

News from the POGO members

POGO and the United Nations Framework Convention on Climate Change (UNFCCC) Conference of Party (COP) 21, Paris, France.

The COP21 Paris Agreement commits, for the first time, all nations to reduce their rates of greenhouse gas emissions to "well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 degrees Celsius above pre-industrial levels," and puts into place a system of monitoring and verification of national emissions, as well as significant guidance and tangible commitments on mitigation, adaptation, financing, capacity development and technology transfer.

Importantly (finally!) steps have been made to recognize the central role of the oceans with a new provision in the Preamble to the Paris Agreement, which states "Noting the importance of ensuring the integrity of all ecosystems, including oceans,...when taking action to address climate change."

Actively participating in every UNFCCC COP meeting since Copenhagen in 2009 and contributing to the outcome above is a large international partnership headed up by Plymouth

Marine Laboratory (PML), SCRIPPS Institution of Oceanography and the UK Ocean Acidification Research Programme with support from the Ocean Acidification International Coordination Centre (OA-ICC) and the German Biological Impacts of Ocean Acidification Programme (BIOACID).



Exhibition stand at COP 21 with delegates from Scripps, PML, UKOA and BIOACID. Photo Credit: Scripps Institution of Oceanography.

The partners were organisers of official UNFCCC side events focusing on the ocean stressors (Ocean acidification, deoxygenation and warming), co-organisers of Oceans Day - attracting very high level country representatives, partners of the Ocean and Climate Platform events and speakers at various events in the civil society venue and central Paris. They had an exhibition stand in the UN area which proved a very useful platform for engagement with the COP21 delegates and, in collaboration with French partner institutions, they realised a large exhibition stand in the civil society area.

POGO has provided its support, alongside the World Bank, EU World Bank, European Union and UN bodies for the ocean stressors publication *Hot, Sour and Breathless* – Ocean under stress message which has been presented by the partnership at the various COP meetings since 2009 (www.oceanunderstress.com). Because of this POGO's logo was present on all the relevant displays at COP21 and the latest POGO publication was handed out.

This article was provided by Plymouth Marine Laboratory.

• COP21 : The Ocean has joined the great climate negotiation entente.

- The climate agreement approved in Paris on Saturday December 12 is a historical moment for the planet: it lays the basis of a gradual transition toward a green and non-carbonated economy.
- The deal has definitely changed for the Ocean. This mention appeared in the preamble of the final text "/Noting the importance of ensuring the integrity of all ecosystems, including oceans.../". It is a sign of a worldwide understanding regarding the importance of the links between ocean and climate. The integration of the ocean in the Paris Agreement proves the acknowledgment of its integrity as a stakeholder in the climate equilibrium.
- This is a symbolic victory for all members of the Ocean and Climate Platform – including the French sea research institute Ifremer as a major scientific player - who have worked very hard over the last two years with the support of the UNESCO Intergovernmental Oceanographic Commission to give voice to oceans beyond the Ocean

community: it is the first stone of a collective and international operation to make the ocean a key element in the next climate conferences. Furthermore, 30 000 citizens signed the Ocean's Call for Climate. The French sea research institute Ifremer has contributed to the mobilization through its strong



Photo from Expo Climate and Ocean. Photo Credit: © Genavir / Loïc Treluyer.

- implication in the Ocean and climate forum, during the action week of COP21. Its science director, Marie-Hélène Tusseau-Vuillemin, was one of the high-level international panelist of the science session. The session aimed at highlighting the existing knowledge across the various fields in the ocean and climate nexus – from ocean research to the social impacts of climate change on coastal communities in Small Island Developing States (SIDS). All available scientific evidence was presented to push for greater recognition and political action on ocean and climate issues in the COP 21 negotiations.

- This raised awareness resulted in the signature of the declaration /Because the Ocean/ at a Heads of State and National Delegations level: 22 countries committed to preparing in 2016 an action plan dedicated to the ocean as part of the United Nations Framework Convention on Climate Change. A next important step before COP22 will be the decision making by IPCC, in April 2016 regarding the drafting of a Special Report on the Ocean during the drafting period of the Evaluation Report on Climate Change AR6.

This article was provided by Thomas Isaak, Service Presse Ifremer.

News from the POGO members (cont'd)

How will climate change affect marine fisheries in Bangladesh?

Work by Plymouth Marine Laboratory (PML) scientists has been published predicting how future climate change could reduce the productivity of Bangladeshi marine fisheries and how adaptive management scenarios may exacerbate or mitigate such impacts.

The fisheries sector is crucial to the Bangladeshi economy and wellbeing, as well as playing a vital role as an important source of food, supplying 60% of the national animal protein intake to the 16 million Bangladeshis living near the coast, a population that has doubled since the 1980s. Any reduction in production in this sector will result in a loss in rural household income, threaten food and nutrition security and increase unemployment on the Bangladesh coast.

Using outputs from downscaled global climate models, scientists in this study simulated changes in physical and biochemical ocean properties, followed by projections of future fish production and catch potential up to 2060. This work showed that total production would be negatively affected by increases in water temperature.

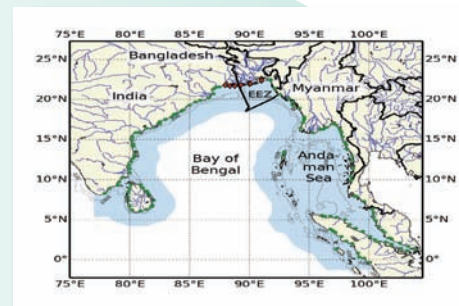
However, work focused on two particular species important to the Bangladesh fishing sector showed that responsive management can mitigate these impacts. The species studied were Hilsa shad (*Tenualosa ilisha*), which accounts for 11% of total catches, and Bombay duck (*Harpodon nehereus*), a low price fish that is the second highest catch in Bangladesh and is an important food source for low income communities. These species are highly overfished and the study showed that better management under a business-as-usual climate scenario could mitigate the impacts from climate change.

First author on the paper and PML Socio-economic Modeller Dr Jose Fernandes commented:

"The results demonstrate that effective fisheries management can be an important tool in response to the effects of climate change on ecosystem productivity in highly fisheries-dependant countries".

The paper can be read here.

This article was provided by Helen Murray, Communications Officer, Plymouth Marine Laboratory.



Map of the Bay of Bengal showing the model domain (shaded), the position of river mouths in the model and the Bangladesh Exclusive Economic Zone. Diamonds show the position of rivers whose flow and nutrient loadings.

Texas A&M University and University of Haifa Expand Global Ocean Observatory and Education to the Mediterranean Sea.

Texas A&M University and the University of Haifa have established a major Mediterranean observatory to capitalize on the oceanographic, atmospheric, and technological strengths of the two institutions and build on existing teaching and research in the Gulf of Mexico.

The agreement, totaling more than \$5.5 M in initial investments, will be known as the "Texas A&M – University of Haifa Eastern Mediterranean Observatory" ("THEMO"). The observatory will be located at the University of Haifa with its access to critical Mediterranean coastal regions, while drawing on instrumentation and analytical expertise of Texas A&M University faculty and their similar research initiatives in the Gulf of Mexico. THEMO comprises of two sensor arrays attached to a 2.25 M surface buoy. THEMO will include a shallow mooring (200m) in the coastal zone and a deeper one 80 km offshore in the Levant Basin of the Mediterranean Sea. The deeper mooring (1470m) will be equipped with a profiler which will communicate to a subsea float and from there to a surface buoy. This array will also have a time-series sediment trap at 1000m. Both arrays will have acoustic capabilities, standard sensor and inductively-coupled thermistor chains. The location of the University of Haifa on top of Mt. Carmel some 600m above sea-level makes THEMO a unique observatory with two-way communication capability. Specifically, the two surface buoys will communicate data from the moored sensors in near-real-time via a fast radio transmission link. The data will be received at a shore station and will be displayed on 8 large Tilex screens at Haifa, College Station and Galveston on identical equipment. There will be a strong web presence with all data available internationally.

The educational component of this partnership is an essential component. At the heart of this collaboration is the engagement of faculty and graduate students from both universities in joint research collaborations that provide students with real-world, hands-on growth opportunities and courses at both Universities will be team-taught. The academic and research collaboration will elevate the teaching-through-research missions of both universities in a truly international manner.

While separated geographically by half a world, the Gulf of Mexico and the Mediterranean Sea are viewed as similar bodies of water. In this context, THEMO will provide unique opportunities for comparative analysis of the their related impacts on the environment, industry and people of their regions.

This article was provided by Anthony Knap, Steve Dimarco and John Walpert (Texas A&M University), Roee Diamant, Morel Groper (University of Haifa).

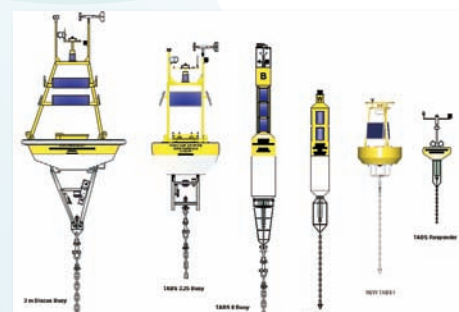


Figure 1: Family of buoys fabricated at GERG includes a 3m discus buoy, 2.25 m discus buoy, Tabs 1 and Tabs 2 buoys, a 1.4 m coastal monitoring buoy and a quick response Responder buoy for spills.

News from the POGO members (cont'd)

Citizen scientists sought to help survey storm-lashed Scottish coastline.

People with a passion for the UK's coastline are being invited to help make history by being part of the largest coastal marine citizen science project ever undertaken.

The £1.7m Capturing Our Coast project, funded through the Heritage Lottery Fund, is designed to further our understanding of the abundance and distribution of marine life around the UK



Dr Hannah Grist, CoCoast project officer for Scotland, surveys the shoreline at SAMS, near Oban. Photo credit: SAMS.

The aim of the project is to recruit and train more than 3,000 volunteers to help build a more accurate picture of the marine life all around the UK.

Collecting data about key indicator species can provide information about how coastal systems are responding to factors such as increased sea temperatures. The research will help scientists to understand how the marine environment is responding to global climate change and inform future policy and conservation strategies.

Led by Newcastle University, the project is a national collaboration involving Hull, Portsmouth and Bangor universities, the Scottish Association for Marine Science, the Marine Biological Association of the UK and the Marine Conservation Society.

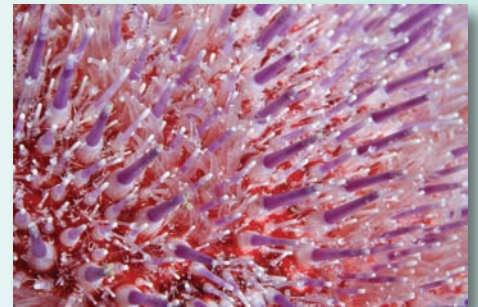
Dr Heather Sugden, Co-Principal Investigator based at Newcastle University, said: "This is the first project of its kind and an exciting

opportunity for anyone with a fascination for marine life and a desire to make a real impact on our understanding - and ultimately the protection - of our coastal environment.

"What this project aims to do is develop a network of citizen scientists who can help us build an accurate picture of marine life all around the UK - a baseline against which we can better understand the impact of climate change and other environmental and human factors."

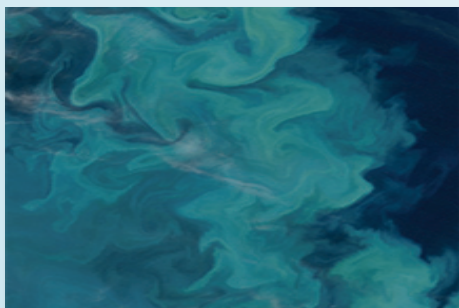
Training and ongoing support will be provided to volunteers to ensure ongoing interest and high quality data. To register for the project, or to find out more, visit www.capturingourcoast.co.uk

This article was provided by Euan Paterson, SAMS media and communications officer.



The European edible sea urchin, Echinus esculentus, is a key indicator species that marine scientists in Oban are keen to trace. Picture by Keith Hiscock.

Increased carbon dioxide enhances Coccolithophores growth, opposite of what was expected.



Moderate Resolution Imaging Spectroradiometer (MODIS) true color image of a coccolithophore bloom in the Barents Sea. Image Credit: Ocean Ecology Laboratory, Ocean Biology Processing Group, NASA Goddard Space Center.

Coccolithophores—tiny calcifying plants that are part of the foundation of the marine food web—have been increasing in relative abundance in the North Atlantic over the last 45 years as carbon input into ocean waters has increased. Their relative abundance has increased 10 times, or by an order of magnitude, during this sampling period.

These findings, reported in the November 26th edition of Science, were based on analysis of nearly a half century of data collected by the long-running Sir Alister Hardy Foundation for Ocean Science (SAHFOS) Continuous Plankton Recorder sampling program.

"The results show both the power of long-term time-series of ocean observations for deciphering how marine microbial communities are responding to climate change and offer evidence that the ocean garden is changing," said Dr. William Balch, senior research scientist at Bigelow Laboratory for Ocean Sciences and a co-author of the paper.

"We never expected to see the relative abundance of coccolithophores increase 10 times in the North Atlantic over barely half a century. If anything, we expected that these sensitive calcifying algae would have decreased in the face of increasing ocean acidification.

Coccolithophores are often referred to as "canaries in the coal mine." Until this data proved otherwise, scientists thought that they would have more difficulties forming their calcite plates in a more acidic ocean. These results show that coccolithophores use the higher concentration of carbon derived from CO₂, combined with warmer temperatures, to increase their growth rate.

"In the geological record, coccolithophores have been typically more abundant during Earth's warm interglacial and high CO₂ periods. The results presented here are consistent with this and may portend, like the "canary in the coal mine," where we are headed climatologically," said Balch.

The lead author of the paper was Sara Rivero-Calle, a PhD candidate at John Hopkins University. In addition to Balch, her co-authors were Anand Gnanadesikan of John Hopkins, Carlos E. Del Castillo of NASA, and Seth D. Guikema of the University of Michigan.

This article was provided by Darlene Trew Crist, Director of Communications, Bigelow Laboratory for Ocean Science.

News from the POGO members (cont'd)

Dolphins validated as sentinel species for mercury exposure in humans.

Humans long have identified with the charismatic Atlantic bottlenose dolphin, and the first data to directly validate the hypothesis of the marine mammal as a sentinel species for public health suggest that the connection is more than skin deep. The study of mercury concentrations in humans was led by epidemiologist Adam Schaefer, MPH, of Florida Atlantic University's Harbor Branch Oceanographic Institute and collaborators from Georgia Aquarium and Colorado State University. The work and its importance in the context of environment-based public health threats were discussed in the December 2015 edition of *Veterinary Sciences* (doi: 10.3390/vetsci2040407).



Examples of the sources, environmental deposition, and trophic transfer of mercury.



Atlantic bottlenose dolphins in Florida's Indian River Lagoon. Image Credit: FAU, Harbor Branch Oceanographic Institute.

A sentinel species is one that is exposed to environmental conditions and studied to predict how the conditions will affect humans. With respect to the bottlenose dolphin, the theory is based largely on its long life span and trophic position as an apex predator, leading to bioaccumulation of organic and inorganic contaminants.

Mercury contamination has been documented via dolphin blood and skin samples collected during capture-release health assessments in Florida's Indian River Lagoon (IRL) estuary, where concentrations were more than four times higher than those in a comparison population from South Carolina's Charleston Harbor.

To assess mercury concentrations in humans, Schaefer et al. collected data from people living near the IRL on frequency and sources of seafood consumption, as well as a hair sample, which was analyzed to gauge mercury intake. The mean total mercury concentration was 1.53 $\mu\text{g/g}$ ($n=135$), which is significantly higher

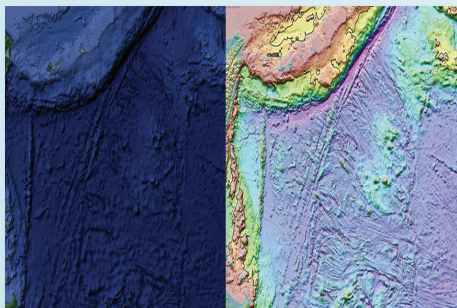
than the U.S. EPA exposure guideline equivalent for human hair of 1.0 $\mu\text{g/g}$; half of participants exceeded the guideline. Hair mercury concentration was significantly associated with frequency of total seafood consumption and with seafood diets obtained entirely or mostly from local recreational sources.

This research represents an approach to ecosystem observation that uses potential impact on humans as a lens. The authors note that animal sentinels may be useful in evaluating risks to humans from threats including climate change, harmful algal blooms, and emerging chemical contaminants.

This article was provided by Larry Macke, ELS, Research Communications Project Manager, FAU Harbor Branch Oceanographic Institute.

New Global Seafloor Map Incorporated into Google Ocean.

Scripps geophysicist helps virtual globe stay up-to-date with the latest science.



The updated Google Earth image at right shows new seafloor features in the western Philippine Sea compared to an earlier version.

The world's most explored virtual globe was recently updated with the latest scientific discoveries along the seafloor. The new features, including the most up-to-date global map of the seafloor developed by Scripps Institution of Oceanography at UC San Diego geophysicist David Sandwell and colleagues, went live on Google Earth just before the new year.

The new global gravity map, recently published by Sandwell and colleagues in the journal *Science*, was used in combination with available depth soundings to provide a more detailed picture of the mountains and valleys along Earth's most unexplored expanse—the ocean floor.

"Google Earth is a wonderful platform for scientists to display scientific data, plan shipboard experiments, and to rapidly assemble information to study undersea earthquakes," said Sandwell. "That's why it's important that Google Earth stay up-to-date with the latest scientific advances."

The update in Google Earth's ocean layer includes thousands of previously uncharted mountains rising from the seafloor, and the first micro-tectonic plate discovered in the Indian Ocean.

The Mammerickx Microplate, which is slightly larger than the size of West Virginia and named after former Scripps research scientist and seafloor mapping pioneer Jacqueline Mammerickx, is revealed by a rotating pattern of grooves and hills that turn the topography of the ocean floor into a jagged landscape. The discovery allowed scientists to pinpoint the exact timing of the initial collision between the India and Eurasia plates that gave rise to the Himalayas.

Scripps alumnus J.J. Becker and Scripps Geological Data Center researcher Chris Olsen worked with Sandwell to provide the publicly available seafloor data to Google.

This article was provided by Annie Reisewitz, Communications and Marketing, Scripps Institution of Oceanography, UC San Diego.

News from the POGO members (cont'd)

Launch of the International Indian Ocean Expedition-2.

Beginning in late 2015 and continuing through to 2020, the Second International Indian Ocean Expedition (IIOE-2) is a major global scientific initiative that seeks to build on the legacy of the first and one of the greatest oceanographic expeditions of all time, the IIOE (1957-65).



IIOE-2 activities being launched by Shri Y. S. Chowdary, India's Minister of State for Science and Technology and Earth Sciences during the International Symposium to commemorate the 50 years of completion of the First IIOE. Photo Credit: INCOIS.

The overarching goals of this ambitious international endeavour are to advance our understanding of the interactions between geological, ocean, and atmospheric processes that give rise to the complex physical dynamics of the Indian Ocean region and to determine how those dynamics affect the climate, extreme events, ecosystems, and human populations. The activities are also focused towards helping to build research capacity in the Indian Ocean rim countries and in motivating efforts to make the oceanographic data from the region more widely accessible to the scientific fraternity. IIOE-2 is co-sponsored by Intergovernmental Oceanographic Commission (IOC), the Scientific Committee on Oceanic Research (SCOR) and the Indian Ocean Global Ocean Observing System (IOGOOS).

Spearheading the Indian activities of this co-ordinated international research endeavour is the Ministry of Earth Sciences (MoES) and its Hyderabad-based R&D Wing, the Indian National Centre for Ocean Information Services (INCOIS).

Commemorating the 50 years of completion of the first IIOE as well as the Golden Jubilee of establishment of India's premier oceanographic institution, the National Institute of Oceanography (CSIR-NIO), an International Symposium on the Indian Ocean titled "Dynamics of the Indian Ocean; Perspective and Retrospective" was organised from the 30 November to 04 December 2015 at NIO, Goa. The Symposium, which was co-sponsored by CSIR-NIO, MoES, SCOR,

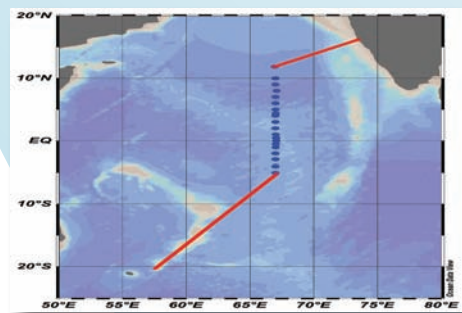
and IOC, provided an ideal forum for over 500 scientists and young researchers from 30 countries to present the results of their studies on the Indian Ocean, review the progress that has been made over the past fifty years in understanding the unique characteristics of the region and to plan future research on many of the outstanding issues. Most appropriate for the occasion were the two Sessions dedicated to the future studies in the Indian Ocean from two different perspectives- the early Career Scientists, and the different National Agencies ("the stakeholders"). A final session on the future IIOE research served as a curtain raiser to the IIOE-2.

On the afternoon of the 4th December, the planned five-year long research activities of IIOE-2 were formally launched by Shri Y. S. Chowdary, India's Minister of State for Science and Technology and Earth Sciences, at an elegant ceremony held at CSIR-NIO. The Implementation Strategy as well as the website of IIOE-2 were also unveiled on the occasion.

This article was provided by P.N. Vinayachandran (Indian Institute of Sciences, India), Satya Prakash, Celsa Almeida, S. Rajan and S.S.C. Shenoi (INCOIS) India

The first scientific cruise under the International Indian Ocean Expedition-2 flagged off.

Close on the heels of the formal launching of the five-year long scientific activities of the Second International Indian Ocean Expedition (IIOE-2), the first scientific cruise of IIOE-2 on board the Indian Research Vessel Sagar Nidhi was flagged off from the Mormugao (Goa) harbour on the evening of 4th December 2015 by Shri Y. S. Chowdary, India's Minister of State for Science and Technology and Earth Sciences. The expedition led by Prof. P. N. Vinayachandran of Indian Institute of Science (IISc), Bangalore and Dr. Satya Prakash of INCOIS, concluded at Mauritius on 22 December 2015 after 18 days of sustained observations and data collection in the western Indian Ocean. Besides twelve scientists from six national research institutions and the Goa University, there were participants from Mauritius, Israel, Singapore, Australia and the UK.



Cruise track and observation stations during the first cruise under IIOE-2 from Goa to Mauritius.

The major goal of this multi-disciplinary scientific expedition was to understand the structure of the water masses in the western Indian Ocean along 67°E longitude and to assess the difference in their characteristics with respect to observations made in the past. The water masses from Red Sea, Persian Gulf and northern Arabian Sea have been observed in this part of the Indian Ocean at different depth layers. Underwater profiles of current, temperature, salinity, oxygen, light and chlorophyll were measured during the cruise. In addition, water samples were collected to a depth of 1000m for various chemical and biological analyses. Samples of zooplankton were collected using nets towed behind the stern of the ship.

It is expected that the data collected during this first step of IIOE-2 will help us to understand the currents and water masses in the western Indian Ocean and thus further our knowledge of the oceanography of the Indian Ocean.

This article was provided by P.N. Vinayachandran (Indian Institute of Sciences, India), Satya Prakash, Celsa Almeida, S. Rajan and S.S.C. Shenoi (Indian National Centre for Ocean Information Services, India)



Participants of the first cruise under IIOE-2 on board the Indian Research Vessel ORV Sagar Nidhi, at Goa harbour, before setting sail. Photo Credit: INCOIS.

News from the POGO members (cont'd)

Loss of Diversity Near Melting Coastal Glaciers.

Sedimentation is impacting an entire ecosystem on the seafloor.

Melting glaciers are causing a loss of species diversity among benthos in the coastal waters off the Antarctic Peninsula, impacting an entire seafloor ecosystem. This has been verified in the course of repeated research dives, the results of which were published by experts from Argentina, Germany and Great Britain and the Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research (AWI) in a study in the journal *Science Advances*. The scientists believe increased levels of suspended sediment in the water to be the cause of the dwindling biodiversity in the coastal region. This occurs when the effects of global warming lead glaciers near the coast to begin melting, as a result of which large quantities of sediment are carried into the seawater.



Dive mission in Potter Cove. Photo Credit: Alfred Wegener Institute / Cristian Lager (CONICET).

Over the past five decades, temperatures have risen nearly five times as rapidly on the western Antarctic Peninsula than the global average. Yet the impacts of the resulting retreat of glaciers on bottom-dwelling organisms (benthos) remain unclear. In response, researchers at Dallmann Laboratory are now mapping and analysing the benthos in Potter Cove, located on King George Island off the western Antarctic Peninsula. Here the Alfred Wegener Institute and the Argentine Antarctic Institute (IAA) operate Dallmann Laboratory as part of the Argentinian Carlini Station. Research concerning benthic flora and fauna has been part of the laboratory's long-term monitoring programme for more than two decades.

"Particularly tall-growing ascidians like some previously dominant sea squirt species can't adapt to the changed conditions and die out, while their shorter relatives can readily accommodate the cloudy water and sediment cover," explains Dr Doris Abele. The AWI biologist and co-author of the study adds: "The loss of important species is changing the coastal ecosystems and their highly productive food webs, and we still cannot predict the long-term consequences."

Publication: Ricardo Sahade, Cristian Lager, Luciana Torre, Fernando Momo, Patrick Monien, Irene Schloss, David K.A. Barnes, Natalia Servetto, Soledad Tarantelli, Marcos Tatián, Nadia Zamboni, Doris Abele: Climate change and glacier retreat drive shifts in an Antarctic benthic ecosystem. *Science Advances* 2015; DOI: 10.1126/sciadv.1500050

This article was provided by Dr. Folke Mehrtens, Press Officer, Communications and Media Relations, AWI.



Benthos community at the seafloor. Photo Credit: Alfred Wegener Institute / Cristian Lager (CONICET).

POGO Activities

POGO Representation at 12th Group on Earth Observation (GEO) Plenary and Ministerial Summit.

GEO is an intergovernmental organisation focussed on Earth Observations and their societal benefits. POGO has been a Participating Organisation (PO) in GEO since its inception in 2005, and led the creation of the "Oceans and Society: Blue Planet" initiative that assembles all the marine elements within GEO. GEO holds plenary meetings annually to which all member states and POs are invited. Every 2-3 years these are combined with Ministerial Summits.

GEO Plenaries are good opportunities to promote ocean observations within the GEO arena, which would otherwise be heavily dominated by terrestrial observation programmes. This can be done through formal statements to the Plenary, through networking and by displaying promotional materials at the venue and in the exhibition area. It is also an opportunity to meet members of the Blue Planet Steering Committee and other participants in the Blue Planet.

The meeting(s) went well, with a lot of enthusiasm all around for Blue Planet. Some highlights include:

- The publication on the Earthzine blog of an interview of Sophie Seeyave, POGO Executive Director, about Blue Planet/ocean observations in GEO.
- The POGO video on ocean observations winning first prize in the GEO video competition. The video was screened to all of the delegates during the Ministerial Summit and was introduced by Sally Jewel, US Secretary of the Interior, who made a short statement on the importance of the oceans. Many participants commented positively on the video afterwards.
- The distribution of a new POGO/ocean observation brochures designed by GEOMAR at the exhibition, along with the POGO folders and POGO DVDs.



GEO Co-Chairs at the 2015 GEO Ministerial Summit. Photo by IISD/ENB.

POGO Activities (cont'd)

- A Blue Planet Steering Committee Meeting, which was very productive. Plans were made for publications, the new governance structure, the implementation plan, 3rd Symposium, and Secretariat support.
- The Plenary's approval of the creation of a new GEO Programme Board, which will include a number of ocean observation representatives.
- An Ocean Observations side event organised by the European Commission, to which Sophie Seeyave was invited to give a presentation on Blue Planet. It was well attended and included many interesting presentations and some good discussion.
- POGO representation at a GEOBON/MBON Side Event and at an evening meeting with the MBON representatives.
- Strong support for Blue Planet during the Plenary and Ministerial, made by Australia, Canada, Norway and Participating Organisations CEOs, GOOS and WMO, among others. POGO also made a statement about its lead role in Blue Planet, and the links being established with GEOBON/MBON. Side discussions were held with delegates from South Africa, Columbia, Canada and UK, who were all interested in being more engaged.

NANO Meetings in Stellenbosch, South Africa.

The NF-POGO Alumni Network for Oceans (NANO) was created in 2010 with the aim to facilitate contacts among the alumni as well as between the alumni, POGO/NF and the instructors involved in the NF-POGO training. The network now comprises 220 alumni from 47 countries. A NANO Coordination Meeting has been held every year since 2010, to which a selection of alumni (usually 10-20) are invited. The aim is to discuss the progress of the Network over the past year (particularly the NANO regional and outreach projects) and to plan the activities for the year ahead.

This meeting was scheduled to coincide with the arrival of the RV Polarstern in Cape Town, marking the end of the North-South Atlantic Floating Summer School, which was partly funded by the Nippon Foundation as part of the NF-POGO Centre of Excellence (see separate article). The POGO Secretariat representatives were therefore able to attend a reception on-board the Polarstern and meet the students and faculty who were involved in the training, as well as meeting with the POGO Chair, Karen Wiltshire, to discuss POGO issues.

The NANO Coordination meeting was productive and resulted in the regional project leaders successfully submitting their project proposals for next year's activities. The Meeting was held back-to-back with a training course on Delft-3D, held at the Council for Scientific and Industrial Research (CSIR), as part of the NANO-Africa regional project on coastal hydrodynamics. The course was taught by NANO "Friend" Christo Rautenbach and it was open to NANO members from outside Africa as well as CSIR and other scientists from Cape Town. A total of around 20 participants attended, including NANO members from Brazil, Iran, Ivory Coast, Mauritius, Togo, Tunisia and Thailand.

Before the Meeting, Sophie Seeyave gave a presentation at UCT about POGO and Coleen Moloney arranged for a series of seminars at UCT and a tour for the participants from the Polarstern training cruise. Sophie also took the opportunity to give a presentation on POGO at CSIR, which is a possible new member of the South African consortium within POGO.



Participants of the NANO Meetings in Stellenbosch, South Africa. Photo Credit: POGO.

Capacity Building Updates



The team is celebrating a water sampling right at the equator line. Photo Credit: Alfred Wegener Institute / Pauhla McGrane.

RV Polarstern arrives in Cape Town after five weeks of on board training

A Team of Young Scientists takes the Vital Signs of the Atlantic Ocean.

Participants of the expedition were 32 international young scientists from 19 different countries in Europe, Africa, Asia and America. They all were sponsored by the Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research (AWI), the Nippon Foundation, the Partnership for Observation of the Global Oceans (POGO) and the Strategic Marine Alliance for Research and Training (SMART) in a concerted effort to increase ocean going training and to build capacity for marine research.

The Atlantic Ocean with its definite biogeographical gradients in temperature and salinity as well as its zones of upwelling is an integral part of our planet's climate system. "With the backdrop of climate change and an increasing El Niño signature it is imperative to know how our oceans function," says Professor Karin Lochte, Director of the Alfred Wegener Institute. And Professor Karen Wiltshire, POGO

Chair, adds: "We therefore need the ships, the instrumentation and, most importantly, well-educated scientists all over the world to secure the ocean's future for our planet."

On a dreary foggy 29 October the RV Polarstern left its homeport Bremerhaven (Germany) on the quest to train 32 young scientists in oceanographic measurements and sampling at sea. During the research cruise the students learned to take oceanographic measurements and to interpret the structure of the water masses. With nets plankton organisms were caught and identified under the microscope. Even a guide for identifying the main algal species was produced. Satellite data were analysed and compared to measurements at sea.

"We as young scientists need as much practical experience as possible, and ship board training on a professional vessel like the RV Polarstern is the perfect training method," says Eleni Bintoudi, aquatic biology student from Greece.

Capacity Building Updates (cont'd)

Geography student Seán Lynch from Ireland adds: "This is an innovative ocean learning experience which includes team building, supervised by professionals. This will serve to increase the overall professionalism of future ocean-going scientists".

While all scientists are looking forward to being on land again and to bringing home their new found expertise in handling large bodies of ocean data from endless instrument casts into the deep, they also are really sad to leave the RV Polarstern and the vast ocean realm.

Amy Wright, marine biology student from Cape Town, says: "This was an awesome experience. I will never forget what I learnt on this cruise and we are all grateful to the crew and teachers for their time and patience".

AWI Director Karin Lochte also draws a positive conclusion: "The young ocean scientists from all corners of the Earth did not only gain new experiences, but all have contributed with their measurements to the ocean data base required for Global Ocean Observation and advancement of climate modelling needed to secure our planet's future."



A Continuous Plankton Recorder is being prepared for deployment. Photo Credit: Alfred Wegener Institute / Philipp Wenta.

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

NF-POGO Centre of Excellence at the Alfred Wegener Institute.

Applications are now being accepted for Year 4 of the Nippon Foundation-POGO Centre of Excellence (NF-POGO CoE) at the Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research (AWI). The training will run from October 2016 to August 2017.

The NF-POGO CoE has provided world class education and training courses in the field of observational oceanography since 2008. Since 2013, the NF-POGO CoE has been hosted by the Alfred Wegener Institute, Germany's foremost polar and marine research institution.

Venue and Background

Located in the North Sea, the NF-POGO Centre of Excellence at AWI will be conducted on the offshore island of Helgoland and the UNESCO reserve Waddensea island of Sylt. Helgoland provides opportunities for the study of open-ocean sciences; shelf/basin interactions are topics of study at Sylt.

Course Synopsis

The training will promote excellence in integrated, multidisciplinary oceanography at a global scale. Scholars will receive ten months of training to include one month of formal introductory training, followed by more detailed courses emphasizing core skills (e.g. writing, scientific presentations, statistics and experimental design) and specialised scientific topics such as modelling, remote sensing, ocean-atmosphere interactions.

Scholars will also receive training in instrumentation, sample collection and analytical protocols. Each scholar will conduct an independent research project during the programme. The scientific staff of AWI can mentor research projects in numerous fields as it is large in number and diverse, with strength in many areas of Observational Oceanography; the scientists on Helgoland and Sylt have unique expertise in biology, ecology, time-series work and coastal processes.

How to apply

The course is open to early-career scientists from developing and developed countries, although preference will be given to those who currently hold a position in a research or academic institution in a developing country and anticipate returning to the country after completion of training. Candidates must have at least a first degree in science. Application details can be found **here**.

The deadline for applications is **20 February 2016**.

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