



**2019 NF-POGO Visiting Fellowship for
Ship-board Training**

Fellowship Report

Name of Trainee: Juan Cruz Carbajal

Name of Supervisor (Parent Institution): Prof. MSc. Andrés Luján Rivas (CESIMAR)

Supervisor (Host Institution): Prof. Dr. Martin Visbeck (GEOMAR)

Dates of Training: 27th October to 22nd November 2019

Section A

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

Please note that this form will be passed on to the host and parent supervisor and when complete will be made publicly available on the [OTP](#) website;

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

The training period began with the VII Seminar of the Bilateral Cooperation DOCEAN – GEOMAR at the Federal University of Pernambuco, Recife Brazil, on October 28 and finished with another seminar at the Ocean Science Centre Mindelo (OSCM), on November 22. The activities during the M159 cruise were separated in two main groups:

1. Mooring work
2. CTD watches

The first week of work focused on the recovery of four full moorings (MicroCAT sensors / Aquadopps / ACDP) and the deployment of other four that are part of GEOMAR project with the objective of studying the variability of the subtropical western boundary circulation of the Atlantic Ocean. The work was done during the daylight hours and basically my task was to drive one of the winches and help with the wire during the recovery and the deployment of the moorings. This training was very useful for my formation as a PhD student because I learned the *in-situ* procedures that involve the mooring works and the huge logistics behind. One of the things that impressed me was the amount of sensors and wire that we collected during this activity (79 instruments, 8 releasers, 7670 m cable). In the second and third weeks the activity centered on performing several CTD stations along 3 sections, two zonal (5° S and 11° S) and one meridional (35° W) crossing the equator. My CTD watches covered two time zones: from 0000 to 0400 and from 1200 to 1600. I was trained in the use of all the instruments in the CTD/rosette package such as the nutrient sensor, the Acoustics Zooplankton and Fish Profiler, the fluorescence sensor and other sensors, and in the routines before starting a station (CTD protocol). Also, I learned the German terms to talk to the winch operator during a CTD station. In this activity, the most important instrument in the rosette for me was the dual Lowered ADCP (LADCP) that performs vertical profiles of the horizontal velocity. Together with other colleagues, we had a special introductory training about how the LADCP works and other training about the hull-mounted ADCP in the ship. In addition to these two main activities, taking



water samples from the 'Niskin' bottles was very interesting as I learned how to measure oxygen and salinity from the water samples with specific methods and instruments (e.g. salinometer). At the end of the cruise, one last mooring was recovered and re-deployment near Cape Verde named Cape Verde Ocean Observatory that measures physical and biogeochemical parameters.

My scientific contribution during the M159 cruise was to investigate the performance of the thermosalinograph onboard as part of the final cruise report. The daily lectures and the scientific meetings were also very interesting as we learned about many different areas of oceanography.

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

I believe that all the applications (both technical and scientific) that I received during the training was beneficial for my development as a PhD student and future researcher. But I think that two were essential for envisioning at my institute and country:

1. LADCP characteristics and function.
2. Mooring techniques.

The recently acquired research vessel 'Victor Angelescu' for the Instituto Nacional de Investigación y desarrollo pesquero (INIDEP) with a complete CTD/rosette package (plus LADCP) is a potential platform for using the skills acquired in this training with the main objective of studying the Argentine Continental Shelf. It is very important for my institute to have a person with the technical knowledge of how works the LADCP for future collaborations projects with the INIDEP.

Furthermore, one year ago the institute acquired a new ADCP Nortek Aquadopp Profiler 400 kHz for the study of the San Jorge Gulf in the Patagonian Shelf and we are now in the preparation phase for the deployment of the instrument (set up the instrument and prepare the dome). So, the mooring work during the training was key to know the techniques and understand how the procedures are.

This type of work is not only essential for our group, but it is also important to the biological and chemistry groups of the institute.

3) Please provide your comments on the Fellowship Programme.

The fellowship programme is an astounding opportunity to meet peers and interact with scientists of different institutes. It is also an effective way of providing good exposure to early career researchers in Physical Oceanography.

As I mentioned in the POGO newsletter Issue 38, the programme made me see the physical oceanography in a totally different point of view because I belong to a small physical oceanographic group that focus in the local processes near the coast and in the inner of the shelf. This programme has provided me with much knowledge of techniques and equipment to work in the deep ocean.

I am very glad that my supervisor for the fellowship programme was Prof. Martin Visbeck, a hard worker with profound subject knowledge and expertise such as the observational oceanography and the ocean science diffusion both for scientific and politicians, the last ones very important because they are the decision-makers.

Finally, I would like to thanks NF-POGO and everyone who helped me getting this training.

PRINT NAME

Juan Cruz Carbajal

Date: December 10, 2019



Section B

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

Please note that this form will be passed on to the parent supervisor and trainee and when complete will be made publicly available on the [OTP](#) website;

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

Juan has shown high motivation and engagement during the expedition. He quickly found his place during the mooring operations, in the CTD watch and in other activities during the M159. He brought his knowledge and expertise in coastal oceanography to the team and gave a very good seminar on his research subject. Juan was eager to expand his skills and his knowledge of MatLab and in general of ocean sciences made it easy from him to process the data and learn from other experts on the expedition. In particular he learned to run and operate an LADCP system and ADCP data processing in general. I was very happy with his progress and wish him all the best for his PhD project and looking forward to hear of him in the near future.

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.

His research group is more focused on shelf processes, which we only periphery engage with at GEOMAR. However, there is very strong collaboration on the shelf break work with his group in Argentina and we have joint funding in an EU project. So it was good for us to have him participate in the expedition and forge new partnerships also among the group of next generation scientists.

3) Please provide your comments on the Fellowship Programme.

I have supported a number of POGO fellows over the years and think this is an excellent program to support marine scientists in the 'Global South'. I particular the programme supports the exchange of views from ocean scientist from around the world. I want to underscore the importance of mutual learning from each other. The other participants on the expedition benefitted from Juan's perspective tremendously.

PRINT NAME

Martin Visbeck

Date: December 13, 2019



SECTION C

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

Please note that this form will be passed on to the host supervisor and trainee and when complete will be made publicly available on the [OTP](#) website;

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

Juan Cruz's application to the NF-POGO fellowship was mainly motivated by the opportunity it offered to interact with an oceanographic group highly trained in observational oceanography and belonging to an institute with an excellent academic history.

The main objective was to participate and learn about equipment and maneuvers on board that are not usual in Argentina and, nevertheless, are vital for his formation as an oceanographer. Based on the description of activities carried out by Juan Cruz and the comments made by the host supervisor, I believe that the objective has been widely achieved. The training has allowed him to know and internalize oceanographic practices and instruments that he would hardly have accessed in our working group, expanding his field training and giving him more solid tools and bases for his future performance as a researcher.

I believe that this technical and human training of Juan Cruz can be a start for the opening of our group and of the CESIMAR institute towards large-scale studies in the Continental Edge together with INIDEP, the SHN and in collaboration with the GEOMAR.

PRINT NAME

Andrés Luján Rivas

Date: December 17, 2019