

INFORMATION ON THE REGION-FOCUSED TRAINING COURSE

FLOOD HAZARD MAPPING

JFY 2007

東・東南アジア地域別：洪水ハザードマップ作成

COURSE NO.: J-07-04050

(Program NO: 0704064)

October 28, 2007 – December 1, 2007



THE GOVERNMENT OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY



. Course Background and Overall Goal

In the Asia Monsoon areas, especially East and Southeast Asia, there are many floods every year, and much human life and property are lost by flood. In order to reduce the damage caused by flood, Hardware-type infrastructures like an embankment for river or a reservoir are very effective. On the other hand, Software-type infrastructures like “Flood Hazard Map”, which can offer the information including the past inundation record, flood anticipation, evacuation route, evacuation place, etc to the residents, are also important. Especially in developing countries with undeveloped hardware-type infrastructure, it is effective to take the measure of a software type immediately.

Under such a situation, we have been implementing this training course “Flood Hazard Mapping” for 8 countries in East and Southeast Asia since JFY2004. The course is specifically designed for technical managers and/or engineers who are involved in flood or river management in the public sector.

The overall goal is that an original flood hazard map is created in each region, and the flood damage in the area concerned is mitigated.

. Course Description

1. Course Title (No.):

Flood Hazard Mapping (J0704050)

2. Course Objective/Outcome:

The technology, knowledge and experience, which the participants acquired and experienced in Japan, are shared among the officials and engineers who engage in the flood and river management.

3. Course Outputs:

To achieve the above mentioned objective, participants are expected to produce the following outputs by the end of this course:

- (1) Acquiring general knowledge on the flood hazard map in Japan and the world and capability of explanation.
- (2) Acquiring professional knowledge and techniques of run-off analysis, GIS and inundation analysis to make an anticipated inundation area map and capability of explanation.
- (3) Acquiring knowledge on how to make, disseminate, and utilize the flood hazard map in Japan and capability of explanation.
- (4) Considering the way to effectively make, disseminate, and utilize the flood hazard map through studying Japan’s cases, and making action plans which include activities after returning to their countries.

4. Duration:

October 28th, 2007 – December 1st, 2007

5. Total Number of Participants and Candidate Countries:

(1) Number of Participants;

16 participants from below-listed 8 countries (2 participants each country)

Each country is expected to nominate:

- One technical manager engaging in flood or river management
- One engineer engaging in flood or river management

(2) Candidate Countries;

Cambodia, China, Indonesia, Lao PDR, Malaysia, Philippines, Thailand, Vietnam

6. Eligible/Target Organization:

Organization concerning to Flood or River Management at the national or local level in the public sector such as governmental/provincial ministries or municipalities

7. Language to be used in this Course:

English

8. Course Program:

This program consists of the following three phase.

(1) Preparatory Phase; *(September 28th, 2007 – October 27th, 2007)*

1) Preparatory Questionnaire (refer to ANNEX I)

All applicants are requested to fill and submit the “Preparatory Questionnaire” to JICA Tsukuba (email: tbictp1@jica.go.jp, fax: +81-29-838-1790) **by August 24th, 2007 (Friday)** with A2A3 Form.

2) Progress Report (refer to ANNEX II)

After “Notice of Acceptance,” the selected participants in each country are required to cooperate in preparation and submission of a progress report titled “Introduction about Policies, Activities and Progress of Flood Risk Management”. The report must be within 10 pages of A4 pages in PDF or Microsoft Word and sent to JICA Tsukuba by email (tbictp1@jica.go.jp) by **October 19th 2007 (Friday)**. Please note that each country will make one progress report.

3) Review and analysis paper (refer to ANNEX III)

Each selected participant is required to make a paper by him/herself under the title of “Review and analysis of Flood Risk Management” presenting problems and solutions based on his/her own evaluation of Policies, Activities and Progress presented in the Progress Report (ANNEX II). The report must be within 5 pages of A4 pages in PDF or Microsoft Word and sent to JICA Tsukuba by email (tbictp1@jica.go.jp) by **October 19th 2007 (Friday)**.

4) Data for run-off exercise (refer to ANNEX IV)

All participants are requested to prepare data for run-off analysis exercise. It is advisable to consult with the participant of 2006 in order to collect data adequately. The data must be in Microsoft Excel format and sent to JICA Tsukuba(tbictp1@jica.go.jp) by **October 9th(Tuesday)**.

(2) Program in Japan; (October 28th, 2007 – December 1st, 2007)

In order to obtain the above-mentioned 4 outputs, the following items are carried out.

Outputs	Training Subject	Type
(1)	General knowledge of FHM	Lecture/Text
	Case example in Japan and foreign countries	Lecture/Text
(2)	Run-off analysis exercise (Tank Model, Storage Function Method)	Exercise
	GIS exercise (ArcGIS)	Exercise
	Inundation analysis exercise (Hec-RAS)	Exercise
	Flood Hazard Mapping exercise (Ise city, Mie prefecture, Japan)	Exercise
	Town Watching	Field survey
	Interview for residents and officials	Field survey
(3)	History of Flood Hazard Mapping in Japan	Lecture/Text
	Process of Flood Hazard Mapping in Japan	Lecture/Text
	Case example in Japan	Lecture/Text
	Town Watching	Field survey
	Interview for residents and officials	Field survey
(4)	Group Discussion	Discussion
	Making Action Plan	Self study/Presentation

*FHM: Flood Hazard Map

Prior to the above program, the Progress Report Presentation will be held. The presentation should be made in Power Point by each country like the progress report making. Accordingly it is advisable that each participant will cooperate with another participant in the same country in preparation of the presentation before coming to Japan. About 20 minutes will be allotted for the presentation of each country.

(3) Developing Phase; (December 2nd, 2007 – January 10th, 2008)

- 1) In order to share the technologies, knowledge and experience they obtained from this training course, all participants should share the outputs of this training program in Japan within their organization in 40 days after going back to home country.
- 2) All participants should submit the report on the above-mentioned activity to JICA Tsukuba (tbictp1@jica.go.jp). The instruction of the above activity will be explained in Japan.

. Conditions and Procedure for Application

1. Responsibility of the Participating Countries/Organizations:

- (1) It is strongly requested for the government of the participating country and organizations concerned to nominate the applicants who fulfill the requirements for this course and have high motivation and strong commitments to address the current problems in your country/organization.
- (2) If any of the applicants are accepted, the organizations to which the applicants belong are required to support them to focus on making report under the title of "Review on Policies and Activities of Flood Risk Management" and collecting data for run-off

analysis exercise as described in ANNEX II and IV.

- (3) After the program in Japan, the organizations are desired to facilitate the participants to spread what they learned in the course to the people and organizations concerned and/or to realize the action plans they prepared in the course.

2. Qualifications of Applicants:

Applicants should:

- (1) be nominated by their governments in accordance with the procedures mentioned in the chapter IV
- (2) be the technical managers or engineers with at least five years experience (two years for Doctor holders) and currently engaged in river or flood management issues in the public sector
- (3) be university graduates or equivalent
- (4) be proficient in spoken and written English (Inadequate command of English will hinder training as well as their dairy life)
- (5) have the experience using “Microsoft Word” and “Microsoft Excel”
- (6) be in good health both physically and mentally to undergo the training (as training for long periods and many field trips may pose risks to pregnant women, pregnancy is regarded as a disqualifying condition for this training course)
- (7) be non-military personnel

3. Required Documents:

Following 2 items should be submitted to JICA Office (or the Embassy of Japan) by **August 24th (Friday)**.

- (1) Nomination Form: One (1) original and three (3) copies
- (2) Preparatory Questionnaire (refer to ANNEX I)

Note: Applications without these items will be out of the selection process.

After “Notice of Acceptance”, the participants must prepare the following reports and data before coming to Japan. And, following items should be submitted to JICA Tsukuba (tbictp1@jica.go.jp) directly .

- (3) Progress Report (refer to ANNEX II) 1 report/country by October 19th (Friday)
- (4) Review and Analysis Paper (refer to ANNEX III) 1 report/participant by October 19th (Friday)
- (5) Data for Run-off Exercise (refer to ANNEX IV) 1 report/participant by October 9th (Friday)

4. Procedure for Application and Selection:

(1) Submission of the Documents for Selection:

Governments desiring to nominate applicants for the Course should submit (1) original Nomination Form and (2) Preparatory Questionnaire by August 24th (Friday).

(2) Selection:

JICA Office (or the Embassy of Japan) accepts the documents for selection, carries out the pre-screening, and send the documents to JICA Center in charge of this course. The JICA Center in charge will hold a selection meeting with organizations concerned in Japan and decide the applicants to be accepted among those who fulfill the set requirements described in III.2 above. In case the number of applicants is more than the capacity of this course, some applicants may not be accepted due to the limited number of seats even though they fulfill the requirements.

(3) Notice of Acceptance:

The JICA office (or Embassy of Japan) will inform the applying government of acceptance or non-acceptance of nominees' application **no later than September 14th (Friday)**.

5 . Rules for Attendance:

Participants are requested to observe the following rules for attending the course:

- (1) to observe strictly the course schedule
- (2) not to change course subjects or extend the course period
- (3) not to bring any members of their family
- (4) to return to their home country at the end of the course according to the international travel schedule designated by JICA
- (5) to refrain from engaging in political activities or any form of employment for profit of gain
- (6) to observe the rules and regulations of their place of accommodation and not to change accommodations designated by JICA

*Participants who have successfully completed the course will be awarded a certificate by JICA.

. Administrative Arrangements

1. Travel to Japan:

(1) Air Ticket:

Round-trip ticket between an international airport designated by JICA and Japan will be borne by JICA.

(2) Travel Insurance:

Travel insurance is not insured by JICA.

2. Accommodation:

JICA will arrange the following accommodations for the participants in Japan:

Tsukuba International Center (JICA TSUKUBA)

Address: 3-6 Koyadai, Tsukuba-Shi, Ibaraki, 305-0074, Japan

TEL: +81-29-838-1117, FAX: +81-29-838-1790

*If no room is available at JICA TSUKUBA, JICA will arrange alternative accommodations for the participants.

3. Living Expenses:

Following expenses will be provided for the participants by JICA:

- (1) Allowances for accommodation, living expenses, outfits and shipping
- (2) Expenses for study tours; basically paid in the form of train ticket(s) or chartered bus.
- (3) Free medical care for participants who become ill after arrival in Japan (costs related to pre-existing illness, pregnancy or dental treatment are not included)
- (4) Expenses for program implementation including materials

For more details, please see p. 9-16 of the brochure for participants titled "KENSU-IN GUIDE BOOK", which will be given to the selected participants before (or at the time of) the pre-departure orientation.

4. Course Implementing Organization:

- (1) Public Works Research Institute (PWRI)
International Centre for Water Hazard and Risk Management under the auspices of UNESCO (ICHARM)
Address: 1-6, Minamihara, Tsukuba, Ibaraki, 305-8516, Japan
Tel: +81-29-879-6751, Fax: +81-29-879-6752
URL: <http://www.icharm.pwri.go.jp>

(2)

5. Pre-Departure Orientation:

A pre-departure orientation will be held at JICA Office (or Embassy of Japan) to provide the selected candidates with details on travel to Japan, conditions of the program in Japan, and other matters. Participants will see a video "Training in Japan," and receive a textbook and cassette tape, "Simple Conversation in Japanese." A brochure, the KENSU-IN GUIDE BOOK, will be handed to each selected candidate before (or at the time of) the orientation.

ANNEX:

ANNEX : Preparatory Questionnaire

ANNEX : Progress Report; Introduction about Policies, Activities and Progress of Flood Risk Management

ANNEX : Review and Analysis Paper

ANNEX : Data for Run-off Exercise

Reference

Founded in 1974, the Japan International Cooperation Agency is an implementation agency for technical assistance, focusing on systems building, organization strengthening and human resource development that will enable developing countries to pursue their own sustainable socio-economic development.

The training program for overseas participants is one of JICA's main cooperation programs. Under this program, JICA invites professionals in various fields including administrative officials, engineers and technicians from developing countries to Japan and provide them with skills and technology needed in their countries as well as the chance to share knowledge and experience with participants from other countries. Through this program, participants are expected to acquire skills and technology or create knowledge, bring them back to their countries, and apply them in their workplaces or societies with necessary modifications according to their own conditions to achieve their specific objectives.

JICA's Mission

We, as a bridge between the people of Japan and developing countries, will advance international cooperation through the sharing of knowledge and experience and will work to build a more peaceful and prosperous world.

Oath of Service

With passion and pride, as professionals in development cooperation, we will perform our work responsibly and energetically with love and a sense of duty; we will encourage and support the participation of the Japanese people in our work; we will work as partners to those in need of assistance; and we will strive to fill the world with hope and happiness by promoting peace and sustainable development.

CORRESPONDENCE

For enquires and further information, please contact the JICA office, or the Embassy of Japan. Address any other correspondence to:

Tsukuba International Center
Japan International Cooperation Agency
(JICA TSUKUBA)

Address: 3-6 Koyadai, Tsukuba, Ibaraki, 305-0074, Japan
TEL: +81-29-838-1117, FAX: +81-29-838-1790

Preparatory Questionnaire
(To be submitted with A2A3 Form)

Note:

- (1) The Preparatory Questionnaire should be submitted with A2A3 Form.
- (2) Applicant without Preparatory Questionnaire will be out of the selection.
- (3) This Questionnaire should be prepared by the applicant himself/herself.

---< ***Applicant information*** >-----

Q1. Please fill your following information.

- (1) Organaization:
- (2) Name:
- (3) Present Post:
- (4) Country:
- (5) E-mail: <If available, please indicate your E-mail address>

---< ***Your organization and department/unit*** >-----

Q2. Please answer the following questions about your organization and department briefly.

- (1) What is the Role and Objective of your organization and department/unit?
- (2) Please describe the Main Activities of your organization and department/unit.
- (3) Please show your Organization Chart and indicate your position.

---< ***Your work*** >-----

Q3. Please answer the following questions in detail as much as possible.

- (1) Please describe briefly about your past work for last 3 years.
- (2) Please describe briefly about your expected work for 3 years in the future.

---< ***Problems on your work and expectation for this training course*** >-----

Q4. Please answer the following questions.

- (1) Do you have any issues which you have to solve on your work? If so, please describe in detail.
- (2) Do you expect how this training course will help to solve the above mentioned issues on your work or in your organization?
- (3) In the field of flood disaster mitigation, what topics are you interested in? Please describe the topics and the reason why you are interested in that topics
- (4) If you have any request, please write down.

Thank you for your cooperation.

**Format of “Progress Report on Policies and
Activities of Flood Risk Management”**

Notes:

- i) A report should be prepared by the participants in each country in cooperation.
- ii) A report must be typed in single spacing on A4 size paper (210mm X 297mm).
- iii) Photos, figures and graphs should be effectively used.

<Cover Page>

“Introduction about Policies, Activities and Progress
of Flood Risk Management”

in

<Your Country>

JICA Region-Focused Training Course
on
Flood Hazard Mapping
JFY 2007

Prepared by

< Your Name >

< Your Name >

<Main Pages>

1. Overview of national policies on flood management

(Maximum four pages)

Note: refer to the report of the ex-participants in your country

(1) Information on flood risk management policies in your country

Please introduce the outline of flood risk management policies and flood control works (structural and non-structural) in your country as well as institutional and legislative frameworks including flood hazard maps.

(2) Information on countermeasures to reduce flood damages including laws and regulations

Please fill in the following two tables using Attachment 1, SAMPLE Table A and B.

Table 1: Disaster mitigation program/practice entry form:

		Individual initiatives	Community Initiatives	Government initiatives
Pro-active response	Risk Reduction			
	Damage Mitigation			
Re-active response (during and after flooding)	Emergency Management			
	Rehabilitation and Restoration			

Table 2: Law and regulation entry form:

		Individual initiatives	Community initiatives	Government initiatives
Pro-active response	Risk Reduction			
	Damage Mitigation			
Re-active response (during and after flooding)	Emergency Management			
	Rehabilitation and Restoration			

2. Introduction of the target area to which you want to apply a flood hazard map

(Maximum four pages)

- (1) Selection of one target area (municipality, province/prefecture, country, etc.) to which you want to apply a flood hazard map
- (2) Current policies and countermeasures for flood risk management, damage mitigation, and emergency response measures in the area.
- (3) Geographic, demographic and hydro-meteorological characteristics using base maps with quantitative information such as average gradient, number of population, rain gauge data and so on as much as possible.
- (4) Past flood disasters, and their social/economical damages in this area, based on the record from 1990 to 2006 with quantitative information such as number of victims, economic loss, inundation area and so on as much as possible.
- (5) Number and the types of candidate evacuation center such as primarily schools, nursing homes.
- (6) Number and the types of disaster prevention centers, including police offices and fire stations.
- (7) Your ideas on how to prepare and distribute flood hazard maps in the area

3. Activities by the Ex-Participant of This Training Course

(Maximum four pages)

Please introduce the activities by ex-participants in your country (2004 ~ 2006).

If you want to know about the training course implemented in 2004, 2005, 2006, please visit to the website (<http://www.icharm.pwri.go.jp/>).

- (1) Name, Position, Organization and E-mail

Please fill the following table about ex-participants.

No.	Name	Current Position	Current Organization	E-mail
2004-1				2005
2004-2				2005
2005-1				2004
2005-2				2004
2006-1				2006
2006-2				2006

- (2) Brief report on activities of each ex-participant

Please describe on the activities of each ex-participant briefly.

- (3) Detailed report on activities of an ex-participant who is most deeply related to your work

Please choose one participant who is most deeply related to your work, and describe his/her recent activities in detail as much as possible.

- (4) Network Activities

If there are some networks related to flood management among ex-participants or the

officials to share the information, please report such network activities in detail as much as possible.

[SAMPLE] See the following sample tables for reference:

Table A: Disaster mitigation program/practice in Japan

		Individual initiatives	Community Initiatives	Government initiatives
Pro-active response	Risk Reduction	<ul style="list-style-type: none"> - resettlement to safer area - elevate housing land 	<ul style="list-style-type: none"> - ring levee - drainage pump 	flood control project (levee rising, levee set-back, dredging and widening river channels, divergence and by-pass channels, and flood control dams, etc.)
	Damage Mitigation	<ul style="list-style-type: none"> - flood insurance - flood proofing: e.g. mizuya (water proof house) - emergency provision 	<ul style="list-style-type: none"> - flood fighting corps - flood fighting materials - designation of shelters and evacuation routes - safety check of levees before rainy season and reporting to government authorities. 	<ul style="list-style-type: none"> - water level and rainfall observation; - precipitation forecast, flood forecasting system, weather information system; - evacuation drill - risk communication workshops - flood forecasting dissemination - hazard maps - dissemination systems and support for evacuation - official communication system for transmission of disaster information - emergency drainage pump - organization of rescue teams
Re-active response (during and after flooding)	Emergency Management	<ul style="list-style-type: none"> - collection of information (weather broadcasting and internet) - raising household goods - self-initiated evacuation 	<ul style="list-style-type: none"> - flood fighting (patrolling of river and levees, flood control construction work), - dissemination of information - group efforts for voluntary evacuation, enquiring into safety conditions, - designation of shelters and distribution of emergency food 	<ul style="list-style-type: none"> - informing real-time rainfall and water level - announcement of flood forecasting and of warning - announcement of evacuation order and evacuation directives - multi-channel alert dissemination - sending rescue teams - procurement and offer of emergency provisions and shelter goods
	Rehabilitation and Restoration	<ul style="list-style-type: none"> - disposal of rubbish - removing mud - restoration of household goods 	<ul style="list-style-type: none"> - collecting and distributing relief funds - learning and reporting lessons from the disaster. 	<ul style="list-style-type: none"> - restoration of affected facilities (business restoration) - inspection of the cause of disaster - reevaluation of disaster prevention works and their implementation

Table B: Related law and legislation:

		Individual initiatives	Community initiatives	Government initiatives
Pro-active response	Risk Reduction		<ul style="list-style-type: none"> - Flood Prevention Association Law 	<ul style="list-style-type: none"> - Disaster Countermeasures Basic Law - River Law - Specific-Multipurpose Dam Law
	Damage Mitigation		<ul style="list-style-type: none"> - Flood Fighting Law - Fire Organization Law 	<ul style="list-style-type: none"> Flood Fighting Law Meteorological Services Law
Re-active response (during and after flooding)	Emergency Management		<ul style="list-style-type: none"> - Flood Fighting Law - Flood Prevention Association Law 	<ul style="list-style-type: none"> - Disaster Countermeasures Basic Law - Flood Fighting Law - Meteorological Services Law - Disaster Relief Law
	Rehabilitation and Restoration	<ul style="list-style-type: none"> - Law for Socio-economic Rehabilitation Aid for Victims 		<ul style="list-style-type: none"> - Disaster Countermeasures Basic Law - Law on Disaster Recovery for State Funding of Public Infrastructures Projects

**Format of “Review and analysis of
Flood Risk Management”**

Notes:

- iv) This report should be prepared by each participant, based on each country’s present situation of the flood risk management, which was presented in the Progress Report (ANNEX II).
- v) It is advisable that this report will be composed not only of each participant’s own opinions but of opinions extracted from discussion in each participant’s affiliating division.
- vi) A report must be typed in single spacing on A4 size paper (210mm×297mm).
- vii) Photos, figures and graphs should be effectively used.

<Cover Page>

“Review and analysis of
Flood Risk Management”
in
<Your Country>

JICA Region-Focused Training Course
on
Flood Hazard Mapping
JFY 2007

Prepared by
< Your Name >

<Main Pages>

- 1. *Problems in the Flood Risk Management of my country (Extract/Organize Problems)***
 - (1) *Technical problems***
 - (2) *Organizational problems***
- 2. *Factors which cause those problems (Cause Analysis)***
- 3.**
- 4. *Proposal of solutions against the problems(Problem Solution/Response)***

Data for Run-off Exercise
(To be submitted as electronic data)

Note:

- (1) Select a target area, which, if possible, includes the area proposed in ANNEX , and prepare hydrologic data concerning to the area.
- (2) If there are some needs for modification, we will inform and request you to modify after checking your data.

Definition:

One flood event means the period from the following A to the following B.

A; The time when the rain just began to fall

B; The time when river discharge became the same level as one before the flood

The image of one flood event is shown as Figure1.

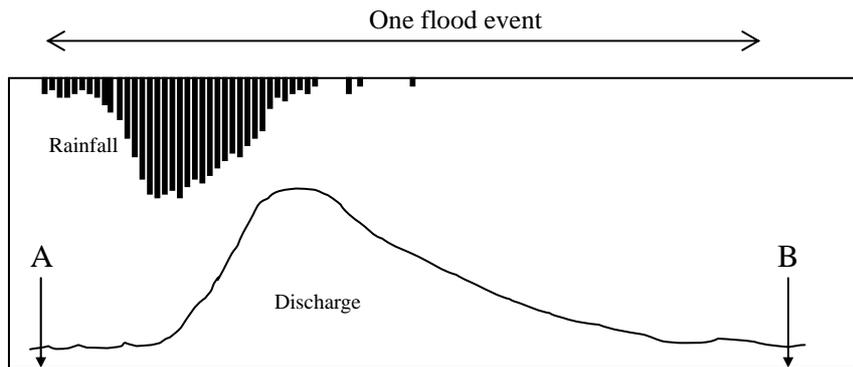
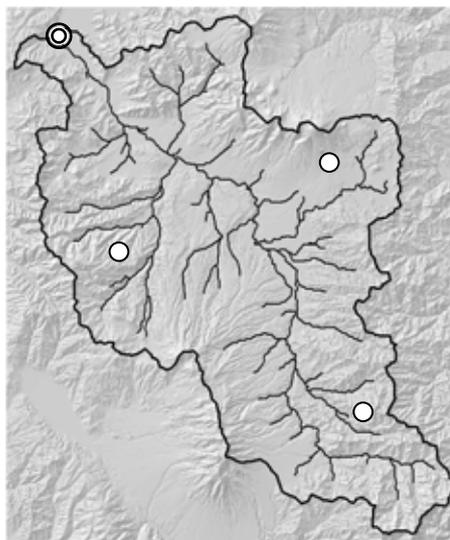


Figure1 The image of one flood event



- ⊙ Discharge observation point
- Rain gauge station

Figure2 The image of target area

1. Time series of Rainfall and Discharge data (necessary)

Please prepare time series of Rainfall and Discharge data of your target area and fill in the Excel Format shown as table 1. You can download it from ICHARM website (<http://www.icharm.pwri.go.jp/html/training/index.html>)

- 1) Time Interval: 1 hour or shorter is recommendable (if not available, 1 day is OK).
- 2) Duration: One flood event containing at least a flood peak
- 3) Number of Floods: 5 floods (please fill in individual sheet)
- 4) Observation points: 1 or 2 points for discharge, all rain gauges in the catchment area.

2. Information of the target area

Please prepare information of your target area and fill in the Excel Format shown as table 1. You can download it from ICHARM website

(<http://www.icharm.pwri.go.jp/html/training/index.html>)

- (1) Catchments area (m²) of each discharge observation point (necessary)
- (2) Location (latitude, longitude) of each discharge observation point and rain gauge station (if possible)
- (2) Elevation of each discharge observation point and rain gauge station (m) (if possible)
- (3) The highest elevation (m) (if possible)

3. Map of the target area (necessary)

Please bring the Map which shows each discharge observation point, its catchment area and all rain gauges with you.

Remark:

The area map is made by each participant or is the existing one.

Thank you for your cooperation.

data, time	discharge point1	discharge point2	rain gauge station 1	rain gauge station 2	rain gauge station 3	rain gauge station 3	
Cartchment Area (m ²)							
Latitude							
Longitude							
Elevation							
Highest elevation							
m/d h							
m/d h							
m/d h							
m/d h							
m/d h							
m/d h							
m/d h							
m/d h							

Table 1 Time series of discharge and rainfall data and