



REPORT ON POGO-SCOR FELLOWSHIP PROGRAMME 2011

Trainee's Report

Name of Trainee: Dr Alaa E.M.M. Younis **Supervisor (Parent Institution):** Dr Mamdouh A. Fahmy

Supervisor (Host Institution): Dr Gavin Tilstone **Dates of Training:** 02.09.11 - 20.12.11

Subject of Training: Effect of CO₂ enrichment on plankton community structure, photosynthesis and primary production in the Atlantic Ocean

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

During the first days, Dr. Gavin Tilstone gave me a quick tour of PML and the Hoe and introduced me to the people in the lab and We had a discussion on the methods and I was familiarized with the materials and instruments in addition to I did setting up and packing of the equipment and materials before the cruise started.

Once in the ship the work was about setting all the equipments into the ship's laboratories and the experiments over the ship's deck. We used water from different depths. Samples were inoculated with ¹⁴C labelled bicarbonate. After incubation, the suspended material were filtered through 25 mm Whatman GF/F filters to measure the total production. The filters were exposed to concentrated HCl fumes for 12 h immersed in scintillation cocktail and ¹⁴C disintegration time per minute (DPM) was measured on board using a WinSpectral 1414 liquid scintillation counter. During other times I was trained how determine pH and alkalinity for calculation of CO₂ with Dr. Vassilis in addition to respiration and reproduction and absorption of phytoplankton.

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

As I said in my application to the POGO fellowship, at the National Institute of Oceanography and Fisheries there are few researchers in this area, so i would like to apply these techniques and knowledge obtained during the POGO fellowship in my Institute (National Institute of Oceanography and Fisheries, Alexandria, Egypt). Especially in our Institute we have equipment which could carry on the techniques i would learn (i.e. HPLC or fluorometers to measure Chla, spectrophotometers for measuring pH, microscopes for measuring phytoplankton community structure) in addition to our Institute plans to buy liquid scintillation counter for measuring ¹⁴C uptake so this training will help me to learn this topic of research which I could apply in our Institute.

3) Please provide your comments on the Fellowship Programme.

The POGO-AMT fellowship programme was, in my opinion, was more than I expected Since I was in Egypt, Miss Laura was always very kind and very helpful at the time to deal with my visa and travel process.

I was lucky to be part of the pool of young scientists onboard and to be guided by experts and experienced researchers.

Dr. Gavin Tilstone was due to be on board for the cruise, but unfortunately he was unable to attend but he spent the necessary time to explain and show me clearly how the work had to be done before and after cruise

The POGO-AMT fellowship programme was useful for my scientific life especially soon I will be co-author in publication from this work.

4) Please provide details as to how your contribution towards living expenses was spent.

Attach receipts for all major expenses.

Receipts were left with Miss Laura Ruffoni, POGO secretariat, before my departure PML.

This was spent for basic needs such as food and transportation (bus and taxi) in Plymouth; and for expenses after the cruise (e.g. souvenir items from Chile and the UK).



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Supervisor's Report (Host Institution)

Name of Trainee: Alaa E.M.M. Younis **Supervisor (Parent Institution):** Dr Mamdouh A. Fahmy

Supervisor (Host Institution): Dr Gavin Tilstone **Dates of Training:** 02.09.11 - 20.12.11

Subject of Training: Effect of CO₂ enrichment on plankton community structure, photosynthesis and primary production in the Atlantic Ocean

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

During his stay at PML Alaa Younes was trained in or received the following training:

- Sea Survival Training,
- ENG1 Medical certification,
- Radiochemical Safe working practice induction,
- Health and Safety induction course including COSHH and RISK assessments,
- Fluorometric analysis of Chla,
- Spectrophotometric measurement of absorption coefficient of phytoplankton,
- Construction, testing and calibration of photosynthetrons and on deck incubators,
- Photosynthesis-irradiance (PE) curves and the calculation of primary production using ¹⁴C,
- PAR measurements and data processing,
- PE Data processing, curve fitting, statistical methods,
- Simulated in situ primary production techniques,
- Winkler Oxygen determination,
- Experimental procedure for running incubations for the calculation of gross production, dark respiration and net community production from Oxygen winkler measurements,
- Spectrophotometric analysis of pH,
- Alkalinity measurements,
- Underway pCO₂ measurements,
- Data visualisation (using ODV and SigmaPlot),
- Simple empirical satellite algorithms of primary production.

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

The POGO fellowship was split into three phases:

1. Initial training at PML from 2 Sept to 28 Sept 2011 to learn the analytical techniques listed above, Sea Survival training, ENG1 medical and logistics and mobilisation for cruise AMT21.
2. On board training on AMT21 from 29 Sept to 14 Nov 2011.
3. Data processing and analysis from 15 Nov to 9 Dec 2011.

During the AMT21 cruises Alaa collected two principal data sets:

- A. Photosynthesis-irradiance (PE) curves at surface, chlorophyll max and 1% light along the AMT track.
- B. Absorption coefficient of phytoplankton (aph) at surface, chlorophyll max and 1% light along the AMT track.

The outcome of his fellowship was that he learnt a wide range of analytical techniques, got a good grasp of data processing, visualization and analysis and which enhanced his understanding of chemical and biological oceanography, especially phytoplankton photosynthesis, respiration and production and the potential effects that enhanced CO₂ in seawater can have on these processes.

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

Possibly; the compilation of data from a number of AMT cruises and the analysis that he carried out after the cruise, may lead to a joint publication.



REPORT ON POGO FELLOWSHIP PROGRAMME 2011

Supervisor's Report (Parent Institution)

Name of Trainee: Alaa E.M.M. Younis **Supervisor (Parent Institution):** Dr Mamdouh A. Fahmy

Supervisor (Host Institution): Dr. Gavin Tilstone **Dates of Training:** 02.09.11 - 20.12.11

Subject of Training: Effect of CO₂ enrichment on plankton community structure, photosynthesis and primary production in the Atlantic Ocean

1) Please provide an evaluation of the training received.

Actually Alaa Younes had learned during POGO fellowship more than I expect not only in his project "Effect of CO₂ enrichment on plankton community structure, photosynthesis and primary production in the Atlantic Ocean" but in many fields in Oceanography like CO₂ cycle in sea water, respiration and reproduction, determination of primary production using Chla and temperature and many programs for statistical analysis like Minitab, Primer and Sigmaplot . In addition, he had a good experience for packing the equipment before cruise and transfer it to the ship's laboratories.

To participate in long oceanographic cruises and enjoying an international academic atmosphere is a good experience for our researchers, so I think that Alaa has been extremely lucky to be able to participate in this AMT program.

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

Alaa Younes will do presentation in our institute to show the new knowledge obtained during POGO fellowship.

Actually NIOF has two research vessels for sailing in the Mediterranean and Red Sea so I think he will transfer the experience techniques and knowledge obtained during the POGO fellowship during our cruises.

3) Is this exchange likely to lead to future collaboration with the host institution?

The positive response of the present programme will encourage and lead to future collaboration with Plymouth Marine Laboratory (UK).

NIOF is looking to be involved in the continuation of this project remotely and will co-author in publication from this work.

4) Please provide your comments on the Fellowship Programme.

The POGO-AMT fellowship programme was, in my opinion, a great success. This is a great opportunity to all involved, and I encourage its continuation strongly

Please return completed form by facsimile to +44 1752 633101

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