

OCEAN OBSERVATIONS

Ocean observations are important for society

We live on a Blue Planet where the Ocean benefits many sectors of society. We rely on the ocean for food, transport and recreation, and even for 50% of the oxygen we breathe. It is Earth's largest reservoir of heat, water and carbon. Rates of change of these variables influence the environmental conditions we experience on land including our weather and climate. However, the ocean is subject to a diversity of threats including pollution, ocean warming and loss of ice cover, reduction of bio-diversity, over-fishing and ocean acidification. The Group on Earth Observations has defined 9 societal benefit areas: water, weather, agriculture, climate, health, biodiversity, disasters, energy and ecosystems; the ocean impinges on all of these. It is only through the collective efforts of all nations that we can observe the oceans, to understand and predict better their role in the Earth system.

What is POGO?

The Partnership for Observation of the Global Oceans (POGO) was founded in 1999 during a meeting of the world's major oceanographic institutions and included Directors of Scripps Institution of Oceanography and Woods Hole Oceanographic Institution (USA), and the Southampton Oceanography Centre (UK), at the Intergovernmental Oceanographic Commission of UNESCO (IOC) in Paris. This meeting confirmed the value of creating a new partnership and defined the initial mission statement and terms of reference.

In just over ten years, the membership of the POGO has grown from 17 institutions in 12 countries, to 37 institutions in 21 countries, including developed and developing nations on all continents and in both hemispheres. POGO is supported from annual dues subscribed by the Members, and by grants

from charitable foundations. It has a Secretariat at the Plymouth Marine Laboratory in the UK. The current Chair is Prof. Peter Herzig, Director of GEOMAR Helmholtz Centre for Ocean Research Kiel; the incoming Chair (2013-2014) is Prof. John Field, Director of the Marine Research Institute in Cape Town, South Africa.

The POGO Agenda

As stated at its founding, the objective of POGO is to make a major contribution to the attainment of sustained *in-situ* observations of the global ocean that

World map showing the extent of POGO capacity building activities and the locations of the 37 member institutions (for complete list go to <http://ocean-partners.org/about-pogo/partners>)

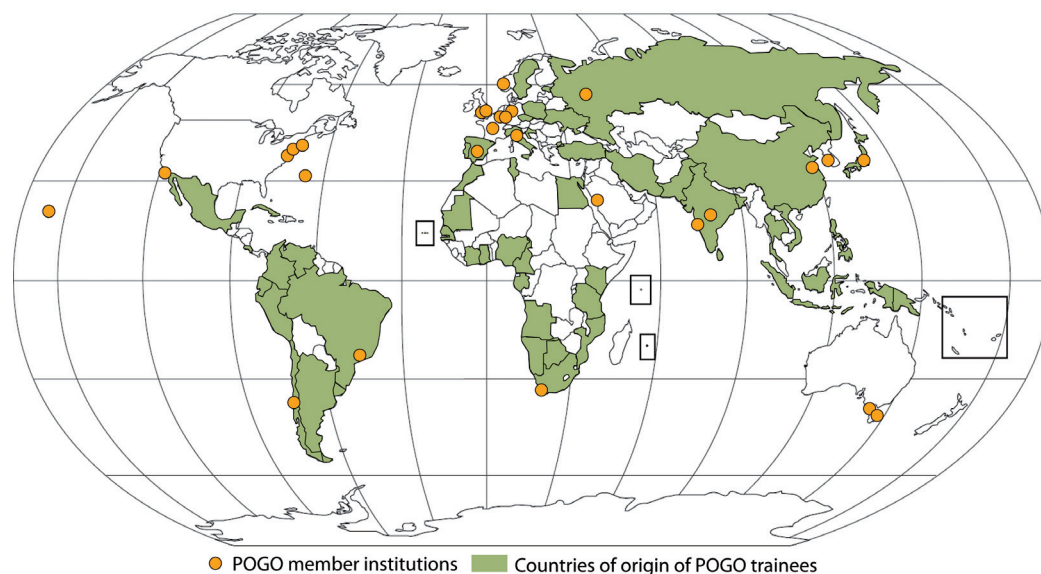
meet the requirements of international research and operational programs. As a means of attaining this objective POGO:

- Initiates key actions to enable effective coordination, integration, and implementation of international ocean observing strategies in close collaboration with the Global Ocean Observing System (GOOS);
- Establishes collective agreements among institutions to promote timely developments in ocean science;
- Develops and promotes coordinated views of ocean insti-

POGO

— joining forces to observe the ocean for science and society

For more than a decade, the Partnership for Observation of the Global Oceans, POGO, has served as a forum for leaders of major oceanographic institutions around the world to promote global oceanography. POGO Scientific Coordinator, **Sophie Seeyave** and Executive Director **Trevor Platt**, look back at its successes and its aspirations for the future





tutions concerning ocean observation and science to governments, international bodies, and others;

- Facilitates linkages between oceanographic research and operational institutions in relation to their goals, plans, and programs;
- Undertakes capacity building;
- Promotes sharing of facilities and infrastructure;
- Encourages interdisciplinary use of observing infrastructure;
- Conducts public outreach.

POGO provides a forum for Members to meet with their peers, and with senior officials of partner organisations, to discuss issues of mutual concern. It also serves as a credible voice for the marine science community, through its leadership role in the informal grouping Oceans United (<http://www.oceans-united.org>), and as an advocating body for the establishment of an integrated, global ocean observing system.

POGO's major achievements

POGO's successes have been several and far-reaching and include:

In its Sao Paulo declaration of 2001, POGO drew attention to the world imbalance between Northern and Southern Hemispheres in the capacity to observe the oceans, recommend-

An Argo float at the surface south of Cape Verde, with RV Maria S. Meran in the background

Photo credit: Helmholtz Centre for Ocean Research Kiel (GEOMAR)



RV Polarstern measuring ice thickness with the SIMS (Sea Ice Monitoring System)

Photo credit: Gerit Birnbaum, Alfred Wegener Institute

ing immediate action to enhance such capacity in developing countries. The result was establishment by POGO of a capacity-building programme. In the Sao Paulo declaration, POGO also underlined the relative paucity of ocean observations in the Southern Hemisphere compared with the Northern Hemisphere and called for intensification of observing in the Southern Hemisphere. A direct, and rapid, response was made by POGO member JAMSTEC (Japan Agency for Marine Earth Science and Technology), which organised a circumnavigation of the Southern Hemisphere, the BEAGLE Expedition: an excellent example of a direct and significant action resulting from a public statement of POGO.

Coincident with the establishment of POGO, the Argo programme was also beginning. One of the first 'crusades' of POGO was to throw the collective weight of its members behind the world expansion of Argo. This collaboration among 50 research and operational agencies from 26 countries now has charge of more than 3,000 floats around the world ocean. Because the members of POGO are directors with the power to commit resources and influence decision makers, a resolution to accord full support to Argo had immediate effect, and the distribution of floats around the world ocean improved rapidly, and so profoundly enhanced the

ocean observing system.

POGO member institutions have been driving the establishment of OceanSITES, a network of deep-ocean, multi-disciplinary time-series reference sites, measuring many variables and monitoring the full depth of the ocean from the surface down to 5,000 metres. This network comprises about 30 surface and 30 sub-surface arrays. At its 2011 meeting in Seoul, POGO's directors decided to give immediate priority to increasing support for OceanSITES, whose moorings are integral to the Global Ocean Observing System. They also agreed to encourage all OceanSITES parties to maintain a minimum set of common measurements.

POGO also supports the Southern Ocean Observing System (SOOS) that has just published its Science Plan and established an International Project Office in one of the new POGO member institutions, the Institute for Marine and Antarctic Studies (IMAS) in Hobart, Tasmania.

Expanding ocean observations in developing countries

POGO carries out a suite of capacity-building programmes, which provide advanced training in ocean observations, especially

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for personnel from developing countries.

POGO's training flagship is the Nippon Foundation - POGO Centre of Excellence in Observational Oceanography located at the Bermuda Institute of Ocean Sciences, under which ten young scientists from developing countries, annually, are supported to study for ten months in an intensive programme related to ocean observations.

In collaboration with SCOR, POGO also runs a Visiting Fellowship Programme, for scientists from developing countries to spend up to three months training in a major oceanographic institution. By 2011, 128 young scientists from 32 countries had been trained under this scheme (see map). A variation on this programme is the POGO-AMT Fellowship, which allows one scientist annually to participate in the major international and interdisciplinary Atlantic Meridional Transect cruise - an opportunity that is rarely given to scientists from developing countries.

It is also important to bring training into developing countries. Thus, POGO has been running Visiting Professorship Programmes encouraging scientists to visit a developing country to conduct training in ocean observations. Between 2005 and 2007 this programme was funded by the Nippon Foundation, and included training in India, Sri Lanka, Viet Nam, Fiji, Tunisia and Brazil. Since 2009, POGO has continued the programme on a more modest scale, with its own funding, with Professors teaching in Argentina, Namibia and Viet Nam.

POGO also supports African graduate students to study at the University of Cape Town, South Africa, and provides travel support for participants from developing countries to attend the Austral Summer Institute at the University of Concepcion, Chile.

Together, these training programmes are making significant contributions to reducing the deficit in trained observers of the ocean in developing countries.

Some 450 young scientists from sixty-three countries have received advanced training through POGO capacity-building initiatives, while the massive over-subscription for POGO training schemes provides ample proof that the effort is responding to a genuine need.

Former scholars or alumni of NF-POGO training become members of the rapidly-developing NANO network (<http://www.nf-pogo-alumni.org>), whose first newsletter appeared in September 2011.

Relating to Partner Organisations

POGO works with relevant partner organisations in the marine field (Scientific Committee on Oceanic Research, SCOR; Intergovernmental Oceanographic Commission, IOC; Global Ocean Observing System, GOOS; Group on Earth Observations, GEO).

These collaborations include joint capacity building programmes, such as the POGO-SCOR visiting fellowship programme (previously POGO-SCOR-IOC). These three organisations collaborate to assess capacity building at the world level in marine science and coor-

Professor Lisa Levin (Scripps Institution of Oceanography) teaches a group of students from the University of Namibia about rocky shore ecology in Solitude, Central Namibia, as part of a POGO Visiting Professorship in 2010

Photo credit: Lisa Levin.

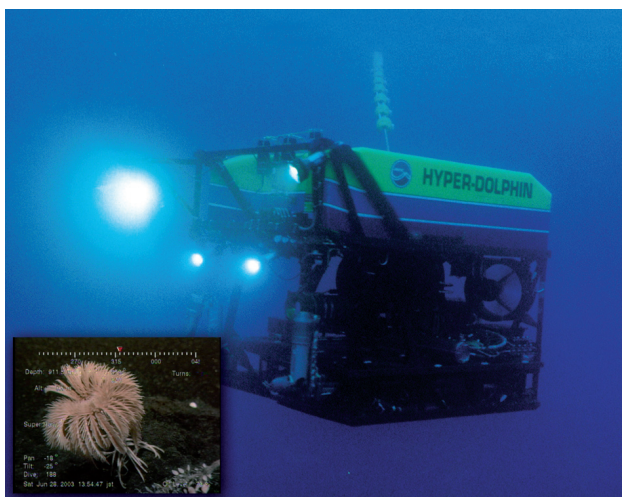


Year 3 (2010-2011) NF-POGO Centre of Excellence Scholar, Gayatri Dudeja (India), helps prepare sampling containers for one of the moored buoys on-board RV Atlantic Explorer

Photo credit: Maureen Conte, Bermuda Institute of Ocean Sciences (BIOS)

dinate their respective capacity-building programmes in order to make them complementary. Another joint action was the creation of a website advertising summer schools and other training opportunities in ocean sciences (www.oceansummer-schools.org).

POGO has been an enthusiastic supporter of GEO since its



inception. Until recently, however, the aggregate impact of oceans within GEO has been less than deserved and POGO has worked hard to reverse this state of affairs. A major breakthrough was achieved in 2011 through the creation, under POGO sponsorship, of a new umbrella Task in GEO, devoted to oceans. The Task is called "Oceans and Society: The Blue Planet". By grouping together all the marine themes of GEO, it serves to emphasize the breadth and scope of marine activities in GEO and to integrate them where possible.

POGO – the future

2012 promises to be a year of new beginnings: POGO is, for the first time, co-sponsoring an international research project with SCOR, the International Quiet Ocean Experiment (IQOE), with seed funding from the Sloan Foundation. This is a programme aimed at characterising the acoustic background in the ocean, including its anthropogenic and natural components (Boyd et al., 2011). The IQOE is planning to launch its Science Plan and begin its implementation this year. POGO is also preparing a major exhibit at the Expo 2012 Yeosu Korea, which will be a major public outreach event on a scale that is unprecedented for POGO.

From a strategic point of view, POGO is also considering some changes. Governance of, and advocacy for, comprehensive systems to observe the oceans for the benefit of society is becoming a crowded field.

The Japan Agency for Marine-Earth Science and Technology (JAMSTEC) remotely-operated vehicle "Hyperdolphin" is able to dive down to 3000m depth and includes a highly sensitive camera that provides precise observations and records of the deep-sea biosphere, such as the photo of the living fossil Crinoidea shown in the bottom left inset

Photo credit: JAMSTEC

Although POGO has been active in this field for more than ten years, its contributions are in danger of being overlooked because its goals overlap with those of other players, including those with greater resources than POGO. Nevertheless, opportunities for POGO exist. First, because POGO is a non-governmental organisation: it therefore has the possibility to take action rapidly, when required, and to take positions without having to worry about diplomatic niceties. Second, because, after all, the POGO members control much of the world's advanced capacity to observe the oceans and to interpret the results. Third, because POGO as an organisation has earned a strong reputation in the marine community for well-thought-out views on marine issues, stated with moderation. Fourth, because POGO is admired for doing a lot with minimal resources especially in the field of capacity building.

Fifth, because POGO can take a leadership role, as it has done recently in GEO, through Oceans United on behalf of a much wider marine community.

As a first step into the future, it will be important for POGO to reconsider its Mission and to clarify its role in such a way that its individual niche is defined without ambiguity. After more than ten years of existence, it might be time for POGO to rethink itself and to establish a new Vision for the future. ☺

For more information about POGO:
www.ocean-partners.org

Reference:

Boyd, I.L., G. Frisk, E. Urban, P. Tyack, J. Ausubel, S. Seeyave, D. Cato, B. Southall, M. Weise, R. Andrew, T. Akamatsu, R. Dekeling, C. Erbe, D. Farmer, R. Gentry, T. Gross, A. Hawkins, F. Li, K. Metcalf, J.H. Miller, D. Moretti, C. Rodrigo, and T. Shinke. 2011. An International Quiet Ocean Experiment. *Oceanography* 24(2):174-181, doi:10.5670/oceanog.2011.37.



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