



**REPORT OF WORKSHOP “MATCHING  
OCEANOGRAPHIC PROBLEMS OF THE  
INDONESIAN SEAS TO THE RIGHT DATA SETS  
AND MODELS”, BANDUNG, 13-22 JANUARY  
2014**

**A COSPAR CAPACITY BUILDING WORKSHOP**

**Organizer :**

**Graduate Program in Earth Sciences**  
Faculty of Earth Sciences and Technology  
Institut Teknologi Bandung  
Indonesia

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### **Sponsors**

Committee on Space Research (COSPAR)

World Climate Research Program (WRCP)

IOC Sub-Commission for the Western Pacific (IOC-WESTPAC)

European Space Agency (ESA)

Institut Teknologi Bandung (ITB)

# **COSPAR CAPACITY BUILDING WORKSHOP On Matching Oceanographic Problems of the Indonesian Seas to the Right Data Sets and Models**

**Bandung, Indonesia, 12-22 January 2014**

## **I. Introduction**

This workshop was conceived and initially planned by members of the CLIVAR Indonesian Throughflow - Task Team. The workshop took place at the Bandung Institute of Technology (ITB), Indonesia, from 12 to 22 January 2014. The goal of the workshop was to provide instruction for young researchers to develop skills in the application, analysis and interpretation of remotely sensed and in situ marine science data, as well as from state-of-the-art models and assimilation products. The workshop primarily focused on oceanographic and climate problems of the Indonesian and broader South-East Asian region. The agenda of the workshop took the form of keynote lectures

from International and Indonesian senior scientists, followed by practical hands-on tutorial sessions in a computer laboratory using models and data provided by the senior researchers to the trainees. The students were guided in the collation of data sets and model output for their own specific regional applications.

The workshop received support for the participation of students and lecturers and logistical support of the Local Organizing Committee through generous financial assistance from the Committee of Space Research (COSPAR); WESTPAC via the International Oceanographic Commission (IOC); the World Climate Research Program (WCRP), the European Space Agency (ESA) and ITB.

## **II. Participants**

Total participants are 32 applicants (see Appendix B), 11 from international students (including China, Cambodia, Philippines, Vietnam, Timor Leste, Malaysia and Singapore) and 21 applicants from all over Indonesia (including Papua, Ambon, Bali, Semarang, Kalimantan, Sulawesi, Jakarta, and Bandung). Applicants were selected based on resume CV, a brief research statement, and a brief letter support that they sent to the organizing committee. Participants were primarily selected based on their current activities, such as continuing education and research in their masters or doctorate program or undertaking research, so what they learned during the workshop can benefit their education and research directly and indirectly then could be continued after their return to their institutions. One participant from Vietnam have a background on fisher, specific in fish tools, but he is interested in participating in this event because he wants to learn how oceanographic could affect fish movement. The workshop proved to be very educational to him.

## **III. Lecturers**

The lecturers come from all around the world such as America, Japan, France, and Indonesia, who had research and knowledge in Indonesian Throughflow (ITF) (see Appendix A). Several lecturers stayed for the entire period the workshop i.e Janet Sprintall (SIO, USA), Kandaga Pujiana (OSU, USA and ITB, Indonesia) and Ivonne Radjawane (ITB, Indonesia) while the other lecturers attended the workshop either the first or the second week. Lecturers with model expertise attended the first week, while those with remote sensing expertise arrived the second week.

## **IV. Program**

The program at the workshop (see Appendix C) was aimed to enhance for the student to learn, integrate, process, and analyze the existing data and models of the Indonesian region. The workshop started with an overview of the objectives, acknowledgment of the sponsors (COSPAR WRCP, ESA and IOC-Westpac) given by the Head of Local

Organizing Committee, Ivonne M. Radjawane, Ph.D. The workshop was officially opened by the Dean of Faculty of Earth Sciences and Technology, ITB. One of deputy from LAPAN, Prof. Thomas Jamaluddin (representative focal point from COSPAR in Indonesia) attended the opening ceremony. The opening was followed by a beginning introductory lecturer that provided an overview of the oceanography and the importance of the Indonesian Throughflow region to climate and ecosystem by Prof. Arnold Gordon of Columbia University. It is followed by lecturers from other lecturers that cover the topics of observations, modeling and assimilation, in-situ observations, satellite observations, data analysis techniques, etc. Some of the lecturers have broad scope, aiming to provide a broad perspective to students in terms of observational and modeling resources. Others focused on regional observations and models. Most classes were preceded by an explanation of the research and knowledge that included the characteristics and processes that are important to the Indonesian Throughflow, and then

continued in practical sessions using software used by the senior lecturers in their data processing.

A complete list of lectures and practical sessions are listed in Appendix C. The detailed program of the workshop was appended later in this report.

## **V. The Projects**

The participants were given two projects with different groups and themes. During the first week the focus was on using model output and comparison to in situ observations, while in the second week, the focus was on the use and application of remotely sensed data. The students were self-organized into group of of 2-3 students to work on projects that they free selected with a common interest. from ~10 projects themes that were outlined. In their project, the students were required to analyze data sets using software that was taught previously (e.g. Matlab, Ocean Data View and Ferret), and then use the oceanographic phenomenon and processes in order to interpret and understand their results. Typically the students worked on the project for 1-2 days and then

presented their results to the class in a 12 minute presentation followed by questions from both lecturers and fellow students. This format seemed to work extremely well and the students were very much involved in the research and asked very pertinent questions. The lecturers were impressed with the efforts of all the groups projects, especially given the limited time the students had to work on each project. From these projects it is expected that the students will be able to use the software to manage and analyze the data, as well as develop the skills they can use when they return to their home institutions.

In summary, the COSPAR capability building workshop proved to be a great success. The students provided very positive feedback, and reported they have learned a lot during the workshop.. The students and the lecturers have also enjoyed the interaction and appreciated the bond that they built. The workshop committee also provided each student and lecturers with a 8-GB USB flash memory drive (as seen in Appendix E) that contains all the lecturers' teaching material (including those of the lecturers and practicals).

## **VI. Venue**

This workshop was held within the ITB campus, with a classroom in the LABTEK XI building was used for daily lectures and a COMLABS (computer laboratory), room located in another building across the LABTEK XI room was utilized for the practical sessions. The size of the classroom was ideal for the 32 student participants and also maximized the interaction between the students and the lecturers. The refreshments for the coffee break (twice a day) were served in the alley by the classroom or an empty space in the adjacent of the COMLABS. The lunches were taken in an open room across the hall from the daily classroom with buffet style so during lunch time this facilitated small discussions between the participants and lecturers.

## **VII. The Hotel**

PatraJasa Hotel in Dago Street (Jalan Ir. H. Juanda), was chosen to be the accommodation location for the lecturers, international and Indonesian students from outside

Bandung, as well as the local organizing committee. All student participants entering the hotel from Sunday (12/1) until Thursday (23/1). The hotel provided a shuttle service from the hotel to the ITB campus. In addition, the hotel also provided a shuttle from Bandung airport to hotel and vice versa. We rented a total of 12 rooms for 24 students (international and national students who do not stay in Bandung) and 1 room for the local organizing committee. The committee provided dinner on Sunday (12/1) and Monday (13/1) at the hotel when there was no event scheduled at that time. The student participants were provided with a daily allowance to support their dinners. They can buy their dinner nearby the hotel with a walking distance restaurant location.

### **VIII. Post Workshop Evaluation**

The committee has distributed questionnaires to the students and lecturers to gather feedback in order to gauge the effectiveness of the workshop and to gather suggestions for improvement. Evaluation results showed that most

aspects of the workshop were rated highly. There were good suggestions for how to improve some of the aspects related to the practical sessions.

The students and lecturers also appreciated the transportation between hotel and campus and between hotel and airport. The international students who arrive in Jakarta was picked up by the committee in Jakarta Airport to direct to Bandung with travel, although one student from Malaysia didn't succeed getting the pick up because the student didn't connect with the committee at the airport. Nonetheless, he eventually connected to the committee and arrived in time to the workshop.

Evaluation was also performed for outside activities like travelling to cultural and environmental events such as Saung Angklung Udjo, Taman Hutan Raya and Tangkuban Perahu. The results show the participants were very happy and entertained by these activities.

A gala night event was held twice, the banquet dinner and the farewell dinner. Banquet dinner at Sierra Restaurant had a dance perform and traditional music during dinner. The second dinner was the farewell dinner and held in

Lawangwangi Art and Café. During this event we played games and the participants all gave comments about the workshop. Evaluation results about this event were very good because everybody was happy.

The most important evaluation for this workshop is the content and the lecturers itself. The participants felt very good for the lecturers and the contents, because the style of the teaching by the lecturers is quite interactive. There was suggestions to enhance teaching material for remote sensing. A remote sensing expert from Europe who was scheduled to give a lecture and arrange a practical session could not make it to the workshop. However, the workshop committee was able to bring a Prof. Tasuku Tanaka, a remote sensing expert from Japan to give a lecture on remote sensing on short notice. The students also welcome more discussion time between the lecturers and the students. Some students suggest follow-up workshops because they found it to be very useful. The participants expressed a wish that the workshop be held once a year in a different Southeast Asian country or remain in Indonesia.

The detailed evaluation results were appended at Appendix D. Photo documentation of the participants during the workshop and at gala events is shown in Appendix E.



## Appendix A

### LECTURERS OF WORKSHOP MATCHING OCEANOGRAPHIC PROBLEMS OF THE INDONESIAN SEAS TO THE RIGHT DATA SETS AND MODELS



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**Appendix B**

**PARTICIPANTS OF WORKSHOP MATCHING OCEANOGRAPHIC PROBLEMS OF THE INDONESIAN SEAS TO THE RIGHT DATA SETS  
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**Appendix C**  
**SCHEDULE OF WORKSHOP**

***Monday, 13 January 2014***

Schedule of Activity	Activity
8:30 a.m. – 9:00 a.m.	Registration
9:00 a.m. – 9:30 a.m.	Introduction, Welcome, Logistics: Dr. Ivonne Radjawane Welcome remarks Dean of Faculty of Earth Sciences and Technology: Prof. Dr. Eddy Subroto

*Chairs: Safwan Hadi and Ariane Koch-Larrouy*

9:30 a.m. – 10:10 a.m.	Lecture 1: Prof. A.L. Gordon The big picture: ITF links to the climate system
10:10 a.m. – 10:40 a.m.	Coffee Break
10:40 a.m. – 11:20 a.m.	Lecture 2: Dr. Dadang Mihardja (ITB, Indonesia) Interaction Monsoon, ENSO and Indian Ocean Dipole in the Indonesian Waters and its surrounding
11:20 a.m. – 12:00 p.m.	Lecture 3: Dr. Anastasia Tisiana (KKP, Indonesia) Upwelling along the South Coast of Java
12:00 p.m. – 1:00 p.m.	Lunch

*Chairs: Arnold Gordon and Kandaga Pujiana*

1:00 p.m. – 1:40 p.m.	Lecture 4: Dr. Ariane Koch-Larrouy (LEGOS, France) Mixing estimates and relationship to climate
1:40 p.m. – 2:20 p.m.	Lecture 5: Dr. Agus Atmadipoera (IPB, Indonesia) T-S Characteristics of the Eastern Seas
2:20 p.m. – 3:00 p.m.	Lecture 6: Dr. Indra Jaya (IPB, Indonesia) Air-Sea interaction during La Ninas in Eastern Seas.
3:00 p.m. – 3:30 p.m.	Afternoon Tea
3:30 p.m. – 5:00 p.m.	Practical 1: Atmadipoera, Jaya Mixing of water masses in the Indonesian seas

**Tuesday, 14 January 2014 → National holiday**

- **Excursion or social program for students (organized by local committee)**
- **Meeting of CLIVAR: Indonesian Task Team and Indonesian Senior Scientists**

### Wednesday, 15 January 2014

Schedule of Activity	Activity
<i>Chairs: Tony Lee and Anastasia Tisiana</i>	
8:30 a.m. – 9:10 a.m.	Lecture 7: Dr. Ivonne Radjawane (ITB, Indonesia) Physical Properties of North Papua Waters
9:10 a.m. – 9:50 a.m.	Lecture 8: Dr. Agus Setiawan (KKP-BPOL, Indonesia) Transport Exchange in South China Sea
9:50 a.m. – 10:30 a.m.	Lecture 9: Dr. Wahyu Pandoe (BPPT, Indonesia) Time series data and spectral analyses
10:30 a.m. – 11:00 a.m.	Coffee Break
11:00 a.m. – 12:30 p.m.	Practical 2: Pujiana, Pandoe and Setiawan: Time series analysis
12:30 p.m. – 1:30 p.m.	Lunch

### *Chairs: Fadli Syamsudin and Janet Sprintall*

1:30 p.m. – 2:10 p.m.	Lecture 10: Dr. Ariane Koch-Larrouy (LEGOS, France) Modelling the ITF
2:10 p.m. – 2:40 p.m.	Lecture 11: Dr. Tony Lee (JPL, USA) Model-data synthesis (assimilation) for ITF studies
2:40 p.m. – 3:10 p.m.	Afternoon Tea
3:10 p.m. – 5:00 p.m.	Practical 3: Dr. Koch-Larrouy Fun with Models

### Thursday, 16 January 2014

Schedule of Activity	Activity
8:30 a.m. – 10:30 a.m.	Practical 4: Dr. Tony Lee Fun with Model Assimilations
10:30 a.m. – 11:00 a.m.	Morning Tea
11:00 a.m. – 12:30 p.m.	Discussion of Research Projects (models) and begin projects

(Sprintall)

12:30 p.m. – 1:30 p.m.	Lunch
1:30 p.m. – 3:00 p.m.	ALL: Work on Projects
3:00 p.m. – 3:30 p.m.	Afternoon Tea
3:30 p.m. – 5:00 p.m.	ALL: Work on Projects

### **Friday, 17 January 2014**

Schedule of Activity	Activity
8:30 a.m. – 11:00 a.m.	ALL: Work on Projects
11:00 a.m. – 1:30 p.m.	Prayer time and Lunch
1:30 p.m. – 3:00 p.m.	ALL: Work on Projects and Presentation
3:00 p.m. – 3:30 p.m.	Afternoon Tea
3:30 p.m. – 5:00 p.m.	Work on presentation

### **Saturday, 18 January 2014**

Schedule of Activity Activity

*Chairs: Ariane Koch-Larrouy and Tony Lee*

8:30 a.m. – 10:30 a.m.	ALL: Student talks on projects (11 groups) Groups 1-8 (15 minutes each: 12 minute talk, 3 minute Q&A)
10:30 a.m. – 11:00 a.m.	Coffee Break
11:00 a.m. – 12:00 p.m.	ALL: Student talks (cont'd) Groups 9-11
12:00 pm – 01:00 p.m.	Lunch

### **Monday, 20 January 2014**

Schedule of Activity Activity

*Chairs: Tasuku Tanaka and KandagaPujiana*

8:30 a.m. – 9:10 a.m.	Lecture 12: Dr. Janet Sprintall (SIO, USA) Interannual variability in the ITF
9:10 a.m. – 9:50 a.m.	Lecture 13: Dr. FadliSyamsudin (BPPT, Indonesia) Current variability along the southern coast of Java
9:50 a.m. – 10:30 a.m.	Lecture 14: Dr. DadangMihardja

	Interaction Monsoon, ENSO and Indian Ocean Dipole in the Indonesian Waters and its surrounding
10:30 a.m. – 11:00 a.m.	Coffee Break
	<i>Chairs: Takahiro Osawa and FadliSyamsudin</i>
11:00 a.m. – 11:40 a.m.	Lecture 15: Dr. Tri W. Hadi (ITB, Indonesia) Monsoon Variability in Indonesian Region
11:40 a.m. – 12:20 p.m.	Lecture 16: Prof. Tasuku Tanaka (CRESOS, Indonesia) Ten years of Indonesian Ocean Characteristics from Satellite Observations
12:20 p.m. – 1:30 p.m.	Lunch
1:30 p.m. – 3:30 p.m.	Practical 5: Dr. Takahiro Osawa (CRESOS, Indonesia) Using remotely sensed measurements
3:30 p.m. – 4:00 p.m.	Afternoon Tea
4:00 p.m. – 5:00 p.m.	Discussion of Research Projects (observations/remote sensing) ( <i>Sprintall</i> )

## **Tuesday, 21 January 2014**

### Schedule of Activity Activity

8:30 a.m. – 10:30 a.m.	ALL: Work on projects
10:30 a.m. – 11:00 a.m.	Coffee Break
11:00 a.m. – 12:30 p.m.	ALL: Work on projects
12:30 p.m. – 1:30 p.m.	Lunch
1:30 p.m. – 3:00 p.m.	ALL: Work on projects
3:00 p.m. – 3:30 p.m.	Afternoon Tea
3:30 p.m. – 5:00 p.m.	ALL: Work on presentation

## **Wednesday, 22 January 2014**

### Schedule of Activity Activity

*Chairs: KandagaPujiana and Janet Sprintall*

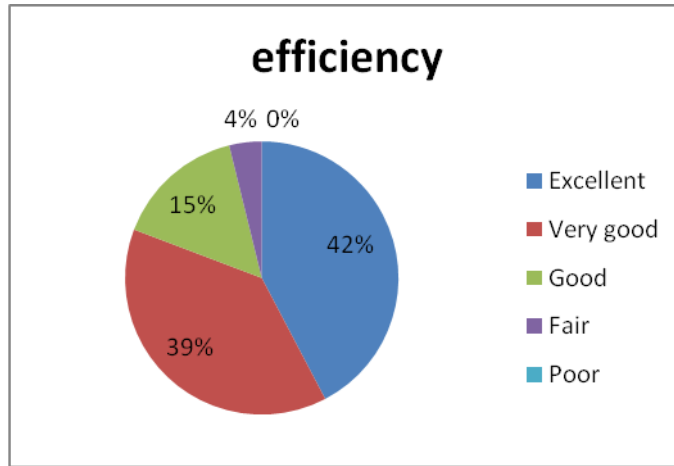
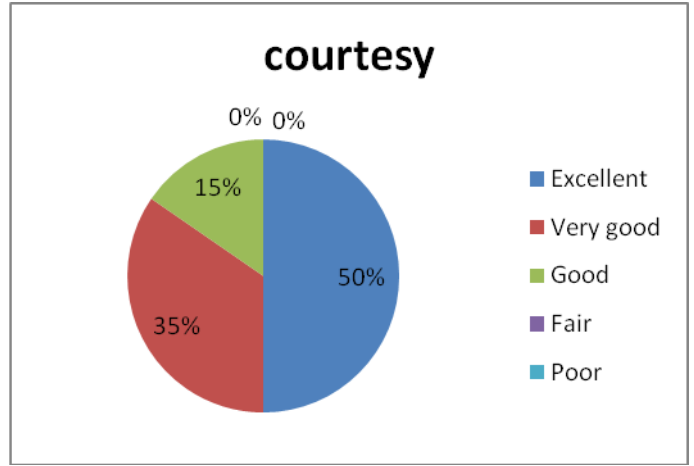
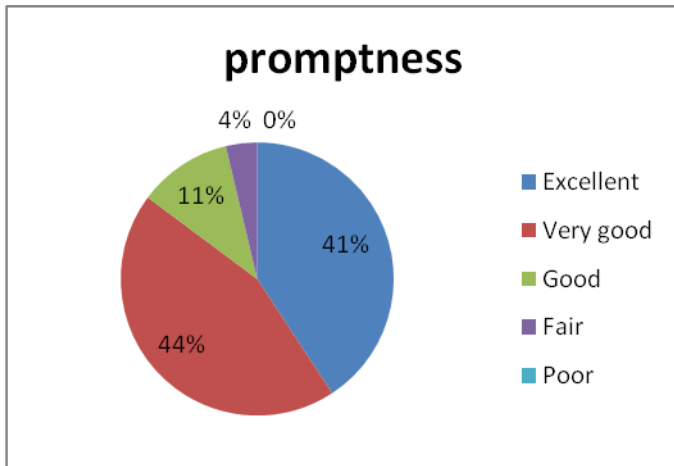
8:30 a.m. – 10:00 a.m.	ALL: Student talks on observational projects (15 minutes each: 12 minute talk, 3 minute Q&A)
10:00 a.m. – 10:30 a.m.	Coffee Break
10:30 am – 12:00 pm	ALL: Student talks (cont'd) Groups 7-12
12:00 p.m. – 1:00 p.m.	Wrap up – Conference Conclusion
1:00 p.m. – 2:00 p.m.	Lunch

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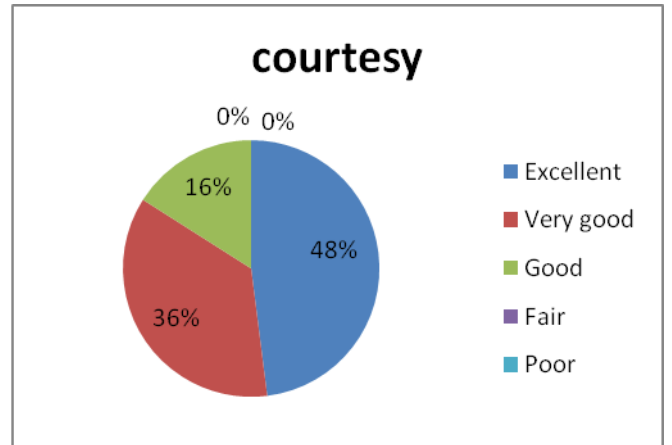
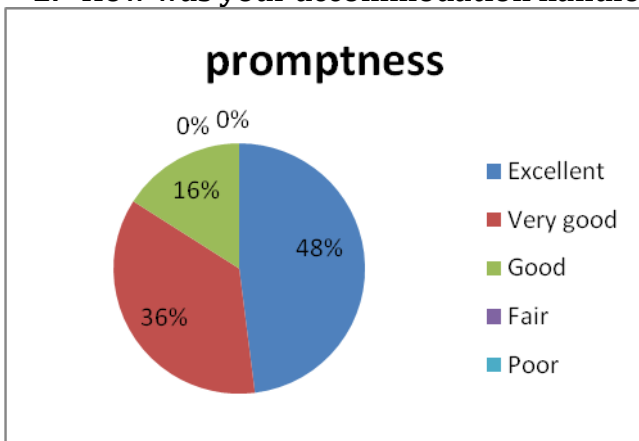
**Appendix D**  
**The Post Workshop Evaluation Results**

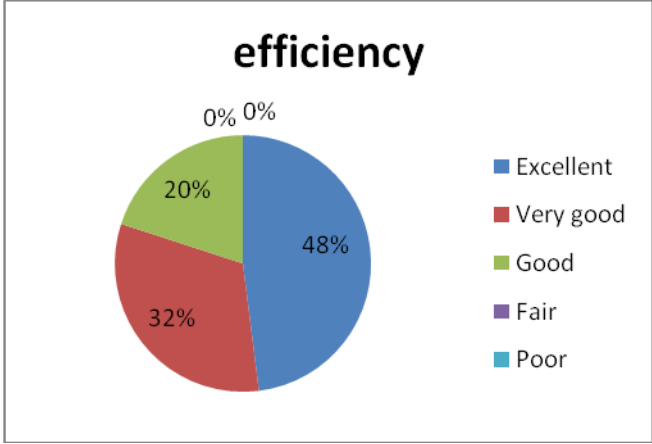


**1. How was your daily pick up service handled?**

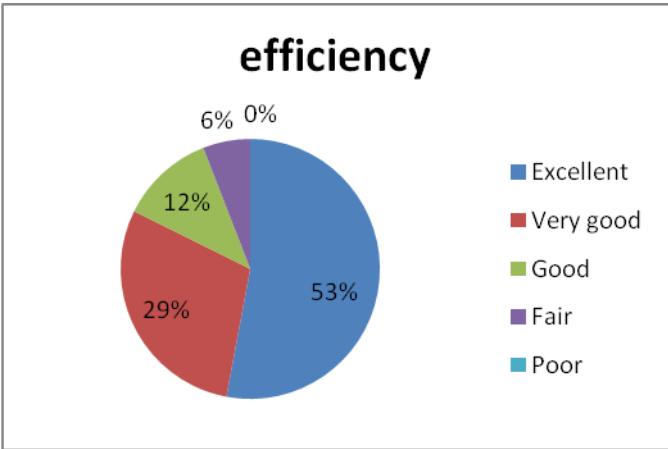
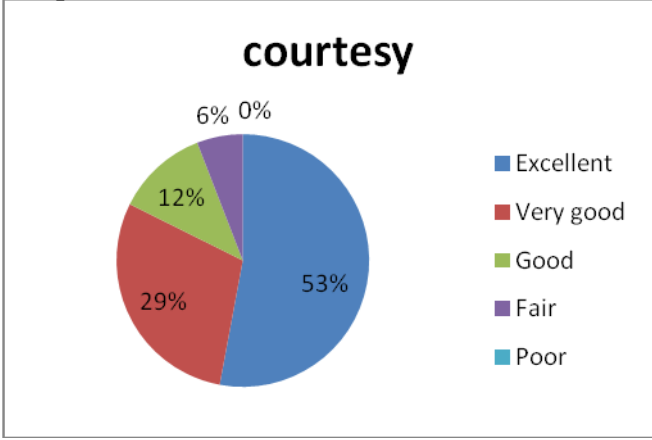
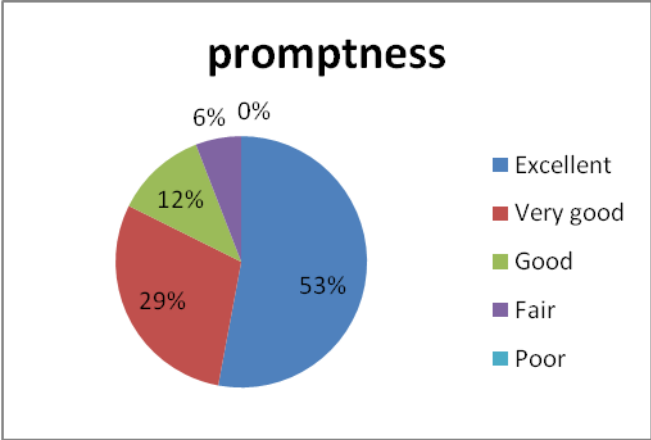


**2. How was your accommodation handled?**



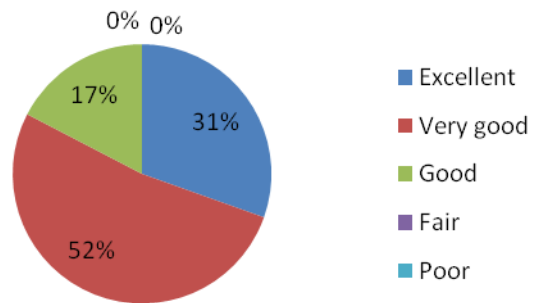


**3. How was your transportation to/from the airport handled?**

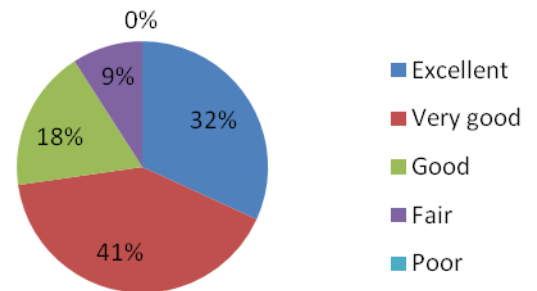


#### 4. Evaluation about the hotel

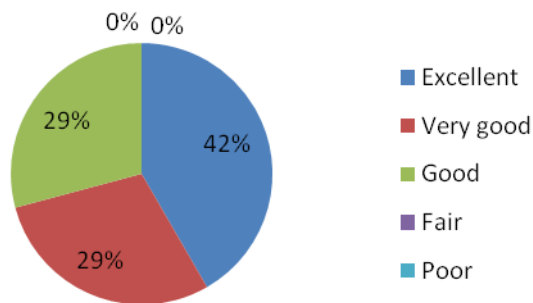
##### How was the room?



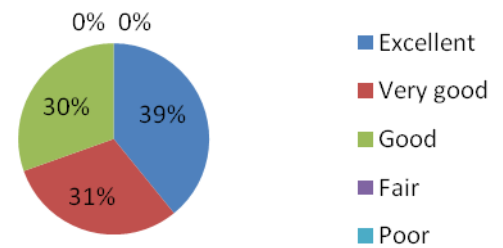
##### How was the dinner?



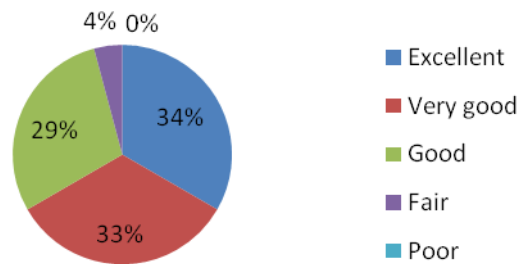
##### How was the breakfast?



##### How was the atmosphere?

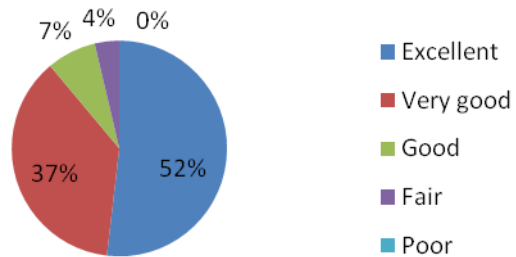


##### How was the service quality?

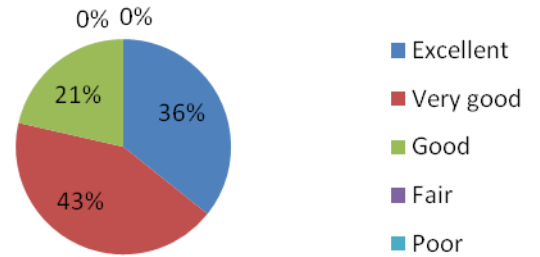


## 5. Evaluation about the workshop content

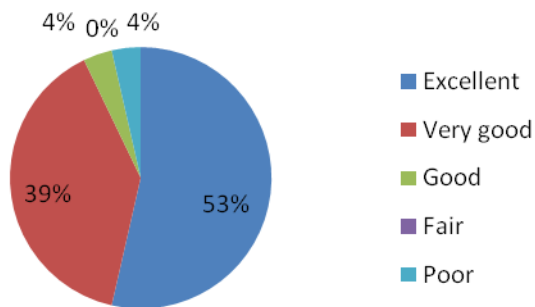
### How was the course material?



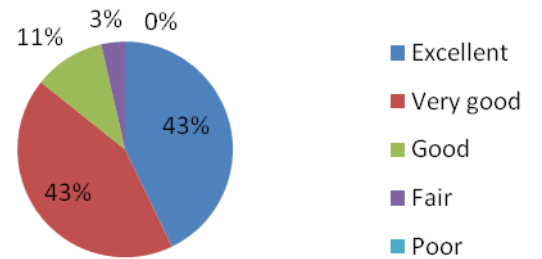
### How was the time for discussion?



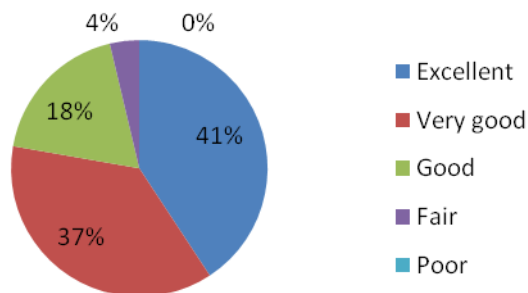
### How was the tutorial?



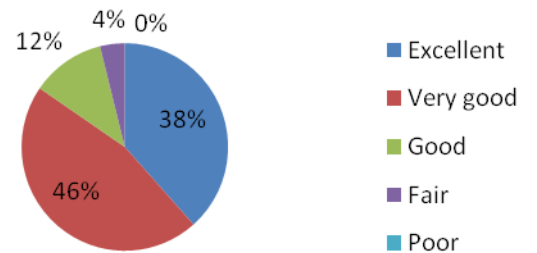
### How was the research project?



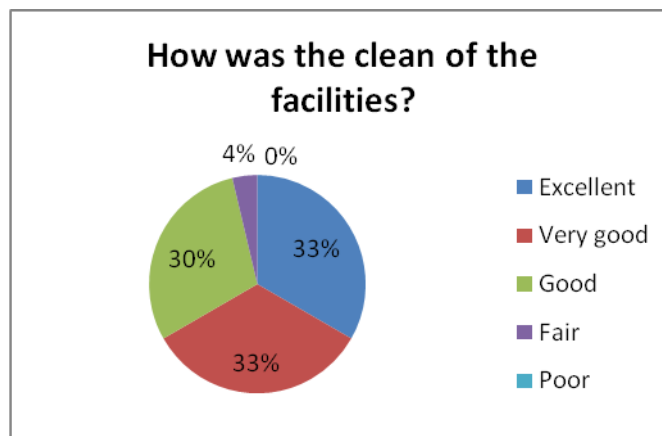
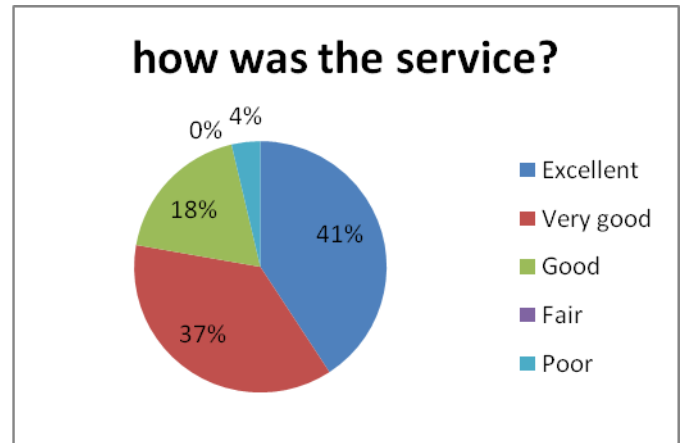
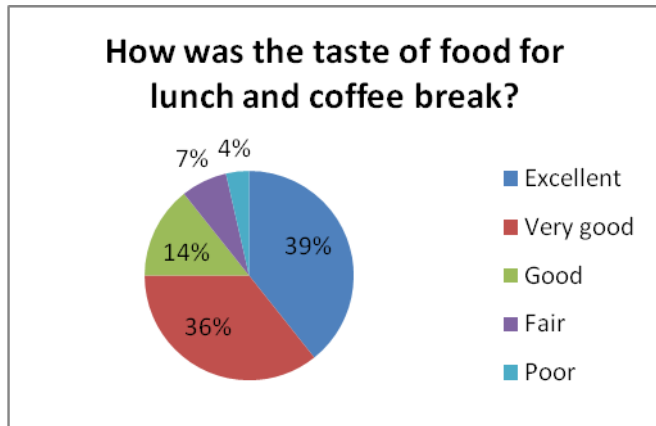
### How was the break time?



### How was the atmosphere?

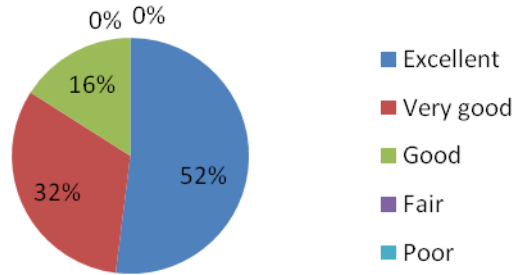


## 6. Evaluation about the catering

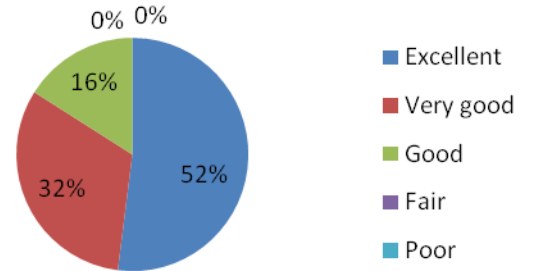


## 7. Evaluation about the social programs (TAHURA & SAUNG ANGKLUNG UDJO)

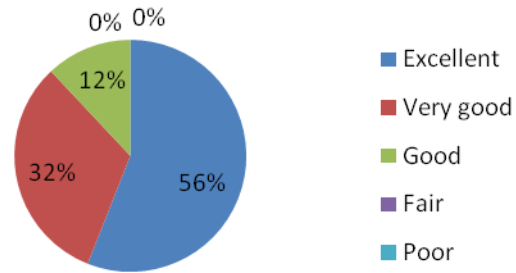
### How was the program?



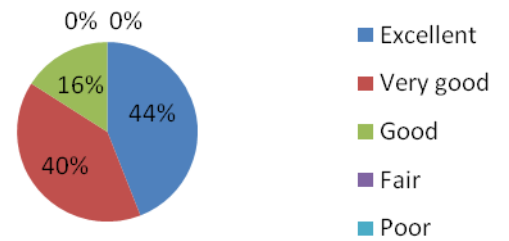
### How was the vehicle?



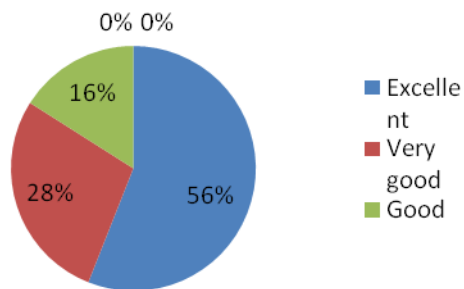
### How was the place?



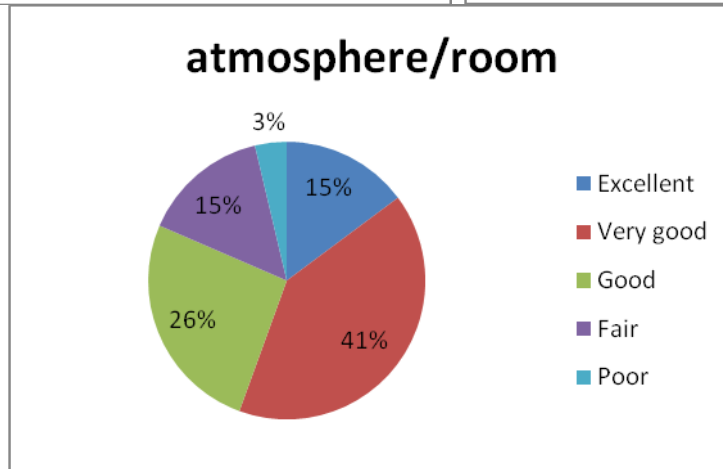
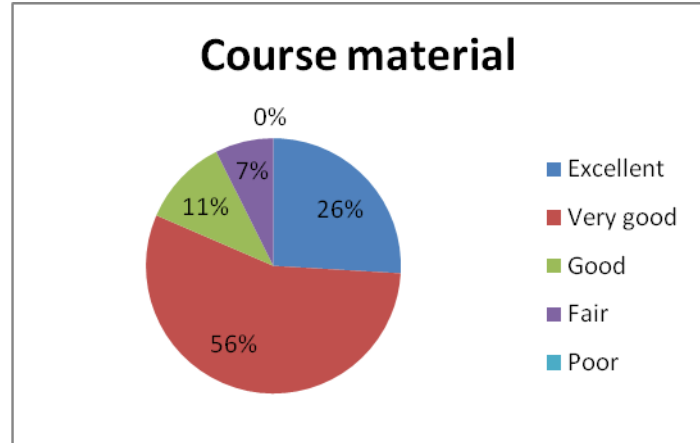
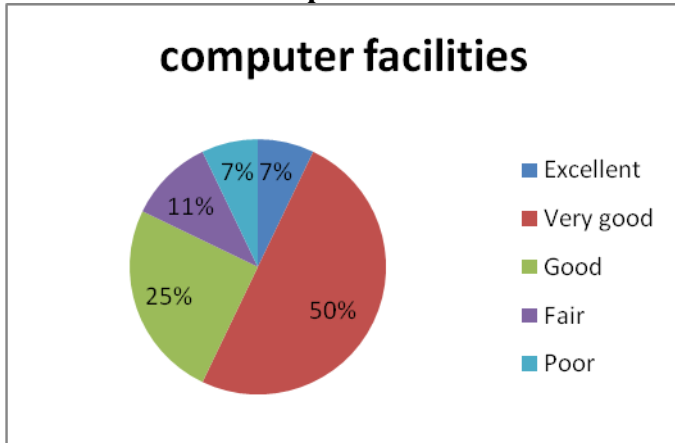
### How was the service quality?



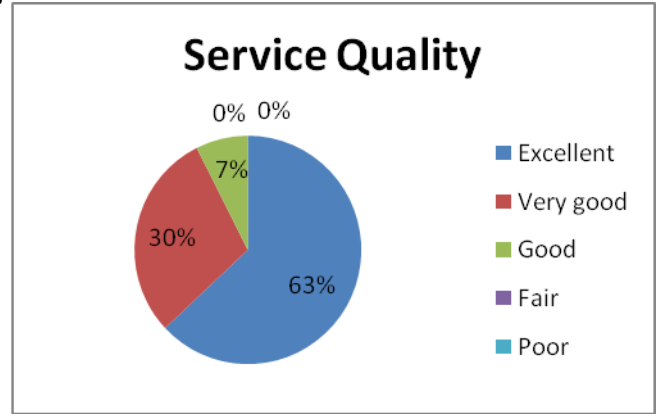
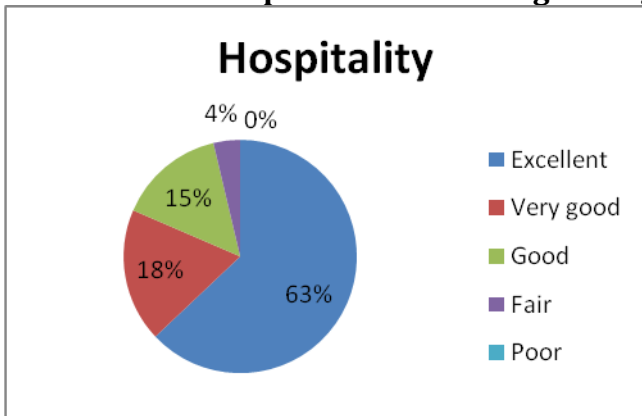
### How was the entertainment?

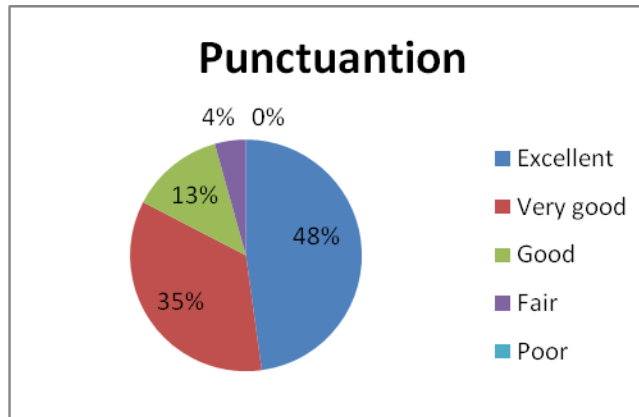


**8. How was the computer service?**



**9. How was the help from the local organizing committee?**





**10. What is your impression about the dinner at Sierra and Lawangwangi? (*the entertainment, the food, and the atmosphere*)**

- ◇ The food and the atmosphere were excellent, but the entertainment was too loud
- ◇ Good and exciting
- ◇ Location is little bit far from hotel, but very nice food and view

**11. What is your impression about this workshop?**

- ◇ Both lecturers and their talks are excellent, and the practical are useful
- ◇ The hospitality of the lecturer
- ◇ Very useful and entertaining
- ◇ Well organized, very bright students
- ◇ It was very wonderful to improve our knowledge
- ◇ Do not stop workshop, it is so much good ideas

**12. What is your suggestion for this workshop?**

- ◇ Have 1 project and allow more time to work on it so we have time to focus on interpretation
- ◇ Must be improvement of efficiency all of the time
- ◇ More useful tutorial on remotely sensing data like how to obtain it, what levels to use, temporal resolution
- ◇ The computer lab facility must be improved



- ◇ Must held every years
- ◇ More lectures and more time to doing the practical assesment
- ◇ Fieldtrip maybe
- ◇ Less talks, and more communicate with lecturers

**13. What do you think about the workshop theme and material?**

- ◇ Excellent but could be enhance
- ◇ Its good but we must add about biological aspect and the effect of ITF to coastal zone
- ◇ Need more preparation for practical
- ◇ It's inspiring to improve the research capacity
- ◇ Excellent, but maybe good to have 1 more day on remote sensing
- ◇ Perfect for young oceanographers learning about regional hydrodynamics unique to this part of the world

**14. What do you think was the best part of the lectures in this workshop?**

- ◇ Have more talks so they could really explain the topic
- ◇ The best part was about the signal analysis and the remote sensing class

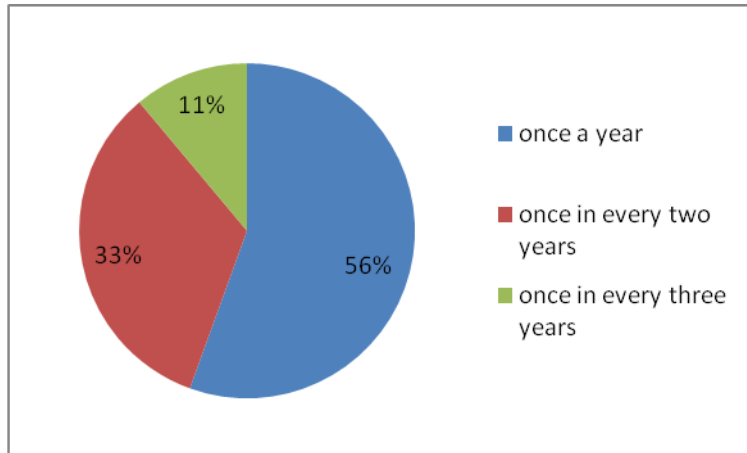
**15. What needs to be improved for the lectures in this workshop?**

- ◇ More details and less introduction in background
- ◇ More practice and longer time for next workshop
- ◇ Internet connection in the computer lab
- ◇ Need to add about ITF wider subject
- ◇ The facility, the ac in the classroom and the computer for practice
- ◇ Talking to the student not just the screen

**16. Do you find this workshop useful for you?**

- Very inspiring and useful

**17. Does this workshop need to be held annually?**



## **Appendix E**

### **PHOTO DOCUMENTATION DURING THE WORKSHOP**