

5.0 CAPACITY-BUILDING ACTIVITIES

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5.0 CAPACITY-BUILDING ACTIVITIES

5.1 SCOR Committee on Capacity Building

Ittekkot

The 2006 SCOR meeting approved terms of reference for a SCOR Committee on Capacity Building, whose primary purposes are to oversee all of SCOR's capacity-building activities and to help the SCOR Secretariat manage these activities. The approved terms of reference follow:

- Provide direction for all of SCOR's existing capacity-building activities: participation of scientists from developing countries and countries with economies in transition in SCOR activities, POGO-SCOR Fellowship Program, travel grants, and provision of reports to libraries in developing countries.
- Guide and assist SCOR Executive Director in development of new capacity-building activities, particularly the Regional Graduate Schools of Oceanography activity.
- Assist SCOR-sponsored projects in developing their capacity-building activities.
- Help SCOR arrange funding for existing and new capacity-building activities.
- Assist SCOR in interacting with regional and international groups related to capacity building in ocean sciences, such as the ICSU regional centers, START, IOC regional programs, etc.

Chair:

Venu Ittekkot (Germany)

Other Members:

Hal Batchelder (PICES)

Sükrü Besiktepe (Turkey)

Missy Feeley (USA and SCOR Executive Committee)

Mike Lucas (South Africa)

Wajih Naqvi (India)

Ilana Wainer (Brazil)

Jing Zhang (China and IMBER)

The membership of the committee is designed to create a tight linkage with the SCOR Executive Committee. A subgroup of the committee can now meet in conjunction with annual SCOR meetings at little extra cost to SCOR, making it possible for any committee recommendations to SCOR to be acted on immediately.

5.2 SCOR Visiting Scholars

Ittekkot

SCOR began a program in 2009 to enlist the services of ocean scientists from the SCOR community, from both developed countries and developing countries, both recently retired and active, to teach short courses and to provide more extended on-site education and mentorship at developing country institutions. Some countries and/or individual institutions have requirements for their scientists to retire at a given age, sometimes as early as 60 years of age. Many retired ocean scientists are still interested in teaching and mentoring, and are supported by pensions

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after their retirement, so do not need salary support. Some active scientists can also use some of their already-supported work time to work in a developing country.

Hosting visiting scientists, whether retired or active, can have many benefits to host institutions also, such as inspiring, motivating, and informing students and faculty, and leading to future collaborations between the visiting scientist and the host institution.

The idea of this program is to regularly send ocean scientists interested in short-term visits to developing countries. The program is a partnership, with the host institution providing local accommodation and SCOR finding resources to pay for airfares and other local expenses, as necessary. The participating scientists donate their time. SCOR Visiting Scholars might be onsite for as little as two weeks to as long as visa requirements would allow. Applicants may already have selected a host institution or SCOR will help identify hosts. Information about the program is available at http://www.scor-int.org/SCOR_Visiting_Scholars.pdf. The SCOR Visiting Scholars who are making their visits in 2016 are shown below. The call for applications for 2017 Visiting Scholars Will be made after the SCOR meeting in Poland.

2016 SCOR Visiting Scholars

Name	Home Country	Host Country	Dates	Purpose
Baban Ingole	India	Bangladesh	16 July- 7 Aug. 2016	Training in biological oceanography, especially benthic ecology and biodiversity
Jacob Larsen	Denmark	Namibia	15 Sept. – 6 Oct. 2016	Training on harmful algal bloom identification and culture techniques
Jorge Santos	Norway	South Africa	Aug.-Sept. 2016	Training in fisheries

SCOR Visiting Scholar

Tentative programme for the proposed training and visit to the National Marine Information and Research Centre (NatMIRC), Namibia 15 Sept – 6 Oct 2016

1st week. Training course in taxonomy and identification of harmful algae, planktonic species

	Morning, 8.30-11.30	Afternoon, 13.00-16.00
Thursday, 15 Sept	Arrival	
Friday, 16 Sept	Preparation for the training course, check of cultures and samples	
17-18 Sept Saturday- Sunday		
Monday, 19 Sept	Lecture: Introduction to HAB Lecture and microscope demonstration: Planktonic Prorocentrum species, P. compressum, P. cordatum, P. gracile, P. micans, P. rostratum, P. scutellum, P. triestenum,	Lecture and microscope demonstration: Dinophysis/Phalacroma, D. acuminata, D. acuta, D. caudata, D. fortii, P. mitra, P. rotundatum
Tuesday, 20 Sept	Lecture and microscope demonstration: Plate terminology, discern plate pattern of armoured dinoflagellates	Lecture and microscope demonstration: Gonyaulacales: Protoceratium, Lingulodinium, Gonyaulax
Wednesday, 21 Sept	Lecture and microscope demonstration: Alexandrium	Lecture and microscope demonstration: Ichthyotoxic flagellates: Raphidophytes, Chattonella antiqua, C. subsalsa, Fibrocapsa japonica, Heterosigma akashiwo; Haptophytes, Prymnesium spp.
Thursday, 22 Sept	Lecture and microscope demonstration: Ichthyotoxic flagellates, unarmoured dinoflagellates, Akashiwo sanguinea, Amphidinium spp., Gymnodinium catenatum, Cochloclodium polykrikoides, Karenia spp., Karlodinium spp.,	Lecture and microscope demonstration: Azadinium spp., Phiesteria spp., Mixed samples
Friday, 23 Sept	Lecture and microscope demonstration: Pseudo-nitzschia	Mixed samples

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2nd week. Excursion to Walvis Bay for collection of sediment samples, training in collection of benthic sampling, identification of benthic dinoflagellates, and culture techniques.

	Morning, 8.30-11.30	Afternoon, 13.00-16.00
Monday, 26 Sept	Lecture: Introduction to benthic flagellates and benthic sampling techniques Excursion to Walvis Bay: Collection of sediment samples, time depends on the tide, we should be in Walvis Bay at or near low tide	
Tuesday, 27 Sept	Preparation and analysis of samples, filtration of samples, cover slip preparations	Analysis of benthic samples
Wednesday, 28 Sept	Introduction to culture techniques, preparation of growth media, isolation exercises	Lecture and microscope demonstration: Benthic dinoflagellates
Thursday, 29 Sept	Lecture and microscope demonstration: Benthic dinoflagellates, continued	Examination of cover slip samples
Friday, 30 Sept	Examination of cultures/isolates Mixed samples	Mixed samples Evaluation

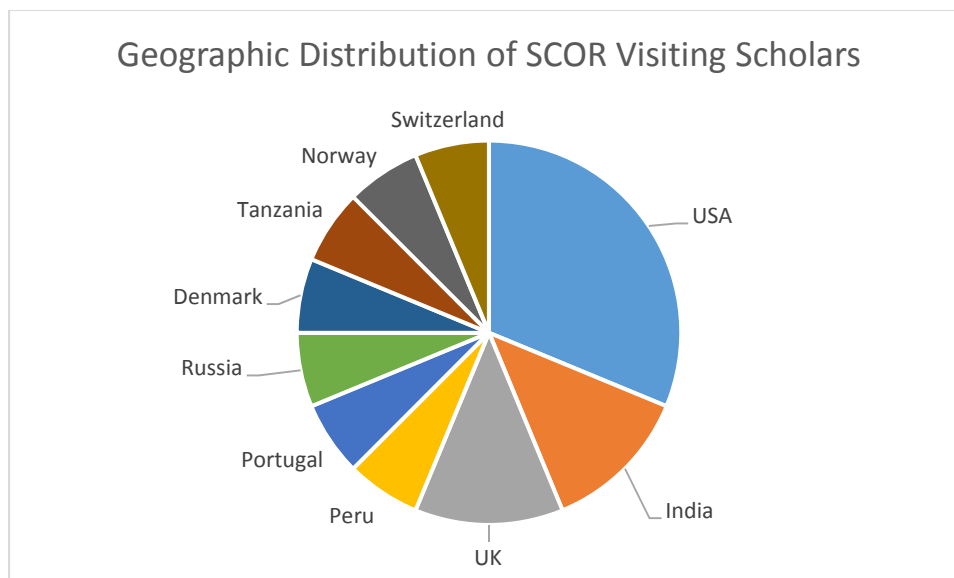
3rd week. Visit to UNAM, Henties Bay. Screening of samples collected during the national Namibian monitoring programme with the view to produce an id. guide –

	Morning, 8.30-11.30	Afternoon, 13.00-16.00
Monday, 3 Oct	One day visit to UNAM, Henties Bay – Lecture on HAB	
Tuesday, 4 Oct	Screening of samples for the id-atlas	
Wednesday, 5 Oct	Screening of samples for the id-atlas	
Thursday, 6 Oct	Departure	

Analysis of Survey Results from SCOR Visiting Scholars

A SurveyMonkey questionnaire was sent to 16 SCOR Visiting Scholars, which includes all the individuals who have served since the start of the program, except the 2016 Scholars. All 16 individuals answered the survey. Some scholars served twice, but submitted only one response. The results follow.

Geographic Spread of Scholars

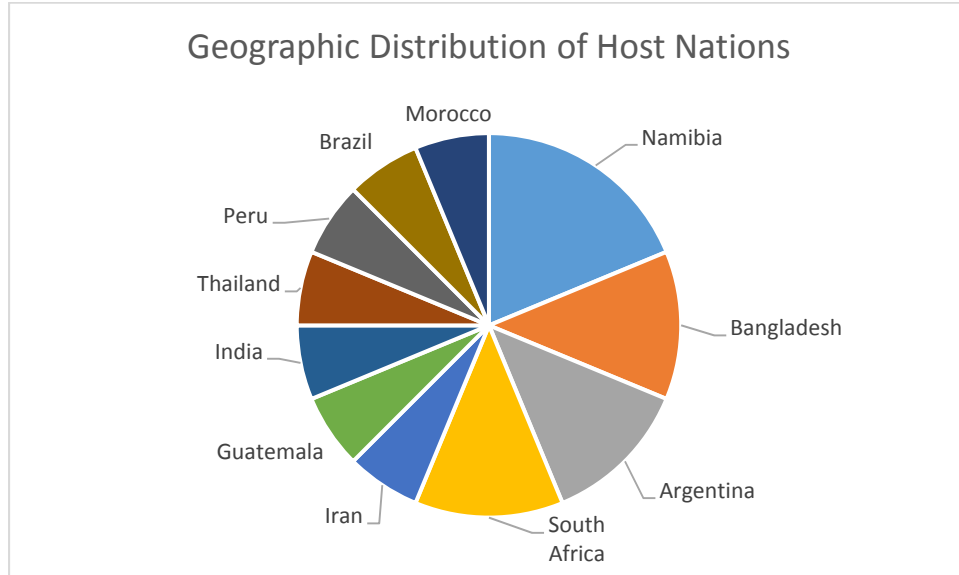


Current Position of Scholars

The survey allowed multiple answers to this question. 75% of the respondents classified themselves as researchers, 25% as teachers, and 25% as researcher/teacher, chief scientist, wildlife ecologist, and research scientist emeritus. 25% of the respondents classified themselves as retired. This is notable because the original conception of the program was that it would be aimed at retired scientists, but it became apparent quickly that a high percentage of applications came from non-retired people who could spare time in their schedules to serve as SCOR Visiting Scholars.

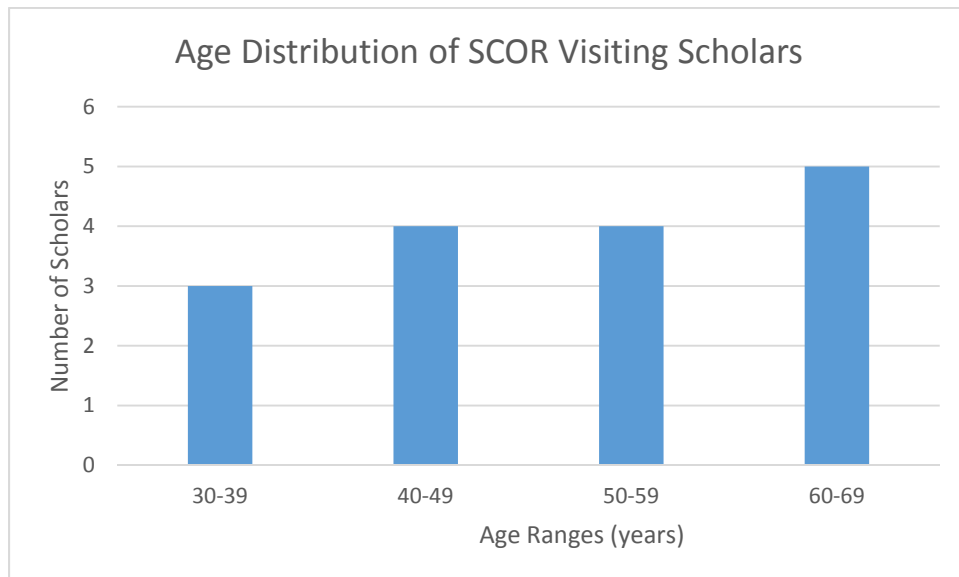
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Countries Served



Of the 16 Visiting Scholars, 75% went to countries that are not currently members of SCOR and which pay no dues to SCOR. Comparing the countries of residence of SCOR Visiting Scholars and their host countries illustrates that some countries are both senders and hosts (Peru and India), indicating that they have enough expertise on some topics to send scientists to other developing countries, but may lack expertise on other topics.

Ages of SCOR Visiting Scholars



Although fewer SCOR Visiting Scholars were retired than expected, most Scholars were mid- to late-career scientists.

How did the SCOR Visiting Scholars learn about the program?

Individuals learned about the SCOR Visiting Scholars program by a variety of methods, mostly involving either emails from the SCOR Secretariat or by word of mouth from colleagues. In some cases, a host institution contacted the Scholar to find out if they were interested in serving at the host institution. About 30% of the Visiting Scholars first learned about SCOR through the program. Of those who were aware of SCOR before they served as Visiting Scholars, awareness was primarily through SCOR-sponsored research projects and working groups.

Influence of SCOR Visiting Scholars

SCOR Visiting Scholars were asked to indicate a range of trainees they have been involved with at the host institution (1-5, 6-10, 11-20, and >20). Using this information, it can be calculated that the 16 SCOR Visiting Scholars interacted with around 200 individual students and other trainees.

Contact with Trainees after the SCOR Visiting Scholar assignment

93.25% of the SCOR Visiting Scholars kept in touch with one or more trainees after their service in the host countries. Of those who have kept in contact with trainees, half did so once per year or less, 31.25% had contact once every 2 to 3 months, and 18.75% had contact monthly.

80% of the Visiting Scholars kept contact to continue research collaborations, 53% to provide continuing mentoring, 33% provided reference letters or helped with applications/proposals, 33% to plan a research visit or exchange, and smaller percentages to provide opportunities for field experience and career development, and to motivate to attend international courses in various fields. One Visiting Scholar, who served in Iran, had little additional contact with his hosts or students because of U.S. sanctions against Iran.

Benefits to SCOR Visiting Scholars from their experiences

SCOR Visiting Scholars were asked to rank the relevance of a variety of statements about the benefits they gained from serving as a Visiting Scholar. The most relevant statements include the following:

- The training provided personal satisfaction or enjoyment (68.75%)
- The training broadened my cultural horizons (37.5%)
- The training led to continued research collaborations (33.3%)

The least relevant statements were the following:

- The training satisfied a requirement of my employment contract or grant (53.33%)
- The training led to an oral or poster presentation at one or more conferences (46.67%)
- The training resulted in one or more research publications (33.33%)

Support from SCOR and Local Hosts

68.75% of the SCOR Visiting Scholars responded that the support from SCOR was adequate, the other respondents provided comments: “It was basically subsistence”, “it was generous”, “living expenses were provided by the host”, “No, but the host covered most of the difference”, and “outreach or training has become a necessity for global researchers who need access to particular study systems. In their grants they must include finances for training, nowadays.”

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75% of the SCOR Visiting Scholars responded that logistical support from SCOR was adequate. Others answered “Local logistical support was very important”, “Logistics were handled between myself and faculty at host institution”, “In fact, EXCELLENT. Thanks in particular to SCOR Executive Director”, and “Not sure what is meant”.

93.75% of the SCOR Visiting Scholars viewed the support provided by local hosts as adequate. One respondent answered “Accommodation, transportation was adequate. Teaching facilities had to be adapted to minimal standards, e.g. without internet access.” The general satisfaction with the host institutions is confirmed by answers to another question. 87.5% of the respondents recommended sending another SCOR Visiting Scholar to the same host institution. However, one respondent wrote “It is still developing, additional participants may be too complex to manage” and another wrote “Yes, provided the host institution is aware of the value of the program and interested in developing it themselves further. No single visits without becoming part of a strong and institution overarching activity.”

Awareness of SCOR at Host Institutions

Since most of the host institutions were not in countries that are currently participating in SCOR, it was not surprising that only 65.25% of the institutions were aware of SCOR before the visit of a SCOR Visiting Scholar. So, SCOR Visiting Scholars do make SCOR more visible in institutions and countries where SCOR is not well known. A question was included on the survey about “what can SCOR do to increase its visibility and activity at the host institution and in the host country?” Answers included the following:

- conduct workshops and support students to come to institutes of the SCOR Visiting Scholars for short periods of time;
- provide a link on the SCOR Web site with all the host institutions and the host country in order that people know more and can choose this institutions as a possibility for training and research
- make the program better known in countries that can benefit from the program;
- ask Visiting Scholars to provide more information about SCOR to host institutions;
- encourage more SCOR Visiting Scholars and a more diverse Scholar population;
- encourage hosts to have SCOR Visiting Scholars meet with university administrators;
- provide questionnaires to hosts; and
- create courses that no single institution can offer, using the national, regional capacity and the local infrastructure in such a way that the host institution will be in a position to continue with its own resources. Work towards high international recognition. Help direct host institutions towards real research questions and publications or other means that make the work visible.

How can the SCOR Visiting Scholars program be improved?

The final question in the survey asked SCOR Visiting Scholars about how the program could be improved. The answers include the following:

- Increase the number of SCOR Visiting Scholars so that many more people who are genuinely interested to teach/mentor/impart knowledge can use their skills.
- Encourage students for short visits for training/internship
- Maintain linkages of SCOR Visiting Scholars and host institutions and ensure that they receive SCOR news and opportunities by email.
- Better identify the countries/institutions that can benefit from the program. Most of the countries/institutions that would benefit from the program are not motivated to apply.
- The program needs to be more broadly advertised. The program needs to be upgraded so it has the cache of a travel grant from the Royal Society or the Churchill Trust.
- Make grants for longer stays
- Prepare some specific goals to all scholars
- Build a database of the Visiting Scholars to make use of their expertise in any other countries needing such expertise.
- Collect the Lecture notes and place them on the SCOR Web site to help showcase SCOR support under the Visiting Scholars program.
- A larger financial grant would help.
- Foster mentoring partnerships between early career researchers and senior scientists
- Follow the unique idea of the Regional Graduate Networks of Oceanography (RGNO). It was created 2 decade ago; it is an excellent idea, but most institutions still do not work together on training. Get funding for the RGNO idea and establish them worldwide with people who dedicate their knowledge, efforts and time. Analyze the ECODIM model (Chile) and copy the good aspects. ECODIM was just awarded an educational prize (only honour and unfortunately no money associated with the prize that would allow to try out new things). But also look at the development of the departments and the fields in oceanography that grew out of ECODIM's international network, such as The Millennium Institute partnership. Promote grant giving foundations to support researchers who dedicate time to link their research with training in the regions (e.g. The Simon's Foundation awarded a 500 k research grant based on the access to the Benguela to one of our RGNO instructors). Help build up research infrastructure. Attract (northern, developed) universities to offer courses for their students as semesters abroad and make their professors work together with the local lecturers, provided they want to and are attracted by doing research with their students.

In summary, the SCOR Visiting Scholars program has been effective at getting mostly non-retired scientists to teach and mentor students in developing countries in Africa, Asia, and South America. About 200 students have benefited from the program since 2009. The visibility of SCOR has been raised in countries that are not currently members of SCOR. The support provided by SCOR (\$2500 per Visiting Scholar) and from host institutions is adequate.

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How should the program be changed in the future?

1. The number of Visiting Scholars could be increased. Enough good applications are received each year to support 4-6 Visiting Scholars. Currently, SCOR funds three Visiting Scholars each year, using NSF funds. This number could be increased in the short-term by requesting that SCOR provide additional funding from membership dues. In the longer term, since the program has been successful, it might be possible to attract funding from a private foundation or other sources. Nations that participate in SCOR, beyond the United States, should be asked to provide national funding for the program.
2. Request SCOR national committees to more effectively participate in the Visiting Scholar program using the member countries' bilateral and international programs.
3. The program should be more widely advertised, through channels that would not normally be reached by SCOR, particularly if additional funding can be developed. Perhaps IOC can help to reach new countries. In addition, no requests for SCOR Visiting Scholars have been received from countries that SCOR representatives have visited and informed about the program (e.g., Sri Lanka, Mauritius). Opportunities in these countries should be pursued. Educational institutions or departments specifically addressing needs in oceanography are just being developed in these countries. For example, the Ocean University of Sri Lanka is a recent development, as is the Faculty of Ocean Studies in Mauritius. Perhaps, SCOR could consider sending Visiting Scholars who could advise on the development of institutions and departments instead of for teaching purposes.
4. Funding should be sought to bring select trainees from host institutions to the Visiting Scholars institution for further training, if and when research programs can be developed in the host institutions that could also benefit to the Visiting Scholar institution. Training visits should also take into account whether they would promote SCOR-related research projects.
5. SCOR Visiting Scholars should be provided with a set of PowerPoint slides that can be presented to their trainees and others within the host institution, to help promote SCOR visibility.
6. Find ways to encourage enduring mentoring relationships between Visiting Scholars and trainees/institution administrators after the visits. This could include return visits, including for the purpose of joint curriculum development.
7. SCOR Visiting Scholars should have an opportunity to work closely with individual members of local faculty and support them to continuously develop their expertise. It is important that local faculty members not get side-lined by the activities of visiting experts, which can damage their reputations.

5.3 POGO-SCOR Visiting Fellowships for Oceanographic Observations *Urban*

SCOR and the Partnership for Observation of the Global Oceans (POGO) have been co-funding a program of Visiting Fellowships for Oceanographic Observations since 2001. In 2016, five individuals were funded through the program.



Report on the 2016 POGO-SCOR Fellowship Programme

This year saw the sixteenth fellowship programme implemented using POGO funds with supplementary financial support from SCOR. As the POGO Members had to be consulted on this year's budget expenditure at POGO's annual meeting at the end of January 2016, the announcement was posted on 9 February 2016, with a closing date of 15 April 2016.

This year saw a total of 41 applications, which was slightly fewer than the previous year. Applications were received from 19 countries.

With the combined available budget from POGO and SCOR, five candidates were selected and come from Argentina, Ivory Coast, Malaysia and South Africa. This year's host institutions include Helmholtz Centre for Ocean Research Kiel, GEOMAR (Germany), Hokkaido University (Japan), National Oceanography Centre (UK), Plymouth Marine Laboratory (UK) and University of East Anglia (UK).

The applications were screened independently by a committee of six, with representation from SCOR, POGO and partners of POGO. In making their selection, the committee considered the following factors:

- quality of the application;
- relevance of the application to the priority areas identified in the fellowship announcement;
- evidence that the training will lead to improved sustained observations in the region, or improved applications of such data;
- evidence that the training would lead to capacity-building with potential lasting impact on regional observations, and
- the need to maximise regional distribution of the awards.

POGO and SCOR commend the efforts from all the supervisors and colleagues at the various host institutions who agreed to devote time and energy required for the training. The programme would not have been viable without such efforts from prominent scientists and their teams.

All the people involved in each fellowship (the fellowship holder, the supervisor at the parent institute and the supervisor at the host institute) have been requested to submit short reports at the end of the training period. Many of the fellowships are just commencing or yet to be

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completed and their reports are expected to be received by the end of the year. From previous fellowships, both host and parents supervisors as well as the fellows themselves have indicated that these exchanges should lead to effective capacity building at the host institute and facilitate longer term collaborations between the institutes concerned. All have previously concluded that the programme serves a useful purpose.

There is tremendous interest in the fellowship programme at all levels, both in the oceanographic institutions of the developing nations, as well as among leading scientists who are eager to contribute to this initiative. It is seen to be filling a niche in capacity building through specialised training that is not filled by intensive courses or by participation in scientific meetings. It helps improve the *esprit de corps* among oceanographic institutions around the world, and serves as a stepping stone to building collaborations.

Furthermore, the POGO-SCOR fellowship scheme is increasingly seen by other organisations as a model in capacity building, and similar schemes have been set up by other programmes based on the success of the POGO-SCOR model (e.g. EU projects, the Europe-Africa Marine Network, EAMNet; and the EUROMARINE consortium of European Networks of Excellence). The POGO Secretariat is often approached for help/advice on setting up similar fellowship schemes, or proposals to partner up with other organisations.

Demography of Fellowships Parent Institutions:

Argentina	Universidad Nacional del Sur
Argentina	Instituto Argentino de Oceanografía (IADO)
Côte d'Ivoire	Centre Universitaire de Recherche et d'Application en Télédétection (CURAT) /Université Félix Houphouët-Boigny (Côte d'Ivoire)
Malaysia	Universiti Malaysia Terengganu
South Africa	South African Environmental Observation Network

Host Institutions:

Germany	Helmholtz Centre for Ocean Research Kiel (GEOMAR)
Japan	Faculty of Fisheries Hokkaido University
UK	National Oceanography Centre
UK	Plymouth Marine Laboratory
UK	University of East Anglia

Gender distribution

Male: 4

Female: 1

2016 Fellows**Jethan d'Hotman – South Africa**

Parent supervisor and institution: Dr. Juliet Hermes – South African Environmental Observation Network.

Host supervisor and institution: Dr. David Smeed – National Oceanography Centre, United Kingdom.

Fellowship period: 1 October-31 October 2016 (1 month)

Topic: Enhancing South Africa's sustained offshore observational capabilities through Argo and mooring arrays.

Jethan d'Hotman's current role is the Agulhas System Climate Array officer and his responsibilities include assisting with the co-ordination of the second ASCA cruise. This involves liaising with an international team of scientists and technicians; ensuring all equipment is available and ready to be deployed in time for the cruise; assisting in the building of several tall moorings; writing sailing orders; workshop co-ordinations; report writing and ensuring all personnel meet all the requirements for going to sea. As part of this Jethan has been assisting in securing Argo floats (through the UK Met office) and SVP drifters (through the SA Weather Service) to be deployed as part of the cruise. Jethan previously completed a BTech in Oceanography. During his BTech, Jethan used near-real time data from an Argo float that was trapped in an Agulhas Ring to assist in understanding its characteristics as it propagated across the South Atlantic.

Jethan aspires to develop and grow the South African Argo community through the development of an Argo Data centre and international collaborations. This will lead to a collaborative effort in monitoring and understanding the world's oceans using relatively inexpensive means. Jethan aspires to be a leading role player in the data handling for South Africa's large mooring arrays as well as collaborating with international partners to ensure the data meets international standards.

Currently the South African Argo program is relatively small, having only contributed two floats to the Argo program with a hand full of scientists and technicians that arrange for other countries Argo floats to be deployed on local cruises, one or two small Argo projects and an education outreach teacher who educates disadvantaged school learners about Argo technology and its uses. It is vital that the South African Argo program grows to be an influential player in the global Argo program. For this to happen the first important step would be to develop the Argo data processing skills amongst personnel in the South African oceanographic community. This fellowship would provide an important base for this skills transfer between the international Argo community and South Africa.

Currently South Africa has two vital long term monitoring mooring arrays (ASCA & South Atlantic Moored Buoy Array (SAMBA)). For a global monitoring system to be effective, all mooring arrays and data handling processes need to be similar. This fellowship will allow for skills transfer from top research technicians working on data from the RAPID Climate Change Array and Overturning in the Subpolar North Atlantic Program (OSNAP) mooring

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arrays directly link to the ASCA and SAMBA mooring arrays through the Agulhas Current and Agulhas Leakage.



Ahon Jean-Baptiste Kassi – Côte d'Ivoire

Parent supervisor and institution: Prof Kouadio Affian – Centre Universitaire de Recherche et d'Application en Télédétection (CURAT) / Université Félix Houphouët-Boigny (Côte d'Ivoire).

Host supervisor and institution: Dr. Marie-Fanny Racault – Plymouth Marine Laboratory.

Fellowship period: 12th September to 12th December 2016 (3 months)

Topic: Characterization and monitoring of upwelling areas in Ivorian waters for fishery valorization using remote sensing data.

Ahon Jean-Baptiste Kassi is currently a researcher and lecturer in remote sensing and oceanography at CURAT at Université Félix Houphouët-Boigny (Cote d'Ivoire). His work focuses on the study (identification, estimation) and mapping of potential areas of retention of pelagic species in the Ivorian continental shelf based on ocean parameters (chlorophyll concentration, sea surface temperature, salinity, wind, surface current, sea level, and wave height). The technique used to estimate potential areas of retention of pelagic species has provided researchers with interesting results, and in particular, areas of strong upwelling index related to high chlorophyll concentration and low sea surface temperature have been identified. To develop Ahon's work and to provide relevant information to support sustainable management of fisheries and protection of the marine ecosystem in Côte d'Ivoire, he requires training in applications based on remotely sensed ocean-colour observations and their analysis in relation to climate and environmental conditions. Plymouth Marine Laboratory (PML) has extensive experience in the development of applications based on remotely sensed biological and physical data and in their analysis and mapping for information and support to ecosystem management. Dr Racault has considerable experience in the study of environmental and climate impacts on marine ecosystem resources. She also uses the software Bilko to compile several types of satellite data and this visit will help Ahon to build capacity in this field.

The Ivorian continental shelf, located within the Large Marine Ecosystem (LME) of the Gulf of Guinea, is strongly subject to anthropogenic pressures associated with increased population, unsustainable fishing practices, etc. It is essential to implement appropriate monitoring strategies. During the training, Ahon will study some techniques to assess the influence of climate on marine resources and understand the mechanisms driving variations in primary producers. This information will be useful to characterisation and monitoring of areas of retention of pelagic fish species. Specifically, there will be opportunities to learn how to work with remote sensing biological datasets of chlorophyll concentration, primary production, phenology metrics, characterise the phenomenon of upwelling and enhancement of areas suitable for fisheries.

The Gulf of Guinea is highly affected by cloud cover, Ahon wishes to work with the ocean-colour data product that has been recently developed by the PML team as part of the European Space Agency Ocean-Colour Climate Change Initiative (ESA OC-CCI) project. This new

product has shown significant increase in data coverage, and this would be highly relevant for the study.

Ahon would like to understand further the operation and development of Bilko applications for the compilation and analyses of oceanic variables, and also work with the Bilko phenology application developed by Dr Racault. This training will allow Ahon to develop skills for the modeling of retention areas of pelagic species and therefore improve fishery activities that support the country's economy. CURAT and PML will establish collaboration with common research programs for the study of the location of favourable areas for fishing. They will involve students and researchers exchange along with experience on the impact of climate on the phytoplankton variability.



Celeste López Abbate – Argentina

Parent supervisor and institution: Dr. Gerardo Perillo – Instituto Argentino de Oceanografía (IADO).

Host supervisor and institution: Dr. Juan Carlos Molinero Helmholtz Centre for Ocean Research Kiel (GEOMAR).

Fellowship period: 1st July 2016 – 31st August 2016 (2 months)

Topic: Analysis and interpretation of coastal food webs exposed to growing synergistic effects of multiple stressors

Celeste López Abbate is currently studying the long term variability in the dynamics of phytoplankton and microzooplankton and their relationship with climate changes and anthropogenic activities in the SW Atlantic Ocean (northern Argentinian Shelf). The functional groups targeted in her current research have a critical relationship with mesozooplankton and fish larvae for which their study is a necessary step to understand not only fish recruitment, but carbon fluxes as well. In this scenario, a simultaneous analysis of functional groups, i.e. producers, consumers, at the base of the food web and multiscale physical forcing is required to quantify ecological responses to multi-stressors. Given the dimension of the database and the complexity of food web interactions, there is a pressing need to develop an analytical package to dig through all data and to extract general pattern that are usually masked in local and short-term studies. Thus, the training is intended to gain experience on the application of practical tools of big data analysis, i.e. data mining, temporal analysis and modelling of plankton networks and environmental data. This approach will reveal additive and synergistic effects of climate and anthropogenic activities on the productivity patterns of microplankton in the northern Argentinian Shelf.

The aim of the training program is to gain experience on the application of practical tools of data retrieval, temporal analysis and modelling of plankton and environmental data. The first part of the training would involve the development of a synoptic climatology and the characterization of the multiscale climate forcing. Principal components analysis, orthogonal functions and indexing will be used to identify space-time patterns, while wavelet analysis will be used to detect the time-varying signal of climate. The second part of the training would be focused on the detection of plankton-environment coupling. To characterize the relationship

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between plankton and environmental variability, biotic data (chlorophyll-a, growth and mortality rate of phytoplankton, abundance, biomass and diversity of phytoplankton and microzooplankton) will be summarized and confronted with abiotic data associated with climate (SST, precipitation, atmospheric pressure, salinity, wind speed, etc.) and anthropogenic activities (concentration of nutrients, organic carbon, dissolved oxygen and turbidity). The obtained data set will be examined by means of generalized additive models (GAM and TGAM) and variance decomposition methods.

The quantification of net effects and their partitioning into direct and indirect effects will be estimated using structural equation modelling (SEM). This methodology has been increasingly used to disentangle complex community- or ecosystem level effects of environmental and climate change.

The training will enable the integration and interpretation of an extensive amount of multiscale biotic and abiotic data from different observation programs in the Argentinian coast. The amount of information gathered during the last 35 years in northern area of the Argentinian Shelf, which included field observations and laboratory determinations, represent a unique multi-institutional coordination in the southwest Atlantic coast. Institutions involved in the acquisition of data are the parent institution, Argentinian Oceanographic Institute (IADO), the Center of Renewable Natural Resources of the Semiarid Zone (CERZOS), the National Southern University (UNS), the Bahía Blanca Port Management Consortium, the Government of Bahía Blanca, the National Meteorological Service (SMN) and the National Oceanic and Atmospheric Administration (NOAA). So far, however, data from different sources have been analysed separately, thus providing limited information on long term patterns. The proposed training will provide a methodological package to properly exploit the extensive database produced by local researchers during the last decades. The learning will be summarised in a special R toolbox for time series analysis that will be shared with the Argentinian community through the IADO's webpage. In addition, data series will be parameterized and uploaded to the IADO's webpage to allow free access. The integrative analysis of data will provide the conceptual framework for posing new hypothesis that upgrade the current strategy of local monitoring and will encourage the execution of further oceanographic observations in the Argentinian coast.



Mohd Fadzil Akhir – Malaysia

Parent supervisor and institution: Prof. Wan Izatul Asma Wan Talaat - Institute of Oceanography and Environment, Universiti Malaysia Terengganu.

Host supervisor and institution: Prof. Tim Jickells - Centre for Ocean and Atmospheric Science, University of East Anglia.

Fellowship period: 1st – 30th November 2016 (1 month)

Topic: Data management and deployment planning for ocean glider and oceanographic buoy.

The marine environment is of major importance to Malaysia in terms of fisheries, offshore hydrocarbon extraction, proximity to major shipping routes and tourism. As a principal researcher of physical oceanography in the institute, Fadzil Akhir currently leads a research

team named “Malaysia Coastal Observation Network” (MyCON). The objective of this group is to develop better oceanographic observations and monitoring along the coast of Malaysia. Part of this effort is to plan for data collection, manage long term datasets and engage national experts to be part of this effort to widen the coverage area and also share resources in terms of equipment and data. Recently, Fadzil started integrating new technology into the framework by conducting WaveGlider deployments through industry engagement. UMT collaborates with Alam Sekitar Malaysia Ltd who distribute wave glider facilities in the region and the institution was chosen to become the first Malaysian institution to deploy wave gliders under the collaboration.

Fadzil plans to set-up a proper data management system that will in time also become accessible to other users who share similar intention to the GOOS initiatives. The required skills include producing data library, data formats, human resources skills and organising metadata. There are 2 areas that I wish to improve in our Malaysian ocean observation initiatives. Firstly, improving deployment planning and methods especially for ocean buoys and wavegliders. These will be part of our observation network program. Most of our deployments until now have been based on trial and error. So far we have lost 2 buoys and a wave glider.

Fortunately, we managed to retrieve the wave glider using our GPS system. I believe knowledge and skills from an experienced institution will improve our work. As part of this Fellowship I would learn from the host institution team about the synergies between different instrument platforms planning, deployment launch and recovery methods, contingency planning and maintenance work on buoys and gliders.

Secondly, since long term datasets and continuous observation data provide a lot of information, and require specific skills to manage such datasets, I want to look into the management system of smart buoy and glider datasets. Proper data and metadata treatment, adhering to international standards for quality control and linking up with global ocean observation systems is vital for data sharing. Currently, the data are not saved in a standard suitable for sharing via GOOS global ocean datasets library. It is vital to have well managed data sets from the start and I hope this Fellowship will allow me to learn how to develop the management of our long term datasets.

I also anticipate enhancing my research skills in this area by discussions with colleagues in the host institutions who are using these tools for their own research and monitoring activities I believe this effort will not only last during the period of the Fellowship, but will continue afterwards. The technical skills and data management set-up will always be a work in progress, thus I will continue dialogue with the hosts and hopefully this will turn into research collaborations. The overall outcome will surely benefit my country’s ocean observation networks and gain more understanding of our seas.



Juan Manuel Molina – Argentina

Parent supervisor and institution: Dr. Andrea Lopez Cazorla - Universidad Nacional del Sur.

Host supervisor and institution: Dr. Akihide Kasai - Faculty of Fisheries Hokkaido University

Fellowship period: 3 July – 26 September 2016 (3 months)

Topic: Application of NEMURO modeling frame in Argentinean fisheries.

Juan Molina has a strong background in fisheries science. For more than eight years he has studied fish communities from coastal and estuarine environments in “El Rincon” oceanographic system (Argentina). Juan’s field of research has always been related with biological and ecological aspects of marine fishes and focused on processes involved or related with fisheries. As an assistant in teaching and research of the Vertebrate Zoology chair of the Universidad Nacional del Sur (National University of the South; www.uns.edu.ar), Juan is currently engaged in research activities concerning the influence of oceanographic variables in the distribution of fish and their seasonal ingress in the Bahía Blanca Estuary (Argentina) and the adjacent coastal areas. This research study is part of the project “Biology, ecology and fisheries parameters of Chondrichthyans that inhabit Bahía Blanca estuary and the adjacent coastal area”, funded by the National University of the South.

The mentioned project involves the integration of physical, chemical and biological oceanographic variables into species-habitat models. The implications in the long term will be very important in biological, conservational and social scales. Training and expertise in oceanographic observation, data management, and modeling of coastal areas would represent a very important asset for the progress of the research activities, and would substantially improve the scope of the project.

During the fellowship, Juan will be mentored by Professor Akihide Kasai from the Faculty of Fisheries Science of Hokkaido University, a leading expert in oceanographic monitoring and modeling of estuaries and coastal environments. Juan will receive training in oceanographic observational techniques and he will learn to process, manage and use that information to model oceanographic variables. Specifically, the use of the modeling frame “lower trophic level ecosystem model” (NEMURO; Kishi et al., 2007) will be learnt and the model will be applied to predict the spatial and temporal distribution of fish. NEMURO model frame is a powerful tool for oceanographic modeling in fisheries sciences, with numerous applications (reviewed in Werner et al., 2007).

Professor Kasai and his collaborators have extensive experience in the use and implementation of this modeling frame to the study of fisheries. As part of the fellowship Juan will also receive field training on how to collect data for the application of this model. This training opportunity would prove highly beneficial, for both the fellow and the home institution, because the current research lines on fisheries coastal and estuarine oceanography are incipient and recently emerging. On his return, Juan will use all the learned knowledge and expertise acquired to advance the research on the oceanographic study of fish distribution and seasonal ingress on

Bahía Blanca Estuary and the coastal area around it, and on other projects to be developed in the future.

Being able to incorporate an adapted NEMURO modeling technique in Argentina would represent the first time in the application of such a tool at a national scale. The education and training of human resources in the implementation of NEMURO will contribute to extend the use of this Japanese modeling technique in Argentina.

At this point there has been no formal collaboration between scientists of Hokkaido University and Universidad Nacional del Sur, therefore a major motivation for this proposal is to start collaborative work between the Argentinean and the Japanese institutions involved. The visiting fellowship would be the first step in developing working relationships with Professor Kasai's institution. The establishment of such a relationship through this program, would increase future interactions between scientists from Argentina and Japan, and would also build the basis of additional bilateral collaborative studies related to the oceanographic sciences.

5.4 NSF Travel Support for Developing Country Scientists

SCOR has received support from the U.S. National Science Foundation (NSF) since 1984 to provide funding for SCOR capacity building activities. Most of the funds are used for travel grants for scientific meetings, although a portion are used for SCOR's contribution to the POGO-SCOR Fellowship Program and the SCOR Visiting Scholars program. Travel grants are awarded to ocean scientists from developing countries and the former Soviet Union, Eastern Europe, and other countries with economies in transition, to enable them to attend international scientific meetings. The current three-year grant runs from 1 July 2014 to 30 June 2017.

The amount of the award from NSF is \$75,000 per year. Recipients of SCOR travel awards are always chosen in consultation with the organizers of meetings that SCOR has agreed to cosponsor; direct applications from individuals are not accepted by the SCOR Secretariat. Priority is given to applicants who are presenting a paper or poster at the meeting or to those who have some special expertise or regional knowledge to bring to a workshop or working group. Preference is also given to younger scientists. In general, care is taken to ensure that the recipients of SCOR/NSF funds are *active* scientists, and that they have not received similar support from SCOR in the previous two years. All travel grant recipients are informed that their support comes from SCOR and that it is made possible through NSF funding.

Requests come in throughout the year and the SCOR Committee on Capacity Building considers new requests between meetings. The following requests have been approved since the 2015 SCOR annual meeting:

Activity Name	Dates	Location	Amount granted
POGO-SCOR Fellowships	Various	Various	\$10,000
SCOR Visiting Scholars	Various	Various	\$7,500
4th International Symposium on the Ocean in a High-CO ₂ World	3-6 May 2016	Hobart, Australia	\$4,000
3 rd Global Ocean Acidification Observing Network (GOA-ON) Science Workshop	8-10 May 2016	Hobart, Australia	\$4,000
PICES-ICES 6th Zooplankton Production Symposium	9-13 May 2016	Bergen, Norway	\$5,000
Interdisciplinary course on Ocean Governance: Policy, Law and Management	18 May-15 July 2016	Halifax, Nova Scotia, Canada	\$3,000
48th Liege Colloquium on Ocean Dynamics	23-27 May 2016	Liege, Belgium	\$3,000
WG 146 Associate Members to WG 146 Meeting	5-7 June 2016	Qingdao, China	\$4,000
SOLAS Remote Sensing Meeting	13-15 June 2016	Frascati, Italy	\$2,500
Margalef Colloquium	10-15 July 2015	Barcelona, Spain	\$3,000
Gordon Research Conference on Ocean Global Change Biology	17-22 July 2016	Waterville Valley, NH, USA	\$3,000
IOCCG Summer Lecture Series	18-20 July 2016	Villefranche-sur-Mer, France	\$4,900
6th International Ra--Rn workshop	18-21 July 2016	Girona, Spain	\$3,000
The XVII International Conference on Harmful Algae (ICHA)	9-14 October 2016	Florionápolis, Brazil	\$4,000
IMBER CLIMECO	10-17 August 2016	Natal, Brazil	\$7,500
International Conference on Paleoceanography	29 August-2 September 2016	Utrecht, The Netherlands	\$3,000
CLIVAR Open Science Conference	19-23 September 2016	Qingdao, China	\$4,900
SOLAS Science and Society	26-27 October 2016	Brussels, Belgium	\$2,500
PICES Annual Meeting	1-13 November 2016	San Diego, Calif., USA	\$5,000
WG 144 workshop	Dec. 2016	Goa, India	\$5,000
SOLAS Ship Plumes Meeting	2016	Sweden	\$2,500
"Indian Ocean Physical and biological oceanography: from observations to modelling" winter	Spring 2017	Goa, India	\$5,000

school			
PICES Drivers of dynamics of small pelagic fish resources	6-11 March 2017	Victoria, BC, Canada	\$5,000
WG 147 Training Workshop	Autumn 2017	Texel, Netherlands	\$5,000

Additional requests will be approved by the SCOR Committee on Capacity Building before the SCOR annual meeting and will be reported on at the meeting.