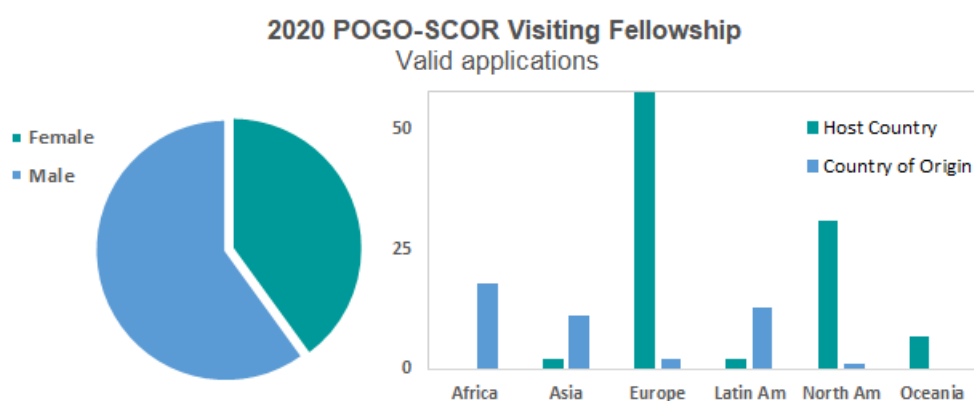


## Report on the 2019 POGO-SCOR Fellowship Programme and Perspectives on 2020 Programme

This year the twentieth fellowship programme has been launched, jointly supported by POGO and SCOR. As the POGO Members had to be consulted on this year's budget expenditure at the POGO annual meeting at the end of January 2020, the announcement was posted on the 17 February 2020, with a closing date of 31 March 2020, subsequently extended to 30 April 2020 because of the COVID-19 pandemic, which may have impacted prospective host institution's ability to provide acceptance letters and to commit to receiving a foreign visitor.

A total of 45 valid applications were received this year (16 more than last year), 40% of which were from female candidates. Applications were received from 24 countries in all continents, except Oceania. Most of the candidates selected host institutes located in at Europe, followed by North America.



The applications will be screened independently by a committee of six with equal representation from SCOR & POGO. In making the selection the evaluation panel will consider a number of 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 or trainee, the supervisor at the parent institute and the supervisor at the host institute) have been requested to contribute to a short report at the end of the training period. The reports that here follow are from the 2019 fellowships. Both host and parents supervisors, as well as the fellows themselves, have indicated that these exchanges lead to effective capacity building at the host institute and facilitate longer term collaborations between the institutes concerned. All have concluded that the programme serves a useful purpose. Several commented that a longer fellowship period would have been beneficial, and would have enabled a more in-depth training and research collaboration, possibly leading to the publication of a manuscript.

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 from 2019**

During 2019, five candidates were selected from Cameroon, Cote d'Ivoire, India, South Africa and Iran. The host institutions included:

Laboratoire d'Etudes en Géophysique et Océanographie Spatiales (LEGOS) France  
Université du Québec à Rimouski, QC, Canada  
Scottish Association for Marine Science (SAMS), Scotland, UK

National Oceanography Centre (NOC), UK  
Université de Bretagne Occidentale (UBO), France

One of the candidates (Maziar Khosravi) was awarded the fellowship and was due to start the training before the end of March, as he was granted an extension due to his supervisor's commitments. However, it transpired around the time that this travel was due to be arranged, that the fellow, from Iran, was undertaking a 2-year postdoc at OGS in Trieste (Italy). This circumstance is in conflict with the aim of these fellowships, which is to provide a unique opportunity to early-career scientists from developing countries to receive training in state-of-the-art facilities that they would not otherwise be able to access. A postdoc at OGS will provide Maziar with ample opportunities and thus would make the POGO-SCOR fellowship less valuable for him, whereas it could be helping someone who really needs it. After such considerations POGO and SCOR jointly decided to withdraw the fellowship offer to this candidate.

### **Reports from 2019 Fellows and their Host Supervisors**

#### **Kemgang Ghomsî Franck Eitel - Cameroon**

Parent supervisor and institution: Prof. Robert Nouayou, University of Yaoundé I, Cameroon.

Host supervisor and institution: Prof. Anny Cazenave, Laboratoire d'Études en Géophysique et Océanographie Spatiales (LEGOS) France.

Fellowship Period: 21 October 2019 – 12 January 2020.

Topic: "Large scale sea level change and impact study based on Argo float and tide gauge measurements from offshore to the near coast of western Africa using the Adaptive Leading Edge Subwaveform (ALES) retracker technique".

#### **Report from Fellowship holder - Kemgang Ghomsî Franck Eitel:**



#### **A brief description of activities during the training period:**

My training began with an extensive discussion and research orientation with my host supervisor Prof. Anny Cazenave who have introduced me to the current improved new satellite altimetry-based products of coastal sea level, in particular along the coasts of Western Africa in which she is involved with her project partners. These new products

are essentially based on a dedicated reprocessing of altimetry data of the Jason -1, -2 and-3 missions to extract the relevant information close to the coast. Along the coasts of Western Africa, they found that the sea level trends (over a 15-year long period) are significantly different within 5 km from the coast than open ocean sea level trends, with at some locations, rates of sea-level rise more than twice open ocean rates. Up to now, the processes causing such large trends are not yet well understood. My task was to investigate the causes of the observed sea level trends in the Western African region using some available observations from the LEGOS as well as Copernicus - Marine environment monitoring service (CMEMS) products developed by Mercator Ocean International in close collaboration with Karina von Schuckmann.

In order to contribute to the understanding of sea-level variability, four boxes have been carefully selected. Three of them were taken along the African and Brazilian coasts and one offshore in the centre of the basin, thus responding to the mode of variability of the tropical Atlantic (Atlantic Ninos). The overall sea level trend in the tropical Atlantic is 2.95 mm/year with large trend pattern of 3.82 mm/year and 3.39 mm/year observed along the Gulf of Guinea and the Amazon respectively.

From our current observations, air-sea interactions appear to be related to a basin-wide mode, mainly the Atlantic child mode. This observation seems to be contradictory in both cases, but in one case (the east) we have an increase in density, and in the west, we have a compensation of density. This suggests, therefore, the impact of the Amazon, which also plays a role in the western part of the basin. In addition, this study provides an overview of the different components of global average sea level evolution in the period 2005-2015 (corresponding to the full deployment of the Argo program). Using a sea level budget approach, we compared the global mean sea level based on altimetry, and the steric (halosteric and thermosteric) sea level based on Argos and other in situ measurements. One of the objectives of our training was to study whether it is possible to understand the contribution of the deep oceans to the global average sea level rise over the last decade in the Tropical Atlantic. This issue is particularly relevant on the basis of the ongoing debate on the recent pause in the evolution of global average air and sea surface temperatures while the planet is still in thermal imbalance. For this reason, the analysis is made using the averages of the available data sets. For each period, we find that, by eliminating the contributions of the global average ocean mass level and the steric sea level (estimated for the ocean layers 0-700 m and 0-2000 m), the thermosteric signal shows a positive slope of 0.4 mm/year and the Halosteric signal a negative slope of 0.27 mm/year in the period 2005-2015.

**What applications of the training received do you envision at your parent institution?**

In general, all aspects of the training I received during this fellowship are important and applicable to the research activities of my home institution. However, as our current research is limited to the continental shelf due to lack of tidal data, limited access to satellite resources and lack of funding, the applications of the training received will be adapted/modified to suit our operations, using the processes of the techniques learned. More specifically, based on my area of expertise (as an oceanographer and geodesist) and the research facilities available at my university, I intend to integrate the training received in data acquisition and processing from Mercator Ocean International's Argo

and Copernicus Marine Monitoring Service (CMEMS) for the use of remote sensing and in situ reanalysis products to account for sea level observations derived from reprocessed satellite altimetry. The result of this study will be the estimation of new coastal sea level products and the understanding of the processes that cause changes in coastal sea level. Also as a new research assistant at the Institute of Geological and Mining Research (IRGM - Cameroon), I intend to discuss with my supervisor and the coastal oceanography team of my new host institute the possibility of establishing a collaboration with Professor Anny Cazenave of LEGOS, who is carrying out a European project (with the support of the European Space Agency) dedicated to reprocessed satellite altimetry data along the West African coast to enable the involvement of local research. The outcome of this partnership will be aimed at bringing benefits to society through observation of information systems, assessment of the sustainability of systems and resources, and coastal management plans, providing essential information on the effects of climate change in one of the most vulnerable coastal areas in the world, thus allowing a better understanding of changes in the marine environment.

**Your comments on the Fellowship Programme:**

Participating in this outstanding training scholarship within the LEGOS was an enriching experience. This fellowship is very rewarding as it offers an excellent opportunity to build ocean observation capacity for scientists from developing countries, West Africa and especially Cameroon. This experience would not have been possible without the support of POGO. Thus, I would like to thank the program for permitting me to deepen my knowledge of ocean observations and to boost my young career. This collaborative and commendable effort is greatly appreciated. These collaborative approaches are necessary and must be promoted if the UN Decades of the Ocean for Sustainable Development are to be successful.

I am also grateful to the staff of POGO for their fantastic support, particularly the Director-General, Dr Sophie Seeyave, Dr Lilian Krug and Ms Laura Ruffoni, as well as others who have worked backstage. Lastly, I would like to express my sincere gratitude to my host supervisor, my mentor, Professor Anny Cazenave of LEGOS, for her meticulousness, dedication and interest in my career and the opportunities she offered me during and after my training. I want to express my gratitude Dr. Karina von Schuckmann, my second host supervisor from Mercator-Ocean, who motivated me to tackle this fellowship, shaped the field of investigations and was supporting and guiding me with her expertise. I look forward to working with her in near future. I am grateful to my parent supervisor, Professor Robert Nouayou, and to the administration of the institution for granting me research leave and the necessary support.

**Report from Host Supervisor: Prof. Anny Cazenave, Laboratoire d'Etudes en Géophysique et Océanographie Spatiales (LEGOS) France.**

**Please provide your comments on the performance of the trainee:**

During his visit in France, Frank Ghomsy investigated the interannual variability of the sea level in the tropical Atlantic Ocean, with some focus on the Gulf of Guinea. This is an important topic in the context of the research currently conducted at LEGOS on sea level changes along the coasts of Western Africa from reprocessed satellite altimetry. Frank

Ghomsi compared how sea level is varying on interannual time scale in different areas of the tropical Atlantic and studied the impact of different climate modes on these regions. He also quantified the respective contributions of ocean thermal expansion and salinity on the regional sea level. Although the short visit duration did not allow to draw definite conclusions, the study conducted by Frank Ghomsi opened novel perspectives that need to be addressed in more detail in the near future. Overall, I think that Frank Ghomsi did an interesting work that will certainly benefit his future research.

**Is this exchange likely to lead to future collaboration with the trainee's parent institution?**

Studying the natural climate modes in the tropical Atlantic, as done by Frank Ghomsi during his visit in Toulouse, is definitely a topic of interest for LEGOS who is engaged in producing and interpreting sea level time series and trends along the world coastlines, including Western Africa. Determining how these climate modes impact sea level is an important issue. In addition, Frank Ghomsi's interaction with Karina von Schuckmann from MERCATOR-Ocean has also been highly positive, with expected fruitful future collaboration.

**Please provide your comments on the Fellowship Programme**

Certainly, worth to be pursued. However, I think that a 3 month visit is too short. In the case of Frank Ghomsi, the proposed research would have needed a 6 month stay to be completed, with a publication draft as an outcome.

**Kouadio Maffoue Jeanne – Cote d'Ivoire**

Parent supervisor and institution: Affian Kouadio, Université Félix Houphouët-Boigny, Abidjan, Senegal.

Host supervisor and institution: Simon Balanger, Université du Québec à Rimouski, QC, Canada

Fellowship period: 26/09/2019 – 27/12/ 2019

Topic: "Assessment of anthropogenic influences on biological parameters in Ivorian coastal and marine waters using Ocean Colour remote sensing".

**Report from Fellowship holder - Kouadio Maffoue Jeanne:**



**A brief description of activities during the training period:**

The goal of this fellowship is to evaluate the impact of anthropogenic influences on the coastal and Gulf of Guinea water quality. It's important for marine and coastal monitoring and management. I have learned more about ocean colour satellite data for discriminate water quality by semi-analytical algorithm. I would appreciate to learn more about in situ observation for the validation of satellite data. Unfortunately by my arrival at UQAR, the fieldwork planned by Dr Bélanger was over. Therefore, my work mainly focussed on Ocean Color data processing in coastal waters. It was a good opportunity for me to better understand the limitations and strengths of the state-of-the-art algorithms readily available. The overall objective is to better understand factors controlling water quality at the coastal and to determine phytoplankton typology. I have studied some techniques to assess the influence of rivers on coastal and marine waters. During the training, I have learnt how to process Sentinel-3 ocean colour data (OLCI sensor) Level 1b data at 300m resolution from the European Space Agency for the period 2016-2019. The data processing was done using SeaDAS and open source software provided by the NASA OPBG and ESA. In addition to the available atmospheric correction (AC) algorithms available in SeaDAS, I experienced an alternative AC algorithm called Spectral Shape parameter (SSP) developed by Dr Rakesh Kumar Singh, who is a postdoctoral fellow at UQAR (Singh et al. 2019). The SSP algorithm is based on UV-VIR approach with non-zero water-leaving radiance contributions in the NIR and UV bands. This method was compared to the standard method available in SeaDAS. The results indicate that in the atmospheric correction process of the satellite ocean colour data, the removal of the aerosol scattering contribution over the coastal and inland water bodies has been a major challenge. With the lack of in situ data, we perform visual inspection of the water-leaving radiance ( $nL_w$ ) retrieval and conclude that the SSP algorithm performed better in retrieving the  $nL_w$  in green-NIR bands compare to standard AC algorithm. That it is more suitable for estimating the aerosol optical properties and water-leaving radiance for turbid and productive waters. Similarly, chlorophyll-a concentration was assessed from atmospherically corrected OLCI data using the Algal Bloom Index (ABI), which separates phytoplankton signals from other constituents in the water column (Shanmugan et al., 2018).

During my stay at UQAR I have learned and developed my skills with computer programming and particularly how to use SeaDAS 7.5.3 Software for OLCI image processing. SeaDAS allows users to process data from raw L1b to binned L3 data. There are so many algorithms implemented in SeaDAS so that is very hard to make decision on which algorithm is relevant for a given region. So part of my work was exploratory and was mainly focused on the L2 processing (i.e., from raw to geophysical products at the full sensor resolution). It was the first time that processed images from level 1b (TOA calibrated image) to Level 3 composite (spatial and temporal binned images). With the help of Dr Bélanger and his team, I learnt more about the retrieval of Inherent Optical Properties (IOPs) with semi-analytical algorithms. I could test the QAA of Lee et al. (2002) (version 6), GSM (Garver and Siegel, 1997; Maritorena et al., 2002) and GIOP (<http://oceancolor.gsfc.nasa.gov/atbd/giop/>) algorithms (Werdell et al 2009). The lesson will greatly enrich our courses at CURAT. Initial results show that the distribution of CDOM and non-algal particles (CDM) is regulated by oceanic processes during the great cold season, while river discharges rich in CDOM control the distribution of CDM during

warm seasons. IOPs and chlorophyll Variations demonstrate biomass regime caused by upwelling, including important nutrients and high microbial activity during cold seasons. During this season, the coastline is characterised by oligotrophic waters to mesotrophic waters.

**What applications of the training received do you envision at your parent institution?**

The training received will be very beneficial to the Centre Universitaire de Recherche et d' Application en Télédétection of the Félix Houphouët-Boigny University (CURAT of the UFHB). It will allow us to process data from the EUMETCAST antenna located at CURAT and other satellite data of the Ivorian continental shelf and also the Gulf of Guinea. The result will be to have a better mapping of Inherent Optical Properties (IOPs). The knowledge that I acquired will be shared among the researchers of CURAT, from the Fisheries communities, the department in charge of the coastal management which runs different projects dealing with climate change impacts on phytoplankton variability and fisheries. As part of that department since 2018, my experience will be of great interest to that community. This training will enhance my course related to remote sensing applied oceanography in which I will now incorporate the use of SeaDAS software in image processing for understanding the factors that control water quality and the phytoplankton typology in coastal waters.

**Your comments on the Fellowship Programme**

This Fellowship Programme is an excellent opportunity offered to young African researchers. It gives them the possibility to extend their knowledge to the world of research. It allows capacity building by having access to equipped laboratories and to work with dedicated research scientists like Dr Simon Belanger. These young African researchers like me have the opportunity to improve themselves in their fields and greatly expand their knowledge by discussing with other researchers. The training at the UQAR allowed me to acquire experience, to produce results for a research publication, to make contacts for future research projects, and to enrich our practical training course at the University. If the program's duration could be extended to longer periods, I would have gained further knowledge and completed/submitted the research article while at UQAR.

**Report from host supervisor, Simon Balanger, Université du Québec à Rimouski, QC, Canada.**

**Please provide your comments on the performance of the trainee.**

Jeanne was very well integrated in my laboratory. She was at the office every day and worked very hard. She made a presentation of her previous work to the laboratory. We had a great discussion on how ocean colour data can help to better understand the coastal system of her region of interest. She was very motivated to learn SeaDAS and she did not hesitate to get help from the post-doctoral fellows (Dr Singh and Dr Pan) and interact with the other students.

We decided to focus on Sentinel-3 data because it will be the main source of ocean color data in the next decades. Sentinel-3 is also more suited for coastal waters with specific



bands (e.g. 709 nm) that allow better discrimination of water constituents in optically complex waters. So Jeanne learnt to manipulate Sentinel-3 data and to process them using various algorithms. In particular she better understands how atmospheric correction and semi-analytical inversion algorithms work. So she has developed a critical point of view with the ocean color data. This will certainly help her in her future work.

**Is this exchange likely to lead to future collaboration with the trainee's parent institution?**

One important outcome is the establishment of the new collaboration between our respective institutions. We should in the near future look for funding opportunity to maintain this new collaboration. We would be pleased to welcome Jeanne again at UQAR any time.

**Please provide your comments on the Fellowship Programme:**

I think it is a very nice programme although 3 months went really fast and in the end it was not long enough to produce a complete study. It always takes some time of adaptation to the new environment (2-3 weeks). I think a minimum of 4 months should be planned.

**Appalanaidu Sura – India**

Parent supervisor and institution: Dr. MV Ramana Murthy, National Centre for Coastal Research, Ministry of Earth Sciences, Chennai, India.

Host supervisor and institution: Dr. Bhavani Narayanaswamy, Scottish Association of Marine Science, Oban, Scotland, UK.

Fellowship period: 18<sup>th</sup> October, 2019 to 17<sup>th</sup> December, 2019

Topic: "Quantifying and identifying the microplastics extracted from benthic invertebrates from the Eastern Arabian Sea, Indian Ocean: FT-IR infrared spectrophotometer microscopy approach".

**Report from Fellowship holder - Appalanaidu Sura**



**A brief description of activities during the training period:**

Pollution of the marine environment from the shallow coastal areas to the open oceans by plastic litter is a global problem, despite the increased awareness, rising population and the improper disposal of the plastic waste will consequently lead to an increase of over 5.25 trillion plastic pieces floating in the world's oceans. It is obvious that plastic

litter is a global challenge for both developed and developing countries and it has a deleterious impact on ecological-biological, social, economic and human health aspects. The inputs of land/sea based sources, and the type of plastic is of particular biological concern and it is therefore necessary to study the effect of microplastics in different marine organisms. During this POGO-SCOR fellowship, I carried out analysis of microplastics found in benthic organisms and in seawater collected from the Eastern Arabian Sea, Indian Ocean.

The aim of this training is the quantification and identification of the microplastics from benthic organisms and waters of Eastern Arabian Sea. During this training, a Thermo-Fisher Fourier Transformation Infrared (FTIR) microscope in transmission mode was used to identify potential microplastic particles/fibres. The samples were placed onto gold coated glass slides and infrared radiation in the wavelengths 600 - 4000  $\text{cm}^{-1}$  was used. Each spectra produced was the average from 16 scans, a variable aperture size was used and the spectral resolution was 4  $\text{cm}^{-1}$ . Background scans were taken between each sample and were subtracted from the sample's spectrum. Spectra were visualised in OMNIC 9 (Thermo Fisher Scientific Inc.) with use of the inbuilt polymer library to aid identification. Additionally, the characteristic functional group signals from each spectra acquired were examined manually to confirm the identity of the materials being assessed. The possible microplastics from organisms were identified as to be synthetic polymers (Nylon, polyethylene, and polypropylene), semi-synthetic (rayon cellulose fibres) and natural fibres.

**What applications of the training received do you envision at your parent institution?**

The POGO-SCOR hands on micro-FTIR microscope training helped to identify and quantify the type of polymers present in the organisms. After successful completion of my training, with the help of colleagues at the Scottish Association of Marine Sciences, my plan is to undertake more research on the long term fate of marine microplastics (specifically in marine biota) in the Northern Indian Ocean, which have not yet been studied for this region. The fellow parent institution is aiming to purchase a new micro-FTIR microscope to detect and identify the microplastics from water, sediment and fauna. My training programme has certainly helped.

The training undertaken with Dr. Bhavani Narayanaswamy, in which I learned about advanced micro-FTIR microscopic technique and further scientific knowledge on data analysis will empower me to complete the present and future research effectively in the parent institute.

**Please provide your comments on the Fellowship Programme.**

The POGO-SCOR short-term fellowship is a unique programme enabling early career scientists from poor/developing countries to have advanced training and also preparing the next generation of ocean scientists from around the globe.

**Report from host supervisor, Dr. Bhavani Narayanaswamy, Scottish Association of Marine Science.**

**Your comments on the performance of the trainee**

Dr Sura spent a period of two months in my institution. The focus of his work was to determine the presence of microplastics and to identify them from fauna and seawater collected in the Western Indian Ocean. Dr Sura was given a lot of training in how to use the FTIR machine correctly and how to identify the spectra produced. During his time with us Dr Sura worked extremely hard and was keen to learn as much as possible in the short time that he was with us. He wanted to be able to take as much information back to his home institute.

In addition, Dr Sura is looking to publish the results of the work that he undertook at my institute.

**Is this exchange likely to lead to future collaboration with the trainee's parent institution?**

This work has already led to initial discussions regarding future collaboration between the two organisations. Dr Sura's institute invited me to speak at the Advances in Coastal Research with special emphasis on the Indo Pacific Symposium which took place in Chennai, December 2019. During this time I had positive discussions with the Director and head of department undertaking microplastic research as well as the Head of the National Centre for Coastal Research. The two institutes will look into forming an MOU initially to collaborate on microplastic research.

**Please provide your comments on the Fellowship Programme:**

I think this is an excellent programme allowing for researchers from developing nations to travel to other institutes to learn about new techniques/ideas which can then be taken back to their organisation. Positive collaborations should result in an exchange of ideas and publications and possibly potential future research projects between the two organisations. If nothing else it provides the fellow with experience of working in a different organisation in a new country, interaction with new colleagues from around the world.

**Lisa Martinengo – South Africa**

Parent supervisor and institution: Prof Mike Roberts, Nelson Mandela University, South Africa.

Host supervisor and institution: Dr David Smeed, National Oceanography Centre (NOC), Southampton, UK.

Fellowship period: 3 February – 4 March 2020

Topic: "Statistical analysis and interpretation of fixed-point current and temperature measurements of the cold ridge on South Africa's central Agulhas Bank".

**Report from Fellowship holder – Lisa Martinengo**



**A brief description of activities during the training period:**

For my POGO SCOR 2019 fellowship I spent a month at the Oceanography Centre in Southampton to work with my supervisor, Dr David Smeed. He helped with the processing and analysis of moored time series data, collected for my PhD project, on the oceanography of South Africa's Agulhas Bank. I learned about quality control protocols for moored ADCP and thermistor chain measurements, including the importance of metadata collection. One of my objectives was to prepare the dataset for submission to the BODC for archiving. Their location at the NOC meant that I was able to work with them personally to achieve this.

I also had the opportunity to collaborate with other members of the SOLSTICE WIO programme who are based at NOC. I worked with Zoe Jacobs to compare the mooring time series with NEMOMEDUSA model output, while Fatma Jebri provided guidance in working with altimeter measurements collected along the mooring transect. Both the model and along-track altimeter data will be analysed in conjunction with the in-situ data to further our understanding of the ecosystem functioning on the Agulhas Bank and show it affects productivity.

During the last week of my trip I attended a workshop on the SOLSTICE-WIO South African case study, a multidisciplinary project that investigates the key factors controlling ecosystem dynamics and associated catch fluctuations in the South African chokka squid fishery. The workshop was attended by student and scientist based in South Africa and in the UK, and I presented preliminary results from my mooring data on the circulation and temperature dynamics on the Agulhas Bank. My research will be included in a Deep Sea Research II Special Issue publication on the SOLSTICE-WIO South African case study, planned for publication in 2021.

**What applications of the training received do you envision at your parent institution?**

I will create a best practice guide for moored data collection and processing that will include - instrument setup - metadata collection - data archiving and - guidelines for data QC and basic processing using Matlab / Python. I will also be able to assist fellow students in statistical analysis and data visualization techniques using Matlab / Python.

**Your comments on the Fellowship Programme**

The POGO SCOR fellowship is an excellent opportunity for students and young professionals from developing countries to acquire essential skills from international

institutes who are leading the way in ocean science. I benefited from the fellowship through exposure and collaboration with world class scientists. The fellowship is well managed, and admin communicated everything very clearly. I want to thank POGO SCOR for their support.

**Report from host supervisor, Dr David Smeed, National Oceanography Centre (NOC), Southampton, UK.**

**Please provide your comments on the performance of the trainee.**

The fellow worked enthusiastically to learn about methods of data calibration, data quality control, data management, and data analysis, and applied these to ADCP and thermistor datasets collected as a part of a project on the oceanography of the Agulhas Bank. Excellent progress on the analysis and interpretation of the data sets was made. The fellow also made good use of the time at the NOC to interact with many scientists and data managers, and to gain exposure to a broad range of topics in oceanography.

**Is this exchange likely to lead to future collaboration with the trainee's parent institution?**

I will continue to provide guidance for the remainder of the fellow's PhD and a joint publication is planned.

**Please provide your comments on the Fellowship Programme**

Whilst advice and guidance can be provided remotely, for example via email, there are considerable advantages of visits such as those supported by the POGO fellowship program. Daily interactions between a trainee and scientists at the host institution facilitate much more rapid progress than would otherwise be possible, and the personal connections made during the visit expand the professional network of the trainee and facilitate interactions and collaborations following the visit.