your lecture style. You always taught us science gently. I hope I can be a scientist like you someday!"
- Hiro

"Mirco has certainly contributed positively to a better word. The influence of teachers extends beyond the classroom, they affect eternity. So, he lives in each of his students, in every single piece of knowledge he has spread, every heart he touched."
- Natalia

Credits: Debra Ramon

"He was a man of honor, a kind man, a man of love, and he will be missed among his beloved ones. But Mirco will always be among his dearest through their memories. Mirco, as you once suggested whilst smoking and glancing the ocean, I promise you to quit smoking and search for the balance between my work and dearests. Today we say farewell to the companion and the mentor. I will imagine that his soul decided to break free to travel the oceans once again. This time until their edge. Until we meet again, have a nice trip Mirco!"
- Thodoris

"He has gone too soon and he will be dearly missed as such a nice human being, a remarkable researcher and wondefrul mentor in the field of Marine Science. I am still speechless about this loss. All I can say is that he has done an amazing job for the little time he has spent on Earth and his passion for research will be borne by all of us, Sonoat 2019 (and everyone who has been privileged to encounter his path). May he find peace and fulfillment next to God."
- Felana

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Scientific events announcements

8th International Symposium on Gas Transfer at Water Surfaces
Plymouth, UK
19 - 22 May 2020

This topic is globally-important - the most widely-known example of air-water gas transfer is the ocean's uptake of ~30% of the atmospheric carbon dioxide resulting from fossil fuel burning. The ocean's absorption of carbon dioxide has slowed the impact of anthropogenic climate change, but is also causing ocean acidification and negatively impacting the marine ecosystem.

Deadline
14 February 2020

Contact: GTWS2020@pml.ac.uk
https://www.pml.ac.uk/News_and_media/Events/The_8th_International_Symposium_on_Gas_Transfer_at_en

A Changing Arctic
Tromsø, Norway
2-5 June 2020

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.

Deadline
30 January 2020

Contact: n.cruz@us.nature.com
https://www.nature.com/natureconferences/changingarctic20/index.html

5th Symposium on the Ocean in a High-CO_2 World
Lima, Peru
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, and carbonate chemistry.

Deadline
6 March 2020

Contact: alicia.cheripka@noaa.gov
http://www.highco2-lima.org/

25th Ocean Optics Conference
Norfolk, USA
25-30 October 2020

Conference presentations include the science of optics across all aquatic environments, research, and applications. We attract a diverse audience of active practitioners in this field including oceanographers, ecologists, limnologists, optical engineers, resource managers, and policy professionals from around the world. There are plenary and oral presentations during the day, as well as an ability to interact with colleagues during scientific poster sessions.

Deadline
1 May 2020

Contact: jenny@tos.org
https://oceanopticsconference.org/

5th Xiamen Symposium on Marine Environmental Sciences
Xiamen, China
11 - 14 January 2021

The Xiamen Symposium on Marine Environmental Sciences, with the overarching theme The Changing Ocean Environment: From a Multidisciplinary Perspective, is one of Asia's largest conferences in marine sciences and acts as a hot spot to exchange research interests in global and regional oceans.

Deadline
31 August 2020

Contact: xmas@xmu.edu.cn
ttps://melmeeting.xmu.edu.cn/xmas5/

For more opportunities in Ocean Sciences visit https://nf-pogo-alumni.org/Opportunities/
Have any opportunity you would like to announce here? Contact info@nf-pogo-alumni.org

nano
NF-POGO Alumni Network for Oceans
https://nf-pogo-alumni.org/

THE NIPPON FOUNDATION
http://www.nippon-foundation.or.ja/eng/

pogo
http://www.ocean-partners.org

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