

**2018 NF-POGO- GEOMAR Fellowship for
Ship-board Training on-board RV Meteor cruise M148**

Fellowship Report

Name of Trainee: Ramilla Vieira de Assunção
Name of Supervisor (Parent Institution): Alex Costa Silva
Supervisor (Host Institution): Marcus Dengler
Dates of Training: from 29 May to 30 July

Section A

(To be completed by the fellow and returned to the POGO Secretariat)

Please note Q1-Q3 will be passed on to the host and parent supervisor and made publicly available on the OTP website; Q4 will be read only by the POGO Secretariat and remain confidential

1) Please provide a brief description of activities during the training period:

The training started on-board of the FS Meteor in May 2018. During the research cruise I took part in the watch system, with shifts 4h on and 8 h off. During the watch, I was responsible for collecting water samples that were subsequently analysed to determine the oxygen concentrations during all CTD stations. Additionally, I was involved in collecting data with the CTD/Rosette system - from preparing the CTD/Rosette prior to deployment until returning it back on deck after the cast.

Beyond of the CTD cast, I have been responsible for preparation of autonomous observatories, like Argos during the time of my shift always been under supervision by an experienced scientist. This was my first direct contact with an Argos, I knew the database, but did not know how to prepare it and deployed it in the water. Other new equipment for me were an underway-CTD system and a RapidCast CTD (also a microstructure profiler that particularly interested me a lot).

I was part of the rescue team the recovery and redeployment of moorings, bottom shields and bottom pressure sensors off Angola and Brazil. I was able to understand the logistics and infrastructure involved in these processes.

For other head, off-watch periods, I've been responsibility to accompany the ocean velocity acquisition in the upper 1000m continuously measured by the vessel-mounted acoustic Doppler current profiler, two ocean surveyor ADCP (osADCP), 38 and 70 kHz. During all cruise, Jan Lüdke (my PhD surveyor) taught me how to download the data, the operation principle and the post-processing of the ADCP data. I learned some methods of calibration, the corrections that need to be done for if be able the real ocean velocity, and how to reduce uncertainty of the collected data sets.

Additionally, daily on-board seminars were held by the participating scientists on the state of the art knowledge about the cruise-related scientific research questions or your own searches. These talks were very interesting, because they made me open my mind to what is being done in the field of oceanographic research, and what can be done beyond my field of research in particular (PhD research). Listen to different opinions on the same issue is very inquisitive and makes us grow as researchers.

Then, after the cruise completion the training has been continued during the 30-day at GEOMAR, Kiel, where I could to mature skills of data processing and to analyse the collected data set, besides the analysis and interpretation of the acoustic velocity data collected during the cruise, I chose to learn about the CTD data, understand about the thermohaline structures and how to identify the

different layers in the ocean superior. This was very helpful for my PhD program, where I am try to identify these layers (it is possible) using multi-frequency acoustic.

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

I'm working in my parent institution (UFPE, Brazil) with acoustics methods, beyond the acoustic current profiler, I'm using multi-frequency acoustic that have the same elements that osADCP. So, to learn and to follow since ocean collected and processing of the data it has added me so much. I'm satisfied with the results of my training, I consider myself more mature regarding state of the art of oceanography and now I can help to fill knowledge gap regards about data post-processing is required by the UFPE staff and the Brazilian research community and to pass to my colleges since the lived experience and to share the methods of the treating, MATLAB routine, between another stuffs.

3) Please provide your comments on the Fellowship Programme.

First, I'm want to thank for the opportunity, the Fellowship Programme is a great way for us, young scientists grow and be able to raise new horizons. The 30 days visiting another lab seems like a lot, but when we are it seems so little time. But it is already of great importance. I've only one suggestion about the receipt of the scholarship. We (myself and my 3 colleagues) stayed for almost a week without knowing how we would receive the scholarship, in a country previously unknown for us, the responsible person had entered on holiday and we ended up receiving from our host supervisor. Maybe transferring the money to the respective accounts before the start the Programme, or sending bank cards to the responsible of the host institution, are better options. Many thanks and I hope can make so many future contributions.

Signature

R V Assunção

Date: 15 August 2018

Section B

(To be completed by host supervisor and returned to the POGO Secretariat)

Please note Q1-Q3 will be passed on to the parent supervisor and trainee and made publicly available on the OTP website; Q4 will be read only by the POGO Secretariat and remain confidential

1) Please provide your comments on the performance of the trainee.

During the cruise, Ramilla exhibited an exceptionally pronounced eager to learn and to advance her knowledge on all aspects of data sampling as well as on ocean science. Despite some difficulties with the English language, she performed all tasks entrusted to her reliably and with great responsibility. A central aim of her training was to learn how to process vessel-mounted acoustic Doppler current profile data (vmADCP). To achieve this, she was given numerical code (Matlab) that she independently extend and improved. Thereby, she developed her own methodology for the data analysis. Her fast progress in her training program made it possible that during the last two weeks of her stay at GEOMAR, she focused on issues related to her PhD that I supervised.

2) Is this exchange likely to lead to future collaboration with the trainee's parent institution? If so please give example(s) of how this collaboration may be pursued.

Cooperation between Ramilla's colleagues at Universidade Federal de Pernambuco (UFPE) and the supervisor host and other colleagues from GEOMAR was established in 2003. Since 2013, collaboration has intensified when GEOMAR reinstalled a western boundary current meter array off Brazil. Cooperation with staff from UFPE, in particular Prof Moacyr Araujo and Dr Doris Veleda, focus predominately on process understanding and data analysis. Students from Prof Araujo's group are regularly participating on annual mooring servicing cruises conducted by GEOMAR, and knowledge transfer on moored instrumentation, mooring design and vessel-base data acquisition and post-processing is ongoing. Most recently, a new research vessel (RV Vital de Oliveira) was put in service by the Brazilian Navy that is also used by the Brazilian scientific community. While the vessel is equipped with state of the art instrumentation, targeted knowledge about data post-processing is required by the UFPE staff and the Brazilian research community. To fully exploit future measurement programs on RV Vital de Oliveira, collaboration and knowledge transfer between the two institutions will enhance in the future.

3) Please provide your comments on the Fellowship Programme.

The NF-POGO Fellowship for ship-board Training is an ideal program for students from developing countries and from countries in transition to experience oceanographic data collection at sea and to interact with researchers, technicians and students from developed countries. This experience as such is in many aspects of great benefit for the fellow's career. The targeting of post-graduate students is exemplary due to their high level of receptiveness and professional qualification. Despite some gaps in knowledge of the fellow's that we were happy to address, a prominent outcome of the NF-POGO- GEOMAR Fellowship program was that we learned from each other while advancing our knowledge about ocean science integrated in the cultural and political dimension of the human, country and ocean interactions. Perhaps the last aspect could be foregrounded in the program.

Signature

M Dengler

Date: Oct. 5th, 2018

SECTION C

(To be completed by parent supervisor and returned to the POGO Secretariat)

Please note Q1 will be passed on to the host supervisor and trainee and made publicly available on the OTP website; Q2 will be read only by the POGO Secretariat and remain confidential

1) Do you agree with the above comments and do you have any additional feedback you wish to provide?

The comments above are pertinent, the student has been dedicated during her training and is applying the acquired knowledge in her PhD thesis, besides getting a new cultural experience. The possibility of boarding and training offered to students is of great importance for their professional training. I hope that in the future other students will have the same opportunity and that we can also contribute to the growth of this collaboration.

Signature

A C Silva

Date: Oct. 5th, 2018