



REPORT ON AMT POGO FELLOWSHIP PROGRAMME 2013

Trainee's Report

Name of Trainee: Miss Ankita Misra

Supervisor (Parent Institution): Dr Vethamony P

Supervisor (Host Institution): Dr Gavin Tilstone

Dates of Training: 12/09/13-18/12/13

Subject of Training: Understanding and Evaluating the role of the phytoplankton community in the photosynthesis and primary production in the Atlantic Ocean.

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

The first few weeks of my stay at PML was spent in the various pre-cruise activities including sea survival course, collecting and packing equipment, consumables as well as learning spectrophotometric and primary production measurement techniques. I had a discussion with Dr. Gavin Tilstone, my host supervisor, about my project objectives and the experiments I was suppose to run on the cruise.

Onboard the ship, I helped Dr. Tilstone to set up the lab for our primary productivity experiments as well as the on deck incubators for the in-situ measurements. During the cruise, I primarily followed a routine which involved analyzing the size-fractionated chlorophyll in the morning hours and then preparing for the noon CTD (1pm) . I carried out the Photosynthesis-Irradiance (PE) incubations which were made during the noon at two depths : surface and deep chlorophyll maximum (DCM) and also filtered for phytoplankton absorption coefficient for the same two depths using GF/F filters. In the evening, I would carry out filtration for the in situ primary production measurements carried by Dr. Gavin during the early morning CTD. I filtered the incubated samples through different pore size filters for three different phytoplankton size classes : 0.2 -2 μm , 2 -10 μm and > 10 μm (the same was done for the PE filtrations). I was also taught to fit the PE curves and process the data during the cruise, which was not possible on the cruise due to lack of time which was taken up by measurements.

Once back at PML, I was mainly involved in doing a literature review on the subject of size fractionated primary productivity as well as processing the data and fitting the PE curves. I ran few test photosynthetic absorption measurements with the sample replicates which we got back with us from the Ship from Falkland islands. I also learnt the calibration of flourometer used for estimating the size fractionated chlorophyll. In the last two days of my stay at PML, I participated in Meeting of the Challenger Society and Remote Sensing and Photogrammetry Society Marine Optics Special Interest Group from 16-17th December 2013. I am thankful to Dr. Tilstone for this opportunity as he was kind enough to personally sponsor my registration for this event.

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

The experience I gained during this fellowship in terms of the scientific skills and techniques as well as the knowledge I acquired through my interactions with the other scientists is beneficial for me as I plan to start my PhD in 2014 at National Institute of Oceanography(NIO), Goa. My immediate aim is to carry out the size fractionated primary productivity measurements as a research study so that whatever I have learnt during this fellowship can be utilized for the better understanding of the biochemistry of the adjoining Indian Ocean. Our institute has recently acquired a new multidisciplinary research vessel

"Sindhu Sadhana" and I am sure that my training on the AMT will help me immensely in collecting data for my PhD during the various scientific cruises that will be conducted in the coming years. Furthermore, as mentioned in my application, very few people in NIO use remote sensing in combination with in-situ measurements to understand the physical and biological properties in the ocean. Through this training, I got many pertinent inputs to bridge this gap and contribute to the development of optical oceanography in my institute.

3) Please provide your comments on the Fellowship Programme.

This fellowship was a unique experience for me ! As a student with a research interest in Oceanography but limited background, it was immensely enriching. From the sea survival course to analyzing PE curves, everything was a challenge which I had never faced prior to my visit to PML.

The fellowship was very well structured into three parts, to prepare for a research cruise, conduct scientific experiments on the cruise and finally process as well as analyze the data collected plus conduct a literature review. Of all the three stages, the time spent on RRS James Clark Ross was the most cherishable part of my fellowship. It was my first International research cruise (also my first cruise ever !) of a duration as long as 6 weeks. I had an amazing time on the ship, because of the helpful crew and the very cooperative relationship shared between all the colleagues on board. Apart from learning a number of in-situ data collection skills and techniques, the cruise also gave me a very good opportunity to interact with scientists with different subject knowledge and skills.

I am glad that my supervisor for this fellowship programme was Dr.Gavin Tilstone. Working under him was very enjoyable as he is an extremely helpful and patient supervisor with profound subject knowledge and expertise. The fact that he is so hardworking, is truly an inspiration to a beginner like me. I would like to thank Dr. Trevor Platt and Dr Shubha Sathyendranath, for the guidance and support they provided during my stay at PML. Finally, I am thankful to POGO for giving me this incredible opportunity to live and learn. I am positive that by virtue of this exposure, I will be able to pursue my PhD in a more competent and productive way than before.

4) Please provide details as to how your contribution towards living expenses was spent. Attach receipts for all major expenses.

A considerable part of my living expense was spent on food and other groceries. Some portion of my stipend was spent during my stay at Falkland islands and the travel back to Plymouth. The receipts have been given to the POGO Secretariat.

Please return completed form by e-mail to: pogoadmin@pml.ac.uk

IMPORTANT: Please also mail the completed form with attached receipts to:

POGO Secretariat
Plymouth Marine Laboratory
Prospect Place
The Hoe
Plymouth
PL1 3DH
UNITED KINGDOM



REPORT ON AMT POGO FELLOWSHIP PROGRAMME 2013

Supervisor's Report (Host Institution)

Name of Trainee: Ankita Misra
Garcia

Supervisor (Parent Institution): Dr Vethamony P

Supervisor (Host Institution): Dr Gavin Tilstone

Dates of Training: 12/09/13-18/12/13

Subject of Training: Understanding and evaluating the role of the phytoplankton community in the photosynthesis and primary production in the Atlantic Ocean.

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

Sea Survival Training,
ENG1 Medical,
Radiochemical Safe working practice induction,
Health and Safety induction course,
COSHH and RISK assessments,
Experimental design, definition of hypotheses and objectives,
Training in the spectrophotometric analysis of CDOM,
Training in the spectrophotometric analysis of phytoplankton absorption coefficients,
Training in the fluorometric analysis of size-fractionated Chla,
Training in photosynthesis-irradiance curves and primary production measurements using 14C,
Training in data processing, curve fitting, statistical methods.

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

Ankita's POGO fellowship was composed of three components:

1. 12 to 27 Sept 2013 for Sea Survival training, ENG1 medical, cruise packing and mobilisation and to learn analytical techniques.
2. On board training on AMT20 from 30 Sept to 14 Nov 2013.
3. 18 Nov to 18 Dec 2013 data processing, fluorometer calibration, training in phytoplankton absorption coefficients of AMT23 data and literature review.

The following data sets were collected:

- A. Size-fractionated biomass along an Atlantic Meridional transect.
- B. Size-fractionated photosynthetic parameters along an Atlantic Meridional transect.

Samples were also collected for:

- C. Phytoplankton absorption coefficients.

During her time both at PML and on board RRS James Clark Ross, Ankita worked well and conscientiously. Since she had not previously undertaken this type of research, the experience was a steep learning curve with exposure to new techniques and in a different environment aboard a ship. She found the working environment and the long working hours, that is normal at sea, quite a challenge. Hence, a number of things that we routinely undertake at sea, such as working up the data, were conducted back at the laboratory. Ankita worked in a methodical and precise way. She often worked in a prescriptive manner to prescribed formulas, which is fine when learning techniques from first principal. For her future career she would ultimately benefit from thinking through different ways of finding solutions to a

particular problem. Ankita has i.) gained experience in the measurement of photosynthesis and primary production, ii.) was trained in a number of analytical methods and techniques, iii.) but also undertook a literature review of the subject which will not only benefit her understanding in this field, but also will be beneficial in her PhD and in her future research in India.

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

Possibly; the data from AMT23, the analyses carried out after the cruise and the literature review undertaken, may lead to a joint publication.

4) Please provide your comments on the Fellowship Programme.

The fellowship programme has undoubtedly provided the student with a unique opportunity to further her future career, which will hopefully benefit India. Attendance at the UK Marine Optics workshop gave her exposure to current research which she will find beneficial to her future studies. This also provides a strong foundation for the fellow to build on her future research. I wish her every success for her future.

This fellowship was funded by POGO with in-kind contributions from the AMT programme.

Please return completed form by facsimile to +44 1752 633101

OR send by e-mail to: pogoadmin@pml.ac.uk



REPORT ON AMT POGO FELLOWSHIP PROGRAMME 2013

Supervisor's Report (Parent Institution)

Name of the Trainee: Miss Ankita Misra **Supervisor (Parent Institution):** Dr Vethamony P

Supervisor (Host Institution): Dr Gavin Tilstone **Dates of Training:** 12/09/13-18/12/13

Subject of Training: Understanding and Evaluating the role of the phytoplankton community in the photosynthesis and primary production in the Atlantic Ocean

1) Please provide an evaluation of the training received.

Based on my discussions with Ms. Ankita Misra, I can confidently conclude that the AMT training was hugely productive in terms of her Phd objectives. I am also informed that she came in contact with a number of scientists working in the field of Bio-optics and Remote sensing, which is her area of interest, and hence I am sure she has been greatly benefitted from these interactions.

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

At the CSIR-National Institute of Oceanography (NIO), Goa we deal with inter-disciplinary work that includes all aspects of physical, chemical and biological oceanography. Ms. Ankita has proposed to do her PhD in Ocean Colour to study *Trichodesmium* in the Indian Ocean at NIO which requires expertise in both in-situ and remote sensing techniques. By virtue of this training Ankita will be able to address her Phd problem more competently. Moreover, at the institution level, few people work in the field of Optical Oceanography, so a researcher with a training in this area is encouraged and supported strongly .

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

Of my knowledge the Plymouth Marine Lab (PML) has a very strong remote sensing group , which is an area that needs to be developed further in NIO. A collaboration in future would be likely, especially in context of the work Ms. Ankita proposes to do in her Phd. NIO has good infrastructure, readily available for collecting the data which can be used in conjunction with the expertise at PML to get good results.

4) Please provide your comments on the Fellowship Programme.

The AMT fellowship program is an effective way of providing good exposure to the early career researchers in Oceanography. I believe the uniqueness of this fellowship lies in the cruise

experience that the student gets, apart from the techniques he/she learns during this period. The intensive training provided to them in preparing for the cruise, in collecting the data and subsequently analyzing over a period of 3 months, although rigorous, prepares the student to be more confident in his/her future research endeavours. Moreover, in the case of NIO, India, our institute is hugely involved in carrying out scientific activities in the Indian Ocean, and researchers with good field experience and skill always prove to be an asset for the organisation.

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