



### News from the POGO members

#### Study tests impact of oil and gas exploration noise on lobster embryos



Lobsters under the rocks within the test area.  
Photo credit: IMAS.

In one of the first studies of its type in the world, scientists from the University of Tasmania's Institute for Marine and Antarctic Studies (IMAS) and Curtin University have researched the impact on the embryonic development of spiny lobster of seismic air guns used in the oil and gas exploration industry.

The study's field tests found that the compressed air guns used to explore for sub-seafloor deposits did not adversely affect the development of spiny lobster embryos.

IMAS Principal Investigator, Associate Professor Jayson Semmens, said that while the spiny lobster fishery is worth an estimated US\$ 775 million across 90 countries, knowledge of the effects of air gun exposure had previously been almost non-existent.

"The limited research that has been conducted around the world into impacts of air gun use in seismic testing has largely been confined to laboratory test environments which do not replicate a real world context.

"Our study found that concerns about the impact of seismic air guns on spiny lobster embryonic development through exposure of females carrying eggs were unfounded, however the study did not consider other species or other life stages of the spiny lobster.

"This is a relatively new field of research and more work needs to be done across a wide range of marine species and their various life stages."

Dr Ryan Day said human generated sound in aquatic environments is a potential concern because sound travels further, faster and more efficiently in water.

"In this study we conducted tests with egg-carrying female spiny lobsters on a shallow reef using three different air gun configurations at various distances.

"We found no differences in the quantity or quality of hatched larvae, suggesting that early stage embryonic spiny lobsters are resilient to air gun signals," Dr Day said. Read more: [www.nature.com/articles/srep22723](http://www.nature.com/articles/srep22723)

*This article was provided by Andrew Rhodes, Communication Manager, IMAS*



Egg-carrying female lobsters were exposed to air gun noise within the test area to see if there was any impact on spiny lobster embryonic development.  
Photo credit: IMAS.

### Exemptions under the Ballast Water Management Convention – a first Belgian risk assessment

The International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM) was adopted by the International Maritime Organization (IMO) in 2004, for which the conditions required for the entry into force are now almost fulfilled (ratified by 49 states (>30) representing 34.82% (<35%) of world tonnage). The convention aims to prevent the spread of invasive aquatic organisms from one region to another by establishing standards and procedures for the management and control of ships' ballast water and sediments. However, exemptions can be granted to ships under certain conditions. In order to harmonize the process of granting exemptions from ballast water treatment, a joint OSPAR/HELCOM exemption procedure was developed.

At the request of the Belgian federal government (FPS Mobility & Transport), Flanders Marine Institute (VLIZ) made a preliminary database-based analysis of species distributions in the ports of interest, based on the trajectories (which include a Belgian port) for which shipping companies expressed their interest to obtain an exemption. The risk for further spread of species from one port to another was determined using the harmonized risk assessment protocol taking into account the OSPAR/HELCOM key risk criteria (presence/absence of a species in a port; differences in salinity between ports; salinity tolerance of a species).

All investigated trajectories were classified as 'high risk'. This implies that it is highly likely that target species are distributed with ballast water and occupy a new habitat. Based on the results of this preliminary study, exemptions cannot be granted for the analyzed trajectories. However, further biogeographic research, as well as taking into account other crucial environmental parameters impacting survival rates of an organism, are strongly encouraged.

VLIZ (2015). Initial risk assessment under Regulation A-4 of the Ballast Water Management Convention for Belgium using the joint HELCOM/OSPAR Harmonised Procedure. VLIZ Beleidsinformerende Nota's, 2015\_002. Vlaams Instituut voor de Zee (VLIZ): Oostende. ISBN 978-94-920432-0-7. 88 pp.

*This article was provided by Dr Thomas Verleye, Policy Information Division, Secretariat Compendium for Coast and Sea, VLIZ*



Chinese mitten crab, one of the most invasive species Belgium has to deal with. The species was introduced by ballast water in the first part of the 20th century, probably around 1933. Photo credit: Silvia Waajen.



## News from the POGO members (cont'd)

### 600 ppm carbon dioxide in the air: crucial tipping point ahead for the stability of the Antarctic ice sheet

**NIOZ postdoc and physical oceanographer Dr. Paolo Stocchi is one of the authors of the article "Antarctic Ice Sheet variability across the Eocene-Oligocene boundary climate transition" (Galeotti et al.), which was published on 10 March in the top scientific journal, Science.**

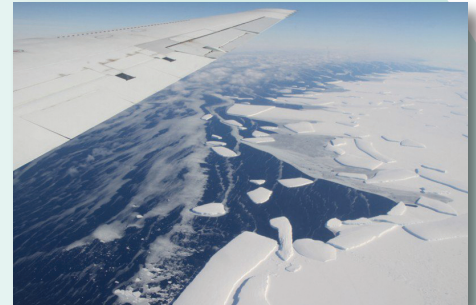
About 34 million years ago, an iceless greenhouse climate on earth cooled down, which led to the first traces of an ice cap at a carbon dioxide concentration of 750 ppm (microgram/gram). A further decrease to levels between 750 and 600 ppm led to a fledgling ice sheet of which the dimensions strongly fluctuated with a 20,000-40,000 year Milankovitch cycle for earth movement in space. A stable icecap that reached the coast of the Antarctic continent formed 32.8 million years ago when the carbon dioxide level had decreased below 600 ppm. This value seems to be a crucial tipping point for the stability of the Antarctic ice sheet. When global policy is not changed, this value is already foreseen by the end of this century (currently 400 ppm, after an increase from 250 ppm around 1850 at the start of the industrial revolution).

These conclusions are drawn from a sediment core taken in the Ross Sea. The mechanism that caused the decrease in carbon dioxide level in the atmosphere was the sinking of dead organic material from an increased biological production in the Southern Ocean. This was fueled by an increased upward flow of nutrients (nitrogen, phosphate and iron) from deep water (upwelling).

More information:

- Science: <http://science.sciencemag.org/content/early/2016/03/09/science.aab0669>
- Comment in EOS: <https://eos.org/articles/scientists-find-the-point-of-no-return-for-antarctic-ice-cap>
- Contact Dr Paolo Stocchi, Paolo.Stocchi@nioz.nl

*This article was provided by Jan Boon, Manager Communication, Outreach & Marketing, NIOZ*



Calving front of an ice shelf in West Antarctica, taken by NASA mission Operation Ice Bridge. Although prior research suggests that West Antarctica is in a state of collapse, a new study suggests that the rest of the Antarctic ice sheet might remain stable until carbon dioxide levels reach 600 ppm. Photo credit: Jefferson Beck, NASA/GSFC.



Powerful Hurricane Irene on August 27, 2011, two hours after making landfall in Cape Lookout, North Carolina. Photo credit: NASA/NOAA GOES Project.

### Why do so many summer hurricanes fizzle near coastlines?

**Rutgers-led study finds answers that could improve forecasts of hurricane intensity, reduce losses linked to inaccuracies.**

A dynamic process that cools the coastal ocean and can weaken hurricanes was discovered as Hurricane Irene made landfall in New Jersey, according to a Rutgers University-led study.

The study's findings could help reduce the uncertainty in intensity forecasts for hurricanes and other tropical cyclones that cross coastal ocean waters before striking populated shorelines.

Hurricane track forecasts have steadily improved, but improvements in intensity forecasts have lagged.

The study, published online in Nature Communications, used observations and models from an ocean observatory that has operated for more than a decade in the mid-Atlantic as part of the U.S.

Integrated Ocean Observing System (IOOS) network.

"We used IOOS to assemble an unprecedented view of a land-falling hurricane during the highly stratified summer season. We discovered new processes responsible for rapid ocean cooling that reduce storm intensities," said Scott Glenn, the study's lead author and a Rutgers professor.

While accurate forecasts of Irene's track in August 2011 provided time for preparations and coastal evacuations, the top wind speeds in Irene's official forecasts along the mid-Atlantic coast were too high. Uncertainties in intensity forecasts can lead to unnecessary preparation costs, future public skepticism about storm warnings, and other impacts.

Many people did not immediately heed the warnings for Hurricane Sandy in 2012 because Irene wasn't as bad as forecast. Irene weakened to tropical storm strength just before it hit New Jersey.

In their study, scientists found that Irene's winds mixed the coastal ocean's warm surface layer and cold bottom layer, causing rapid cooling ahead of Irene's eye. They documented cooling during all 11 summer hurricanes that crossed mid-Atlantic coastal waters from 1985 to 2015 and when Super Typhoon Muifa crossed the Yellow Sea in 2011.

*This article was provided by Todd B. Bates (Science Communicator), Prof. Scott Glenn (study lead author), Prof. Oscar Schofield (study coauthor), Rutgers University.*

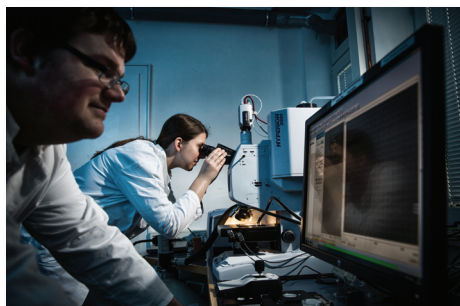


From left to right: Josh Kohut, Scott Glenn, Oscar Schofield, Hugh Roarty, Greg Seroka and Travis Miles in the Rutgers University Center for Ocean Observing Leadership. Photo credit: Nilsen Strandskov, Rutgers University.



## News from the POGO members (cont'd)

### AWI's studies show micro-plastic particles in edible fish and herbivores



AWI scientists are analysing a sea water sample for microplastic particles in a laboratory at the AWI Helgoland. Photo credit: Tristan Vankann, AWI.

Micro-plastic particles pose a risk not only to sea birds, whales and organisms at the bottom of the sea. In a new study, scientists of the Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research (AWI) show that plastic waste is also eaten by North and Baltic Sea fish such as cod and mackerel.

AWI scientists investigate the quantity and distribution of micro-plastic in the sea as well as its impact on marine life. As part of the fish study, the researchers examined the digestive tract and stomach contents of 290 mackerel, flounder, herring, cod and dab from the North and Baltic Seas. The study showed that the herring, for example, do not appear to ingest any micro-plastic particles at all at certain times of the year. In the case of the mackerel, on the other hand, the percentage of animals with micro-plastic in the digestive organs varies between 13 and 30 percent depending on marine region. Mackerel thus swallow micro-plastic particles significantly more frequently than fish species that live close to the bottom of the sea such as flounder and dab.

"We believe that the reason for this is the feeding behaviour of the fish," says AWI biologist and study leader Dr Gunnar Gerdt. "Probably the animals we investigated ingested the micro-plastic fragments drifting in the water column quite accidentally while in search for food. The many plastic fibres, which we mainly found in mackerel,

tell a different story. It seems the fish mistook them for prey."

The reason: The fibres often drift on the surface of the water with a relatively high density. With regard to shape and colour they then resemble newly hatched pipefish, which mackerel like to hunt. "Our findings indicate that fish species that look for food near the water surface or in the upper layers are more at risk of swallowing plastic than other species," says Gunnar Gerdt. The researchers found no indications that accumulating micro-plastic particles in the stomach let fish starve, as it is known from bigger plastic items.

Original study: Christoph D. Rummel, Martin G.J. Löder, Nicolai F. Fricke, Thomas Lang, Eva-Maria Griebeler, Michael Janke, Gunnar Gerdt: Plastic ingestion by pelagic and demersal fish from the North Sea and Baltic Sea, *Marine Pollution Bulletin*; doi:10.1016/j.marpolbul.2015.11.043

Full press release: <http://www.awi.de/nc/en/about-us/service/press/press-release/mikroplastikpartikel-in-speisefischen-und-pflanzenfressern.html>

This article was provided by Dr. Folke Mehrrens, Communications and Media Relations, AWI.

### From the pristine to degraded: reefs of the central pacific

Marine ecologist Jennifer Smith and colleagues from Scripps Institution of Oceanography at UC, San Diego, undertook one of the most comprehensive assessments of Pacific Ocean coral reef health, spanning 10 years, 56 islands, and five archipelagos. They examined how coral reef communities at 450 sites are faring with increased human activity. The findings, published in the journal *Proceedings of the Royal Academy B*, show that remote uninhabited islands are healthy in the absence of local human populations, and thriving despite global climate change.

From the uninhabited Malden and Millennium atolls in the Line Islands to the heavily populated Hawaiian Islands, the central Pacific Ocean is known for its vast expanse of islands and some of the most unspoiled coral reefs on Earth. For Smith, this far-flung region is an ideal natural laboratory to study the impacts of humans on coral reef health.

The team discovered that reef-building corals and coralline algae, two important features for reef construction, dominate the reefs around the remote, uninhabited islands. In contrast, non-reef building organisms, such as fleshy algae, dominate the majority of inhabited islands.

"Our findings suggest that in the absence of local human impacts, coral reef communities appear to be more resistant or resilient to global change than those with local human populations," said Smith, lead author of the study. "This offers a new incentive for local conservation efforts on populated islands."

According to the authors, the results suggest that cumulative human impacts on inhabited islands across the central Pacific may be causing a reduction in calcifying, reef-building organisms resulting in island-scale shifts to dominance by fleshy organisms.

The study offers some hope for the future of the pristine reefs around the uninhabited atolls of Malden and Millennium, and an incentive for inhabited islands to protect what they have left.



A pristine reef located off the uninhabited Malden atoll in the Line Islands. Photo credit: Jennifer Smith, Scripps.



A fleshy algae-dominated reef off Kiritimati atoll in the northern Line Islands. Photo credit: Jennifer Smith, Scripps.

This article was provided by Dr. Annie Reisewitz, Scripps Communications, SCRIPPS.

## News from the POGO members (cont'd)



Launch of a glider off the coast of Peru. Photo credit: Anna Reichel, GEOMAR

### Glider swarm tracks newborn eddy

Similar to the great currents, eddies play an important role for the transport of heat, nutrients and oxygen in the oceans. Long-lasting examples often form on the eastern boundaries of the oceans before migrating west. As the formation process takes place within a few weeks they are difficult to predict, making a direct observation hard to conduct.

During a cruise with the German RV *METEOR* in 2013 scientists of the GEOMAR Helmholtz Centre for Ocean Research Kiel, of the Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research in Bremerhaven (AWI) and the Max Planck Institute for Marine Microbiology in Bremen, funded by the Collaborative Research Center (Sonderforschungsbereich, SFB) 754 "Climate-Biogeochemistry Interactions in the Tropical Ocean", were able to investigate the formation of an eddy of almost 100 kilometers in diameter off the coast of Peru. The results of the observations

have recently been published in the JGR - Oceans.

Besides ship-based measurements, the team used seven gliders for their observations. The one and a half meter long devices dive back and forth between the water surface and 1,000 meters depth, converting the upward or downward movement into a forward motion. Overall, more than 10,000 profiles of temperature, salinity, oxygen and chlorophyll were collected while the eddy was evolving.

"The data show, that the water inside the eddy's core originates from the bottom layers of the continental slope," says lead-author Sören Thomsen from GEOMAR. The properties of this water differ greatly from those of waters in the open ocean.

The eddy transported the water masses westward to the open Pacific. "With our study, we show that a large part of the eddy's anomalous properties originate from the region where the eddy is formed," says Sören Thomsen.

Original work: <http://dx.doi.org/10.1002/2015JC010878>

*This article was provided by Jan Steffen, Press Officer, GEOMAR.*

### A new research vessel KAIMEI has joined JAMSTEC's fleet

A new research vessel, *KAIMEI* which has been under building at the Shimonoseki Shipyard & Machinery Works of Mitsubishi Heavy Industries, Ltd., was completed and delivered to JAMSTEC on the 30th of March 2016.

R/V *KAIMEI* is expected to promote scientific research in a wide area, including scientific surveys of marine resources in waters around Japan. The vessel will feature crustal structure survey using a three-dimensional seismic imaging system, sediment/core sampling using drilling equipment installed on the seabed, simultaneous use of multiple autonomous underwater vehicles, and detailed survey using acoustic devices.

After testing of observation equipments and crew training, the research vessel is scheduled for a research voyage from fiscal year 2017.

#### Principal Specifications:

Length:	100.5 m
Beam:	20.5 m
Depth:	9.0 m
Draft:	6.0 m
Gross tonnage:	5,747 tons
Cruising speed:	12 knots
Range:	Approx. 9,000 nautical miles
Accommodation:	65 (27 crew members, 38 researchers and others)
Main propulsion system:	Two 2,400-kW propulsion electric motors
Main propulsion method:	Two azimuth thrusters



*METEOR* research vessel. Photo credit: Hermann Bange, GEOMAR



Vessel R/V *KAIMEI*  
Photo credit: JAMSTEC

*This article was provided by Jin Tachihara, International Affairs Division, JAMSTEC.*



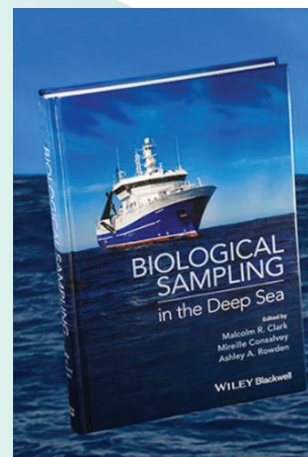
## News from the POGO members (cont'd)

**Biological Sampling in the Deep Sea** edited by Malcolm Clark, Mireille Consalvey, and Ashley Rowden presents a large fraction of what we know about this subject in 19 chapters and 472 pages. Published in April 2016 by Wiley-Blackwell (ISBN-10: 0470656743), the book emerged from the dozens of field projects in the deep sea organized under the flag of the Census of Marine Life. The editors led the seamounts project of the Census and for this book attracted experts also on abyssal plains, vent & seep communities, and the continental margins and all the challenges involved.

Initial chapters cover habitats and fauna, survey and sampling design, and mapping. The heart of the book describes and analyses a panoply of approaches spanning trawls, longlines, epibenthic sledges, corers and grabs, landers (including baited cameras and traps), towed cameras, submersibles and remotely operated vehicles, and even seafloor observatories. Later chapters address sorting, recording, preservation and storage, information management strategies, and data analysis. Concluding chapters ponder application of studies to governance and management and the future of biological sampling in the deep sea. The 50+ authors are a who's who of deep sea biology and technology.

The book, carefully edited and attractively produced, is the first comprehensive compilation of deep-sea sampling methods for the full range of habitats. It is hard to imagine writing a sound and successful research proposal in deep sea biology without making use of its breadth and depth. All the authors and especially the editors and their host institution, New Zealand's National Institute of Water and Atmospheric Research (NIWA), merit thanks for a volume that advances our chances to excel individually and collectively.

*This article was provided by Jesse H. Ausubel, Director, Program for the Human Environment, The Rockefeller University.*



## Discover Plymouth, Britain's Ocean City, during POGO-18



Photo credit: PML

The next annual POGO meeting, POGO-18, will be held from 24-26th January 2017 at Plymouth Marine Laboratory (PML, [www.pml.ac.uk](http://www.pml.ac.uk)), based in Plymouth, UK. PML is the host of the POGO Secretariat.

A vibrant waterfront city nestled between the ocean and Dartmoor, Plymouth is home to over 300 marine related businesses and has been at the forefront of marine science for over 125 years. The city has a strong connection with the sea and holds a powerful place in English and world maritime history.

The annual POGO meeting provides a platform for the directors of member institutes and other relevant partners to discuss the global agenda for ocean observing and issues of mutual concern. POGO's achievements over the last year are highlighted and the Members make strategic plans going forward. The meeting also provides an opportunity for the host to highlight its latest research and facilities.

Information on transportation to and from Plymouth and detail on accommodation will be available on the POGO website closer to the date. All meeting rooms for POGO-18, hotels and activities are planned to be within walking distance of each other.

PML's Chief Executive, Professor Stephen de Mora, commented "I am looking forward to welcoming the delegates to Plymouth Marine Laboratory and hosting a successful POGO-18 whilst also having the opportunity to highlight Plymouth's research facilities and programmes".

*This article was provided by PML together with the POGO Secretariat*

## Professional Training Updates

### North South Atlantic Training Transect 2016

The call for applications for the North South Atlantic Transect (NoSoAT) 2016 providing training onboard the RV Polarstern is now open. The NoSoAT will investigate ocean, atmosphere and climate interactions on a transect from Bremerhaven, Germany to Cape Town, South Africa from 12th November to 12th December 2016.

NoSoAT is a joint cooperation between the Alfred Wegener Institute (AWI), the Strategic Marine Alliance for Research and Training (SMART), the NF-POGO Centre of Excellence and AtlantOS.

The deadline for applications is 15th May 2016. Further details and the application form can be found at: <http://www.smartseaschool.com/nosoat2016>.



## Professional Training Updates (cont'd)

### ITCOcean/ INCOIS-POGO Training Course on "Emerging trends in Ocean Observations and Ocean Data Analysis"

4-15 July 2016, INCOIS, Hyderabad, India

#### Course Objectives:

- Provide an overview of recent advances in ocean observations, data sets and applications (data assimilation and OSE)
- Discuss fundamentals of time series analysis techniques (filters in time and space, Fourier analysis, Wavelet analysis, EOF)
- Provide an overview of Ocean models and data sets, Quality assessment of operational Ocean Forecast
- Provide hands on exercises on analysis of model data/oceanographic data sets

#### Faculty:

- Dr. Eric D'Asaro, Applied Physics Laboratory and School of Oceanography, University of Washington, USA
- Dr. J. Thomas Farrar, Department of Physical Oceanography, Woods Hole Oceanographic Institution, USA
- Dr. M Ravichandran, Indian National Centre for Ocean Information Services, Hyderabad
- Dr. D. Shankar, National Institute of Oceanography, Goa, India
- Dr. V. Venugopal, Centre for Atmospheric and Oceanic Sciences, Indian Institute of Science, Bangalore
- Dr. V. Vinu, Indian Institute of Tropical Meteorology, Pune
- Dr. Francis P A, Indian National Centre for Ocean Information Services, Hyderabad

In addition, scientists from INCOIS, Hyderabad and other Indian institutions will be part of the faculty.

#### Prerequisites:

Masters or PhD in Meteorology/Oceanography/Atmospheric Science/Physics.

Basic Mathematics (at Graduate/Post-Graduate level) and computer skills will be assumed.

#### Venue:

The training course will be held at Indian National Centre for Ocean Information Services (INCOIS), Hyderabad (India).

#### Important Dates:

- Last date of application submission: 10 May, 2016
- Intimation to selected candidates: 25 May, 2016
- Course dates: 04 - 15 July, 2016

The brochure of the course can be found at: <http://www.incois.gov.in/portal/ITCOcean/etoo.jsp>

Both full-and-co-sponsoring are available for a limited number of foreign participants. Priority will be given to participants from Indian Ocean rim countries. ITCOcean, being part of UNESCO is committed to promote gender equality. Therefore, applications from women are strongly encouraged. The training course is co-sponsored by the Partnership for Observation of the Global Oceans (POGO).

*This article was provided by B. Madhusudan Rao, ITCOcean, ESSO-INCOIS.*

## Pogo Activities



### POGO at Oceanology International 2016

POGO participated in the 47th edition of the Oceanology International 2016 exhibition from 15-17th March. POGO had an exhibition stand in the New Exhibitors Zone and provided a presentation during the Marine Technology and Services Sector Role in the Blue Economy Conference during the Panel Session: Ocean Observing Systems - Focus on Blue Economy. As a member of POGO, Tony Knap (Director, Geochemical and Environmental Research Group (GERG) Texas A&M University) delivered the presentation on behalf of POGO and was a panellist during the discussion sessions.

Oceanology International is held biennially in London, it has established itself as the world leading marine science and ocean technology exhibition and conference. Attracting visitors from various industries including oil and gas, engineering, renewables, and maritime security and marine science, this was an opportunity to network and make contact with relevant suppliers or potential partners.

Supported by the AWI, GERG and JAMSTEC, the exhibition stand also provided an opportunity for POGO to convey its objectives and share its mission as detailed in POGO's strategy document, officially launched at a press conference in Tokyo earlier this year, ahead of this year's annual meeting in Japan.

*This article was provided by Vikki Cheung, Scientific Coordinator, POGO Secretariat.*



## POGO Activities (cont'd)

### POGO-17 Annual Meeting

This year's POGO Meeting was hosted by the Japan Agency for Marine-Earth Science and Technology (JAMSTEC) in Yokohama, Japan from the 26th to 28th January 2016.

Ahead of the POGO 17th Annual Meeting the new POGO Strategy Document was launched at a press conference hosted by JAMSTEC at their Tokyo offices.

POGO's new mission is to:

- Lead innovation and development of the crucial components of the ocean observing system.
- Identify and contribute to the development of the key skills, capabilities and capacities needed to achieve the vision.
- Work with governments, foundations and industry, to articulate the benefits to society and required funding to build and sustain the system.

The Strategy Document is available to download from the POGO website at: [http://ocean-partners.org/sites/ocean-partners.org/files/public/attachments/article/Products/POGO\\_strategy\\_document\\_Final.pdf](http://ocean-partners.org/sites/ocean-partners.org/files/public/attachments/article/Products/POGO_strategy_document_Final.pdf)

The POGO-17 meeting held at the Yokohama City Minatomirai 21, Queen Mall Conference room, was well attended with 56 participants from 23 countries coming together for the annual meeting. The Minutes from the meeting are now available to download from the POGO website at <http://www.ocean-partners.org/sites/ocean-partners.org/files/public/images/stories/pogo17/POGO-17-minutes.pdf>

Dr. Asahiko Taira, President of JAMSTEC, opened the meeting by welcoming the participants. The Director General of the Policy Bureau, Yokohama City, Mr. Kazumi Kobayashi, addressed the delegates and added his welcoming remarks to those of Dr. Taira.

Karen Wiltshire was reappointed for a second term as Chair of POGO, since she was nominated/seconded by several of the POGO members. There had been no other nominations so there was no need for an election.

A showcase of Japanese oceanography and observing technology was presented by speakers from JAMSTEC, followed by an update on POGO activities and presentations from new members including Harbour Branch Oceanographic Institute, Florida Atlantic University and Qingdao National Laboratory for Marine Science and Technology. Mini presentations from selected POGO Members were also included in this session.

A series of parallel workshops took place on the topics below followed by reports, discussions and recommendations for each theme. The parallel workshops this year were:

- Ocean observations and Marine Protected Areas;
- Engaging with industry;
- Observations in estuaries;
- Polar observations.

In addition to a reception hosted by JAMSTEC in the Mitsubishi Minatomirai Industrial Museum, a reception hosted by NANO took place where flash presentations given by NANO alumni. Poster presentations were also given by JAMSTEC scientists and NANO alumni. The latter described their professional backgrounds and their career progression made possible by NANO. Current research results were also highlighted together with current links to NANO Regional Projects and NANO Coordination activities.

Following the close of the meeting, the meeting participants were able to take a tour of one of JAMSTEC's research vessels, the RV *Mirai* which was berthed in Yokohama.

Plymouth Marine Laboratory has offered to host POGO-18 in January 2017, the offer was gratefully received by the membership.



Participants of the POGO-17 after the tour of RV *Mirai*. Photo credit: JAMSTEC

*This article was provided by the POGO Secretariat & JAMSTEC.*

## Other News

### New POGO Members

We are delighted to welcome two new members to POGO who have recently joined the international forum:

#### The Monterey Bay Aquarium Research Institute (MBARI), USA

Research programs at the Monterey Bay Aquarium Research Institute (MBARI) encompass the entire ocean, from the surface waters to the deep seafloor, and from the coastal zone to the open sea. The need to understand the ocean in all its complexity and variability drives MBARI's research and development efforts.



#### The Oceanology Division of the Centro de Investigación Científica y de Educación Superior de Ensenada (CICESE), Mexico.

The division's mission has three complementary lines: undertake scientific research about the physical, chemical, biological and geological processes that take place in the marine environment; generating highly specialized human resources through its academic postgraduate programs; and implementation of packets for transferring technologies and methodologies that allow the leverage of natural resources, contributing thus to the solution of problems at regional, national and global scale.



### Changes in the POGO Secretariat

In March 2016, the Executive Director of POGO, Dr. Sophie Seeyave, started her maternity leave. During this time, Dr. Magdalena Wutte has joined POGO as an Assistant Scientific Coordinator, to support Dr. Victoria Cheung and Laura Ruffoni in the secretariat.

Magdalena holds a M.Sc in Biology and a PhD in Neurosciences from Munich University, Germany. She joins us after a four year postdoc at Aix-Marseille University, France. Her scientific journey has sent her to live in diverse countries (Germany, Italy, USA, New Zealand, France) over the past several years. She considers herself fortunate to now join the international POGO family and contribute her scientific and international experience.



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