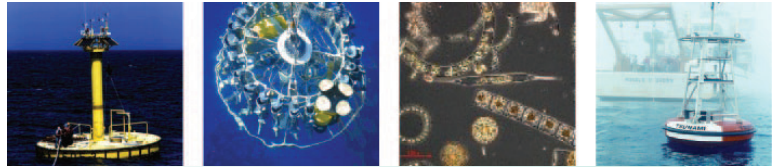




Partnership for Observation of the Global Oceans

Newsletter

Issue 21
Jul 2015



POGO Capacity Building News

Nippon Foundation-POGO Centre of Excellence Scholars at the Alfred Wegener Institute for Polar and Marine Research for 2015

The ten successful candidates for the 2015-16 programme have now been selected and notified. The scholars are from Bangladesh, Brazil, Croatia, Ghana, India, Madagascar, Nigeria, Philippines, Russia and Senegal.

They will receive 10 months of training at AWI's well-equipped training and teaching facilities in marine and oceanographic science. The first half of the training will take place on the UNESCO reserve Waddensea island of Sylt, where shelf/basin interactions will be the topic of study, and the second part of the training will take place on the island of Helgoland focussing on the study of open-ocean sciences.



Aina Le Don Nomenisoa
Madagascar



Baye Cheikh MBaye
Senegal



Galina Abyzova
Russia



Mahmudur Rahman Khan
Bangladesh



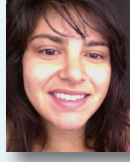
Tsei Senam Kofi
Ghana



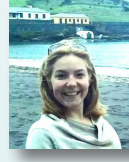
Ayodele Gilbert Ogunkoya
Nigeria



Frances Camille Mendoza Rivera
Philippines



Katherine Amorim
Brazil



Meri Bilan
Croatia



Shahin Kadar Badesab
India

POGO-SCOR Visiting Fellowships 2015

This year, four POGO-SCOR Visiting Fellowships have been selected for this year's programme. The successful fellows are from Chile, China, Cote d'Ivoire and India. Each fellow will be receiving training from three different institutes in the USA (Georgia Institute of Technology; NorthWest Research Associates (NWRA) in collaboration with NOAA/Pacific Marine Environmental Laboratory (PMEL); Colorado Center for Astroynamics Research (CCAR) and in the UK (Plymouth Marine Laboratory), respectively.



Jose David Donoso - Chile

"Advanced numerical ocean modeling by means of high-performance computing"



Qingyang Sun - China

"Data analysis, assimilation, and integration of Fixed-Point Time-Series Observations (floats, moorings and buoys) with new satellite ocean observations"

Abaka Brice Hervé Mobio - Cote d'Ivoire

"Spatial and temporal monitoring of the Ivorian continental shelf surface current fronts: Maximum Cross-Correlation (MCC) technique application"



Deepulal Parenkat Mony - India

"How variability in atmospheric CO₂ and CH₄ concentrations impact the air-sea fluxes of these greenhouse gases in a coastal region"



News from the POGO members

Scientific voyage to the deep sea

Deeper reefs are monitored during month-long expedition



Scott Reef, off the coast of North West Australia. Photo Credit: AIMS

Scientists have returned from a month-long expedition from April to May at Scott Reef and the submerged shoals near the Kimberley coast on board the Australian Institute of Marine Science vessel, Solander and the US-based Schmidt Ocean Institute's research vessel, Falkor. The research brings together scientists from the Australian Institute of Marine Science (AIMS), the University of Western Australia, Stanford University and Griffith University.

Dr Andrew Heyward, chief AIMS scientist on board Falkor, has made initial observations of some of the deeper water areas in previous years and he is excited to revisit them with the advanced mapping and imaging equipment the Falkor brings to the project.

"Using fixed moorings and a full suite of oceanographic sensors from the ship, we will map the ocean circulation and seabed environment in fine detail, measure the structure and productivity of the overlying water column and see how this information links to patterns of habitats observed on the seabed," said Dr Heyward.

The scientists are particularly interested in looking into the long term changes in the little understood deeper reefs from a variety of environmental factors and they will explore the connections between ocean circulation, habitat patterns and benthic biodiversity on two deep-reef ecosystems in the region along with observing a coral spawning event during the cruise.

The seafloor and bottom coral communities will be mapped using the Falkor's Remotely Operated Vehicle (ROV). In addition to the live video feed, the ROV carries multiple cameras recording both forward and downward views, with the location of every image precisely known. This allows the scientists to create detailed maps of the major habitats, like those dominated by deeper water corals and understand the link to the ocean circulation.

The cruise coincides with a possible April coral spawning.

This article was provided by Georgina Kenyon, Australian Institute of Marine Science

A web portal on sea ice for public and science

The platform www.meereisportal.de represents an example of the knowledge transfer process of science to society with respect to sea ice as an important climate indicator. The platform is maintained by institutional support from different departments and partners and is embedded in the the frame of the Helmholtz Climate Initiative, Regional Climate Change (REKLIM).

The platform [meereisportal.de](http://www.meereisportal.de) distributes scientific qualified information focused on sea ice to a German audience. It provides comprehensive, high quality and up-to-date data and information. The portal aims at user specified and individually tailored information and services. Through the multilevel structure (breadth and depth) of the data and information portal and its user specified products [meereisportal.de](http://www.meereisportal.de) responds to the increasing demands of various user groups.

Following this approach, knowledge relevant for the society is derived from scientific results and supports activities in the fields of information, education and decision-making. In recognition of its excellent service the platform [meereisportal.de](http://www.meereisportal.de) received an award in 2015 within the 'Germany – Land of Ideas' initiative.

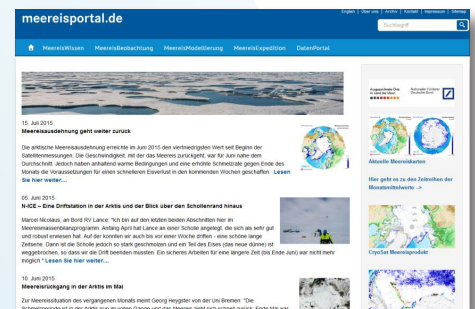
This article was provided by Renate Treffeisen, Alfred Wegener Institute

ITCOcean training course at INCOIS

The ITCOcean training course on "Indian Ocean Dynamics: From the Large-scale Circulation to Small-scale Eddies and Fronts." will be held at INCOIS, Hyderabad during November 16-27, 2015. The Announcement brochure and the Application form is available at www.incois.gov.in

The link is <http://www.incois.gov.in/documents/ITCOcean/Brochure-IndianOceanDynamics.pdf>

Prof. Julian McCreary from the International Pacific Research Centre (IPRC), University of Hawaii, USA will be conducting the course. The deadline for applications is September 15, 2015.



The meereisportal provides information and data to scientists and the public. Image Credit: Alfred Wegener Institute

News from the POGO members (cont'd)

Climate change pushing fish northwards in the subarctic Barents Sea

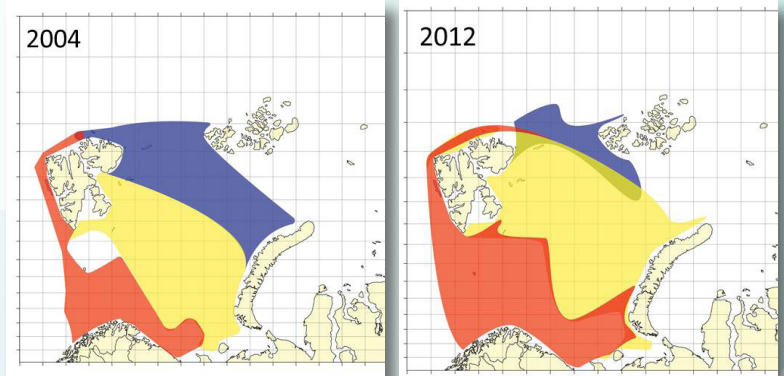
Norwegian studies find Arctic fish species are vulnerable to climate change

In the last decade, water temperatures in the subarctic Barents Sea have been the warmest on record, and the sea ice has retreated. Each year since 2004, Norwegian and Russian marine scientists have been at sea in late summer when the sea ice coverage in the northern Barents Sea is at its lowest. Consequently, we can demonstrate that southern fish communities are gradually moving northwards. In these fish communities we find species such as cod, haddock, deepwater redfish and long rough dab. These species are large generalist fish predators with long migration routes. Meanwhile, the stocks are also large. The living conditions for these fish species have probably improved in the northern Barents Sea, in terms of both temperature and food availability.

It appears that the Arctic fish community does not cope with rising sea temperatures as well as other communities. This fish community includes species such as Greenland halibut, snailfishes, sculpins and eel pouts. Characteristic features of Arctic fish species are that they are small, stagnant and more dependent on finding their food on the seabed. As Arctic fish species have a more specialized diet, they are more vulnerable to climate change. The large fish species from the south will compete with the Arctic species for food, and even feed directly on these smaller fish species. It is anticipated that this could result in the disappearance of some Arctic fish species, such as the gelatinous snailfish, from our northernmost areas.

Many modelling studies have indicated that climate change, particularly increased sea temperatures, will result in species and communities moving. The pace of range shifts in marine fish species is globally projected to 40 km/decade on average. We found that the fish communities in the Barents Sea moved up to four times faster than this in the period 2004-2012.

This article was provided by Maria Fosshem, Norwegian Institute of Marine Research and Raul Primicerio, The Arctic University of Norway.



2004: These were the areas where the fish communities could be found in 2004. Fish communities: Arctic (blue), Central (yellow) and Atlantic (red).
2012: Eight years later, the translocation of the fish communities is drastic.
Image Credit: IMR

New research vessel named KAIMEI

The Naming and Launching Ceremony takes place

On June 7, 2015, the naming and launching ceremony of JAMSTEC's new research vessel took place at the Shimonoseki Shipyard owned by Mitsubishi Heavy Industries, Ltd.

In response to public interest in marine research and development, JAMSTEC had invited the public to help name its research vessel. The name "KAIMEI", which can mean clarification and elucidation in Japanese, was selected from a large number of suggestions because it conveys an impression of "opening a new era in marine research and development" and also reflects its mission to unravel mysteries of the deep seafloor through deep sea exploration.

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 final outfitting and sea trials, the research vessel is scheduled to be delivered at the end of fiscal year 2015, followed by crew training before it starts marine research and exploration.



JAMSTEC's new research vessel "Kaimei" is launched Photo Credit: JAMSTEC



Principal particulars:

Length overall Approx. 100 meters
Beam 19.0 meters
Gross tonnage Approx. 5,800 tons
Sea speed 12.0 knots
Cruising distance 9,000 nautical miles
Accommodation 65 (27 crew members, 38 researchers)

This article was provided by Kaori Sato, International Affairs Division, JAMSTEC

News from the POGO members (cont'd)

Review Paper by CAS Members on Pacific Ocean Circulation and Climate Published in Nature for the First Time

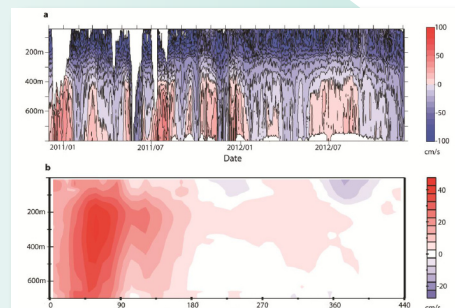
In June 2015, the review paper "Pacific western boundary currents and their roles in climate" was published in Nature. Led by Academician Hu Dunxin from Institute of Oceanology, Chinese Academy of Sciences, with 17 scientists in oceanographic and climatological communities from different countries, this is the first review paper in Nature on the topic of the Pacific Ocean circulation and climate, and is also the first review paper published in Nature by Chinese oceanographers.

This 5000-word paper by Hu Dunxin, Wu Lixin, Cai Wenju, et al. turns out to be authoritative and influential. It synthesises what has been learned and highlights what remains to be resolved. Pacific Western Boundary Currents (WBCs) are strong oceanic flows which modulate the regional and global climate through their heat advectations and interaction with the atmosphere. Their variations could make an influence on the largest warm water mass in the global ocean - Western Pacific Warm Pool, and hence ENSO cycle and global climate. The warm pool variations could also affect the East Asian Monsoon and floods/droughts in China by changing the atmospheric circulation. Therefore, studies on the Pacific WBCs are particularly important. This article points out the importance of the Pacific WBCs in the global ocean and climate system, and summarises several important scientific findings based on in situ observations in the western Pacific over the past 20 years: New Guinea Coastal Undercurrent, Mindanao Undercurrent, Luzon Undercurrent, North Equatorial Undercurrent, and New Ireland Coastal Undercurrent have been discovered altering our conventional understanding of the structure of the Pacific WBCs.

It also presents some recent progress on the relationship between the Pacific WBCs and the climate. The influence of the WBCs variation on the climate change (El Niño and La Niña), especially, the southward shift of the NEC/SEC bifurcations over the past 60 years strongly affects the climate over the Pacific by changing the heat advection of the WBCs. Besides, under global warming, the Pacific WBCs variations directly influence the Indonesian Throughflow (ITF) and the global thermohaline circulation; Pacific WBCs could also influence the East Asian Monsoon, Australian Monsoon (e.g. South China Sea monsoon) and floods/droughts in China by changing the heat storage of the warm pool.

Based on previous studies, Hu et al. came up with a systematic analysis on the variations of different components of the Pacific WBCs system during El Niño, and emphasise that the Pacific WBCs and climate over the Pacific will continue to change in the coming century due to past and future emissions of greenhouse gases. The paper also identifies some important scientific topics to be investigated through future research. Coordinated efforts in observation, process study and modeling are suggested to target the above issues. The paper can be seen at <http://www.nature.com/nature/journal/v522/n7556/full/nature14504.html>

This article was provided by Dunxin Hu, Institute of Oceanology Chinese Academy of Sciences



Profiles of New Guinea coastal undercurrent

Scientists will use robots to explore deepest ocean

Extreme ocean regions known as 'hadal zones' to be studied

Scientists from the Oban-based Scottish Association for Marine Science (SAMS) will use custom-built robots to explore the deepest parts of the ocean in a bid to discover how life is sustained thousands of metres below the surface. The research team led by Professor Ronnie N. Glud, who is based at the University of Southern Denmark and SAMS, will take the unique step of studying and sampling organisms in their own environment, thousands of metres below sea level. These extreme ocean regions, known as 'hadal zones', occur where one plate of the Earth's geological crust is sliding underneath a neighbouring plate, forming deep trenches in the seafloor.

The Hades Project requires three purpose-built robots to operate at depths of up to almost 11 kilometres.

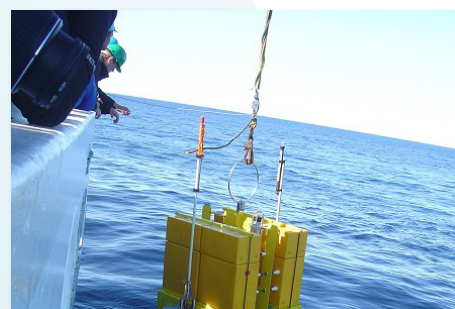
Previous expeditions led by Professor Glud – most notably to the Mariana Trench (2013), the deepest part of the ocean, have revealed surprisingly high levels of biological activity at nearly 11 kilometres deep. Now the aim is to investigate how life is sustained at these depths and how its activity affects the biogeochemical functioning of the oceans and the Earth.

Professor Glud said: "It is extremely difficult to investigate what actually happens in the extreme deep. Organisms that are removed from their natural extreme environment and studied in a laboratory will inevitably be affected – and potentially killed – by the large pressure difference during sample recovery. It is therefore important to examine the organisms and their metabolic activity in that environment."

The three trenches to be visited by the researchers are in the Pacific Ocean: the Atacama Trench off Chile (max depth 8,068 metres), Japan Trench south and east of Japan (max depth 9,504 metres) and Kermadec Trench north of New Zealand (max depth 10,047 metres).

The five-year project has received a European Research Council (ERC) Advanced Grant of 3,185,000 Euros.

This article was provided by Euan Paterson, The Scottish Association for Marine Science



Prototype of an autonomous robot after test dive.
Photo Credit: Ronnie Glud

News from the POGO members (cont'd)

PML scientists to use latest European Sentinel satellite to study lakes and coastal waters

As one of six sensor types to be launched over the next few years as part of the Copernicus project, the satellite, 'Sentinel-2a', was sent up on a Vega rocket from Kourou in French Guiana with the aim of returning images of the planet's surface in visible and infrared light.

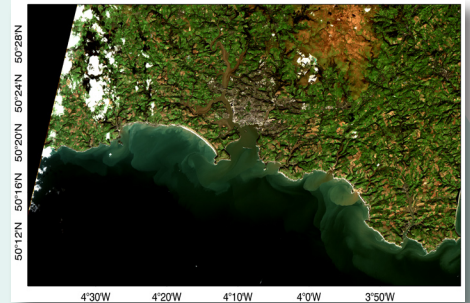
The data will map global natural disasters like volcanic eruptions and floods, water quality and sediment levels in lakes and coastal waters, with greater detail and higher frequency than previous satellites have before been able to provide.

Plymouth Marine Laboratory's (PML) Head of Science for Earth Observation Steve Groom commented, "what makes Sentinel 2, and the entire Copernicus programme special, is the continuity of coverage. Up until now, space agencies have typically launched single satellites to gather data, yet once that satellite reaches the end of its life the data stop. Now, over the next 20 years, with Sentinel b, c and d following on from Sentinel-2a, we are almost guaranteed no gaps in the data. The images received from Sentinel 2 will benefit the work we do at PML hugely by being more frequent, with higher resolution than previous satellite data".

PML will use the spacecraft to gather information on coastal and inland waters, to assess levels of sediment and turbidity, as well as monitoring lakes to detect organisms which could be harmful to human and animal health, such as cyanobacteria blooms.

Craig Donlon, ESA Principal Scientist for oceans and ice visiting PML commented "There are a number of things about Sentinel 2 which are really remarkable. There will be a massive amount of data made available in an operational context through Copernicus with an open and free data policy. This is going to result in an unprecedented amount of data available on the coastal zone which will be incredibly useful for coastal managers, policy makers, planners, local authorities and national governments for the next 20 years. The intention is to invest in the space hardware, infrastructure, services and the people who will use the data, and that's where PML comes in: to train up this generation of scientists who are able to work with the data for societal value."

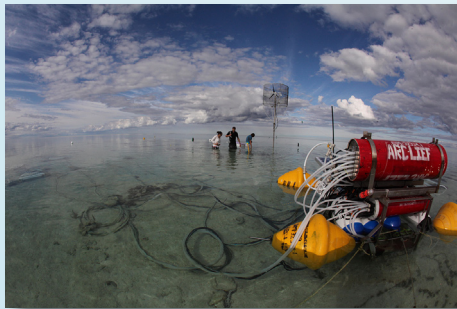
This article was provided by Helen Murray & Steve Groom, Plymouth Marine Laboratory



True colour image of Plymouth Sound from Space. Lighter colours off the coast indicate suspended particulate.
Image Credit: Silvana Mallor/NEODAAS

Paving the Way for an Early Warning System for Coral Reefs

Team offers improved approach to monitor health of coral reef ecosystems



The researchers collected information on seawater at Heron Reef using an integrated sensor network. Photo Credit: David I. Kline

A new study on Australia's Great Barrier Reef showed that corals are continuously exposed to two key climate change-related stressors throughout the year, but not necessarily at the same time. The results can help scientists better monitor the exposure of coral reef ecosystems to global climate change.

For six months, an international team led by scientists at Scripps Institution of Oceanography at UC San Diego collected high-resolution measurements of temperature, pH, carbonate chemistry, and other key environmental parameters on the Heron Island coral reef flat, located in the southern Great Barrier Reef. The results revealed that exposure to low pH and high water temperature occur in a non-synchronized way, which suggests that coral reefs could be subject to stressful conditions more often than scientists previously thought.

"Corals are being exposed to environmental stressors at different times, which could allow a reef some recovery time between stress events, such as a warm-water bleaching event," said David Kline, a project scientist at Scripps and study lead author. "We can use this new information to develop a warning system for both temperature and pH stress events on coral reefs."

The study, published in the journal PLOS ONE, is the first to provide a high-resolution, long-term dataset of seawater carbonate chemistry on a coral reef flat.

Climate change and ocean acidification are widely considered to be the largest threats to coral reefs globally. The researchers hope that these results illustrate the importance of including both temperature and pH in computer models that predict when coral reefs are most likely to be impacted.

The study included researchers from the University of Queensland in Australia, Stanford University, Conservation International, Carnegie Institution, University of Hawaii, University of Alaska, Institut Océanographique Paul Ricard, and the Hebrew University of Jerusalem.

The research was funded by Australian Research Council (ARC) Linkage Infrastructure, Equipment and Facilities grants, an ARC Centre of Excellence grant, a Queensland Government Smart State Premier's Fellowship, National Science Foundation grants, and the Pacific Blue Foundation.

This article was provided by Annie Reisewitz, Scripps Institution of Oceanography

News from the POGO members (cont'd)

JPI Oceans SRIA is published

JPI Oceans has published its first Strategic Research and Innovation Agenda (SRIA) and was officially released at the First JPI Oceans conference on May 7 2015. The SRIA presents ten Strategic Areas, developed and agreed by JPI Oceans (with the support of CSA Oceans) as strategic priorities for marine and maritime research in Europe. The Strategic Areas are:

- Exploring Deep Sea Resources
- Technology and Sensor Developments
- Science Support to Coastal and Maritime Planning and Management
- Linking Oceans, Human Health and Wellbeing
- Interdisciplinary Research for Good Environmental Status
- Observing, Modelling and Predicting Oceans State and Processes
- Climate Change Impact on Physical and Biological Ocean Processes
- Effects of Ocean Acidification on Marine Ecosystems
- Food Security and Safety Driving Innovation in a Changing World
- Use of Marine Biological Resources through Development and Application of Biotechnology

Actions within the Strategic Areas will vary in size, scope and duration. Specific actions in the cross-cutting fields of research infrastructures, science-policy interactions, and human capacity building are also identified as being necessary to address the overall vision.

The SRIA will provide the basis for the selection and implementation of joint actions. Actions will be taken forward when at least four countries agree to participate within JPI Oceans. The actions will make use of a range of fit for purpose tools and will always seek to align efforts at a European level.

The Management Board of JPI Oceans is currently discussing which actions will be taken forward in the first phase of implementation. These activities will be published in an Operational Plan.

The Strategic Research and Innovation Agenda can be viewed at <http://www.jpi-oceans.eu/library?refid=246303>



The first copies of the Strategic Research and Innovation Agenda were presented to the Norwegian State Secretary Dilek Ayhan, Belgian State Secretary Bart Tommelein and, Director General of DG Research & Innovation Robert-Jan Smits. Photo Credit: JPI Oceans

This article was provided by Tom Redd, Willem Demoor, Kathrine Angell-Hansen & Jacky Wood, JPI Oceans Secretariat

International ocean experts join forces in the EU large scale research project AtlantOS

The AtlantOS project sets out to enhance the integration and effectiveness of Atlantic Ocean observing and information delivery

AtlantOS, one of the recently launched Horizon 2020 projects under the Blue Growth portfolio is focusing on Atlantic Ocean observations in support of research, innovation and services. 63 partners from 18 countries set out to join forces to make in-situ observing of the whole Atlantic Ocean more integrated, effective and sustainable. The EU is funding AtlantOS with 21 million euros over a period of four years.

The kick-off meeting of AtlantOS was held from 10th to 12th of June in Brussels with the participation of research institutes, universities, research networks and the private sector. A plenary session held on the first day included talks from invited speakers, a panel discussion on the international perspectives and presentations on the work program. The rest of the meeting consisted of project planning activities, break-out sessions for strategic integrating themes and a final discussion.



AtlantOS will be a regional contribution to the Blue Planet Initiative under GEO (Group on Earth Observation) and the Global Ocean Observing System (GOOS). The project builds upon the Galway Statement on Atlantic Ocean Cooperation which connects actors in Europe with those in the United States and Canada with ambition to better understand the Atlantic Ocean and to promote the sustainable management of its resources.

The project is coordinated by GEOMAR Helmholtz Centre for Ocean Research Kiel, Germany and several POGO Members are providing expertise to the consortium including the Scottish Association for Marine Science (SAMS), Alfred Wegener Institute for Polar and Marine Research (AWI), Centre National de la Recherche Scientifique (CNRS), Institute of Marine Research (IMR) Norway, Sir Alister Hardy Foundation for Ocean Science (SAHFOS), Royal Netherlands Institute for Sea Research (NIOZ), Flanders Marine Institute (VLIZ), Instituto Español de Oceanografía (IEO), Institut Français de Recherche pour l'expl. de la mer (IFREMER), Plymouth Marine Laboratory (PML) and Woods Hole Oceanographic Institution (WHOI). AWI is leading the task on capacity building in the Atlantic.

The Atlantic Ocean is a major trade route, provides the oxygen we breathe, supplies the fish we consume and is responsible for the mild European climate. Environmental change causes the ocean to warm, sea level to rise, fish populations to decline and migrate, the water to become more polluted, more acidic, deoxygenized and less biodiverse. In order to understand and manage the change, encourage more conservation and develop the ocean more sustainably nations are in urgent need for more comprehensive ocean information. An already well coordinate space based observing capability needs to be complemented with an equally well-coordinated in-situ component to jointly deliver integrated ocean information to assess current trends and predict future scenarios.

For more information on the AtlantOS project visit www.atlantOS-h2020.eu

Content for this article was provided by Martin Visbeck (GEOMAR), Anuschka Miller (SAMS) and Karen Wiltshire (AWI)

News from the POGO members (cont'd)

Measuring an ocean of change

Researchers have put in place ongoing measurements of the East Australian Current in the seas off the east coast of Australia



Australia's new Marine National Facility research vessel, Investigator, at sea
Photo Credit: CSIRO

The collaboration between CSIRO, the Marine National Facility and the Integrated Marine Observing System (IMOS) will enable the maintenance of multi-year monitoring of the current.

The East Australian Current sets the whole structure of the Tasman Sea, influencing the climate, ecosystem, and commercial and recreational fishing. If the current was not there, we would have a very different Tasman Sea.

The current moves massive amounts of water – each second transporting more than 25 million cubic metres of water, or the equivalent capacity of 10,000 Olympic swimming pools, southwards. It is a key component of global ocean circulation, moving heat, freshwater and nutrients around the South Pacific, and is the dominant mechanism for the redistribution of tropical Pacific Ocean heat between the ocean and atmosphere in the Australian region.

The waters in the Tasman Sea have warmed by more than 2 degrees Celsius, faster than other parts of the world's oceans. Monitoring the East Australia Current provides information of the large-scale drivers of regional ocean change. These changes may result in subtropical marine species moving into temperate waters, altering the habitat of many species.

A voyage in May aboard Australia's new Marine National Facility research vessel, Investigator, deployed six large moorings, from the continental slope to the deep ocean off Brisbane. This is where the East Australian Current approaches its maximum strength and its flow is relatively uniform so the current's average flow and how it varies over time can be measured.

The IMOS observations will provide significant new insights into the variable nature of the East Australian Current.

This article was provided by Simon Torok, Communication Manager, Oceans and Atmosphere Flagship CSIRO

The oceans can't take any more: researchers fear a fundamental change in the oceans

Our oceans need an immediate and substantial reduction of anthropogenic greenhouse gas emissions. If that doesn't happen, we could see far-reaching and largely irreversible impacts on marine ecosystems, which would especially be felt in developing countries. That's the conclusion of a new review study published in Science. In the study, the research team from the Ocean 2015 initiative assesses the latest findings on the risks that climate change poses for our oceans, and demonstrates how fundamentally marine ecosystems are likely to change if human beings continue to produce just as much greenhouse gases as before. The researchers' statement, above all, addresses those individuals who will attend the international climate conference COP21 in Paris this December. Their study offers four key takeaway messages for the negotiators and decision-makers who will convene there:

1. The oceans greatly influence the climate system and provide important services for humans.
2. The impacts of anthropogenic climate change on key marine and coastal species can already be seen today. Many of these plant and animal species will face significant risks in the decades to come, even if we succeed in capping carbon dioxide emissions.
3. We urgently need an immediate and substantial reduction of carbon dioxide emissions in order to avoid widespread and above all irrevocable harm to ocean ecosystems and the services they provide.
4. As atmospheric CO₂ increases, the available protection, adaptation and repair options for the ocean become fewer and less effective, and with them the odds that marine life forms can successfully adapt to these rapid changes.



Photo Credits: Louis Teyssié, AWI

The Ocean 2015 initiative was launched to provide extensive information on the future of the oceans as a resource for decision-makers participating in the COP21 conference. The international research team is supported by the Prince Albert II of Monaco Foundation, the Ocean Acidification International Coordination Center of the International Atomic Energy Agency; the BNP Paribas Foundation and the Monégasque Association for Ocean Acidification.

A summary of the review study is published in Science: J.-P. Gattuso et al: Contrasting futures for ocean and society from different anthropogenic CO₂ emission scenarios, Science 3-July-2015

This article was provided by Margarete Pauls, Alfred Wegener Institute

POGO Activities

Second Blue Planet Symposium hosted by CSIRO in Cairns, Australia



L-R: Andy Stevens, Sophie Seeyave & Jonathan Hodge at the 2nd Blue Planet Symposium. Photo Credit: POGO

POGO first proposed the "Oceans and Society: Blue Planet" initiative to the Group on Earth Observations (GEO) in 2011, and convened the Blue Planet Kick-Off Symposium in Brazil in November 2012, with funds from the Canadian Space Agency. Following the success of that Symposium, CSIRO offered to host a 2nd Symposium to mark its commitment to ocean observations under its forthcoming chairmanship of the Committee on Earth Observation Satellites (CEOS). Since we generally try to combine NANO meetings with other international conferences, a NANO Meeting was held back-to-back with the Symposium. Funding from the Nippon Foundation and from GEO was obtained to enable nine NANO members to attend the Blue Planet Symposium and the NANO Meeting.

The Symposium was a success, bringing together over 100 delegates from around the world, representing a diverse range of international and regional networks, including POGO, NANO, IOC/GOOS, IODE, CEOS, GODAE-OceanView, GEO, the World Ocean Assessment, IOOS, IMOS and many others. Sophie Seeyave provided overview presentations on Blue Planet and POGO in the opening session, and gave the concluding remarks, as well as chairing Plenary and Discussion Sessions on

"Developing Capacity and Societal Awareness". Uwe Send gave a presentation on OceanSITES, and Megan Davis (Harbor Branch Oceanographic Institute) gave a presentation on Our Global Estuary that also mentioned links to POGO. Several meetings of the Blue Planet Steering Committee were held, and some firm commitments were made by the participating organisations to develop Blue Planet further and transition from the "community mobilisation" stage to the implementation phase, and to strengthen the focus on end-user engagement and the provision of products and services that are useful, usable and used for societal benefit. It was agreed that Blue Planet should apply to be an Initiative in the new GEO structure, aspiring to spin off a number of end-to-end services as GEO Flagships. For this, a Strategy/Implementation Plan will need to be elaborated. Plans for a 3rd Blue Planet Symposium were also discussed. There has been a long-standing proposal from the USA to host this, and further details were provided. The proposal is for it to be held jointly with RCN (Ocean Observation Research Coordination Network) and CZCP (GEO Coastal Zone Community of Practice), back-to-back with the OCEANS'16 conference on ocean science, engineering and policy that will take place in Monterey, CA, USA in Sept 2016.

POGO representation at other international meetings

European Marine Board Spring Plenary, Ghent, Belgium, 29-30 April 2015

Since one of the outcomes of the POGO-16 Meeting was to strengthen collaboration with the Marine Board, Sophie Seeyave attended this Meeting to interact with the members and Secretariat of the Marine Board and discuss areas of mutual interest, including the possibility of setting up joint Working Groups focussing on ocean observation-related topics. The Marine Board is currently finalising a policy paper on deep-sea research and planning to set up a Working Group on biological observations. A decision was made to set up a new Working Group on citizen science that will start in autumn 2015. All of these topics are of interest for POGO.

28th Session of the IOC Assembly, June 2015

Future priorities of the IOC will include a partial restoration of capacity development programmes and the strengthening of the regional sub-commissions. In particular, it is proposed to: (1) strengthen tsunami and coastal sea-level hazard preparedness and awareness with focus on SIDS and LDCs, (2) strengthen engagement with UN institutions and processes, including technical guidance and training for monitoring ocean SDG objectives and climate change adaptation and mitigation, (3) ensure partial restoration of funding to core ocean research and observational activities which help leverage the collective contribution of all IOC Member States, including a focus on capacity development that will build local services from ocean data and forecast system infrastructure, and marine spatial planning.

A new activity of IOC is the Global Ocean Science Report (GOSR), which is envisaged to provide an overview on nations (i) investments, (ii) resources, and (iii) scientific productivity in Ocean Science by June 2016. It will provide a tool for mapping and evaluating the human and institutional capacity of Member States in terms of marine research, observations and data/information management, as well as a global overview of the main fields of interest, technological developments, capacity building needs and overall trends. The Global Ocean Science Report (GOSR) is part of the voluntary commitment of the IOC at Rio+20.

Regarding the Second International Indian Ocean Experiment (IIOE-2), the Assembly agreed to launch IIOE-2 at Goa, India, on the 4th of December 2015, for an initial period of five years, and adopted the IIOE-2 Draft Science Plan Version 1 (13 May 2015) developed by SCOR as the scientific basis for IIOE-2. The IOC encourages IOC Member States, IOC Regional Subsidiary Bodies, including Member States of IOCINDIO, and other relevant organisations to propose, coordinate and promote research projects to implement IIOE-2 science priorities, noting the ongoing East Indian Ocean Upwelling Research Initiative and West Indian Ocean Upwelling Research Initiative.

These articles were provided by Sophie Seeyave, POGO Secretariat

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