付　属　資　料

１．合同レビュー調査報告書に関する協議議事録（M/M）

２．インタビュー対象者

３．日本側からの投入

４．インドネシア側からの投入

５．評価グリッド結果（和文）

MINUTES OF MEETING
FOR
THE THIRD JOINT COORDINATING COMMITTEE
ON
CLIMATE VARIABILITY STUDY AND SOCIETAL APPLICATION
THROUGH INDONESIA-JAPAN "MARITIME CONTINENT COE"
- RADAR BUOY NETWORK OPTIMIZATION
FOR RAIFALL PREDICTION
IN
THE REPUBLIC OF INDONESIA

Jakarta, 12th June, 2012

Dr. Ridwan Djamaluddin
Deputy Chairman
Technologyf or Natural Resources
Development
Agency for the Assessment and
Application
of Technology (BPPT)
Republic of Indonesia

Dr. Manabu Yamanaka
Project Leader
Principal Scientist
Research Institute for Global Change
Japan Agency for Marine-Earth
Science and Technology (JAMSTEC)
Japan

WITNESSED BY:

Ms.Tiomega Gultom
Deputy Director
International Science and Technology Network
The Ministry of Research and Technology
Republic of Indonesia

Mr. Hideo Noda
Director
Environmental Management Division 1
Environmental Management Group
Global Environment Department
Japan International Cooperation Agency
Japan

Third Joint Coordinating Committee on the Project

12th June, 2012 – BPPT Headquarters, Komisi Utama Room, Jakarta, Indonesia

1. Meeting started at 09:00.

2. Agenda and the list of Attendants list is given in Appendix 1 and 2 respectively.

3. Opening of the meeting.
Dr. Ridwan Djamaluddin, Deputy Chairman of Technology for Natural Resources Development, Agency for the Assessment and Application of Technology (BPPT), acted as the chair and declared the opening of the Third Joint Coordinating Committee (hereinafter called JCC) by welcoming all the participants. Mr. Hideo Noda, Director of the Japan International Cooperation Agency (JICA), Dr. Keisuke Mizuno, Program Director of the Japan Agency for Marine-Earth Science and Technology (JAMSTEC), and
Dr. Thomas Djamaluddin, Deputy Chairman of Science, Research and Aerospace Information of National Institute of Aeronautics and Space (LAPAN) then made the greeting speeches respectively.

4. Activity Report on the Project.
Dr. Yamanaka and Dr. Fadli, the Project Leaders of both sides, presented the progress of the Project in general and Output 1, followed by the presentation of each group leaders.

5. Report on Mid-Term Review
Mr. Noda of JICA presented the report on the Mid-Term Review supplemented by Mr. Kaneko, JICA Consultant and Dr. Inoue of JST.

6. Agreement and Confirmation
Dr. Ridwan Djamaluddin reviewed the matters that had been discussed between the Japanese and the Indonesian sides and all the attendees agreed and confirmed on the following:

   (1) Report on the Mid-Term Review
   All the points raised by the Joint Midterm Review Report such as the Project purpose, indicators, coordination mechanism among the participating organizations, etc. were discussed point by point and it was decided that the Japanese and Indonesian partners will continue the discussion internally and jointly the result will be presented at the next JCC in 2013. By the JCC next year, the Indonesian side will show the leading concept of the MCCOE including the vision and mission. Then JCC confirmed the Joint Midterm Review Report as per Appendix 3.

   (2) Correction of Master Plan/Plan of Operations
   The following corrections as per Appendix 4 have been agreed by JCC:
   - Indicator for the Project purpose
     With JICA recommendations, the following were decided as the indication for the Project purpose including but not limited to:
     a) Institutional and organizational mechanism of MCCOE is functioned.
     b) Societal application of research on climate variations is newly introduced in Indonesia.
   - Output 2(schedule)
   - Output 3(schedule and participants)
   - Output 4(combined 4-4/4-5and changed the context)
   - Output 6(changed context of the activities in 6-3 and 6-4 and also inviting BMKG/LAPAN as trainee to Japan sometime in September 2012)
   - Updated the list of articipants

(3) Transfer of the properties.
Following the Minutes of Meeting of the First JCC signed on the 8th of June, 2010, the Japanese side has been working on the transfer of the properties (X-band Doppler radar and three wind profilers) owned by the Japanese Government to the Indonesian Government and it was reported to be only waiting for the official response of the Indonesian Government. Also JAMSTEC has started its administrative procedure for the transfer of CDR to BPPT which is expected to be completed by the end of August at the latest.

Regarding the maintenance costs of the radar operations, the Indonesian side will discuss how they will manage until the MCCOE is established. The Indonesian side will make the best efforts not to stop the radars. After MCCOE is established, MCCOE will handle the operational costs.

(4) Release of the SATREPS data to public:
The data produced by the Project activities, they should be open to the public. Data originally belong to the particular institution such as BMKG, the treatment of data should be discussed prior to opening to public.

(5) It was discussed that the next JCC Meeting would be held in Jakarta or other place (to be decided later) in June, 2013.

6. Comments by the Observers
(1) RISTEK
Ms. Tiomega Gultom, Deputy Director for International Science and Technology Network stated that RISTEK will support MCCOE upon its establishment.
(2) LAPAN
Dr. Thomas Djamaluddin, Deputy Chairman of Science, Research, and Aerospace Informatinon stated LAPAN will continue to support the Project and MCCOE.
(3) JICA
Mr. Hideo Noda, Director of JICA, stated that he would change some points of Joint Midterm Review Report based on JCC discussions. He also stated that currently BAPPENAS is drafting the action plan for the climate change in mitigation sector which will be finished by this September and proposed that this Project should give some kind of involvement in this project.
(4) JST
Dr. Kotaro Inoue Principal Fellow, thanked the members of the JCC for all their support on the Project. Also he stated that since this Project is the collaborative research between Japan and Indonesia, he looks forward to seeing the scientific result at the end of the Project.

7. Closing of the meeting
Dr. Ridwan Djamaluddin, Chairperson of JCC, closed the Third JCC Meeting.

Meeting closed at 16:15.

Appendix 1: Agenda for the Third JCC
Appendix 2: List of the Attendants
Appendix 3: Joint Mid-Term Review Report
Appendix 4: Plan of Operation
Appendix 5: List of the participants of SATREPS-MCCOE Project

Agenda of the Third Joint Coordinating Committee (JCC) Meeting of SATREPS-MCCOE Project

Date : Tuesday, June 12, 2012
Place : Komisi Utama Room, 3rd Floor, BPPT 2nd Building

TIME	TITLE	SPEAKER
	JCC Meeting	
09.00 – 09.30	Registration and Coffee Break	
09.30 – 09.40	Opening Speech	Dr. Ridwan Djamaluddin Chairperson of JCC
09.40 – 09.45	Greeting by Representative of JICA	Mr. Hideo Noda Director, JICA Headquarters
09.45 - 09.50	Greeting by Representative of JAMSTEC	Dr. Keisuke Mizuno Program Director JAMSTEC
09.50 – 09.55	Greeting by Representative of LAPAN	Dr. Thomas Djamaluddin Deputy Chairman of Science, Research and Aerospace Information, LAPAN
09.55 – 10.00	Photo Session	
10.00 – 10.30	Activity Report on SATREPS-MCCOE Project in General Output 1	Prof. Manabu D. Yamanaka, Project Leader of the Japanese Side Dr. Fadli Syamsudin, Project Manager of the Indonesian Side
10.30 – 10.40	Activity Report on Output 2	Dr.Shuichi Mori, JAMSTEC
10.40 – 10.55	Coffee Break	
10.55 – 11.15	Activity Report on Output 3	Dr. Wahyu Pandoe, BPPT Mr.Yasuhisa Ishihara, JAMSTEC
11.15 – 11.25	Activity Report on Output 4	Mr. Awaluddin, BPPT
11.25 – 11.55	Activity Report on Output 6	Dr. Kentaro Ando, JAMSTEC Dr. Eddy Hermawan, LAPAN
11.55– 12.25	Report on Mid-Term Review	Mr. Hideo Noda Director, JICA Headquarters Mr. Akio Kaneko Evaluation Analyst Representative of LCC AMHN Dr. Kotaro Inoue Principal Fellow, JST
12.25 – 13.30	Lunch Break	
13.30 – 15.15	Comments/Discussions: • Report on Mid-Term Review • Corrections of Master Plan/Plan of Operations: - Indicator for the Project purpose - Output 2 - Output 3 - Output 4 - Output 6 - List of participants • Transfer of properties • Release of SATREPS data to public • Comments by: - RISTEK - LAPAN - BMKG - JICA - JST	Dr. Ridwan Djamaluddin Chairperson of JCC

15.15– 15.40	Resume of the Third JCC Meeting	Dr. Muhamad Sadly, Project Director of Indonesian Side
15.40 – 15.55	Coffee break	
15.55 – 16.05	Signing of Minutes of the Meeting	Dr. Ridwan Djamaluddin Chairperson of JCC Prof. Manabu D. Yamanaka, Project Leader Ms. Nada D.S. Marsudi Director, RISTEK Mr. Hideo Noda Director, JICA Headquarters
16.05 – 16.15	Closing Remarks	Dr. Ridwan Djamaluddin Chairperson of JCC

Appendix 2: LIST OF ATTENDANTS

No.	NAME	POSITION IN SATREPS	AFFILIATION
1	Dr. Ridwan Djamaluddin	JCC Chairman	Deputy Chairman of Technology for Natural Resources Development, BPPT
2	Prof. Thomas Djamaluddin	Representative of LAPAN	Deputy of Science, Research, and Aerospace Information, LAPAN
3	Ms. Tiomega Gultom	Representative of RISTEK	Deputy Director for International S & T Network, Development Program and Analysis, RISTEK
4	Dr. Keisuke Mizuno	Advisor	Program Director of Research Institute for Global Change, JAMSTEC
5	Prof. Manabu D. Yamanaka	Project Leader	Principal Scientist of Research Institute for Global Change, JAMSTEC
6	Dr. Muhamad Sadly, M.Eng	Project Director	Director of Technology for Natural Resources Inventory Center, BPPT
7	Dr. Fadli Syamsudin	Project Manager	Manager of GEOSTECH Laboratory, BPPT
8	Dr. Findy Renggono	Group Leader : Weather Radar Technology	BPPT
9	Dr. Shuichi Mori	Group Leader : Weather Radar Technology	Team Leader Research Institute for Global Change, JAMSTEC
10	Dr. Wahyu W. Pandoe	Group Leader : Buoy Technology	BPPT
11	Mr. Yasuhisa Ishihara	Group Leader : Buoy Technology	Sub Leader Marine Technology Center, JAMSTEC
12	Dr. Kentaro Ando	Group Leader : Meteorological and Oceanographical Data	Team Leader Research Institute for Global Change, JAMSTEC
13	Dr. Eddy Hermawan	Group Leader : Outcomes	LAPAN
14	Mr. Yusuke Hibino	Observer	Secretary for Foresty, Fishery and Nature Conservation, Japan Embassy in Indonesia
15	Mr. Ronny D. Tulah	Observer	Section Head of Foreign Cooperation, BPPT
16	Dr. Udrekh	Observer	BPPT
17	Ms. Wiji Lestari		Bureau of Planning, BPPT
18	Mr. Hideo Noda	Team Leader of JICA Evaluation	~~Representative of JICA Indonesia Office~~
19	Ms. Ruri Hidano	JICA Evaluation Team	~~Representative of JICA Indonesia Office~~
20	Dr. Kotaro Inoue	JICA Evaluation Team	Principal Fellow, JST
21	Mr. Akio Takahashi	JICA Evaluation Team	Senior Staff of Research Partnership for Sustainable Development, JST
22	Mr. Akio Kaneko	JICA Evaluation Team	Evaluation Analyst Representative of LCC AMHN
23	Ms. Naoko Miyamoto	Project Coordinator	Administrative Staff of Research Support Department, JAMSTEC
24	Ms. Chiaki Fukuda	Project Coordinator	Japan International Cooperation Agency

25	Sopia Lestari, S.Si	Rapporteur	BPPT
26	Ardhi A. Arbain, S.Si	Logistics Workshop	BPPT
27	Awaludin, S.Pi	Data Integration	BPPT

JOINT MIDTERM REVIEW REPORT
ON
JAPANESE TECHNICAL COOPERATION
PROJECT FOR
CLIMATE VARIABILITY STUDY AND SOCIETAL APPLICATION THROUGH INDONESIA-JAPAN "MARITIME CONTINENT COE"-RADAR-BUOY NETWORK OPTIMIZATION FOR RAINFALL PREDICTION

Jakarta, June 12, 2012

Midterm Review Team

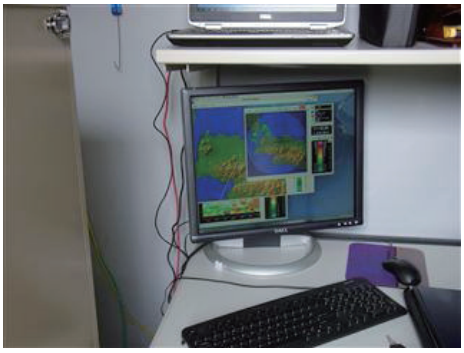
Pictures

Ina TRITON Buoy

Cable for Buoy Sensors

MPR (Multi Parameter Radar)

CDR (C-Band Doppler Radar)



CDR Observation

SIJAMPANG (at BPPT)

MCCOE construction site

Interview with Indonesian Experts

Abbreviations and Acronyms

AWS	Automatic Weather Station
BMKG	Agency for Meteorology Climatology and Geophysics
BPPT	Agency for the Assessment and Application of Technology
BRKP	Agency for Marine Affairs and Fisheries Research
CDR	C-Band Doppler Radar
CRA	Collaborative Research Agreement
EEZ	Exclusive Economic Zone
GEOSTECH	GeoSystem Technology Laboratory
IDR	Indonesian Rupiah
JAMSTEC	Japan Agency for Marine-Earth Science and Technology
JCC	Joint Coordinating Committee
JFY	Japanese Fiscal Year
JICA	Japan International Cooperation Agency
JPY	Japanese Yen
JRA25	Japanese Re-Analysis 25 years
JST	Japan Science and Technology Agency
KLH	Ministry of Environment
LAPAN	National Institute of Aeronautics and Space
M/P	Master Plan
MCCOE	Maritime Continent Center of Excellence
MEXT	Ministry of Education, Culture, Sports, Science and Technology
MPR	Multi Parameter Radar
NECP	National Emergency Communications Plan
NEONET	Nusantara Earth Observation Network
NHM	Non Hydrostatic Model
PO	Plan of Operation
PU	Ministry of Public Works
PUSPIPTEK	Research Center for Science and Technology
QPE	Quantitative Precipitation Estimation
QPF	Quantitative Precipitation Forecast
R/D	Record of Discussions
RISTEK	Ministry of Research and Technology
SATREPS	Science and Technology Research Partnership for Sustainable Development
SIJAMPANG	SISTEM INFORMASI HUJAN DAN GENANGAN BERBASIS KERUANGAN (Pool Based Rain and Spatial Information System)
SINTEXF	Scale Interaction Experiment-Frontier Model
WBS	Work Breakdown Structure
WPR	Wind Profiler Radar
XDR	X-Band Doppler Radar

TABLE OF CONTENTS

1. Introduction

1-1 Objective of the Midterm Review

Two (2) years and two (2) months have passed since Japanese technical cooperation project for Climate Variability Study and Societal Application through Indonesian-Japan "Maritime Continent COE"-Radar-Buoy Network Optimization for Rainfall Prediction (hereinafter referred to as "the Project") was started in April, 2010.

Following the Record of Discussions (R/D) of the Project signed on January 22, 2010 between JICA and BPPT on behalf of the Indonesian Government, this midterm review was conducted in order to review the current progress of the Project, and to assess whether the Project has been properly implemented as planned in the Master Plan (M/P).

1-2 Members of the Midterm Review Team

The Midterm Review was conducted by a team whose members are from both Japan and Indonesia as shown in Table 1-1.

Table 1-1 Members of the Midterm Review Team

(Japanese side)

Position	Name	Organization
Team Leader	Mr. Hideo Noda	Director, Environmental Management Division 1, Global Environment Department, JICA
Climate Change / Environmental Management	Ms. Ruri Hidano	Deputy Assistant Director, Environmental Management Division 1, Global Environment Department, JICA
Scientific and Technical Evaluation	Dr. Kotaro Inoue	Principal Fellow, JST
Scientific and Technical Evaluation	Mr. Akio Takahashi	Senior Staff, SATREPS, JST
Evaluation Analysis	Mr. Akio Kaneko	Consultant, LLC AMHN

(Indonesian side)

Position	Name	Organization
Team Leader	Ms. Tiomega Gultom	Deputy Director for International S&T Network, Development Program & Analysis, RISTEK

1-3 Schedule of the Midterm Review

The Midterm Review was conducted from June 5, 2012 to June 12, 2012 along with a schedule as shown in Table 1-2.

Table 1-2 Midterm Review schedule

Date	Schedule
June 5 (Tue)	-Meeting with Mr. Tomoyuki Tada, Senior Representative in JICA Indonesia Office -Visit to Serpong, future MCCOE building, buoy factory and radar site -Interview with Indonesian Experts for Output 3
June 6 (Wed)	-Interview with Indonesian Group Leaders for Output 1 to 6 from BPPT, BMKG and LAPAN -Meeting with Dr. Ridwan Djamaluddin, Deputy Chairman, BPPT
June 7 (Thu)	-Meeting with Dr. Marzan Aziz Iskandaor, Chairman, BPPT -Meeting with Prof. Amin Soebandrio, Deputy Minister and Ms. Tiomega Gultom, RISTEK -Interview with Japanese Experts
June 8 (Fri)	-Discussion for Midterm Review Report -Meeting with Mr. Masato Kawanishi, JICA Expert in “the Project of Capacity Development for Climate Change Strategies in Indonesia”
June 9 (Sat)	-Work on Midterm Review Report
June 10 (Sun)	-Work on Midterm Review Report
June 11 (Mon)	-Final Discussion for Midterm Review Report with BPPT (Dr. Sadly and Dr. Fadli) and RISTEK (Ms. Tiomega)
June 12 (Tue)	-Confirmation of Midterm Review Report on the 3rd Joint Coordinating Committee of the Project

1-4 Outline of the Project

Outline of the Project is shown in Annex 1

2. Methodology of the Midterm Review

2-1 Criteria for Evaluating Development Assistance

When evaluating programs and projects it is useful to consider the following DAC Criteria, as laid out in the DAC Principles for Evaluation of Development Assistance. JICA is also following these criteria for Official Development Assistance evaluation.

Table 2-1 Five (5) Criteria for Evaluation

Criteria	Evaluation
Relevance	The extent to which the aid activity is suited to the priorities and policies of the target group, recipient and donor. In evaluating the relevance of a program or a project, it is useful to consider the following questions: To what extent are the objectives of the program still valid? Are the activities and outputs of the program consistent with the overall goal and the attainment of its objectives? Are the activities and outputs of the program consistent with the intended?
Effectiveness	A measure of the extent to which an aid activity attains its objectives. In evaluating the effectiveness of a program or a project, it is useful to consider the following questions: To what extent were the objectives achieved / are likely to be achieved? What were the major factors influencing the achievement or non-achievement of the objectives?
Efficiency	Efficiency measures the outputs -- qualitative and quantitative -- in relation to the inputs. It is an economic term which signifies that the aid uses the least costly resources possible in order to achieve the desired results. This generally requires comparing alternative approaches to achieving the same outputs, to see whether the most efficient process has been adopted. When evaluating the efficiency of a program or a project, it is useful to consider the following questions: Were activities cost-efficient? Were objectives achieved on time? Was the program or project implemented in the most efficient way

	compared to alternatives?
Impact	The positive and negative changes produced by a development intervention, directly or indirectly, intended or unintended. This involves the main impacts and effects resulting from the activity on the local social, economic, environmental and other development indicators. The examination should be concerned with both intended and unintended results and must also include the positive and negative impact of external factors, such as changes in terms of trade and financial conditions. When evaluating the impact of a program or a project, it is useful to consider the following questions: What has happened as a result of the program or project? What real difference has the activity made to the beneficiaries? How many people have been affected?
Sustainability	Sustainability is concerned with measuring whether the benefits of an activity are likely to continue after donor funding has been withdrawn. Projects need to be environmentally as well as financially sustainable. When evaluating the sustainability of a program or a project, it is useful to consider the following questions: To what extent did the benefits of a program or project continue after donor funding ceased? What were the major factors which influenced the achievement or non-achievement of sustainability of the program or project?

(Source : http://www.oecd.org/dac/evaluation/)

2-2 Methods of the Midterm Review and the Data Collection

(1) Collect necessary data for the review through reports, documents, questionnaires and interviews to focal persons (see Annex 2).

(2) Review the program and the process of inputs, activities and outputs.

(3) Evaluate the Project by five (5) evaluation criteria.

(4) Draw conclusions and make recommendations for the Project

(5) Make "Midterm Review Report" for the confirmation in JCC members.

2-3 Limits and Constraints of the Midterm Review

Due to time and resource constraints, it was not possible to interview all the Japanese experts and the Indonesian experts who were involved in the Project implementation. Efforts were made, however, to gather the information by literature

review or by interviewing other personnel in a similar field so as to reduce possible sample biases. The Midterm Review Team was able to gather data from the core members of the Project. Therefore, it is reasonably said that the information collected within the evaluation framework maintains a substantial level of reliability and validity.

3. Current Progress and Achievements

3-1 Input of the Project

(1) Japanese side (see Annex 3)

(a) Japanese experts

One (1) long-term expert as a Project Coordinator has been dispatched since July, 2010.

Total number of 17 short-term experts has been dispatched 83 times since June, 2010.

(b) Training in abroad

Total 25 Indonesian experts were dispatched to Japan for trainings including two (2) Indonesian experts who participated in the on-board training by the Oceanographic Research Vessel "*MIRAI*."

Total 4 Indonesian experts were dispatched to Germany for MP radar training.

(c) Provision of machinery and equipment

Equipment such as MPR and Buoy equivalent to approx. IDR 3,206,000,000 (equivalent to about JPY 3 million) in JFY 2010 and approx. IDR10,024,000,000 (equivalent to about JPY 100 million) in JFY 2011 was provided.

(d) Local cost born by Japanese side

IDR 1,938,336,103 in JFY 2010 and IDR 4,323,120,747 in JFY 2011 were provided

Operational and maintenance cost for four (4) radars (XDR in Padang, three (3) WPRs in Manado, Pontianak and Biak[1]) has been borne until March, 2012. Originally it was expected to complete the granting process by that time. However, there has been a delay in the process and final procedures are now being taken by the Indonesian Government.

(2) Indonesian side (see Annex 4)

(a) Indonesian experts

Total 99 Indonesian experts have been allocated 35 from BPPT, 34 from BMKG, 26 from LAPAN, 2 from RISETK and 2 from BRKP.

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1 XDR and three (3) WPRs were originally assets of MEXT. CDR and XDR have been utilized for the Project activities to obtain the data of rainfall distribution. WPRs have been utilized for window profiling. Granting process of those radars from Japanese Government to Indonesian Government is almost completed. CDR, an asset of JAMSTEC, will also soon be transferred to BPPT after the completion of the above process.

(b) Provision of facilities

Office space and utilities at BPPT building in Jakarta and PUSPIPTEK in Serpong were properly provided.

(c) Local cost born by Indonesian side

Voyage expenses for buoy deploy/recovery training approx. IDR 324,000,000 in Indonesian fiscal year 2011 was provided.

The operational and maintenance costs for the radars will be borne by Indonesian side after April, 2012.

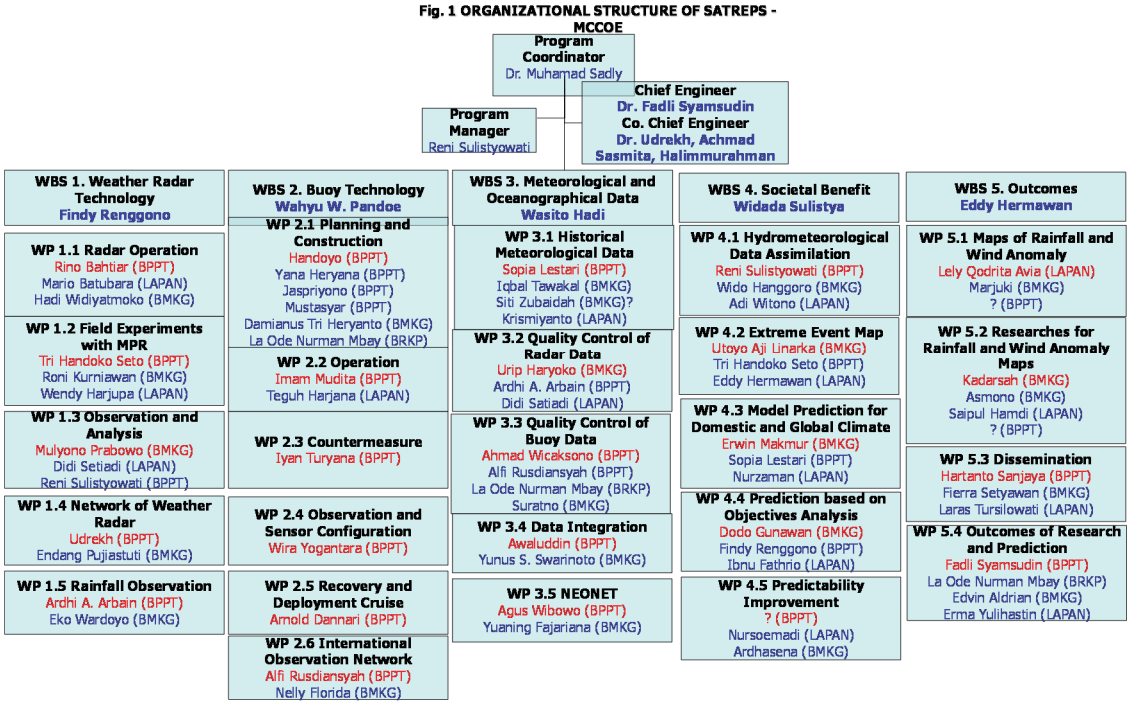
3-2 Current Progress and Achievements

3-2-1 General

Outputs of this Project were originally set in chronological order when the Project started. In the reality, activities related to Output 1 to consider and propose the possible vision and structure of MCCOE have not formally started yet. The intensive discussions will soon be started in parallel with other activities implementation.

Fig. 1 is a diagram of the Indonesian experts participating in the Project. Work Breakdown Structure (WBS) was made by the Indonesian side to clarify the roles and responsibilities among Indonesian experts. WBS 1 to 5 are basically corresponding to Output 2 to 6 accordingly.

Fig. 1 ORGANIZATIONAL STRUCTURE OF SATREPS - MCCOE



3-2-2 Output 1

There is a program under the Indonesian Government to establish MCCOE as a laboratory under GEOSTECH of BPPT. A new building for GEOSTECH has been constructed since February 2012 in a corner of the PUSPIPTEK in Serpong, which is expected to be completed by the end of 2012. BPPT is the only responsible agency for the construction with the Indonesian Government budget.

The Project is expected to provide necessary advice for the establishment of MCCOE to become a firm institution contributing to the Indonesian society as well as the international society.

(a) Current Progress

Vision, mission and an organizational structure of MCCOE will be considered by running activities for Output 2 to 6 during the second half of the Project and will be one of the main agenda for next year's JCC.

(b) Achievement

Symposium and workshops with the topic of Climate Variability issues were held three (3) times.

3-2-3 Output 2

(a) Current Progress

Usually, operation of the radars does not require many staffs so that Japanese experts have been transforming the operational skills to some core members of the Indonesian experts. They learned how to utilize five (5) radars (CDR, XDR, and three (3) WPRs) by series of trainings. Radars are now ready for the operation and data release to the public. It is expected that those core members will transfer their knowledge to other Indonesian experts during the second half of the Project.

MPR has been procured by the Project. This radar is the first radar implemented in the Equatorial tropics region of South-East Asia, in a high temperature and a high humidity environment. Field experiments were conducted in December 2011 in West Sumatra. The verification of the obtained data has been done by comparing with the in-situ data from weather stations and rain gauges deployed both by BMKG and the Project. This activity is the basis for QPE and QPF in the activity of Output 5.

(b) Achievement

Operation skills for radars have been transferred to the Indonesian experts. MPR

has been successfully operated for the first time in Indonesia.

3-2-4 Output 3

(a) Current Progress

After the huge tsunami hit the coast of Sumatra in 2004, the Indonesian Government has instructed BPPT to develop the tsunami buoy. Deployment of tsunami-buoy, named as Ina Buoy, was started five (5) years ago in 2008. BPPT has been appointed to enforce the capacity for tsunami-buoy operation and there are more than 50 staffs dedicated to the buoy operation. With the past experiences, the Indonesian experts were able to smoothly join the activities for Output 3, even though there is a difference between tsunami-buoy and ocean-climate buoy.

Activities are almost on schedule. Series of on-site and on-board trainings for the construction and deployment of ocean-climate buoy have been conducted in Japan as well as in Indonesia.

(b) Achievement

The first ocean-climate buoy, named as Ina TRITON buoy has been developed consisting of mooring gears including surface buoy and meteorological and underwater sensors. Data of four (4) underwater parameters; temperature, depth, salinity and current and six (6) atmospheric parameters; wind, temperature, relative humidity, precipitation, atmospheric pressure and shortwave radiation are obtained by using iridium satellite communication system. The Ina TRITON buoy is optimized and adjusted by the collaboration of the Japanese and the Indonesian experts. Through this work, Indonesian experts are now able to construct, deploy and recover the Ina TRITON buoy by themselves.

Countermeasures for the vandalism were developed by covering the sensors.

3-2-5 Output 4

(a) Current Progress

CDR data have been transformed and disseminated as information on rainfall distribution over Jakarta and its vicinity in every six (6) minutes. With the guidance of the Japanese experts, the Indonesian experts analyzed CDR data and innovated the system called SIJAMPANG[2] in May, 2010. It is published through the website of BPPT and socialized by using the social media. The system can integrate the real weather information sent from people by SMS. The system is also helpful for flood warning in

[2] http://neonet.bppt.go.id/sijampang/

Jakarta and its vicinity. Data from other four (4) radars have been archived.

Historical meteorological data in BMKG have been digitalized. Oceanographical data will be obtained after deployment of the Ina TRITON buoy.

(b) Achievement

Historical meteorological data have been collected from 107 stations so far and put into a database. In the original plan, it was expected to collect the data from 200 stations but currently it seems that data are available in only 185 stations.

The project contributed to initiate the rainfall information system of SIJAMPANG, a prototype of QPE by transforming necessary data from CDR.

A computer program for the quality control of the real time data of the Ina TRITON buoy has been developed and waiting for the examination.

3-2-6 Output 5

(a) Current Progress

Activities related on QPF have been just started. NHM has been selected for experimental short-term rainfall forecast.

(b) Achievement

There appears no particular achievement yet.

3-2-7 Output 6

(a) Current Progress

Results of calculation of SINTEX-F model has been compared with those of LAPAN model for predicting rainfall over rice production areas in Indonesia. Key technologies for 3-month-prediction by the Japanese side and 6-month-prediction by Indonesian side are now being developed.

(b) Achievement

It has been found that the 3-month-prediction for the rainfall by SINTEX-F is applicable with significant correlations (0.6) for June-November at least at three (3) locations among eleven (11) rice production centers.

3-3 Process of the Project Implementation

(1) Indonesian experts from BMKG, LAPAN and BRKP are participating in the Project based on the CRA signed between BPPT and JAMSTEC. With time and distance

constraints among agencies, it has been difficult to hold regular meetings and to spare enough time for the Project.

(2) Activities in Output 1 were expected to start from the first year of the Project; however intensive discussions to consider and propose the framework of MCCOE will start from now on. Various activities subject to MCCOE have been forced to be implemented along with the tentative framework of MCCOE.

(3) MPR was procured just in time for its scheduled operation for the Project, although towing-truck is still yet to be delivered. Therefore, other arrangements for MPR transportation had to be made with additional cost.

4. Results of the Midterm Review

4-1 Relevance

Relevance of this project is high. Climate variations are focusing on the short-term period of Climate Change whose policies are shown in (1) and (2). They align with Japanese ODA policy to Indonesia as shown in (3). Furthermore, after the Project commencement, Presidential instruction was given to deal with the extreme climate condition such as (4). Indonesian government has also the policy to establish Center of Excellence; COE as shown in (5).

(1) Regulation of the President of the Republic of Indonesia "National Medium-Term Development Plan 2010-2014" describing Climate Change as one of the important issues to be tackled
(2) "National Action Plan Addressing Climate Change" issued in 2007 from KLH
(3) Japanese ODA policy towards Indonesia stating Climate Change as one of the main areas to be focused
(4) Presidential Instruction of the Republic of Indonesia "National Security of Rice Production in Anticipating Extreme Climate Condition" issued in March 2011
(5) Science and Technology Policy issued in 2010 from RISTEK

4-2 Effectiveness

Effectiveness of the Project is fair to high.

(1) Prospect of the achievement of the project purpose

The project purpose is "by optimizing atmospheric and oceanic observation networks and utilizing observational data, research and development for improving predictability of extreme weather/climate variations and drawing up strategy to mitigate rainfall disasters are promoted, and the outcomes are published internationally."

It is observed that the technical transfer from Japanese experts to Indonesian experts has been smoothly conducted so far especially in the areas of the buoy construction and radar operation. As for activities of Output 1, the implementation schedule have been changed from the original PO, however the Project is moving forward to speed up the process from now on.

The main challenges lie in the fact that for the second half of the Project period, the Project needs first to set up the clear goal for the minimum requirement for the predictability improvement of extreme weather/climate events and go forward to achieve the goal with all the Project members.

(2) Project management system

The Project benefits from the fact that the Team leader of the Japanese experts stays almost half a year in Indonesia and directly communicating with the Indonesian experts. However, because of the fact that several organizations are involved in project activities, it has been difficult for the Project to organize regular project meetings attended by many of the stakeholders. Those meetings are usually held on an ad-hoc basis with a small number of participants working in a specific field. Therefore, it is rather difficult for the Project to accurately comprehend the Project's overall progress and to grasp the interrelations among each Output as well as each activity. It is recommended that meetings be held on a regular basis so that the latest information on the Project's progress would be shared among stakeholders and the directions toward the achievement of the Project purpose would be exchanged and discussed.

4-3 Efficiency

Efficiency is fair.

(1) Provision of inputs – the Japanese side

Through interviews with the Indonesian experts, it is confirmed that the areas of expertise of the Japanese experts are well covering the needs of the Indonesian side and the dispatch was done in a timely manner. Much closer communications, for example to share the image of the purpose of the specific activity and its process before coming to Indonesia, will contribute to smoother implementation.

The procurement of MPR, which was relatively difficult, was successfully conducted with some margin of time and its operation started almost on schedule.

(2) Provision of inputs – the Indonesian side

A total of 99 Indonesian experts including those from cooperating agencies are appointed to work with the Japanese expert team and around 30 people are the core members including 20 people of buoy engineers working for Output 3. It was found that huge differences of contributions among experts exist. Especially cooperating agencies such as BMKG and LAPAN have to spend a substantial amount of time for other work assignments. It may be worth clarifying the roles and responsibilities of the group-leaders at first and also promoting the team building of each group.

Another issue is that leaves, transfers and resignations of the experts who had already received some amount of technical transfer, influenced efficient capacity development activities.

Radar operation and maintenance costs were agreed to be borne by the Indonesian

side from April 2012, however due to lack of necessary arrangements, the operation of four radars have been stopped one by one since April 2012 and are not in use at this moment. Although it does not directly affect the project activities, it is crucial for the high accuracy prediction of extreme weather/climate events to have seamless data collection.

(3) Contributing and hindering factors to efficiency

It is worth mentioning that Indonesian experts in general have strong motivation to realize the societal benefits, which is giving positive impacts on efficiency. Also some highly skilled professionals of IT sector are greatly contributing to innovate and improve the system of societal dissemination tool such as SIJAMPANG.

As for a hindering factor to efficiency, changes of the schedule of activities related to Output 1, as explained earlier, can be pointed out as the main cause which is also related to the insufficient coordination and lack of understandings of the Project purpose by the members of cooperating agencies.

4-4 Impact

Positive impacts such as SIJAMPANG appeared so far. There was a concept before the commencement of the Project but it is worth mentioning that SIJAMPANG realized during the Project.

The overall impacts of the Project are unknown at this stage.

4-5 Sustainability

Sustainability of the Project will highly depend on MCCOE establishment, where details are still unclear at the moment.

5. Conclusions

For the achievement of the project purpose, project activities have been conducted well in general along with PO, which was properly revised in the past two (2) JCC meetings. Activities of Output 1 were expected to start from the early stage of the Project; however the Project will foster the common sense of a concrete image of MCCOE from now on.

Among six (6) outputs which are to contribute to the achievement of the Project purpose, Output 2 and Output 3 have been mostly achieved, while other outputs are to be achieved with further activities.

Generally, based on the five evaluation criteria, it is concluded that the Relevance of the Project is high, Effectiveness is fair to high, and Efficiency is fair so far.

The Project purpose is expected to be achieved to a certain degree by the end of the Project period with higher prospect if the following recommendations proposed below are properly addressed.

6. Recommendations

(1) Revision of Master Plan

Indicators for Project purpose should be set immediately in JCC based on the Minutes of Meetings signed on August 12, 2009 in the Detailed Planning Survey of the Project as follows;

a. Institutional and organizational mechanism of MCCOE is functioned.

b. Societal application of research on climate variations is newly introduced in Indonesia.

Also, other tentative indicators should be determined until the end of 2012.

(2) Vision, mission, and organizational structure of MCCOE

It is recommendable for the Project to start the consideration of the vision, mission, and a possible organizational structure of MCCOE with enough consultation among both Indonesian and Japanese experts as soon as possible, and it is encouraged to make a proposal by the time of JCC in 2013. Such proposal is helpful to motivate and guide the members of the Project toward the common goal. In the latter half of the Project, periodical meetings among at least group leaders of the Indonesian and the Japanese side will play an important role to develop the backbone of the institutional framework of MCCOE. Contributions of this project to the foundation of MCCOE should be more specific.

(3) Commitment of cooperating organizations

It is suggested that necessary arrangements will be taken by mainly group leaders for the experts coming from BMKG and LAPAN so that their experts can be more involved in the Project.

(4) Clear common understandings of the outcomes of the Project

Indonesian side places high importance on deriving the outcomes for societal benefits. Providing high accuracy of the short term rainfall predictions and flooding alarms is one of the main goals of the Project and also enabling longer term rainfall predictions in rice production centers is the other purpose of the Project. Sometimes achieving societal benefits needs different vectors from the pure science and application development and/or capacity development of the working-levels are also required. It is suggested that the Project will share the common sense of the Project purpose by balancing different vectors and by efficient allocation of the resources.

Specifications of each targeted research goals, for example accuracy, time mesh,

term and area of rainfall forecast systems should be shown concretely and quantitatively. It is very important to share the project goal clearly among each group and each expert. Sharing information among different groups and also among experts in the same group are encouraged to improve the efficiency of the teamwork and to strengthen the cross-cutting relationships among five (5) groups as well as experts.

Annex 1　　Outline of the Project

(1) Country: Republic of Indonesia
(2) Project Title: Climate Variability Study and Societal Application through Indonesian-Japan "Maritime Continent COE"-Radar-Buoy Network Optimization for Rainfall Prediction
(3) Cooperation Scheme: Technical Cooperation Project
(4) Total Cost (at the time of the Midterm Review): Approximately JPY 398,615,000
(5) Period of Cooperation: From April 1, 2010 to March 31, 2014
(6) Responsible Agency: JICA (Japan), BTTP (Indonesia)
(7) Master Plan

1. Project Purpose

By optimizing atmospheric and oceanic observation networks and utilizing observational data, research and development for improving predictability of extreme weather/climate variations and drawing up strategy to mitigate rainfall disasters are promoted, and the outcomes are published internationally.

2. Outputs and Activities

1) Institutional framework for MCCOE such as organization, personnel and budget is prepared.

Indicators (tentative)

1-1. Conference and seminars on climate variations are organized by MCCOE at least once a year, and the number of participants is more than 100.
1-2. More than XX (number) staffs are assigned in MCCOE by the end of the project.
1-3. At least one administrative document showing the organization chart, staff assignment and budget plan is issued by the end of the project.

Activities

(1-1) Organizational structure and personnel are prepared for establishing MCCOE.
(1-2) Operation plans for MCCOE are prepared.
(1-3) Inter-ministry coordination framework for MCCOE is established.
(1-4) International coordination framework for MCCOE is established.
(1-5) Frameworks established in (1-3) and (1-4) are periodically reviewed and revised.

2) Technology to observe and predict short-term climate and rainfall variations with high accuracy is established in MCCOE through optimized radar-profiler network.

Indicators (tentative)

2-1. At least one meteorological radar is operated and maintained by Indonesian side by the third year of the project.

2-2. Rainfall observation with high accuracy through the optimized network is planned and implemented more than once a year in rain season by the Indonesian researchers in MCCOE by the third year of the project.

Activities

(2-1) Radar operation and application technology is transferred.

(2-2) Field experiments with the mobile Multi Parameter (MP) radar are implemented and concrete observation points and methodology for Quantitative Precipitation Estimation (QPE) are proposed.

(2-3) Observation and analysis of extreme events are conducted.

(2-4) Network of meteorological radars and wind profilers is optimized.

(2-5) Rainfall observation with high accuracy through the optimized network is planned and implemented by the Indonesian researchers in MCCOE.

3) Observation technology to predict short-term climate variations is established in MCCOE through observation network.

Indicators (tentative)

3-1. One ocean observation site is operated and two buoys are maintained by Indonesian side by the third year of the project.

3-2. Periodical maintenance cruise is conducted once a year.

Activities

(3-1) Buoy planning and construction technology is transferred and two buoys are developed.

(3-2) Buoy operation technology is transferred and capacity building cruise is implemented.

(3-3) Countermeasure technology against vandalism is developed.

(3-4) Observation parameters and buoy sensor configuration are optimized.

(3-5) International Ocean Observational Buoy Workshop is held by MCCOE and MCCOE participates in the international surface buoy array project as buoy provider.

(3-6) Buoy recovery and deployment cruise is implemented regularly.

(3-7) Optimized buoy observations as a part of the international observation network are operated by the Indonesian researchers in MCCOE continuously, and data necessary for short-term climate prediction are provided.

4) Technology of quality control, archiving, analysis of the meteorological and oceanographical observation data and dissemination to Indonesian society is established by collaborative research in MCCOE.

Indicators (tentative)

4-1. Climate database for at least two hundred stations is established by the second year of the project.

4-2. Radar-profiler data at 5 stations are opened public by Indonesian side by the third year of the project.

4-3. One buoy site data is opened to public by Indonesian side, by two and half years after the project commencement.

Activities

(4-1) Historical meteorological data (e.g. , rainfall), climate-related records, results of environmental observation and social indices (e.g., flood, draught, forest fire, crop production, etc.) are collected and analyzed.

(4-2) Quality control of radar data is conducted.

(4-3) Analysis and quality control of buoy data acquired in the Indonesian EEZ is conducted.

(4-4) Data in (4-1), (4-2) and (4-3) are provided to NEONET and opened to domestic and global communities.

5) Data collected through output 4 are transferred to information applicable to society and societal application is developed.

Indicators (tentative)

5-1. More than five papers for refereed international journals are published yearly during the last two years of the project.

5-2. Quantitative Precipitation Forecast (QPF) ad extreme event maps are produced for at least two regions by the third year of the project.

5-3. Detection of torrential rainfall is achieved for MCCOE observation sites by the third year of the project.

5-4. Nowcasting of torrential rainfall is achieved for MCCOE observation sites by the third year of the project.

Activities

(5-1) Hydrometeorological data assimilation for QPF model is conducted, by which warning system for heavy rain and drought is proposed.

(5-2) Extreme events maps are produced based on results of radar observation and regional modeling.

(5-3) Cause of climate variations in Indonesia region and importance of the Indonesian maritime continent on global climate are understood, through which the prediction models for domestic and global climate variations are improved.

(5-4) Prediction based on objective analysis incorporating Indonesian data is compared with observations in Indonesia and other countries.

(5-5) Predictability improvement by the observation optimization is demonstrated.

6) Outcomes associated with research and prediction of short-term climate variations including intraseasonal variation, El Nino, Indian-Ocean dipole mode will be obtained through collaboration is MCCOE.

Indicators (tentative)

6-1. More than five papers for refereed international journals are published yearly during the last two years of the project.

6-2. Hazard maps associated with development phase of NESO/IOD are made for the maritime continent by two and half years after the project commencement.

6-3. Detection of anomalous oceanic thermal conditions is achieved in the Pacific and Indian Oceans by two and half years after the project commencement.

Activities

(6-1) Maps of rainfall and wind anomaly for each region and for each phase of El Nino and Indian-Ocean dipole mode are developed by analyzing data of global air-sea coupling prediction models such as SINTEXF.

(6-2) Based on objective analysis such as JRA25 and NCEP, researches for rainfall and wind anomaly map are conducted and the scientific and social importance of the anomaly maps is clarified.

(6-3) Method of information transmission to utilize the anomaly maps as a hazard map is proposed, and the most effective and scientifically trustworthy hazard maps are created based on the prediction results.

(6-4) Outcomes of research and prediction based on the data acquired from the buoy observations in the Indonesian EEZ are published towards the world.

Annex 2　List of Interviewees

(Japanese Experts)

No.	Name	Duty on the Project	Organization
1	Dr. Manabu Yamanaka	Project Leader	JAMSTEC
2	Dr. Keisuke Mizuno	Advisor	JAMSTEC
3	Dr. Shuichi Mori	Sub-Leader, Output 2	JAMSTEC
4	Dr. Yasuhisa Ishihara	Sub-Leader, Output 3	JAMSTEC

(Indonesian Experts)

No.	Name	Duty on the Project	Organization
1	Dr. Fadli Syamsudin	Project Manager	BPPT
2	Dr. Udrekh	Network Engineer	BPPT
3	Mr. Ardhi Adhary Arbain	Radar Engineer	BPPT
4	Dr. Wahyu Pandoe	Group Leader, Output 3	BPPT
5	Dr. Yunus Subagiyo	Group Leader, Output 4	BMKG
6	Ms. Nelly Florida Riama	Meteorology	BMKG
7	Dr. Eddy Hermawan	Group Leader, Output 6	LAPAN

Annex 3 List of Inputs from Japanese side

(1) Dispatch of Japanese Experts

(Long-term Expert)

No.	Name	Duty on the Project	Organization	Period	MM
1	Ms. Chiaki Fukuda	Project Coordinator	JICA	2010/07/08 – up to now	23.0

(Short-term Experts)

No.	Name	Duty on the Project	Org.	Period	MM
1	Dr. Manabu Yamanaka	Project Leader SL - OP 1, 5	J	2010/06/01-06/16 2010/06/29-07/14 2010/07/26-08/25 2010/11/09-11/27 2010/12/12-12/24 2011/01/17-01/26 2011/02/14-02/23 2011/03/10-03/12 2011/03/22-03/31 2011/04/01-04/02 2011/04/13-04/30 2011/05/08-06/01 2011/06/08-06/29 2011/07/05-07/23 2011/08/02-08/26 2011/09/19-09/30 2011/10/10-11/10 2011/11/12-12/20 2012/01/03-01/13 2012/01/24-02/18 2012/02/28-03/13 2012/03/25-03/31 2012/04/17-05/17 2012/06/03-06/10	14.63
2	Dr. Keisuke Mizuno	Advisor / Ocean Climate SL - OP 6	J	2010/06/06-06/11 2010/09/26-09/30 2011/5/17-05/21 2012/06/09-06/14	0.90
3	Dr. Shuichi Mori	Radar Meteorology SL - OP 2, 4 PC - OP 5	J	2010/06/05-06/14 2011/05/19-05/26 2011/09/13-09/19 2011/10/22-11/16 2011/11/23-12/03 2011/12/08-2012/01/05	3.03
4	Dr. Hiroyuki Hashiguchi	Radar Engineering SL - OP 2	KT	2010/07/25-08/01 2010/11/30-12/10 2011/02/26-03/09 2011/07/02-07/07 2012/01/04-01/15 2012/02/26-03/08	2.03

5	Dr. Kentaro Ando	Ocean Climate SL - OP 4 PC - OP 3, 6	J	2010/06/06-06/12 2011/05/08-05/11 2011/10/10-10/13 2012/03/11-03/14 2012/06/09-06/14	1.00
6	Dr. Iwao Ueki	Ocean Data Quality Control PC - OP 4	J	2010/06/07-06/12 2011/02/27-03/05 2012/03/04-03/10	0.67
7	Dr. Yasuhisa Ishihara	Buoy Engineering SL - OP 3	J	2010/06/06-06/12 2011/04/24-05/11 2011/11/06-11/10 2012/03/11-03/17	1.23
8	Mr. Takeo Matsumoto	Buoy and Sensor Operation PC - OP 3	M	2010/06/06-06/12 2011/04/24-05/11 2011/11/06-11/10 2012/03/11-03/17	1.23
9	Dr. Jun-ichi Hamada	Meteorological Database PC - OP 4	J	2010/07/24-08/06 2010/12/11-12/19 2011/02/20-02/27 2011/03/20-03/29 2011/07/17-07/30 2011/09/21-09/30 2011/11/20-2012/01/05	3.73
10	Mr. Hideyuki Kamimera	Radar Meteorology PC - OP 4 / 5	J	2010/07/24-07/31 2011/02/20-02/27 2011/07/17-07/30 2011/10/22-11/13 2011/11/20-2012/01/05	5.20
11	Mr. Masayuki Yamaguchi	Buoy Engineering PC - OP 3	J	2010/06/06-06/12 2011/04/24-05/11 2011/11/06-11/10 2012/03/11-03/17	1.23
12	Dr. Yuji Kashino	Ocean climate PC - OP 1, 6	J	2011/03/06-03/17 2012/03/11-03/24	0.87
13	Mr. Tatsuno Fukuda	Buoy Engineering PC - OP 3	J	2010/06/06-06/12 2011/04/24-05/11 2012/03/11-03/17	1.07
14	Dr. Tomosaki Mega	Radar Engineering PC - OP 2	KT	2010/11/30-12/25	0.87
15	Dr. Peiming Wu	Regional Modeling SL - OP 5	J	2011/11/20-2012/01/05	1.57
16	Dr. Miki Hattori	Regional Modeling PC - OP 5	J	2011/11/27-2012/01/05	1.33
17	Ms. Naoko Miyamoto	Planning and Coordination	J	2010/06/06-06/12 2011/05/17-05/21 2012/06/03-06/13	0.77

SL: Sub-Leader, PC: Person in charge, OP: Output

J: JAMSTEC, KT: Kyoto University, M: Marine Works Japan, Ltd., KB: Kobe University

(2) Training of Indonesian Personnel in Japan

Training Course	Period	Indonesian Experts
Data analysis	2010.09.26 ～ 2010.11.27	Mr. Awaluddin (BPPT)
Buoy technology	2010.09.26 ～ 2010.10.09	Mr. Iyan Taryana (BPPT) Mr. Bondan Suwandi (BPPT)
(IOC 50 year anniversary symposium)*	2010.11.27 ～ 2010.12.04	Dr. Ridwan Djamaluddin (BPPT) Dr. Eddy Hermawan (LAPAN) Dr. Muhamad Sadly (BPPT) Dr. Wahyu Pandoe (BPPT)
(IOC 50 year anniversary symposium)*	2010.11.30 ～ 2010.12.05	Dr. Andy Eka Sakya, M. Eng (BMKG)
Buoy technology	2011.02.07 ～ 2011.02.19	Mr. Arnold Dannari, S.T (BPPT) Mr. Sidarto Handoyo, B.E (BPPT)
Buoy technology	2011.07.10 ～ 2011.07.23	Mr. Wayan Wira Yogantara (BPPT) Mr. Muhammad Firdausi Manti (BPPT) Mr. Athur Yordan Herwindya (BPPT) Mr. Dwi Haryanto (BPPT) Mr. Arfis Maydino Firmansyah Putra (BPPT) Mr. Bambang Subagyo (BPPT) Mr. Yana Heryana (BPPT) Mr. Andrianshah Priyadi (BPPT)
The Ocean and Earth Research Vessel "*Mirai*" (in Japan and on the sea)	2011.08.09 ～ 2011.09.21	Mr. Arnold Dannari, (BPPT) Mr. Jonasan Meiky Davis Rori (BPPT)
(Meeting with JAMSTEC)*	2011.09.06 ～ 2011.09.10	Dr. Ridwan Djamaluddin (BPPT) Dr. Muhamad Sadly (BPPT) Mr. Yudi Anantasena (BPPT) Dr. Fadli Syamsudin (BPPT)
Data analysis	2011.09.10 ～ 2011.10.08	Mr. Awaluddin (BPPT)

*: Regarded as a business trip without training

(3) Training of Indonesian Personnel in the third country

Training Course	Period	Indonesian Experts
MPR (in German)	2011.08.08 ～ 2011.08.19	Dr. Fadli Syamsuddin (BPPT) Mr. Ardhi A Arbain (BPPT) Mr. Findy Renggono (BPPT) Mr. Budi Santoso(BMKG)

(4) Provision of Machinery and Equipment

Ownership of machinery and equipment procured by overseas activity cost is belong to JICA

(JFY 2010)

(a) Procured by overseas activity cost

No.	Machinery and Equipment	Unit Cost (thousand)	Q'ty	Total (thousand)	Delivered Date	Frequency of use*	Condition*
1	Automatic Weather Station	IDR14,880	5	74,400	2011/03/30	A	A
2	HDD for WS (Data Analysis)	IDR1,400	5	7,000	2011/03/21	A	A
3	WS for Data Control/Analysis	IDR11,731	1	11,731	2011/02/21	A	A
		IDR32,536	1	32,536			
		IDR3,391	24	81,385			

(b) Procured and transported from Japan

No.	Machinery and Equipment	Unit Cost (thousand)	Q'ty	Total (thousand)	Delivered Date	Frequency of use*	Condition*
1	XDR Spare Parts/Consumables	JPY1,500	1	1,500	2011/02/18	A	A
2	WPR Spare parts/consumables	JPY1,000	1	1,000	2011/02/27	A	A
3	Buoy system equipment	JPY20,000	1	20,000	2012/03/12	A	A
4	Navigation training buoy set (Rope and others)	JPY2,700	1	2,700	2011/04/26	A	A
5	Navigation training buoy set (Body glass ball)	JPY120	12	1,440	2011/04/26	A	A

*: A (Frequent/Good), B (Moderate), C (Not Frequent/Bad)

(JFY 2011)

(a) Procured by overseas activity cost

No.	Machinery and Equipment	Unit Cost (thousand)	Q'ty	Total (thousand)	Delivered Date	Frequency of use*	Condition*
1	Work Station for Data Analysis	IDR12,180	2	24,360	20110/7/08	A	A
2	Laptop PC for AWS Observation	IDR4,750	3	14,250	2011/11/25	A	A

3	Observation UPS (Manado, BMKG)	IDR5,450	1	5,450	2011/10/29	A	A
4	Releaser	USD16.538	1	16.538	2012/03/27	A	A
5	Iridium Transmitter	USD2.864	1	2.864	2012/03/28	A	A

(b) Procured and transported from Japan

No.	Machinery and Equipment	Unit Cost (thousand)	Q'ty	Total (thousand)	Delivered Date	Frequency of use*	Condition*
1	Work Station for Data Analysis	IDR12,180	2	24,360	20110/7/08	A	A
2	Laptop PC for AWS Observation	IDR4,750	3	14,250	2011/11/25	A	A
3	Observation UPS (Manado, BMKG)	IDR5,450	1	5,450	2011/10/29	A	A
4	Releaser	USD16.538	1	16.538	2012/03/27	A	A
5	Iridium Transmitter	USD2.864	1	2.864	2012/03/28	A	A
6	Multi parameter Radar （MPR)	JPY62,000	1	62,000	2012/03/12	A	A
7	Radar Transportation	JPY3,000	1	3,000	2012/3/12	A	A
8	XDR Consumables / Spare Parts	JPY1,500	2	3,000	2011/07/18	A	A
9	WPR Consumables/ Spare Parts	JPY1,000	1	1,000	2011/07/03	A	A
10	Observation Consumables (Sonde)	JPY28	200	5,600	2011/10/29	A	A
11	Observation Consumables (balloon)	JPY3	200	600	2011/10/29	A	A
12	Buoy System Equipment (Procured first half year of 2010 and delivered to Indonesia 2011)	JPY8,400	1	8,400	2012/03/12	A	A
13	Buoy Equipment Transportation	JPY2,000	1	2,000	2012/03/12	A	A
14	XDR Maintenance Cost	JPY1,500	1	1,500	2011/07/03	A	A

*: A (Frequent/Good), B (Moderate), C (Not Frequent/Bad)

(4) Expenditure of Local Cost

(IDR)

Local Cost	JFY 2010	JFY 2011
Miscellaneous	1,607,692,803.00	2,204,309,919.00
Airfare	167,783,950.00	344,198,865.69
Travel Cost (excluding Airfare)	125,352,050.00	604,813,862.00
Fee & honorarium (for non-staff)	12,300,000.00	77,136,700.00
Refreshment	25,207,300.00	192,661,400.00
Total	1,938,336,103.00	3,423,120,746.69

Annex 4 List of Inputs from Indonesian side

(1) Assignment of Indonesian Experts

No.	Name	Organi-zation	Position in the Project	Responsible Output	Work period
1	Prof. Dr. Jana T. Angggadiredja, MS	BPPT	Chairperson	-	2010/04 - 2010/06
2	Dr. Ridwan Djamarddin	BPPT	Chairperson	1	2011/07 - up to now
3	Dr. Muhammad Sadly, M. Eng.	BPPT	Project Director	1	2010/04 - up to now
4	Dr. Fadli Syamsudin	BPPT	Project Manager	1	2010/04 - up to now
5	Dr. Teguh Rahardjo	RISTEK	Representatiove of RISTEK	-	2010/04 - 2011/04
6	Prof. Dr. M. Syamsa Ardisasmita, DEA	RISTEK	Representative of RISTEK	1	2011/05 - up to now
7	Drs. I. Putu Pudja, MM	BMKG	Group Leader of BMKG	-	2010/04 - 2011/04
8	Dr. Andi Eka Sakya, M.Eng.	BMKG	Representative of BMKG	1	2010/04 - up to now
9	Drs. Afif Budiono, MT	LAPAN	Representatiove of LAPAN	-	2010/04 - 2011/04
10	Dr. Afif Budiono	LAPAN	Representative of LAPAN	1	2011/05 - up to now
12	Dr. Putu Pudja	BMKG	Observer	1	2011/05 - up to now
13	Dr. Edvin Aldrian	BMKG	Observer, Climate Change	1, 3	2010/04 - up to now
11	Prof. Thomas Djamaluddin	LAPAN	Observer	1	2011/05 - up to now
14	Dr. Teguh Harjana	LAPAN	Observer, Sub-Leader	1, 4	2010/04 - up to now
15	Adi Witono	LAPAN	Hydrometeorology	5	2011/05 - up to now
16	Ahmad Wicaksono	BPPT	Sub. Leader 3.3, IT Engineer	4	2010/04 - up to now
17	Alfi Rusdiansyah, S.Si	BPPT	Sub. Leader 2.6, Quality Control Data	3, 4	2010/04 - up to now
18	Andrianshah Priyadi	BPPT	Buoy Engineer	3	2011/05 - up to now
19	Ardhasena	BMKG	Meteorology	5	2011/05 - up to now
20	Ardhi A. Arbain, S.Si	BPPT	Sub. Leader 1.5, Radar Engineer	2	2010/04 - up to now
21	Arfis Maydino Firmansyah Putra	BPPT	Buoy Engineer	3	2011/05 - up to now
22	Arief Suryantoro	LAPAN	Meteorology	5	2011/05 - up to now
23	Arnold Dannari, ST	BPPT	Sub. Leader 2.5, Instrument Electronics	3	2010/04 - up to now
24	Asmono	BMKG	Meteorology	6	2011/05 - up to now
25	Athur Yordan Herwindya	BPPT	Buoy Engineer	3	2011/05 - up to now
26	Awalludin, S.Si	BPPT	Sub. Leader 3.4, Database Engieer	4	2010/04 - up to now
27	Bambang Subagyo	BPPT	Buoy Engineer	3	2011/05 - up to now

28	Bondan Suwandi	BPPT	System Engineer	3	2010/04 - up to now
29	Dadang Sobarna, M.Si	LAPAN	Atmospheric Modelling	5	2010/04 - 2011/04
30	Damianus Tri Heryanto	BMKG	Oceanography	3	2011/05 - up to now
31	Dr. Agus Wibowo	BPPT	Sub. Leader 3.5	4	2011/05 - up to now
32	Dr. Didi Setiadi	LAPAN	Sub-Leader, Atmospheric Modeling	2, 5	2010/04 - up to now
33	Dr. Dodo Gunawan	BMKG	Sub. Leader 4.4	2, 5	2010/04 - up to now
34	Dr. Eddy Hermawan	LAPAN	Group Leader 5, Outcomes	6	2010/04 - up to now
35	Dr. Findy Renggono	LAPAN	Group Leader 1, Weather Radar Technology	2	2010/04 - up to now
36	Dr. Imam Mudita	BPPT	Sub. Leader 2.2, Buoy Engieer	-	2010/04 - up to now
37	Dr. Muhammad Firdausi Manti	BPPT	Buoy Engineer	3	2011/05 - up to now
38	Dr. Udrekh	BPPT	Sub. Leader 1.4, Network Engieer	2	2010/04 - up to now
39	Dr. Wahyu W. Pandoe	BPPT	Group Leader 2, Buoy Technology	3	2010/04 - up to now
40	Dr. Wira Yogantara	BPPT	Sub. Leader 2.4, Sensor Engineer	3	2010/04 - up to now
41	Dr. Yudi Adityawarman	BPPT	Radar Engineer	2	2010/04 - 2011/04
42	Dra. Nurhayati, M.Si	BMKG	Group Leader 4, Societal Benefit	4, 5	2010/04 - up to now
43	Drs. Achmad Sasmita	BMKG	Co. Chief Engineer of Indonesian team	1, 5	2010/04 - up to now
44	Drs. Rino Bahtiar, MT	BPPT	Sub. Leader 1.1, Radar Engineer	2	2010/04 - up to now
45	Drs. Wasito hadi, M.Sc	BMKG	Group Leader 3, Meteorological and Oceanographical Data	4	2011/05 - up to now
46	Dwi Haryanto	BPPT	Buoy Engineer	3	2011/05 - up to now
47	Eko Wardoyo	BMKG	Radar Engineer	2	2011/05 - up to now
48	Endang Pujiastuti	BMKG	Network Engineer	2	2011/05 - up to now
49	Erma Yulihastin	LAPAN	Meteorology	6	2011/05 - up to now
50	Erwin Makmur	BMKG	Sub. Leader 4.3	5	2011/05 - up to now
51	Fiera Setiawan, Msi	BMKG	Meteorology	2	2010/04 - up to now
52	Fierra Setyawan	BMKG	Meteorology	6	2010/04 - up to now
53	Ginaldi Ari Nugrobo	LAPAN	Meteorology	4	2011/05 - up to now
54	Hadi Widiyatmoko	BMKG	Radar Engineer	2	2011/05 - up to now
55	Halimmurahman, MT	LAPAN	Co. Chief Engineer of Indonesian team	1	2011/05 - up to now
56	Hartanto Sanjaya, S.Si, M.Sc	BPPT	Sub. Leader 5.2, Remote Sensing Specialist	6	2010/04 - up to now
57	Ibnu Fathrio	LAPAN	Meteorology	5	2011/05 - up to now

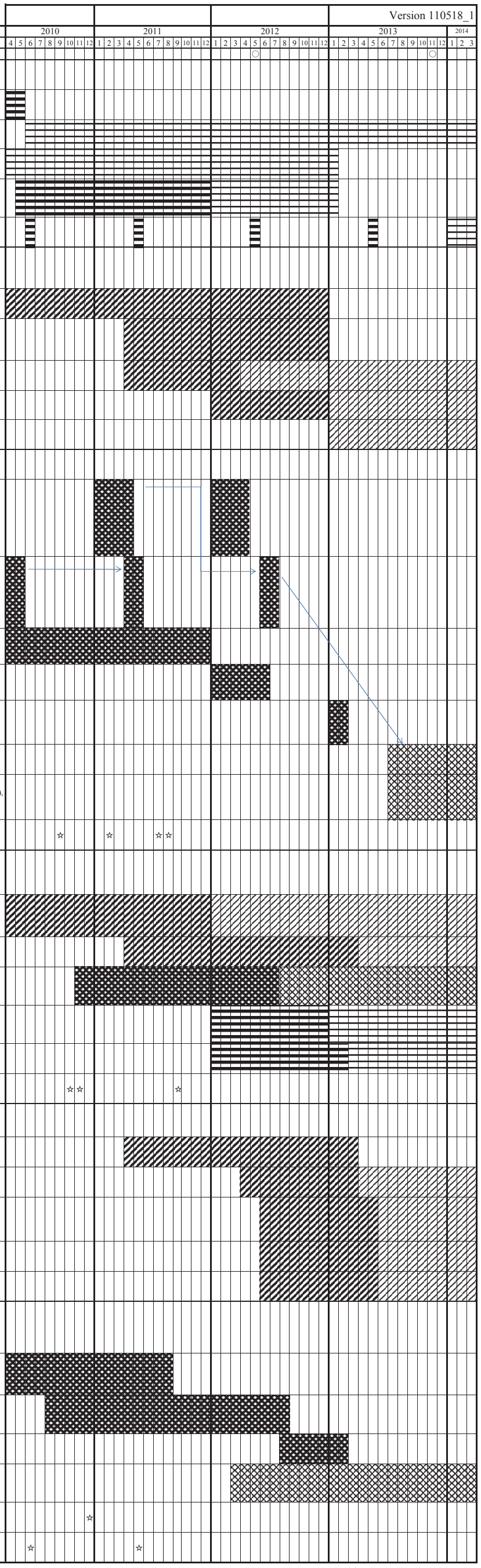
58	Iqbal Tawakal	BMKG	Meteorology	4	2011/05 - up to now
59	Ir. Agus Wibowo, M.Si	BPPT	Network Engieer	4	2010/04 - up to now
60	Ir. Timbul Manik, M. Eng.	LAPAN	Radar Engineer	2	2010/04 - 2011/04
61	Iyan Turyana	BPPT	Sub. Leader 2.3, Buoy Engieer	3	2010/04 - up to now
62	Jaspriyono	BPPT	Buoy Engineer	3	2011/05 - up to now
63	Kadarsah, M.Sc	BMKG	Sub. Leader 5.1, Meteorology	6	2010/04 - up to now
64	Krismiyanto	LAPAN	Meteorology	4	2011/05 - up to now
65	La Ode Nurman Mbay, M.Si	BRKP	Buoy Engieer	3	2010/04 - up to now
66	La Ode Nurman Mbay, M.Si	BRKP	Buoy Engineer	3	2010/04 - up to now
67	Laras Tursilowari	LAPAN	Meteorology	6	2011/05 - up to now
68	Lely Qodrita Avia, M.Si	LAPAN	Atmospheric Modelling	6	2010/04 - up to now
69	Lely Qodrita Avia, M.Si	LAPAN	Sub. Leader 4.5	6	2010/04 - up to now
70	Mario Batubara	LAPAN	Radar Engineer	2	2011/05 - up to now
71	Marjuki	BMKG	Meteorology	6	2011/05 - up to now
72	Mr. Andri	BMKG	Meteorology	4	2010/04-2011/04
73	Mugni Hadi Haryadi, M.Sc	BMKG	Meteorology	4	2010/04-2011/04
74	Mulyono Prabowo	BMKG	Sub. Leader 1.3	2	2011/05 - up to now
75	Mustayar	BPPT	Buoy Engineer	3	2011/05 - up to now
76	Nelly Florida	BMKG	Meteorology	3	2010/04 - up to now
77	Nely Florida Rima, M.Si	BMKG	Meteorology	5	2010/04 - up to now
78	Nur Febrianti, S.Si	LAPAN	Meteorology	6	2011/05 - up to now
79	Nursoemakdi	LAPAN	Meteorology	5	2011/05 - up to now
80	Nurzaman	LAPAN	Meteorology	5	2011/05 - up to now
81	Reni Sulistyowati	BPPT	Sub. Leader 4.1	5	2010/04 - up to now
82	Reni Sulistyowati, S.Si	BPPT	Hydrometeorology Moedelling	1	2010/04 - up to now
83	Risyanto	LAPAN	Meteorology	2	2011/05 - up to now
84	Roni Kurniawan	BMKG	Meteorology	2	2011/05 - up to now
85	Saipul Hamdi	LAPAN	Meteorology	6	2011/05 - up to now
86	Sidarta Handoyo, B.Eng	BPPT	Sub. Leader 2.1, Buoy Engieer	2, 3	2010/04 - up to now
87	Siti Zubaidah	BMKG	Meteorology	4	2011/05 - up to now
88	Sopia Lestari	BPPT	Sub. Leader 3.1	4	2011/05 - up to now
89	Surantno	BMKG	Meteorology	4	2011/05 - up to now
90	Tri Handoko Seto, S.Si, M.Si	BPPT	Sub. Leader 1.2, Meteorology	2, 4, 5	2010/04 - up to now
91	Urip Haryoko, M.Si	BMKG	Meteology	2	2010/04 - up to now
92	Urip Haryoko, M.Si	BMKG	Sub. Leader 3.2	2	2010/04 - up to now
93	Utoyo Ajie Linarka	BMKG	Sub. Leader 4.2	5	2011/05 - up to now
94	Wendy Harjupa	LAPAN	Radar Engineer	2	2011/05 - up to now

95	Wido Hanggoro	BMKG	Hydrometeorology	5	2011/05 - up to now
96	Winarno, ST	BPPT	Telemetry Engineer	3	2010/04 - up to now
97	Yana Heryana	BPPT	Buoy Engineer	3	2011/05 - up to now
98	Yuaning Fajariana	BMKG	Network Engineer	4	2011/05 - up to now
99	Yunus S. Swarinoto	BMKG	Meteorology	4	2011/05 - up to now

Annex 5 Plan of Operation (PO)

Version 110518_1

Unit Task			The Organ./Person in Charge	
		Outputs and Activities	**Japan**	**Indonesia**
Mid-term review and Terminial Evaluation				
1	**Institutional framework for MCCOE such as organization, personnel and budget is prepared.**		M. Yamanaka	Fadli Syamsudin (BPPT)
	1-1	Organizational structure and personnel are prepared for establishing MCCOE.	M. Yamanaka	Deputy Chairman (BPPT)
	1-2	Operation plans for MCCOE are prepared and implemented.	M. Yamanaka	Muhamad Sadly (BPPT), Putu Pudja (BMKG), Afif Budiono (LAPAN)
	1-3	Inter-ministry coordination framework for MCCOE is established.	M. Yamanaka	Muhamad Sadly (BPPT), Edvin Aldrian (BMKG), Teguh Harjana (LAPAN)
	1-4	International coordination framework for MCCOE is established.	M. Yamanaka	Fadli Syamsudin (BPPT), Nurhayati (BMKG), Achmad Sasmita (BMKG), Halimmurahman (LAPAN)
	1-5	Frameworks established in (1-3) and (1-4) are periodically reviewed and revised.	M. Yamanaka	JCC
2	**Technology to observe and predict short-term climate and rainfall variations with high accuracy is established in MCCOE through optimized radar-profiler network.**		S. Mori H. Hashiguchi	Findy Renggono (BPPT)
	2-1	Radar operation and application technology is transferred.	H. Hashiguchi Post Doctoral Researcher	Rino Bahtiar (BPPT), Mario Batubara (LAPAN), Hadi Widiyatmoko (BMKG)
	2-2	Field experiments with the mobile Multi Parameter (MP) radar are implemented and concrete observation points and methodology for Quantitative Precipitation Estimation (QPE) are proposed.	S. Mori	Tri Handoko Seto (BPPT), Roni Kurniawan (BMKG), Wendy Harjupa (LAPAN)
	2-3	Observation and analysis of extreme events are conducted.	S. Mori M. Hattori	Mulyono Prabowo (BMKG), Didi Setiadi (LAPAN), Reni Sulistyowati (BPPT)
	2-4	Network of meteorological radars and wind profilers is optimized.	H. Hashiguchi Post Doctoral Researcher	Udrekh (BPPT), Endang Pujiastuti (BMKG), Risyanto (LAPAN)
	2-5	Rainfall observation with high accuracy through the optimized network is planned and implemented by the Indonesian researchers in MCCOE.	N/A	Ardhi A. Arbain (BPPT), Eko Wardoyo (BMKG), Teguh Harjana (LAPAN)
3	**Observation technology to predict short-term climate variations is established in MCCOE through optimized maritime observation network.**		Y. Ishihara	Wahyu W. Pandoe (BPPT)
	3-1	Buoy planning and construction technology is transferred and two buoys are developed.	Y. Ishihara、T.Fukuda T.Matsumoto, M.Yamaguchi	Handoyo, Yana Heryana, Jaspriyono, Mustasyar (BPPT), Damianus Tri Heryanto (BMKG), La Ode Nurman Mbay (BRKP), Bambang Subagyo (BPPT), Andrianshah Priyadi (BPPT), Dwi Haryanto (BPPT)
	3-2	Buoy operation technology including sensor calibration is transferred and capacity building cruise is implemented.	Y. Ishihara、T.Fukuda T.Matsumoto, M. Yamaguchi	Imam Mudita (Baruna Jaya, BPPT), Athur Y. Herwindya (BPPT) Muhammmad F. Manti (BPPT) Arfis M. F. Putra (BPPT)
	3-3	Countermeasure technology against vandalism is developed.	Y. Ishihara、T.Fukuda T.Matsumoto, M. Yamaguchi	Iyan Turyana (BPPT), Bondan Suwandi (BPPT)
	3-4	Observation parameters and buoy sensor configuration are optimized.	Y. Ishihara、T.Fukuda T.Matsumoto, M. Yamaguchi	Wira Yogantara (BPPT)
	3-5	International Ocean Observational Buoy Workshop is held and the Indonesian Government participates in the international surface buoy array project as buoy provider.	K. Ando Y. Ishihara	Fadli Syamsudin (BPPT)
	3-6	Buoy recovery and deployment cruise is implemented regularly.	N/A	Arnold Dannari (BPPT)
	3-7	Optimized buoy observations as a part of the international observation network are operated by the Indonesian researchers in MCCOE continuously, and data necessary for short-term climate prediction are provided effectively.	N/A	Alfi Rusdiansyah (Baruna Jaya, BPPT), Nelly Florida (BMKG)
	JICA Trainee: Master the buoy technology			
4	**Technology of quality control, archiving, analysis of the meteorological and oceanographical observation data and dissemination to Indonesian society is established by collaborative research in MCCOE.**		S. Mori K. Ando	Wasito Hadi (BMKG)
	4-1	Historical meteorological data (e.g., rainfall), climate-related records, results of environmental observation and social indices (e.g., flood, draught, forest fire, crop production, etc) are collected and analyzed.	J. Hamada	Sopia Lestari (BPPT), Iqbal Tawakal, Siti Zubaidah (BMKG), Krismiyanto (LAPAN)
	4-2	Quality control of radar data is conducted.	S. Mori H. Kamimera	Urip Haryoko (BMKG), Ardhi A. Arbain (BPPT), Didi Satiadi (LAPAN)
	4-3	Analysis and quality control of buoy data acquired in the Indonesian EEZ is conducted.	I.Ueki R. Hidayat	Ahmad Wicaksono (BPPT), Alfi Rusdiansyah (BPPT), La Ode Nurman Mbay (BRKP), Suratno (BMKG)
	4-4	Data in (4-1), (4-2) and (4-3) are integrated to unified database.	M. Yamanaka K. Ando	Awaluddin (NEONET, BPPT), Winarno (BPPT), Yunus S. Swarinoto (BMKG), Ginaldi Ari Nugroho (LAPAN)
	4-5	Database in (4-4) is provided to NEONET and opened to domestic and global communities.	N/A	Agus Wibowo (BPPT), Yuaning Fajariana (BMKG)
	JICA Trainee: Master the technology for data quality control.			
5	**Data collected through output (4) are transferred to information applicable to society, and used for investigations to promote science and technology.**		M. Yamanaka P. Wu	Nurhayati (BMKG)
	5-1	Hydrometeorological data assimilation for QPF model is conducted, by which warning system for heavy rain and drought is proposed.	S. Mori H. Kamimera	Reni Sulistyowati (BPPT), Wido Hanggoro (BMKG), Adi Witono (LAPAN)
	5-2	Extreme event maps are produced, based on results of radar observation and regional modeling.	P. Wu M. Hattori	Utoyo Ajie Linarka (BMKG), Tri Handoko Seto (BPPT), Arief Suryantoro (LAPAN)
	5-3	Cause of climate variations in Indonesia region and importance of the Indonesian maritime continent on global climate are understood, through which the prediction models for domestic and global climate variations are	M. Yamanaka S. Ogino	Erwin Makmur (BMKG), Sopia Lestari (BPPT), Nurzaman (LAPAN)
	5-4	Prediction based on objective analysis incorporating Indonesian data is compared with observations in Indonesia and other countries.	M. Yamanaka S. Ogino	Dodo Gunawan (BMKG), Findy Renggono (BPPT), Ibnu Fathrio (LAPAN)
	5-5	Predictability improvement by the observation optimization is demonstrated.	M. Yamanaka	Lukijanto (BPPT), Nursoemadi (LAPAN), Ardhasena (BMKG)
6	**Outcomes associated with research and prediction of short-term climate variations including intraseasonal variation, El Nino, Indian-Ocean dipole mode will be obtained through collaboration in MCCOE.**		K. Mizuno Y. Masumoto	Eddy Hermawan (LAPAN)
	6-1	Maps of rainfall and wind anomaly for each region and for each phase of El Nino and Indian-Ocean dipole mode are developed by analyzing data of global air-sea coupling prediction models.	Y. Masumoto K. Ando R. Hidayat	Lely Qodrita Avia (LAPAN), Marjuki (BMKG), Nur Febrianti (LAPAN)
	6-2	Based on objective analysis, researches for rainfall and wind anomaly maps are conducted, and the scientific and social importance of the anomaly maps is clarified.	Y. Masumoto K. Ando R. Hidayat	Kadarsah, Asmono (BMKG), Saipul Hamdi (LAPAN)
	6-3	Dissemination of anomaly hazard map is proposed in effective and scientifically reliable way.	K. Mizuno K. Ando	Hartanto Sanjaya (BPPT), Fierra Setyawan (BMKG), Laras Tursilowati (LAPAN)
	6-4	Outcomes of research and prediction based on the data acquired from the buoy observations in the Indonesian EEZ are published towards the world.	K. Mizuno Y. Masumoto K. Ando Y. Kashino	Fadli Syamsudin (BPPT), La Ode Nurman Mbay (BRKP), Edvin Aldrian (BMKG), Erma Yulihastin (LAPAN)
	JICA Trainee: Workshop in Japan			
	JICA Trainee: Workshop in Indonesia			



Whole	Japanese and Indonesian	
Whole	Indonesian	
Radar	Japanese and Indonesian	
Radar	Indonesian	
Buoy	Japanese and Indonesian	
Buoy	Indonesian	

２．インタビュー対象者

（1）日本人専門家

No.	Name	Duty on the Project	Organization
1	Dr. Manabu Yamanaka	Project Leader	JAMSTEC
2	Dr. Keisuke Mizuno	Advisor	JAMSTEC
3	Dr. Shuichi Mori	Sub-Leader, Output 2	JAMSTEC
4	Dr. Yasuhisa Ishihara	Sub-Leader, Output 3	JAMSTEC

（2）インドネシア人専門家

No.	Name	Duty on the Project	Organization
1	Dr. Fadli Syamsudin	Project Manager	BPPT
2	Dr. Udrekh	Network Engineer	BPPT
3	Mr. Ardhi Adhary Arbain	Radar Engineer	BPPT
4	Dr. Wahyu Pandoe	Group Leader, Output 3	BPPT
5	Dr. Yunus Subagiyo	Group Leader, Output 4	BMKG
6	Ms. Nelly Florida Riama	Meteorology	BMKG
7	Dr. Eddy Hermawan	Group Leader, Output 6	LAPAN

３．日本側からの投入

(1) 日本人専門家

(a) 長期専門家

No.	職名	職名	所属	期間	MM
1	福田　千秋	調整員	JICA	2010/07/08- 現在まで	23.0

(b) 短期専門家

No.	職名	職名	所属	Period	MM
1	山中　大学	研究代表者、研究統括 SL - OP 1, 5	J	2010/06/01-06/16 2010/06/29-07/14 2010/07/26-08/25 2010/11/09-11/27 2010/12/12-12/24 2011/01/17-01/26 2011/02/14-02/23 2011/03/10-03/12 2011/03/22-03/31 2011/04/01-04/02 2011/04/13-04/30 2011/05/08-06/01 2011/06/08-06/29 2011/07/05-07/23 2011/08/02-08/26 2011/09/19-09/30 2011/10/10-11/10 2011/11/12-12/20 2012/01/03-01/13 2012/01/24-02/18 2012/02/28-03/13 2012/03/25-03/31 2012/04/17-05/17 2012/06/03-06/10	14.63
2	水野　恵介	アドバイザー、海洋気候 SL - OP 6	J	2010/06/06-06/11 2010/09/26-09/30 2011/5/17-05/21 2012/06/09-06/14	0.90
3	森　修一	レーダー気象 SL - OP 2, 4 PC - OP 5	J	2010/06/05-06/14 2011/05/19-05/26 2011/09/13-09/19 2011/10/22-11/16 2011/11/23-12/03 2011/12/08-2012/01/05	3.03
4	橋口　浩之	レーダー技術 SL - OP 2	KT	2010/07/25-08/01 2010/11/30-12/10 2011/02/26-03/09 2011/07/02-07/07 2012/01/04-01/15 2012/02/26-03/08	2.03

5	安藤　健太郎	海洋気象 SL - OP 4 PC - OP 3, 6	J	2010/06/06-06/12 2011/05/08-05/11 2011/10/10-10/13 2012/03/11-03/14 2012/06/09-06/14	1.00
6	植木　巖	海洋データ品質管理 PC - OP 4	J	2010/06/07-06/12 2011/02/27-03/05 2012/03/04-03/10	0.67
7	石原　靖久	ブイ技術 SL - OP 3	J	2010/06/06-06/12 2011/04/24-05/11 2011/11/06-11/10 2012/03/11-03/17	1.23
8	松本　健寛	ブイ及びセンサー運用 PC - OP 3	M	2010/06/06-06/12 2011/04/24-05/11 2011/11/06-11/10 2012/03/11-03/17	1.23
9	濱田　純一	気象データベース PC - OP 4	J	2010/07/24-08/06 2010/12/11-12/19 2011/02/20-02/27 2011/03/20-03/29 2011/07/17-07/30 2011/09/21-09/30 2011/11/20-2012/01/05	3.73
10	上米良　秀行	レーダー気象 PC - OP 4 / 5	J	2010/07/24-07/31 2011/02/20-02/27 2011/07/17-07/30 2011/10/22-11/13 2011/11/20-2012/01/05	5.20
11	山口　誠之	ブイ技術 PC - OP 3	J	2010/06/06-06/12 2011/04/24-05/11 2011/11/06-11/10 2012/03/11-03/17	1.23
12	柏野　祐二	海洋気候 PC - OP 1, 6	J	2011/03/06-03/17 2012/03/11-03/24	0.87
13	福田　達也	ブイ技術 PC - OP 3	J	2010/06/06-06/12 2011/04/24-05/11 2012/03/11-03/17	1.07
14	妻鹿　友昭	レーダー技術 PC - OP 2	KT	2010/11/30-12/25	0.87
15	伍　倍明	領域モデリング SL - OP 5	J	2011/11/20-2012/01/05	1.57
16	服部　美紀	領域モデリング PC - OP 5	J	2011/11/27-2012/01/05	1.33
17	宮元　直子	研究統括補佐、研究企画調整	J	2010/06/06-06/12 2011/05/17-05/21 2012/06/03-06/13	0.77

SL: サブリーダー、P 専門家、OP: 成果
J: 独立行政法人海洋研究開発機構、KT: 京都大学、M: 株式会社マリン・ワーク・ジャパン

(2)　インドネシア人専門家の日本研修

トレーニングコース	期間	インドネシア人専門家
Data analysis	2010.09.26 ～ 2010.11.27	Mr. Awaluddin（BPPT）
Buoy technology	2010.09.26 ～ 2010.10.09	Mr. Iyan Taryana（BPPT） Mr. Bondan Suwandi（BPPT）
（IOC 50 year anniversary symposium）*	2010.11.27 ～ 2010.12.04	Dr. Ridwan Djamaluddin（BPPT） Dr. Eddy Hermawan（LAPAN） Dr. Muhamad Sadly（BPPT） Dr. Wahyu Pandoe（BPPT）
（IOC 50 year anniversary symposium）*	2010.11.30 ～ 2010.12.05	Dr. Andy Eka Sakya, M. Eng（BMKG）
Buoy technology	2011.02.07 ～ 2011.02.19	Mr. Arnold Dannari, S.T（BPPT） Mr. Sidarto Handoyo, B.E（BPPT）
Buoy technology	2011.07.10 ～ 2011.07.23	Mr. Wayan Wira Yogantara（BPPT） Mr. Muhammad Firdausi Manti（BPPT） Mr. Athur Yordan Herwindya（BPPT） Mr. Dwi Haryanto（BPPT） Mr. Arfis Maydino Firmansyah Putra（BPPT） Mr. Bambang Subagyo（BPPT） Mr. Yana Heryana（BPPT） Mr. Andrianshah Priyadi（BPPT）
The Ocean and Earth Research Vessel "Mirai"（in Japan and on the sea）	2011.08.09 ～ 2011.09.21	Mr. Arnold Dannari,（BPPT） Mr. Jonasan Meiky Davis Rori（BPPT）
（Meeting with JAMSTEC）*	2011.09.06 ～ 2011.09.10	Dr. Ridwan Djamaluddin（BPPT） Dr. Muhamad Sadly（BPPT） Mr. Yudi Anantasena（BPPT） Dr. Fadli Syamsudin（BPPT）
Data analysis	2011.09.10 ～ 2011.10.08	Mr.　Awaluddin（BPPT）

*：トレーニングを含まない業務出張

(3) インドネシア人専門家の第三国研修

トレーニングコース	期間	インドネシア人専門家
MPR 操作研修 （ドイツにて）	2011.08.08 ～ 2011.08.19	Dr. Fadli Syamsuddin（BPPT） Mr. Ardhi A Arbain（BPPT） Mr. Findy Renggono（BPPT） Mr. Budi Santoso（BMKG）

(4) 供与された機器及び機材

現地業務費で調達された機器及び機材の所有権は JICA が有する。

(2010 年度)

(a) 現地業務費での調達

No.	機器及び機材	単価 (1,000)	数量	合計 (1,000)	納入日	使用頻度 *	状態 *
1	Automatic Weather Station	IDR14,880	5	74,400	2011/03/30	A	A
2	HDD for WS (Data Analysis)	IDR1,400	5	7,000	2011/03/21	A	A
3	WS for Data Control/Analysis	IDR11,731	1	11,731	2011/02/21	A	A
		IDR32,536	1	32,536			
		IDR3,391	24	81,385			

(b) 日本からの調達品

No.	機器及び機材	単価 (1,000)	数量	合計 (1,000)	引渡し日	使用頻度 *	状態 *
1	XDR Spare Parts/Consumables	JPY1,500	1	1,500	2011/02/18	A	A
2	WPR Spare parts/consumables	JPY1,000	1	1,000	2011/02/27	A	A
3	Buoy system equipment	JPY20,000	1	20,000	2012/03/12	A	A
4	Navigation training buoy set (Rope and others)	JPY2,700	1	2,700	2011/04/26	A	A
5	Navigation training buoy set (Body glass ball)	JPY120	12	1,440	2011/04/26	A	A

* : A (多用されている / 良好), B (普通), C (使用されていない / 悪い)

(2011 年度)

(a) 現地業務費での調達

No.	機器及び機材	単価 (1,000)	数量	合計 (1,000)	納入日	使用頻度 *	状態 *
1	Work Station for Data Analysis	IDR12,180	2	24,360	20110/7/08	A	A
2	Laptop PC for AWS Observation	IDR4,750	3	14,250	2011/11/25	A	A

3	Observation UPS（Manado, BMKG）	IDR5,450	1	5,450	2011/10/29	A	A
4	Releaser	USD16.538	1	16.538	2012/03/27	A	A
5	Iridium Transmitter	USD2.864	1	2.864	2012/03/28	A	A

(b) 日本からの調達品

No.	機器及び機材	単価（1,000）	数量	合計（1,000）	引渡し日	使用頻度 *	状態 *
1	Work Station for Data Analysis	IDR12,180	2	24,360	20110/7/08	A	A
2	Laptop PC for AWS Observation	IDR4,750	3	14,250	2011/11/25	A	A
3	Observation UPS（Manado, BMKG）	IDR5,450	1	5,450	2011/10/29	A	A
4	Releaser	USD16.538	1	16.538	2012/03/27	A	A
5	Iridium Transmitter	USD2.864	1	2.864	2012/03/28	A	A
6	Multi parameter Radar（MPR）	JPY62,000	1	62,000	2012/03/12	A	A
7	Radar Transportation	JPY3,000	1	3,000	2012/3/12	A	A
8	XDR Consumables / Spare Parts	JPY1,500	2	3,000	2011/07/18	A	A
9	WPR Consumables/ Spare Parts	JPY1,000	1	1,000	2011/07/03	A	A
10	Observation Consumables（Sonde）	JPY28	200	5,600	2011/10/29	A	A
11	Observation Consumables（balloon）	JPY3	200	600	2011/10/29	A	A
12	Buoy System Equipment（Procured first half year of 2010 and delivered to Indonesia 2011）	JPY8,400	1	8,400	2012/03/12	A	A
13	Buoy Equipment Transportation	JPY2,000	1	2,000	2012/03/12	A	A
14	XDR Maintenance Cost	JPY1,500	1	1,500	2011/07/03	A	A

*：A（多用されている / 良好）, B（普通）, C（使用されていない / 悪い）

（4）在外事業強化費

（単位：IDR）

在外事業強化	2010 年度	2011 年度
一般業務費	1,607,692,803.00	2,204,309,919.00
航空賃	167,783,950.00	344,198,865.69
旅費（航空賃以外）	125,352,050.00	604,813,862.00
謝金報酬（スタッフ以外）	12,300,000.00	77,136,700.00
会議費	25,207,300.00	192,661,400.00
合計	1,938,336,103.00	3,423,120,746.69

４．インドネシア側からの投入

(1) インドネシア人専門家

No.	氏名	所属	プロジェクトでの職位	担当する成果	業務期間
1	Prof. Dr. Jana T. Angggadiredja, MS	BPPT	Chairperson	-	2010/04 - 2010/06
2	Dr. Ridwan Djamarddin	BPPT	Chairperson	1	2011/07 - 現在まで
3	Dr. Muhammad Sadly, M. Eng.	BPPT	Project Director	1	2010/04 - 現在まで
4	Dr. Fadli Syamsudin	BPPT	Project Manager	1	2010/04 - 現在まで
5	Dr. Teguh Rahardjo	RISTEK	Representatiove of RISTEK	-	2010/04 - 2011/04
6	Prof. Dr. M. Syamsa Ardisasmita, DEA	RISTEK	Representative of RISTEK	1	2011/05 - 現在まで
7	Drs. I. Putu Pudja, MM	BMKG	Group Leader of BMKG	-	2010/04 - 2011/04
8	Dr. Andi Eka Sakya, M.Eng.	BMKG	Representative of BMKG	1	2010/04 - 現在まで
9	Drs. Afif Budiono, MT	LAPAN	Representatiove of LAPAN	-	2010/04 - 2011/04
10	Dr. Afif Budiono	LAPAN	Representative of LAPAN	1	2011/05 - 現在まで
12	Dr. Putu Pudja	BMKG	Observer	1	2011/05 - 現在まで
13	Dr. Edvin Aldrian	BMKG	Observer, Climate Change	1, 3	2010/04 - 現在まで
11	Prof. Thomas Djamaluddin	LAPAN	Observer	1	2011/05 - 現在まで
14	Dr. Teguh Harjana	LAPAN	Observer, Sub-Leader	1, 4	2010/04 - 現在まで
15	Adi Witono	LAPAN	Hydrometeorology	5	2011/05 - 現在まで
16	Ahmad Wicaksono	BPPT	Sub. Leader 3.3, IT Engineer	4	2010/04 - 現在まで
17	Alfi Rusdiansyah, S.Si	BPPT	Sub. Leader 2.6, Quality Control Data	3, 4	2010/04 - 現在まで
18	Andrianshah Priyadi	BPPT	Buoy Engineer	3	2011/05 - 現在まで
19	Ardhasena	BMKG	Meteorology	5	2011/05 - 現在まで
20	Ardhi A. Arbain, S.Si	BPPT	Sub. Leader 1.5, Radar Engineer	2	2010/04 - 現在まで
21	Arfis Maydino Firmansyah Putra	BPPT	Buoy Engineer	3	2011/05 - 現在まで
22	Arief Suryantoro	LAPAN	Meteorology	5	2011/05 - 現在まで

23	Arnold Dannari, ST	BPPT	Sub. Leader 2.5, Instrument Electronics	3	2010/04 - 現在まで
24	Asmono	BMKG	Meteorology	6	2011/05 - 現在まで
25	Athur Yordan Herwindya	BPPT	Buoy Engineer	3	2011/05 - 現在まで
26	Awalludin, S.Si	BPPT	Sub. Leader 3.4, Database Engieer	4	2010/04 - 現在まで
27	Bambang Subagyo	BPPT	Buoy Engineer	3	2011/05 - 現在まで
28	Bondan Suwandi	BPPT	System Engineer	3	2010/04 - 現在まで
29	Dadang Sobarna, M.Si	LAPAN	Atmospheric Modelling	5	2010/04 - 2011/04
30	Damianus Tri Heryanto	BMKG	Oceanography	3	2011/05 - 現在まで
31	Dr. Agus Wibowo	BPPT	Sub. Leader 3.5	4	2011/05 - 現在まで
32	Dr. Didi Setiadi	LAPAN	Sub-Leader, Atmospheric Modeling	2, 5	2010/04 - 現在まで
33	Dr. Dodo Gunawan	BMKG	Sub. Leader 4.4	2, 5	2010/04 - 現在まで
34	Dr. Eddy Hermawan	LAPAN	Group Leader 5, Outcomes	6	2010/04 - 現在まで
35	Dr. Findy Renggono	LAPAN	Group Leader 1, Weather Radar Technology	2	2010/04 - 現在まで
36	Dr. Imam Mudita	BPPT	Sub. Leader 2.2, Buoy Engieer	-	2010/04 - 現在まで
37	Dr. Muhammad Firdausi Manti	BPPT	Buoy Engineer	3	2011/05 - 現在まで
38	Dr. Udrekh	BPPT	Sub. Leader 1.4, Network Engieer	2	2010/04 - 現在まで
39	Dr. Wahyu W. Pandoe	BPPT	Group Leader 2, Buoy Technology	3	2010/04 - 現在まで
40	Dr. Wira Yogantara	BPPT	Sub. Leader 2.4, Sensor Engineer	3	2010/04 - 現在まで
41	Dr. Yudi Adityawarman	BPPT	Radar Engineer	2	2010/04 - 2011/04
42	Dra. Nurhayati, M.Si	BMKG	Group Leader 4, Societal Benefit	4, 5	2010/04 - 現在まで
43	Drs. Achmad Sasmita	BMKG	Co. Chief Engineer of Indonesian team	1, 5	2010/04 - 現在まで

44	Drs. Rino Bahtiar, MT	BPPT	Sub. Leader 1.1, Radar Engineer	2	2010/04 - 現在まで
45	Drs. Wasito hadi, M.Sc	BMKG	Group Leader 3, Meteorological and Oceanographical Data	4	2011/05 - 現在まで
46	Dwi Haryanto	BPPT	Buoy Engineer	3	2011/05 - 現在まで
47	Eko Wardoyo	BMKG	Radar Engineer	2	2011/05 - 現在まで
48	Endang Pujiastuti	BMKG	Network Engineer	2	2011/05 - 現在まで
49	Erma Yulihastin	LAPAN	Meteorology	6	2011/05 - 現在まで
50	Erwin Makmur	BMKG	Sub. Leader 4.3	5	2011/05 - 現在まで
51	Fiera Setiawan, Msi	BMKG	Meteorology	2	2010/04 - 現在まで
52	Fierra Setyawan	BMKG	Meteorology	6	2010/04 - 現在まで
53	Ginaldi Ari Nugrobo	LAPAN	Meteorology	4	2011/05 - 現在まで
54	Hadi Widiyatmoko	BMKG	Radar Engineer	2	2011/05 - 現在まで
55	Halimmurahman, MT	LAPAN	Co. Chief Engineer of Indonesian team	1	2011/05 - 現在まで
56	Hartanto Sanjaya, S.Si, M.Sc	BPPT	Sub. Leader 5.2, Remote Sensing Specialist	6	2010/04 - 現在まで
57	Ibnu Fathrio	LAPAN	Meteorology	5	2011/05 - 現在まで
58	Iqbal Tawakal	BMKG	Meteorology	4	2011/05 - 現在まで
59	Ir. Agus Wibowo, M.Si	BPPT	Network Engieer	4	2010/04 - 現在まで
60	Ir. Timbul Manik, M. Eng.	LAPAN	Radar Engineer	2	2010/04 - 2011/04
61	Iyan Turyana	BPPT	Sub. Leader 2.3, Buoy Engieer	3	2010/04 - 現在まで
62	Jaspriyono	BPPT	Buoy Engineer	3	2011/05 - 現在まで
63	Kadarsah, M.Sc	BMKG	Sub. Leader 5.1, Meteorology	6	2010/04 - 現在まで
64	Krismiyanto	LAPAN	Meteorology	4	2011/05 - 現在まで
65	La Ode Nurman Mbay, M.Si	BRKP	Buoy Engieer	3	2010/04 - 現在まで
66	La Ode Nurman Mbay, M.Si	BRKP	Buoy Engineer	3	2010/04 - 現在まで
67	Laras Tursilowari	LAPAN	Meteorology	6	2011/05 - 現在まで
68	Lely Qodrita Avia, M.Si	LAPAN	Atmospheric Modelling	6	2010/04 - 現在まで
69	Lely Qodrita Avia, M.Si	LAPAN	Sub. Leader 4.5	6	2010/04 - 現在まで

70	Mario Batubara	LAPAN	Radar Engineer	2	2011/05 - 現在まで
71	Marjuki	BMKG	Meteorology	6	2011/05 - 現在まで
72	Mr. Andri	BMKG	Meteorology	4	2010/04-2011/04
73	Mugni Hadi Haryadi, M.Sc	BMKG	Meteorology	4	2010/04-2011/04
74	Mulyono Prabowo	BMKG	Sub. Leader 1.3	2	2011/05 - 現在まで
75	Mustayar	BPPT	Buoy Engineer	3	2011/05 - 現在まで
76	Nelly Florida	BMKG	Meteorology	3	2010/04 - 現在まで
77	Nely Florida Rima, M.Si	BMKG	Meteorology	5	2010/04 - 現在まで
78	Nur Febrianti, S.Si	LAPAN	Meteorology	6	2011/05 - 現在まで
79	Nursoemakdi	LAPAN	Meteorology	5	2011/05 - 現在まで
80	Nurzaman	LAPAN	Meteorology	5	2011/05 - 現在まで
81	Reni Sulistyowati	BPPT	Sub. Leader 4.1	5	2010/04 - 現在まで
82	Reni Sulistyowati, S.Si	BPPT	Hydrometeorology Moedelling	1	2010/04 - 現在まで
83	Risyanto	LAPAN	Meteorology	2	2011/05 - 現在まで
84	Roni Kurniawan	BMKG	Meteorology	2	2011/05 - 現在まで
85	Saipul Hamdi	LAPAN	Meteorology	6	2011/05 - 現在まで
86	Sidarta Handoyo, B.Eng	BPPT	Sub. Leader 2.1, Buoy Engieer	2, 3	2010/04 - 現在まで
87	Siti Zubaidah	BMKG	Meteorology	4	2011/05 - 現在まで
88	Sopia Lestari	BPPT	Sub. Leader 3.1	4	2011/05 - 現在まで
89	Surantno	BMKG	Meteorology	4	2011/05 - 現在まで
90	Tri Handoko Seto, S.Si, M.Si	BPPT	Sub. Leader 1.2, Meteorology	2, 4, 5	2010/04 - 現在まで
91	Urip Haryoko, M.Si	BMKG	Meteology	2	2010/04 - 現在まで
92	Urip Haryoko, M.Si	BMKG	Sub. Leader 3.2	2	2010/04 - 現在まで
93	Utoyo Ajie Linarka	BMKG	Sub. Leader 4.2	5	2011/05 - 現在まで
94	Wendy Harjupa	LAPAN	Radar Engineer	2	2011/05 - 現在まで
95	Wido Hanggoro	BMKG	Hydrometeorology	5	2011/05 - 現在まで
96	Winarno, ST	BPPT	Telemetry Engineer	3	2010/04 - 現在まで
97	Yana Heryana	BPPT	Buoy Engineer	3	2011/05 - 現在まで
98	Yuaning Fajariana	BMKG	Network Engineer	4	2011/05 - 現在まで
99	Yunus S. Swarinoto	BMKG	Meteorology	4	2011/05 - 現在まで

5 項目及びその他の基準	レビューの視点		結　果
	概要	ポイント・確認事項	
妥当性	プロジェクトがめざす効果はインドネシアの国家開発政策に合致しているか。	現在のインドネシア政府の気候変動に対する現在の政策 （National Development Planning: Indonesia Reponses to Climate Change）・気候変動のための国家行動計画	インドネシア政府の政策に変更がなく、以下の政策などが確認できた。 (1) インドネシア共和国大統領令「国家中期開発計画 2010 ～ 2014」において気候変動は対応すべき 1 つの重要な課題とされている。 (2)「気候変動に対する国家活動計画」2007 年、環境省 (3)「対インドネシア共和国　国別援助方針」において「アジア地域の抱える海上安全やテロ、感染症などの問題や、環境保全・気候変動などの地球規模課題への対応能力や援助国（ドナー）としての能力の向上に寄与するための支援などを行う。」との記載がある。 (4) インドネシア共和国大統領令「異常気象現状を見据えた米生産の国家安全保障」2011 年 3 月 (5) 2010 年 RISTEK により発行された、科学技術についての方針
	ターゲットグループの選定は妥当であったか。	技術評価応用庁（BPPT） 気象気候地球物理庁（BMKG） 航空宇宙庁（LAPAN） ・それぞれの組織としての役割分担 ・組織としてのコミットメント状況 ・2015 年までの全地球観測（GEOSS）の活動の中心となっている組織の確認	BPPT と JAMSTEC の間で結ばれている CRA を基に、BPPT, BMKG, LAPAN, BRKP から研究者が BPPT の調整の下で参加している。インドネシアでプロジェクト目標を達成するための活動を行うには、これらの組織の参加が必要であり、ターゲットグループの選定は妥当であると判断された。
	日本の援助政策に合致しているか。	国別援助実施計画（2009.04）のなかで気候変動対策支援を強化し、プログラム化することが述べられている。	平成 24 年 4 月に発表された「対インドネシア共和国　国別援助方針」によれば、「同国が中長期的な安定を確保するためには、継続的な経済成長の実現とその地方への波及を通じた国内の所得格差・地域格差の是正、雇用機会の確保、災害や感染症に対する脆弱性の克服などが重要である。」とされており、重点分野（中目標）において、「（３）アジア地域及び国際社会の課題への対応能力向上のための支援アジア地域の抱える海上安全やテロ、感染症などの問題や、環境保全・気候変動などの地球規模課題への対応能力や援助国（ドナー）としての能力の向上に寄与するための支援等を行う。」とあり、本協力の目的と一致しており、妥当性が高い。

	日本の技術の適用可能性はあるか。		対象となるインドネシア地域は海大陸という特別な地域となり、研究を行う意味が高い地域である。本協力を実施している JAMSTEC はインドネシアにおいて、既に 30 年間研究協力を行ってきた実績がある。この間の研究結果の蓄積や、人的関係を本プロジェクトに活用することが可能である。
有効性	プロジェクト目標は達成されているか。	① 極端気象現象の予測精度向上、降雨による災害緩和対策立案の基礎研究・開発状況 ② 成果発信状況	長期予測としては、試験的に QPE が実施され、今後 NHM の利用による QPF が行われる。短期予測として、SINTEXF を利用した短期気象予測の研究が進められている。
	アウトプットは達成されているか。	① Maritime Continent Center of Excellence（MCCOE）の設立（予算・制度・組織）状況などの確認	MCCOE は BPPT の GEOSTECH に所属する研究施設となることは決まっているが、その構想、使命、そして組織構造などは、今後検討されることになっている。MCCOE 施設の建築は 2012 年 2 月に開始され、2012 年中には竣工の予定である。
		②（陸）気象レーダー・プロファイラー網の整備状況及び最適化の状況、高精度降雨観測技術の移転状況・レーダー供与後（文科省から承継するもの含む）の運営維持管理体制・実験的観測（2 年間）、高精度な観測のための地点・方法の提案（3 年目）・極端現象の監視と解析（3 年目）、レーダー・プロファイラー（観測）網の最適化（4 年目）	CDR、XDR、3 台の WPR の運用についての技術移転は完了しており、既にインドネシア側での運用が可能になっている。 XDR、3 台の WPR は日本政府よりインドネシア政府への供与手続きがほぼ終了したところである。CDR についてはこの供与が完了してから BPPT に対して JAMSTEC から供与が行われる予定である。 これらのレーダーの運用費用は 2012 年 4 月からインドネシア側が負担する約束になっており、供与手続きが完了すれば、この予算が執行されることになる。現在は、供与が完全に終了していないため、インドネシア側の予算執行ができず、運転が停止している状況にある。現在は、それぞれの装置の性能確保に最低限必要な、空調費用のみ BPPT が負担している。 MPR の運用についてはドイツでの研修と 2011 年 12 月の集中観測を経て、技術移転が完了している。この集中観測において、アジア熱帯地域の、高温多湿の環境下での初めての MPR による観測が成功している。

		③　（海）海洋観測網（ブイ）の整備状況及び最適化の検討状況、高精度降雨観測技術の移転状況 ・ブイ計画・組立技術の移転状況（カウンターパート（Counterpart：C/P）の技術・部品の調達先） ・4 年目以降のインドネシア側の独自航海の準備状況・インドネシア向けブイ盗難防止策の開発と技術移転（JAMSTEC） ・インドネシア側独自のブイの製作検討状況	BPPT におけるブイ運用の経験は、2008 年に始まっている。スマトラ沿岸で起こった大津波の経験から、津波を観測するブイを設置運用することが BPPT の責務であった。この津波ブイの運用経験から、本プロジェクトにおいても、比較的スムーズに、本活動に参画できている。 Ina TRITON ブイの組み立て、設置、回収に関する技術移転が完了しており、2012 年 9 月にはインドネシア側の技術者を中心とした、初めての設置と運用が開始される予定である。研修は陸上及び船上の両方で実施されている。2011 年 9 月にスンダ海峡における洋上研修も実施されている。 盗難防止策については、センサー部にメッシュのカバーを取り付けることにより実現された。2 個目のブイについては、インドネシア国内で浮体部の一部を製造することが計画されている。
		④　気象・海洋観測データの品質管理・蓄積・解析技術の移転状況、情報公開状況 ・これまでの実績（2 年間は JAMSTEC 中心） ・NEONET で観測データにどのように統合し、公開する予定か、工夫している点（BPPT）	CDR のデータは、6 分ごとに、ジャカルタとその近郊地域の降雨分布情報として、公開されている。SIJAMPANG と呼ばれるシステムが、BPPT のウェブ上で、2010 年 5 月から稼動しており、SMS により、一般市民が、実際の気象情報をフィードバックできるソーシャルメディアとして構築されている。プロジェクトとしては、この SIJAMPANG は、CDR からの必要なデータを変換したプロトタイプの QPE という位置づけである。 BMKG が有する歴史的気象データのデジタル化は現在 107 カ所のデータベース化が終了している。その後の確認で、データベース化の目標は現在 185 カ所になっている。 Ina TRITON ブイからの実時間データ品実管理を行うプログラムは完成している。ブイが設置され、そのデータによる動作試験を待っているところである。
		⑤　気象・海洋観測データの二次的気象・気候情報（警報・マップ）への加工状況	QPF に関した活動は始まったばかりである。2012 年 12 月に行われ集中観測のデータをベースに、試験的な QPE が行われた。今後進められる QPF には、NHM が試験的な短期降雨予報モデルとして採用されている。

	・レーダー観測の天気予報モデルへの同化・豪雨・旱魃警報などの発出体制の検討状況（2 ～ 3 年目） ・過去のデータの統計解析・極端現象出現頻度マップ作成状況（3 年目 JAMSTEC、4 年目 BPPT） ・全地球規模気候変動モデル改良の提案（3 年目 JAMSTEC・京大、4 年目 BPPT） ⑥　季節内変動・エルニーニョ現象・インド洋ダイポールモード現象に関するハザードマップ作成状況 ・降雨・風速に関する偏差マップ作成（1 ～ 2 年目 JAMSTEC、3 年目ハザードマップ作成 BPPT）	インドネシアにおける稲作地帯への降雨予測が、SINTEXF モデルによる計算と LAPAN のモデルが比較されている。日本側では 3 カ月予報を、インドネシア側では 6 カ月予報のための鍵となる技術が現在開発されている。SINTEXF による降雨 3 カ月予報は、6 月～ 11 月の間、11 カ所のコメ生産センターのうち少なくとも 3 カ所で、相関係数 0.6 を実現している。
インドネシア側が質の高い研究をしているか。	新しい技術が開発されているか。	Ina TRITON ブイの開発が JAMSTEC の TRITON ブイをベースに行われた。MPR が、熱帯地域において初めての観測が行われ、データ取得に成功した。
	査読国際学術誌への論文状況は？	国内誌 2 件、国際誌 56 件、（このうちインドネシア側筆頭 9 件）の原著論文が発表されている。
	社会実装につながる研究成果が出ているか。	SIJAMPANG の運用が開始されている。
プロジェクトのアウトプットはプロジェクト目標の達成に貢献しているか。	C/P の研究能力向上がアウトプットに貢献しているか。	インドネシア人専門家の社会貢献したいという強い意思が、SIJAMPANG を実現した。
	機材の運転・維持管理状況	レーダーの運用はすでにインドネシア側で行われている。ブイの組み立て、設置、回収、保守管理の技術移転は終了しており、2012 年 9 月に設置が行われ、実際の運用が始まる。
	技術を活用しているか。	成果 2 及び 3 で技術移転され収集できるようになったデータが、成果 4、5、6 に今後活用されていく。
	2 基のブイによる観測で得られる情報がどの程度高度な観測に貢献しているか。	2012 年 9 月にブイの設置が完了する予定である。データはその後入手予定であり、成果 4、5、6 の活動に使用され、長期的な気候予測に利用される予定である。

	プロジェクト目標達成を阻害した要因はあるか。	①メンバー交代 ②離職の有無	BMKG については現業部門であるため、インドネシア人専門家が多忙となっており、プロジェクトに関与できる時間が制限される状況である。また LAPAN はバンドンにあるため、距離的な問題から、やはりプロジェクトに関与できる時間が制限されている状況にある。既に技術移転を行ったメンバーの休暇、配置転換、退職などによる、メンバー交代の問題もある。
効率性	達成されたアウトプットから見て、投入の質、量、タイミングは適切か。	専門家派遣人数、専門分野、派遣時期の適切性	日本人専門家については、リーダーが長期間インドネシアに派遣され、インドネシア人専門家と緊密な活動を行っている。他の専門家についても、必要な専門家が、適切な時期に派遣されており、適切な状況である。 インドネシア人専門家については 99 名が配置されているが、コアに活動しているのはこのうちの 10%程度となっている。
		供与機材の種類、量、設置時期の当初予定との比較 ①新規可搬型レーダー（2011） ②ブイ（2012）	MPR は調達に困難が伴ったが、集中観測を行うスケジュールである、2011 年 12 月に間に合うよう調達できた。しかし MPR を輸送するための車両についてはまだ調達作業中である。現在は車両をレンタルする必要がある。 ブイは 1 個目については、適切な時期に JAMSTEC の手配で調達を完了した。2 個目については、インドネシア国内で浮体部分の一部を製作されることが計画されている。それでも、多くの部品は日本をはじめとした、国外から輸入する必要がある。
		研修員人数 / 分野 / 研修内容 / 研修期間 / 時期（2010.6、2010.12、2014.1）の適切性	プロジェクト目標を達成するために、適切な研修が、適切なタイミングで行われていることが確認された。研修実施状況の詳細データを入手した。
		インドネシア人専門家の人数、配置状況、能力の適切性	99 名のインドネシア人専門家が、担当する成果の活動内容に応じて、BPPT、BMKG、LAPAN から配置されている。配置されている人材については、インドネシアにおいて最も適当な人材が配置されている。
		建物、施設の規模、質、利便性	MCCOE は BPPT の計画により建設が進められている。しかし構想、使命、そして組織構造などは今後検討されることになっている。
		プロジェクトの予算規模の適切性（当初予算：3 億 9,000 万円）	研修など、活動項目によっては予算額が十分ではないという話が JAMSTEC 側からあった。しかし、全体的な活動については、この予算規模が活動の障害になっているわけではない。
		C/P の能力向上・行動変化	インドネシア人専門家のやる気が非常に高いことが確認できた。特に、本活動により、気象予測が正確にできるようになり、洪水の防止や、コメの増産に役立てたいなど、社会に役立つ結果を出したいという意向が強い。

	効率性を阻害した要因はあるか。		成果 1 の活動がまだ開始されていない。また参加している組織の間で、組織間の連携とプロジェクト目標の理解が不足していること。
インパクト	上位目標は何か、またその達成見込みは。	(科学技術案件の特性のため設定されていない)	-
	上位目標以外の正負の影響が出ているかまた想定されるか。	政策・制度・基準・社会・技術面等	SIJAMPANG のような正のインパクトが表れてきている。全般的なプロジェクトによるインパクトは現時点では不明である。
自立発展の見通し	インドネシアにおける BPPT, BMKG, LAPAN の位置づけは明確か。	① BPPT の役割（国内観測データの統合管理） ② BMKG の役割・改組拡充状況	気象予報を社会に対して出せるのは現在 BMKG のみである。BPPT は、気象予報を行うために必要な科学技術の開発を行う役目を担っている。
	事業を継続するだけの能力が組織に備わっているか。	運営管理能力	インドネシア側のやる気は大変高いこと、BPPT 側の本計画への関心が高いことが確認されている。今後の運営管理は、MCCOE の設立とその内容が鍵になると思われる。
		財務状況・先方予算配分状況	日本側から供与される CDR、XDR、3 台の WPR の運用費用はインドネシア側で負担することが決定している。ブイの設置に必要な航海費用もインドネシア側で負担される。
	移転された技術は定着しているか。	移転された技術は実施機関内で普及するか。	レーダーとブイの運用はすでに技術移転済みで、レーダーはすでに運用が始まっている。ブイについても、過去の経験を考えると、インドネシア側で運用ができるようになることが予想される。
		機材の維持管理適切性	レーダー：ユーザーにおいて行う維持管理についての技術移転は終了している。メーカにより行われる必要のある維持管理についても予算が確保される予定である。 ブイ：技術移転は完了しており、今後実地で行われる、設置や回収で実践される計画である。
プロジェクトの実績	上位目標の達成状況(見込み)		(科学技術案件の特性のため設定されていない)
	プロジェクト目標の達成状況(見込み)	極端気象現象の予測制度向上及び降雨による災害緩和対策率案のための基礎研究・開発が促進され、その成果が世界に発信される。	-
	成果の達成状況		
	日本側投入	専門家：長期専門家 1 名（業務調整)、短期専門家 16 名	「有効性」にて確認した。詳細データを入手している。
		本邦研修：1 ～ 2 名 / 年× 4 年	「有効性」にて確認した。詳細データを入手している。

		供与機材： 可搬型（MP）レーダー、同レーダー搬送用自動車、ブイ、自動気象ステーション等の機器、それらの設置・運用に必要な機材、及び、データ解析用のシステム機器	「有効性」にて確認した。詳細データを入手している。
		在外事業強化費	「有効性」にて確認した。詳細データを入手している。
		投入はプロジェクトの進捗に適正なものであったか。	プロジェクトの進捗に合わせた適正なものであると判断される。
	インドネシア側投入	(a) カウンターパート（C/P）： 総括責任者(プロジェクトディレクター)、実施責任者（プロジェクトマネジャー）を含め、BPPT から 17 名の研究者・職員、BGMK から 12 名、LAPAN から 7 名の研究者	「有効性」にて確認した。詳細データを入手している。
		(b) 施設、機材等： BPPT 内の NEONET 部門内に専門家用執務スペースが確保される。将来的には、MCCOE 内に研究棟が建設される。PUSPIPTEK 内にある BPPT-MEPPO（機械生産自動化センター）内の整備工場でブイの整備・保守作業を利用する。	「有効性」にて確認した。詳細データを入手している。
		投入はプロジェクトの進捗に適性なものであったか。	レーダーについての海外研修が不足しているという指摘がインドネシア側からあった。
実施プロセス	マネジメント体制は十分であったか。	① 意思決定過程 ② 関係機関の意思疎通	本活動は R/D を基本文書として実施されている。また実務的には JAMSTEC と BPPT 間で結ばれている、CRA も重要になる。この CRA において、BPPT がインドネシア側の取りまとめを行うことになっている。BPPT、BMKG、LAPAN 間には包括的な MOU は存在するが、本プロジェクト用のものではない。インドネシア側では、実際には、BPPT、BMKG、LAPAN の各研究者間における、歴史的な人間関係から、意思疎通や活動が行われている側面が大きい。

	専門家間のコーディネーション	日本・インドネシアに分散する専門家間の連絡調整状況	日本人専門家のなかでは、月例ミーティングがもたれている。インドネシア人専門家間、またインドネシア人専門家と日本人専門家との意思疎通やミーティングは必要に応じて行われているが、参加人数や回数が限られたものとなっており、十分とはいえない。
	計画に沿った活動が行われているか。	PO 上の進捗確認	成果 1 を除いて、ほぼ計画どおり進捗している。
	日本人専門家の活動は適正か。		日本人専門家は、インドネシア人専門家を十分に巻き込む形で、活動を行っている。
	インドネシア側実施機関と C/P 活動への関与状況は。		BMKG は現業的な業務を行っており、日々の時間拘束が大きく、本活動のための時間を取ることが難しい面がある。LAPAN においては、バンドンに本部があるという地理的な制約がある。そのなかでも、可能な範囲で活動が行われているが、BPPT の研究者が中心になっている状況もある。
	プロジェクト組織は適正か。		BPPT、BMKG、LAPAN の各研究者間における、歴史的な人間関係から、意思疎通や活動が行われている側面が大きい。 本プロジェクトに参加するインドネシア側の専門家の組織図が作成され WBS が構築されている。このなかには成果 1 は含まれておらず。WBS の 1 ～ 5 が、それぞれ成果 2 ～ 6 に相当する。
	実施機関や C/P のプロジェクトへの認識は高いか。実施機関や C/P のプロジェクトへの認識は高いか。	太平洋・インド洋における気象観測の一翼を担う意識（現在は日・米が観測）	実施機関やインドネシア人技術者においては、社会貢献をしたいという意向が強いことが確認されている。一方プロジェクト目標の理解度はまだ十分とはいえない面がある。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