

**2019 NF-POGO PML Visiting Fellowship for  
Ship-board Training on an Atlantic Meridional Transect (AMT) Cruise**

**Fellowship Report**

**Name of Trainee: Paul Alexander Strubinger Sandoval**

**Name of Supervisor (Parent Institution): Dr Williams Melendez**

**Supervisor (Host Institution): Dr Giorgio Dall'Olmo**

**Dates of Training: 13<sup>th</sup> September 2019 to 20<sup>th</sup> December 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:**

My activities during the visiting fellowship could be divided into three stages:

- Prior cruise:

I spent one month before the cruise at Plymouth Marine Laboratory (PML), working alongside Dr Giorgio Dall'Olmo and Dr Francesco Nencioli. There, I was involved in the preparation, assembly and testing of all the instruments, software and consumables, including batteries, hyperspectral absorption and attenuation sensors (ac-s), the C-Star transmissometer, the SBE CTD, the scattering sensor (bb3), and radiometers that comprised the optics rig system, the underway optical data collection system, and the Hyperspectral Surface Acquisition System (HyperSAS). Additionally, I took an STCW Sea Survival course and an ENG1 medical examination that is compulsory to work at sea.

- Research expedition:

The expedition was conducted on board of the RRS Discovery, passing across the Atlantic Ocean. We departed on the 13th October 2019 from Southampton, UK and arrived on the 25th November 2019 to Punta Arenas, Chile. I was part of the Optics group which included Dr Giorgio Dall'Olmo, Dr Francesco Nencioli and Dr Carolina Sá. I was involved in a range of activities including the assembly, deployment, and maintenance of the optics rig system; assembly and maintenance of underway optical data collection system (hyperspectral absorption and attenuation, backscattering and CTD); deployment of Core-Argo floats; assembly, and maintenance of HyperSAS radiometers used for satellite ocean colour validation. Additionally, I was responsible for the processing of data from CTD casts, the generation of profiles of the water column and the latitudinal section plots for different parameters using SBE Data Processing software and Ocean Data view, respectively, and their subsequent distribution to the scientific party (see figure 1 as a reference of my training). Furthermore, I collected samples from the twenty-four 20-litre water bottles rosette for the analysis of nutrients and DNA during a total of 55 cast deployments, including pre-dawn and the solar-noon casts.

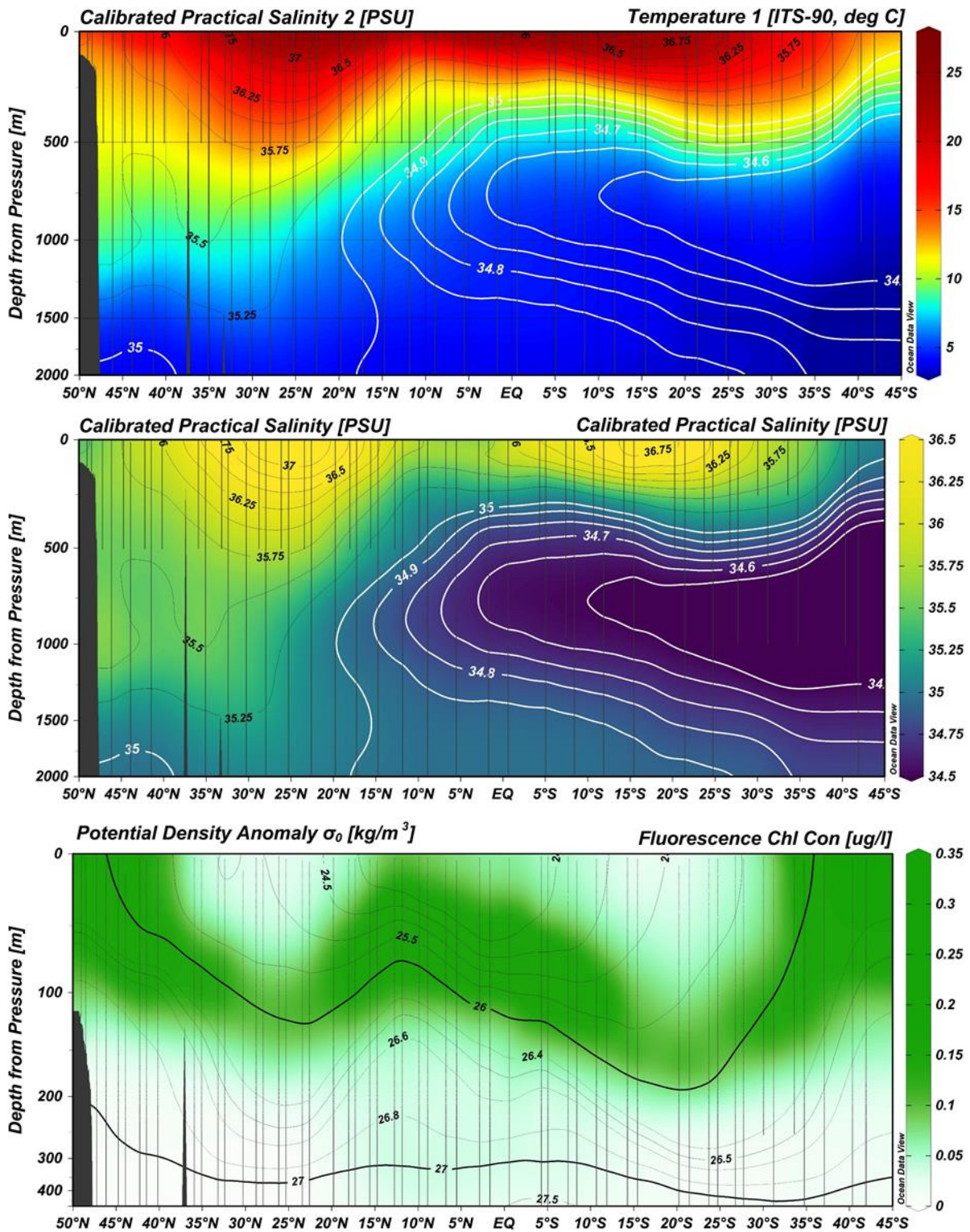


Figure 1 Section plots along the AMT29/DY110 transect of the temperature, salinity, and fluorescence Chl concentration, respectively versus latitude (50°N – 45°S).

- Post-cruise:

I spent approximately one additional month at PML. There, I worked with Dr Giorgio Dall'Olmo on the preparation of a scientific article about the particulate organic carbon (POC) measurements and its uncertainties across the mesopelagic zone of the Atlantic Ocean using data from a previous AMT cruise (AMT-24). During this time, I trained and enhanced my coding and programming skill using MATLAB and Octave software.

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

I am detached from my parent institution, and I am currently living in Plymouth, UK. Thus, this training will not immediately lead collaboration to the institution. However, in the short term, I would like to fulfil my original ideal of imparting the knowledge received during this fellowship via distance learning courses using WebEx, Zoom, or Skype to undergraduate students in Venezuela. These courses will cover the theoretical framework for optical oceanography, including optical constituents of the oceans, inherent and apparent optical properties and how to measure those parameters, instruments used to obtain bio-optical observations, and statistical analysis and interpretations of the results. Finally, over time and as an ultimate goal, I would like to bring international collaboration in the developing of oceanographic projects in Venezuela.

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

The POGO fellowship programme is an excellent opportunity, especially for early-career scientists as me who are looking for to improve their knowledge about the latest ocean science methodologies and techniques. This programme contributed to my formation as a scientist. It was an exceptional opportunity where I gained a valuable insight into the planning and preparation of an open-ocean research expedition across the Atlantic Ocean and received essential training in a range of instruments used to collect bio-optical measurements. Also, It was a great platform to widen my professional network with colleagues from international institutions which could lead to future scientific collaboration. For instance, after completion of this fellowship, Dr Dall'Olmo and I are planning to work, with data collected during the AMT-24 and AMT-26, in another paper about the relationship between the particulate beam attenuation ( $C_p$ ) and backscattering ( $b_{bp}$ ) coefficients and the POC across the deeper layers of the Atlantic Ocean.

**PRINT NAME**

*Paul A. Strubinger S.*

**Date: 13<sup>th</sup> January 2020**

## 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.

It was great to get know Paul and to see him take responsibility for a wide range of tasks before, during and after the AMT29. Paul has met if not exceeded all my expectations during the cruise and we have almost finished completing a manuscript.

### 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.

Because of the political situation in Venezuela, we do not know exactly when Paul will be able to return to his country. However, I fully support his idea of developing and delivering long-distance education materials. If needed, I'd be happy to contribute to this endeavour.

### 3) Please provide your comments on the Fellowship Programme.

The POGO AMT Fellowship programme has allowed me to meet and establish a professional and personal relationship with Paul. As it has already happened in the past, I expect to continue this fruitful collaboration in the future. Similarly, I hope the POGO AMT Fellowship will continue to support future exchanges.

**PRINT NAME**

**Giorgio Dall'Olmo**

---

**Date: Jan 21<sup>st</sup>, 2020**



**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?**

I agree with the above comments. I just want to add that Paul's Job was very interesting. It helped him to increase his knowledge in this type of scientific research. I would hope he could continue studying and working with this group of researchers in the future.

**PRINT NAME**

**Williams Melendez**

---

**Date: Feb 19, 2020**