Proposal Report
On
"Flood Hazard Mapping Project
in
Yan Ta Khao Distric under Trang Province
Thailand"

Prepared By

Piriya Uraiwong
Department of Water Resource
Thailand

FLOOD HAZARD MAPPING TRAINING COURSE
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1. Background

Southern part of Thailand situates in a Tropical Monsoon region which flooding is not uncommon when heavy rain storm takes place every year. At least 4,000 to 6,000 million bahts (160-200 million US dollars) were spent by the government to relief suffering from flood utilizing both structural and non-structural counter measure. Protection from flood using structural measure is one of the "public assistance" efforts in disaster prevention to improve disaster preparedness at normal time (Kamei, 2008). In order to reduce damage caused by flood, non-structural measures such as preparing hazard maps and providing disaster information must be promoted in an integral manner. Flood hazard map can be effective tool to promote non-structural measure, and it should be created base on the viewpoint of residents and should be displayed for residents to understand easily and quickly.

Flood hazard map refer to a map which is prepared primarily to prevent human damage by providing residents with inundation related information, such as levee braces and flood occurrences, and evacuation in an easy to understand way. A flood hazard map must provide information of specified inundation risk area and evacuation information (MLIT,2005).

2. Outline of Trang Province

The target area is Trang province which is the one of the southern provinces (*changwat*) of Thailand, at the western shore of the Malay Peninsula to the Andaman Sea. Neighboring provinces are (from north clockwise) Krabi, Nakhon Si Thammarat, Phatthalung and Satun.

Trang province has an area of approximately 5,000 square km.
The province is located on the coast of the Andaman Sea, and contains 46 islands together with the mainland area. There are only few plains, and most of the area is hills. The Khao Luang and the Banthat mountain range are the sources of the two main rivers of the province, the Trang River and the Palian River.

It has along western coastline of about 119 kilometres. The province consists of an archipelago in the Andaman Sea with over 46 islands. Of these, 12 are in Amphoe Kantang, 13 in Amphoe Palian and 21 in Amphoe Sikao. The best time for sea travel is during October to May. Situated along the Andaman coast, Trang province is home to innumerable beautiful islands, while the mountainous eastern region is home to dramatic waterfalls, caves and pristine jungle. Between the mountains and the coast are extensive plantations of rubber.

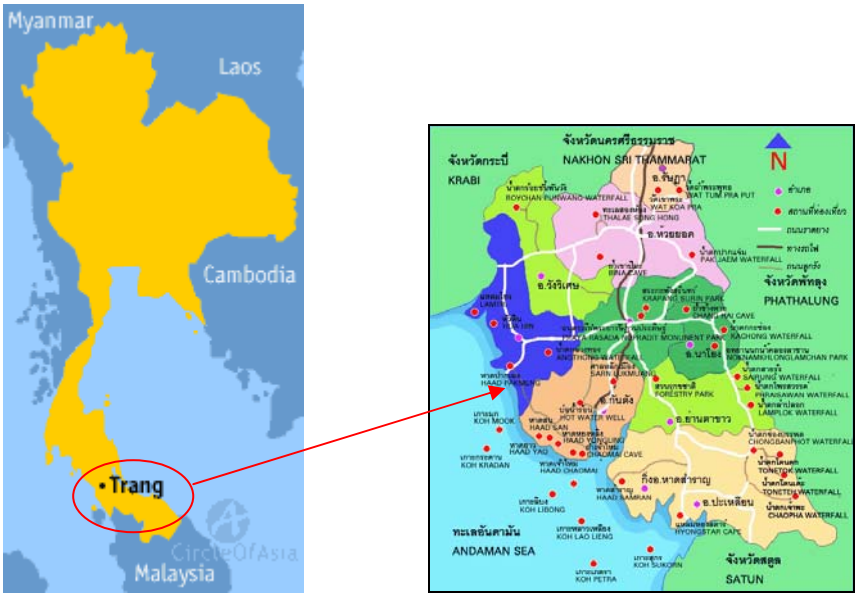

Fig 1: Map of Trang province

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Avg high °C (°F)	32 (91)	34 (94)	35 (96)	34 (94)	32 (91)	31 (89)	31 (88)	31 (88)	31 (88)	31 (88)	30 (87)	31 (88)	32 (90)
Avg low temperature °C (°F)	21 (70)	21 (71)	22 (72)	23 (74)	23 (75)	23 (74)	23 (74)	25 (77)	23 (74)	22 (73)	22 (72)	21 (71)	22 (73)
Precipitation centimeters (inches)	5 (2.1)	2 (1.0)	6 (2.6)	19 (7.5)	24 (9.7)	24 (9.8)	25 (10.2)	29 (11.6)	32 (12.8)	32 (12.7)	24 (9.5)	11 (4.4)	238 (93.9)

Table 1: meteorological data

In December 2005, Flooding occurred in Trang province causing by heavy rainfall from monsoon and depression from November to December. Fig 2 shows accumulate rainfall in south part of Thailand from November to December. On December 18, there was maximum amount of discharge ,503.85 m^3/sec, causing water level up to 6.54(msl). Result was 52 villages sunk under water.

Help from various organization such as red cross, rajaprachanukrau, in Trang went to flooding area, and donated food and water for victims from flooding(97,633 live bags, 200,000 bottles of drinking water, 138,218 sets of instant food , 673 sets of medication, grass and hay, and 13 flatboat)

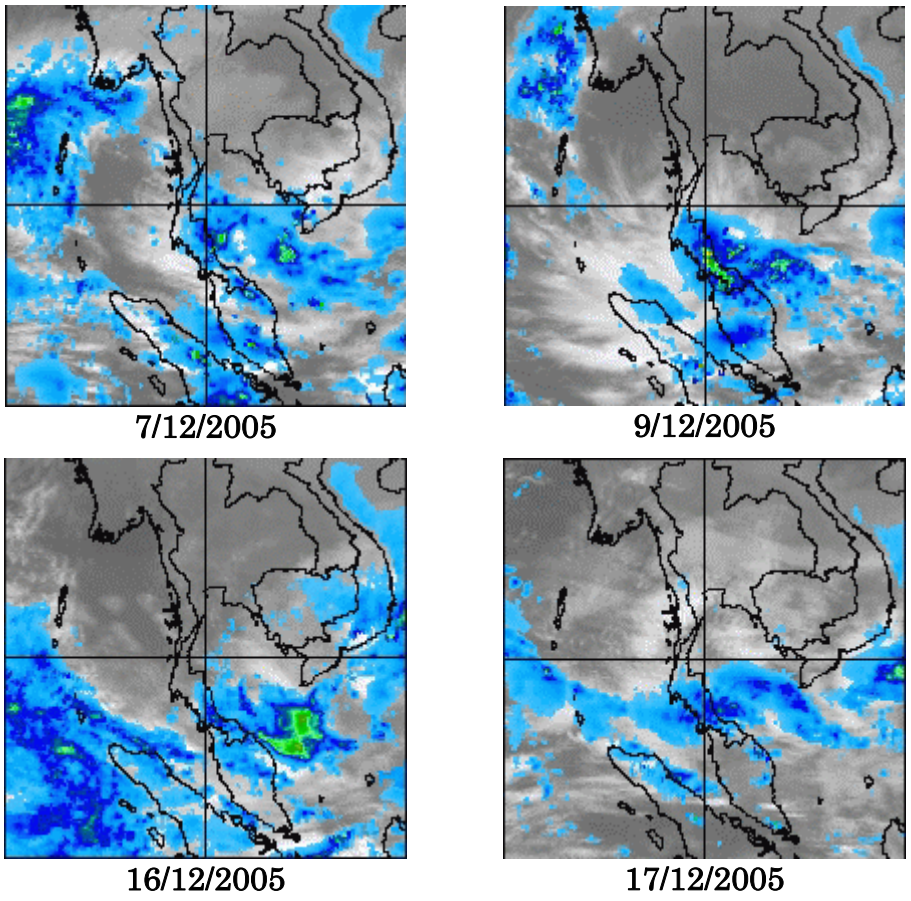

Fig 2: Accumulate rainfall from November to December in south part of Thailand

3. Action Plan toward Effective Flood Hazard Mapping

Action plan for flood hazard mapping can manipulate into two directions. First is to introduce flood hazard map to line agencies who relate to deal with flood disaster especially the department of disaster prevention and mitigation. According to Disaster Prevention and Mitigation Act, the Department of Disaster Prevention and Mitigation is assigned to lead responsibility to coordinate flood prevention and mitigation. Further national level on implementation of flood hazard mapping will be under consideration of the Department of Disaster Prevention and Mitigation.

The Department of Water Resource is an agency for formulating management plan, as well as monitoring, coordination and implementation of water resources conservation and rehabilitation. It is also an agency for flood control and mitigation for 25 river basins in the country. Stakeholders in the river basin will get involve for flood

mitigation in the basin management for officers in the regional offices of the department of water resource.

In order to make action plan toward flood hazard map for the Department of Water Resources, the effective development plan involves six stages consisting of introduction of FHM, training, making the map, stake-holder's participation, revising the map(optional) and production and dissemination maps (Figure 3-1).

Fig 3-1: Development of Action Plan for Flood Hazard Mapping

3.1 Introduction of flood hazard map to officers for both main office and regional offices of the Department of Water Resources will dedicate to organization knowledge management. This effort can help individuals and groups to share valuable organizational insights, to reduce redundant work, to avoid reinventing the wheel per se, to reduce training time for new employees, to retain intellectual capital as employee's turnover in an organization.

3.2 Training on flood hazard mapping will be hold either on headquarter office or regional office. The training will comprise of two methodologies; lecture and exercise. In order to be able to make flood hazard map, the following items will be carried out.

Object	Training Subject	Type
1	General knowledge of FHM Case example in Japan	Lecture
2	Run-off analysis GIS exercise (ArcGIS) Inundation Analysis (HEC-RAS) Flood Hazard Mapping Exercise	Lecture/Exercise
3	Group discussion	Discussion

3.3 After training on flood hazard mapping, the flood hazard map of target area (pa-lean district) will be prepared by the regional office's officer.

3.4 Since flood hazard map prepared by the Department of water resource are based on technological knowledge, stake holder's participation will be recognized to analyze and suggest for the map. Coordination with River Basin Management Sub-committee, local government administration, and NGO in introduction, inquiring comments, and requirements will be formulated.

3.5 Recommendation and comments from stake-holder's participant will take into an account in order to revise or improve flood hazard map of the target area.

3.6 The improved or revised version of flood hazard map will be produced and disseminate to the local administrations in flood prone areas. According to budget allocation, it is difficult to distribute flood hazard map to every household in the hazardous area.

4. Schedule of Implementation

The project duration will take about 11 weeks as shown on table 4-1

Item	Activity	Time Frame (weeks)										
		1	2	3	4	5	6	7	8	9	10	11
1	Introduction of Flood Hazard Map											
2	Training on Flood Hazard Mapping											
3	Making Flood Hazard Map for Target Area											
4	Stake Holder's Participation											
5	Revising Flood Hazard Map											
6	Production and Dissemination Maps											

Table 4-1: the project duration

Remark: Time frame can be flexible

5. Estimated Budget

Budget for this project will come from a fiscal budget of the Department of Water Resource or can be supported by other sources of funding. Total amount of budget is 437,000 Baht (about 12,850 $ US) as shown in Table 5-1

Item	Activity	Amount (Baht)
1	*Introduction and Training for Flood Hazard Mapping*	
	1.1 Per dium/ Accommodation/ Fares	114,200.00
	1.2 Administration Running Cost	100,000.00
	1.3 Travelling Cost	80,000.00
	1.4 Material	5,000.00
	sum	**299,200.00**
2	*Making Flood Hazard Map on Target Area*	
	2.1 Material	3,000.00
	2.2 Administration Running Cost	5,000.00
	sum	8,000.00
3	*Stake-holder's participant*	
	3.1 Administration Running Cost	10,000.00
	3.2 Travelling Cost	40,000.00
	3.3 Material	5,000.00
	sum	**55,000.00**
4	*Reviesing Flood Hazard Map*	
	4.1 material	1,000.00
	sum	1,000.00
5	*Production and Dissemination Maps*	
	5.1 Publishing Cost	50,000.00
	5.2 Dissemination Cost	25,000.00
	sum	**75,000.00**
Total		**437,200.00**

Table 5-1: Cost Estimation

6. Expected Effectiveness

According to the action plan, expected results can be defined as follow;

1. Promote Flood Hazard Mapping as a non-structural measure for flood disaster
2. Production and dissemination flood hazard maps for the target area
3. Increase awareness for flood disaster to community

……End……