

## POGO-SPONSORED TRAINING INITIATIVE Report

### 1. Name of grant recipient (Proposal Coordinator)

**Xiaogang Xing**

### 2. Title of training

**Principles and Applications of BGC-Argo**

### 3. Dates of training (e.g., 01 Jan 1999)

Start date: 15 Nov 2023

End date: 20 Nov 2023

### 4. Location of training (e.g. institute, city, country) Please indicate if online/in person/hybrid.

**Second Institute of Oceanography, Hangzhou, China / in person**

### 5. Number of trainees: 19

### 6. Other partners/funding sources

**State Key Laboratory of Satellite Ocean Environment Dynamics (SOED)  
Hangzhou shallow-sea technology Co. LTD**

### 7. Provide an outline of the training course/initiative (objectives, format, topics)

*Full programme can be included as an Appendix.*

#### **Objectives:**

**To introduce the Argo program and BGC-Argo program  
To introduce the principles of Argo floats and biogeochemical sensors  
To impart the knowledge of BGC-Argo data processing and interpretation  
To enhance understanding of the applications of BGC-Argo data**

#### **Format:**

**Informative lectures, hands-on training, discussions, and Q&A**

#### **Topics:**

**Lecture 1: Introduction to the Argo Program  
Lecture 2: Introduction of BGC-Argo  
Lecture 3: BGC-Argo data quality control  
Lecture 4: Hands-on training on BGC-Argo data access & visualization  
Lecture 5: BGC-Argo outreach  
Lecture 6: BGC-Argo data application in phytoplankton phenology  
Lecture 7: BGC-Argo data application in marine biogeochemistry  
Lecture 8: Synergy of BGC-Argo and ocean colour remote sensing  
Lecture 9: BGC-Argo data application in ocean modelling  
Lecture 10: Hands-on training on BGC-Argo data analysis  
Trainees' research plan discussion**

### 8. Provide a summary of the students' performance and any informal feedback received

*Please note that an evaluation questionnaire will be sent to the participants by the Secretariat and therefore we ask that you provide a list of trainees and their e-mail addresses. The questionnaire results will be shared with you in due course.*

**All students are very active, motivated, and studious. The survey results show, 95% of trainees are very satisfied with the training, agree that training covered the content announced/expect; all trainees (100%) strongly agree that, training activities helped him/her to achieve the stated learning outcomes, training instructors provided effective guidance and feedback, pre-workshop communications and support were satisfactory, as well as on-site logistical arrangements. All trainees preferred in-person training. The main suggestions from trainees include, longer training duration, sharing PPT in advance for preview, arranging some simple training assignments after class, and group activities which will promote more discussions among students.**

**9. Do you have any plans for future collaboration with the students, the host institute (if applicable) or for future editions of the training course?**

**Yes, we will carry out collaboration with the students, particularly the oversea students, some of who proposed their research plans using BGC-Argo data; I am interested in organizing the second-time training course on “Principles and Applications of BGC-Argo” or a new course on “BGC-Argo data quality control” in the future.**

**10. List of trainees**

Please fill in the attached Excel spreadsheet with the list of trainees.

## Training Course Detailed Schedule

Date	Time	Lectures / Activities	Speaker / Instructor
15 Nov. (Wed)	09h30-10h30	Opening ceremony	Jianfang Chen Yuntao Wang Xiaogang Xing
	10h30-11h30	Preparation for hands-on training	Yibin Huang
	14h00-17h00	Icebreaking	All attendees
16 Nov. (Thu)	09h00-10h00	Introduction to the Argo Program	Zenghong Liu
	10h30-11h30	Introduction to BGC-Argo	Xiaogang Xing
	14h00-16h30	BGC-Argo data quality control	Tanya Maurer
17 Nov. (Fri)	09h00-10h30	Hands-on training on BGC-Argo data access & visualization	Yibin Huang
	11h00-12h00	BGC-Argo outreach	Marin Cornec
	14h00-16h30	BGC-Argo data application in phytoplankton phenology	Marin Cornec
18 Nov. (Sat)	09h00-11h30	BGC-Argo data application in marine biogeochemistry	Yibin Huang
19 Nov. (Sun)	09h00-11h30	Synergy of BGC-Argo and ocean colour remote sensing	Marin Cornec
	14h00-16h30	BGC-Argo data application in ocean modelling	Elena Terzić
20 Nov. (Mon)	09h00-11h30	Hands-on training on BGC-Argo data analysis	Yibin Huang
	14h00-17h00	Trainees' research plan discussion	All attendees
	17h00-17h30	Closing ceremony	Xiaogang Xing

## Survey summary on the international training course on “Principles and Applications of BGC-Argo”

*We have received survey responses from 19 trainees on the last day, here is a summary of the survey:*

### **Q1 – Overall level of satisfaction with the training**

[95 %] Very satisfied    [5 %] Satisfied    [ ] Neutral    [ ] Dissatisfied

### **Q2 – The training covered the content announced/expected**

[95 %] Strongly agree    [5 %] Agree    [ ] Neutral    [ ] Disagree

### **Q3 – The training activities helped you to achieve the stated learning outcomes**

[100 %] Strongly agree    [ ] Agree    [ ] Neutral    [ ] Disagree

### **Q4 – The training instructors provided effective guidance and feedback**

[100 %] Strongly agree    [ ] Agree    [ ] Neutral    [ ] Disagree

### **Q5 – The pre-workshop communications and support were satisfactory**

[100 %] Strongly agree    [ ] Agree    [ ] Neutral    [ ] Disagree

### **Q6 – The on-site logistical arrangements were satisfactory**

[100 %] Strongly agree    [ ] Agree    [ ] Neutral    [ ] Disagree

### **Q7 – Preferred format for future training**

[ ] Online    [100 %] In-person    [ ] Hybrid

### **Q8 – What 2-3 elements of the workshop did you find most useful or valuable?**

Top responses:

Resources provided such as presentations and tools valuable in processing BGC-Argo data;

Skilled individuals guiding participants of the workshop;

Activities and exercises that engage participants of the workshop;

Use BGC-Argo to study the phytoplankton phenology and marine biogeochemical model.

### **Q9 – What 2-3 suggestions do you think would make this training a better learning experience?**

Top responses:

Longer training duration;

Sharing PPT in advance for preview;

Arranging some simple training assignments after class;

Group activities will be more helpful in promoting more discussions among students.

### **Q10 – How do you plan to apply what you've learned during the training in your work or studies?**

Top responses:

Simulation input and inversion verification;

Combine with remote sensing data and ship survey data to study marine biogeochemical process and further understand marine biological pump and ecosystem;

Skills and data explored from the workshop are valuable and can be applied to future researches and incorporated in dissertations.

**Q11 – Any other comments on the training that you would like to share?**

Top responses:

We discussed the research plan on the last day, and we will keep in touch with instructors to ask for any guidance or doubts.

We hope we will be able to achieve our research objectives.

Thanks to Prof. Xing, and all instructors for your classes and guidance, and thanks to assistants Keira, Yupeng, and Guo.