

Annex-5

Seminar and Evacuation Drill

Community-based Disaster Prevention Activity

~ AWARENESS PROGRAM and EVACUATION DRILL ~

in Manggahan-Lawin

Manggahan Day Care Center, Manggahan-Lawin, Kawit
September 17, 2008, Wednesday

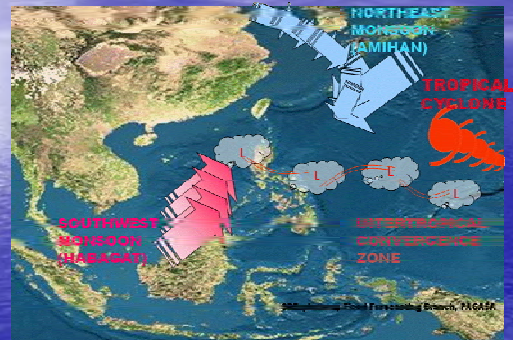
Activity	Time	In-Charge
Registration of participants	14:00 am	
Welcome speech	14:20 am	Mr. Andrinico Papa Barangay Chairman
Part 1 Awareness Program		
Mechanism of floods in Cavite	14:30 am	Mr. Makoto Mitsukura JICA Study Team
What is a Flood Hazard Map?	14:50 am	Ms. Annabelle Cayabyab PG-ENRO
What did we do in Map Exercise?	15:10 am	Barangay
Part 2 Evacuation Drill		
Explanation for Evacuation Drill	15:20 am	Mr. Makoto Mitsukura JICA Study Team
Evacuation Drill (New Municipal Building)	15:25 am	
Wrap-up the Activities	16:25 am	
Closing remarks	16:30 am	Hon. Reynaldo Aguinaldo Municipal Mayor

THE STUDY
ON
COMPREHENSIVE FLOOD MITIGATION FOR
CAVITE LOWLAND AREA
IN THE REPUBLIC OF THE PHILIPPINES

Floods in Cavite

September 2008
JICA Study Team

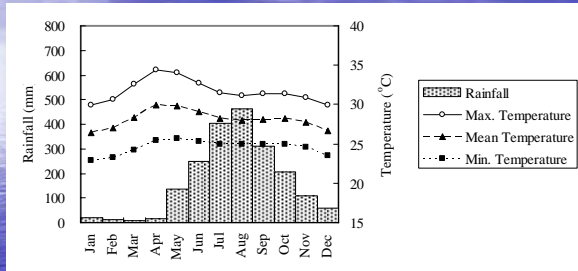
Weather Causing Phenomena
in the Philippines



Source: PAGASA

Meteorological condition in the study area

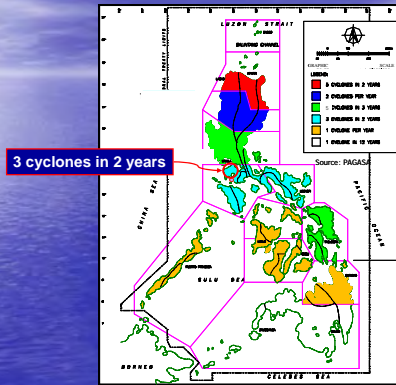
Distinct rainy and dry seasons



Monthly Mean Rainfall and Temperature at Sangley Point (Average of 1974 to 2006)

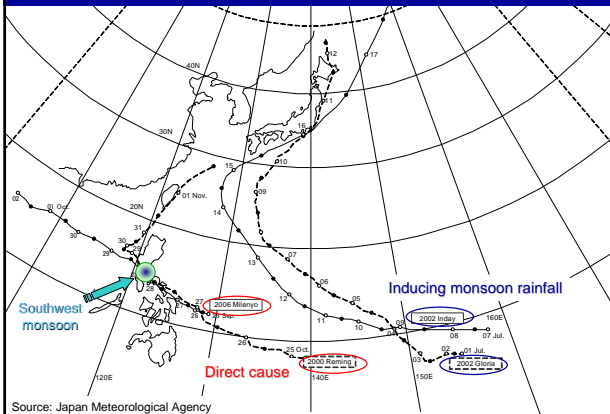
Source: PAGASA

Typhoons in the study area



Source: PAGASA (2002)

Tracks of major typhoons in 2000s

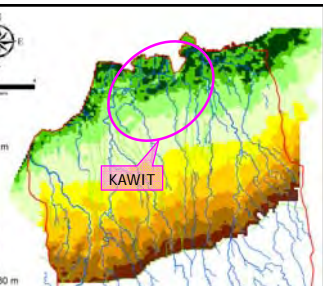


Source: Japan Meteorological Agency

The Study Area

River Basin	Catch
Imus	1
San Juan	1
Canas	1
Residual	1
Total	4

Division	Ground Elevation (m)	Area (ha)	Percentage (%)
Extremely Low Land	0 - 2 m	4.0	1.0%
Lowland Area	2 - 30 m	97.5	23.9%
Central Area	30 - 400 m	236.7	58.1%
Upland Area	400 - 650 m	69.2	17.0%
Total Area		407.4	100.0%



Various Floods

River-Overflow Flood
2000 Flood (Source: IDI)

Clogging of Debris under Bridge Flooding in Residential Area Flood Overflow from River Channel

2008 Flood (Clarified by the Study Team)

Canas River: Estimated based on debris remained and results of interview from residents San Juan River: Estimated based on the color of wall, garbage remained and interview from residents

Various Floods

Inland Flood by Storm Rainfall and High Tide

Tidal Flood in Kawit

Inland Flood by Storm Rainfall

Potol-Magdalo

Flood in Potol-Magdalo

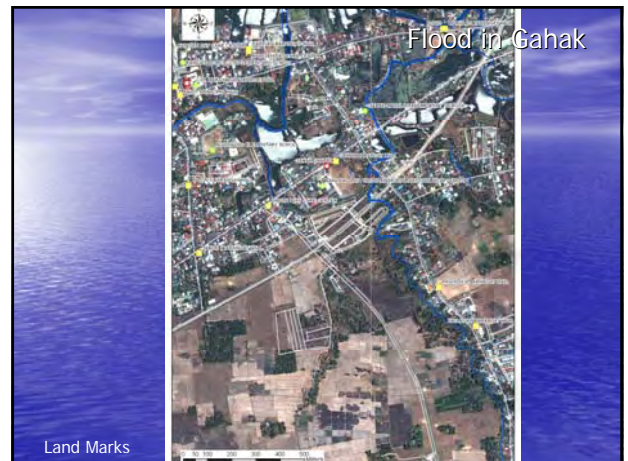
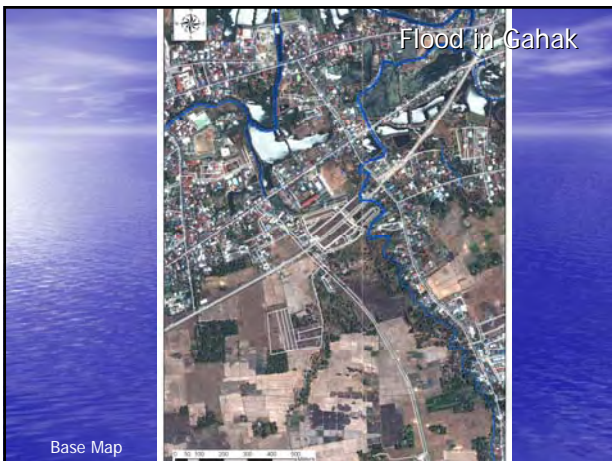
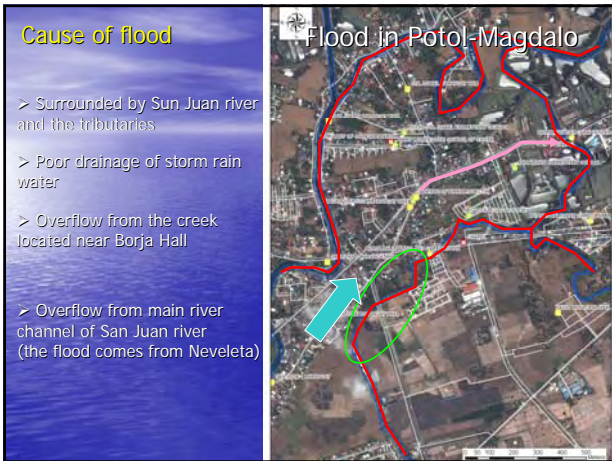
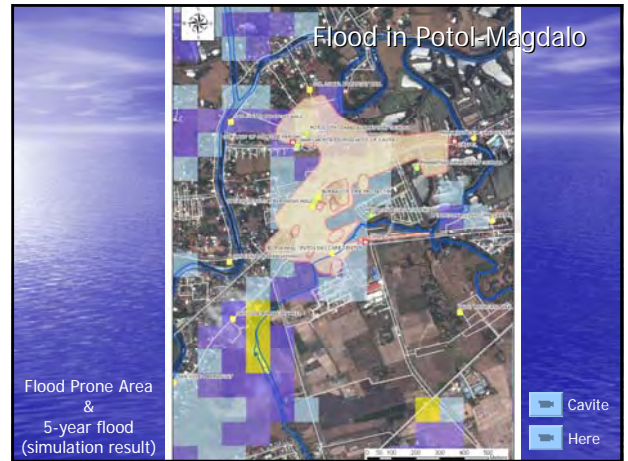
Base Map

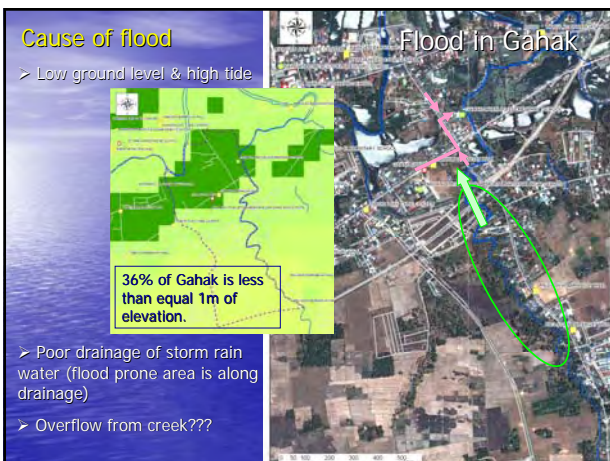
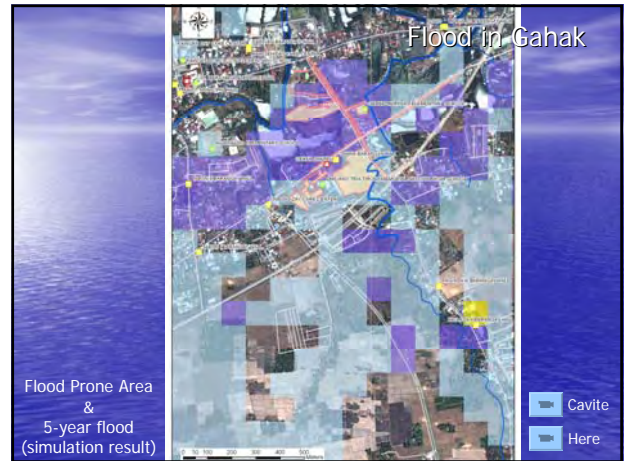
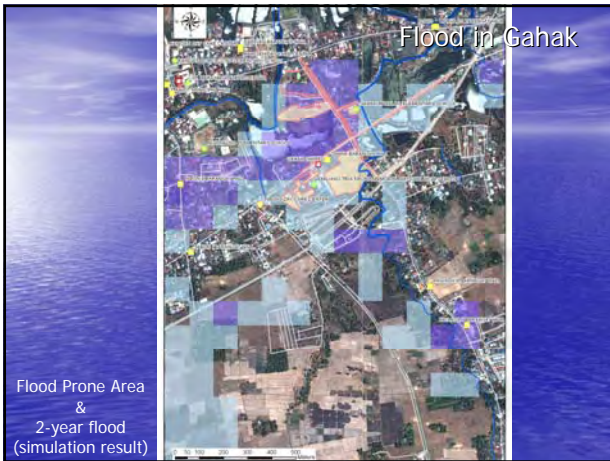
Flood in Potol-Magdalo

Land Marks

Flood in Potol-Magdalo

Flood Prone Area





Manggahan-Lawin

Flood in Manggahan-Lawin



Base Map

Flood in Manggahan-Lawin



Land Marks

Flood in Manggahan-Lawin



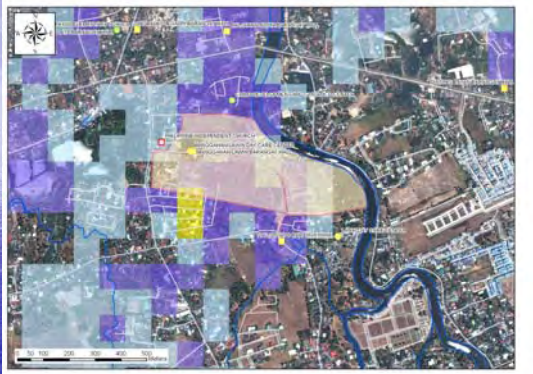
Flood Prone Area

Flood in Manggahan-Lawin



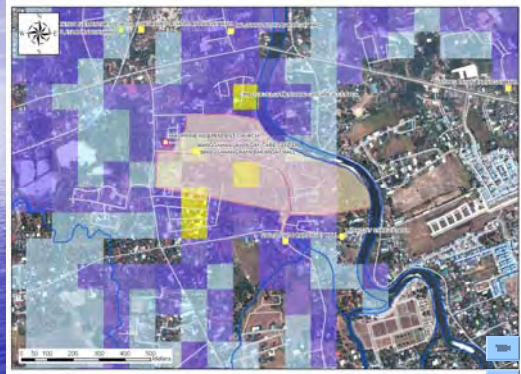
Inundation Area on Aug. 08, 2007

Flood in Manggahan-Lawin



Flood Prone Area & 2-year flood (simulation result)

Flood in Manggahan-Lawin

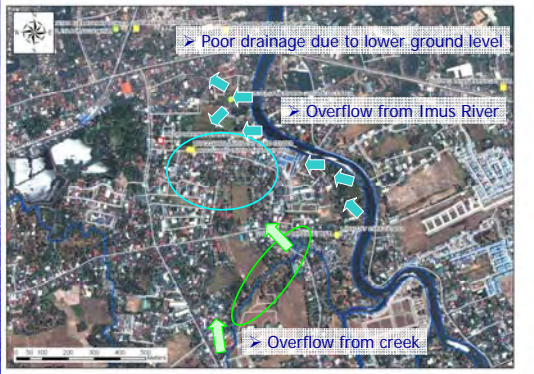


Flood Prone Area & 5-year flood (simulation result)

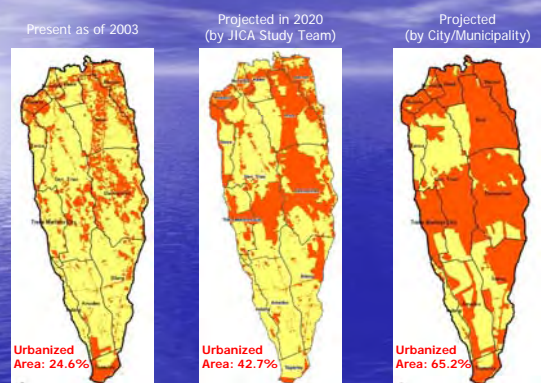
▶ Cavite
▶ Here

Cause of flood

Flood in Manggahan-Lawin



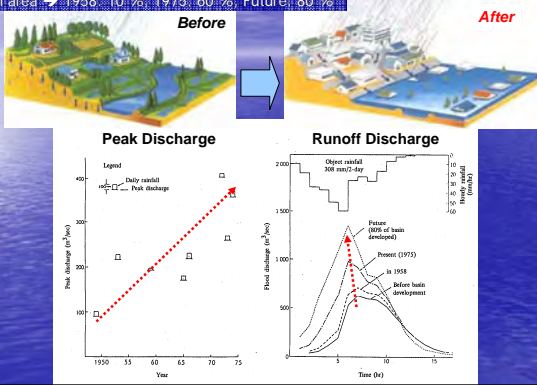
Present and Projected Built-up Area



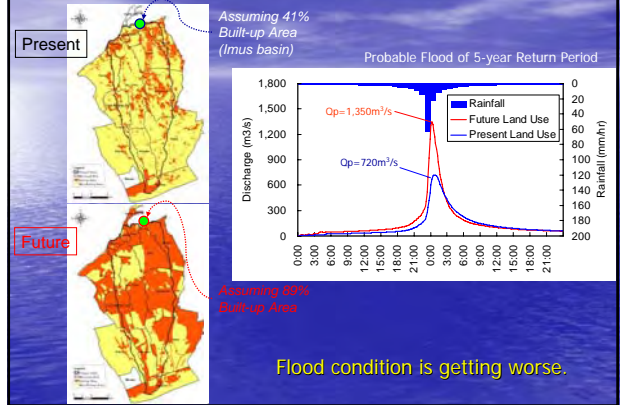
What will happen by urbanization?

Example of Tsurumi River basin in Japan:

Urban area → 1958: 10%, 1975: 60%, Future: 80%



Increment of Peak Flood Runoff Discharge



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Flood Hazard Map

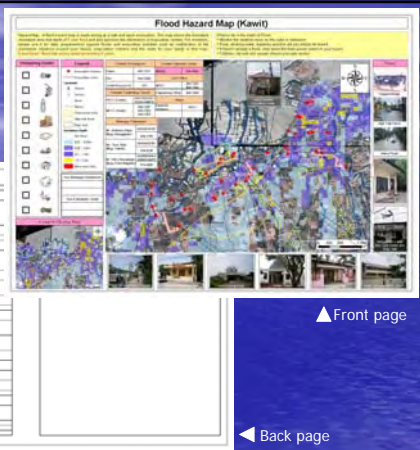
September 2008
JICA Study Team

What's a Flood Hazard Map

View showing of frame format of Flood Hazard Map



What's a
Flood
Hazard Map



Why do we need a hazard map?

Because the completion of Structural measure takes long time.

Floods might come while the project is being conducted.

Flood Hazard Map is effective as a flood prevention measure in normal condition in order to lessen the damage.

Why do we need a hazard map?

Because main reasons of loss of human lives during disasters is

No appropriate evacuation directives for residents

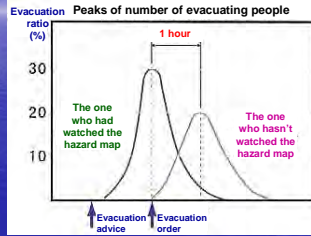
- Wrong evacuation / No safe evacuation / People do not know what to do
- Wrong perception of safety behind structural measures
- Poor knowledge regarding the present danger and hazard / No technical capability
- No warning / Warning was ignored

Objective of Flood Hazard Map

- Flood hazard map is made aiming at prevention of any loss of human lives during floods by providing the residents the flood and evacuation information.
 - Description of expected inundation area
 - Description of evacuation information
 - Head of municipality is supposed to develop hazard map and announce to the public (in Japan)
(in the Philippines??)

Impact of Flood Hazard Map

The Hazard Map contributed to early evacuation at the heavy rain in Koriyama City in August 1998.

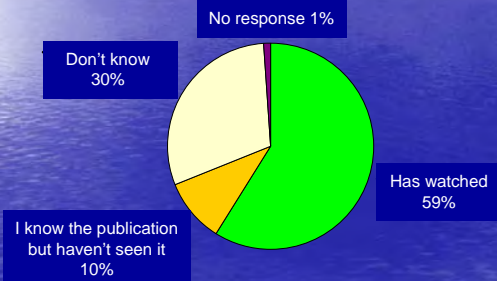


Data source: KATADA research laboratory of Gunma University

Impact of Flood Hazard Map

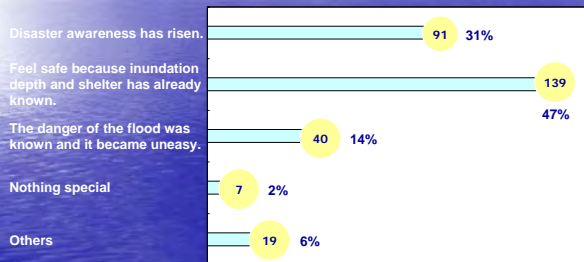
Publication and well-known of Hazard Map raises awareness of the local residents.

Acknowledgement of Hazard Map

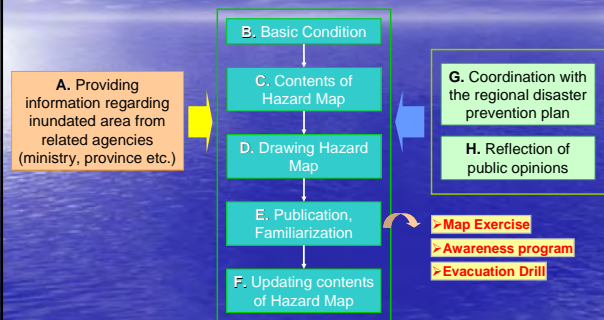


Impact of Flood Hazard Map

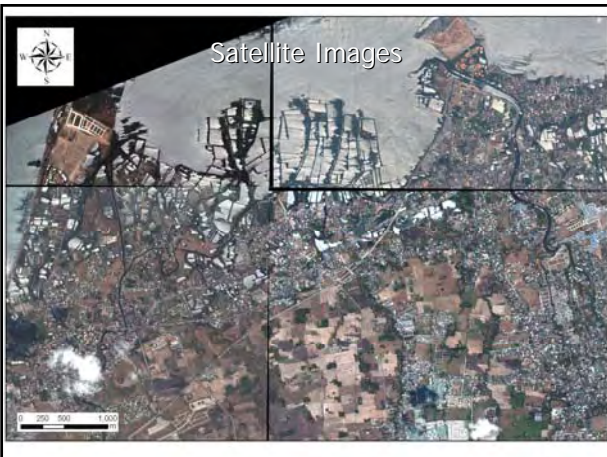
What do you feel when you see the Map?



Procedure of Hazard Map preparation

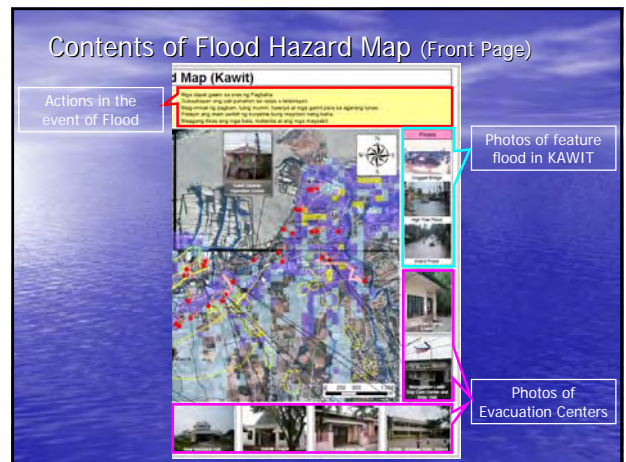
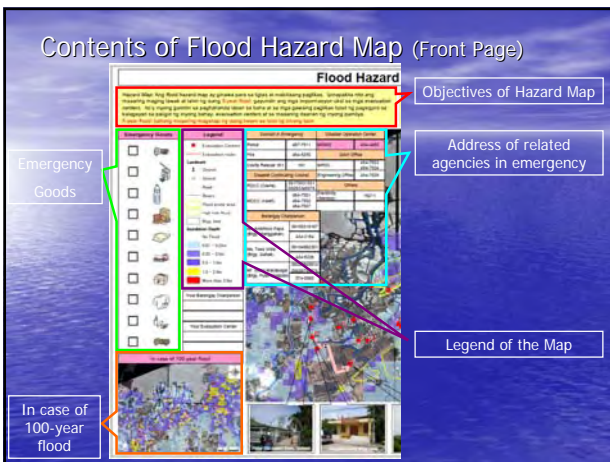
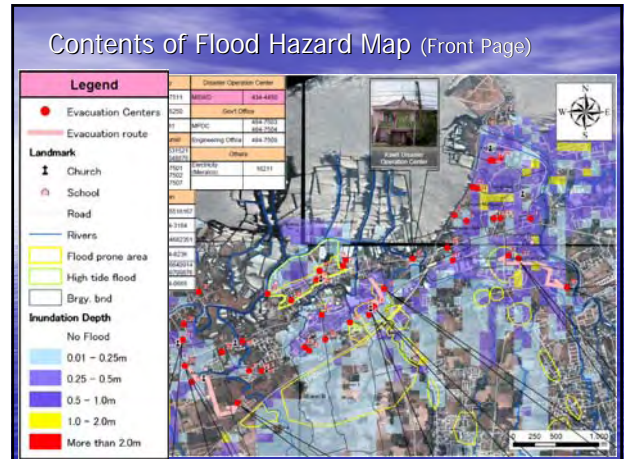
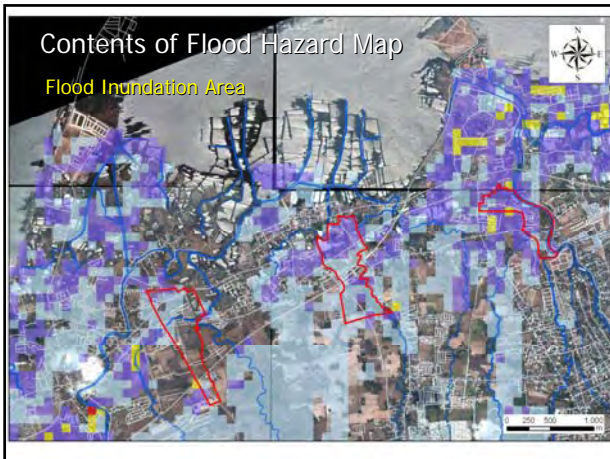


Satellite Images



Base Map





Contents of Flood Hazard Map (Back Page)

Evacuation Centers (Kawit)	
0011	Disaster Operation Center
0200	Gov't Office
0201	MP/PC
0202	Engineering Office
0203	Others
0204	Police
0205	Fire Station
0206	
0207	
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Memos	
Pala-batas ang lathalaing sa maging partikular ang mga itataguyod ng... ...sa mga lokal na opisina, kumunsa, bayan, maging agrikultura sa maliliit na... ...sa mga lokal na opisina, kumunsa, bayan, maging agrikultura sa maliliit na...	
Memos	
Inventory of evacuation centers in KAWIT	

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Evacuation Drill

September 2008
JICA Study Team

Discussion result of Map Exercise
(PotoI-Magdalo)

Q: What do you pay attention to during evacuation?

- > Checking if there are enough food, medicine, clothes, drinking water, etc.
- > Checking if the children, sick and the elders are evacuated early,
- > Families,
- > Checking if there are enough supplies (e.g. flashlight, food, ropes, medicine, drinking water, clothes, etc.), and
- > Checking if the route is safe on the way to the evacuation center.

- > Where is the dangerous point?
 - Creeks
 - Road-side drainages
 - Manholes
 - Electric facilities
- > Where is the low ground level along evacuation route?
- > Can your elderly or children evacuate?

Discussion result of Map Exercise
(PotoI-Magdalo)

Q: What makes your evacuation difficult?

- > Evacuation of children, the sick and the elderly,
- > Lack of supplies in the evacuation centers as well as during the evacuation itself (i.e. ropes, small boat, etc), and
- > If the evacuation centers are far and if their necessities are not prepared.

- > Late evacuation (strong current, deep water depth)
- > Heavy rain
- > Evacuation on foot
- > Carrying your properties
- > Obstructions along evacuation route
 - vehicles
 - tricycle
 - garbage, etc.

Discussion result of Map Exercise
(PotoI-Magdalo)

Q: What can you we do by ourselves for early evacuation?

- > Awareness,
- > Necessary supplies (e.g. food, clothes, candles, drinking water, medicine, etc.),
- > Checking weather news on the radio or TV, and
- > The residents should not hesitate to leave some of their household things that they can't really save.

- > Preparations for evacuation as usual
- > Checking the things that might be obstacles during flood in advance
- > Early evacuation system of Barangay
- > Understanding of Flood Hazard Map

Evacuation Center (PotoI-Magdalo)



Discussion result of Map Exercise
(Manggahan-Lawin)

Q: What do you pay attention to during evacuation?

- > The residents should help each other.
- > The route should be safe and they should get to the center as soon as possible.
- > Family are priritize.
- > As Barangay Tanods, it is also their duty to make sure that all the residents of the Barangay are safe.

- > Where is the dangerous point?
 - Creeks
 - Road-side drainages
 - Manholes
 - Electric facilities
- > Where is the low ground level along evacuation route?
- > Can your elderly or children evacuate?

Discussion result of Map Exercise (Manggahan-Lawin)

Q: What makes your evacuation difficult?

- Heavy / strong current.
- Narrow passageways
- Lack of supplies (e.g. 2-way radios, medicine, small boats, etc.)

- Late evacuation (strong current, deep water depth)
- Heavy rain
- Evacuation on foot
- Carrying your properties
- Obstruction along evacuation route
 - vehicles
 - tricycle
 - garbage, etc.

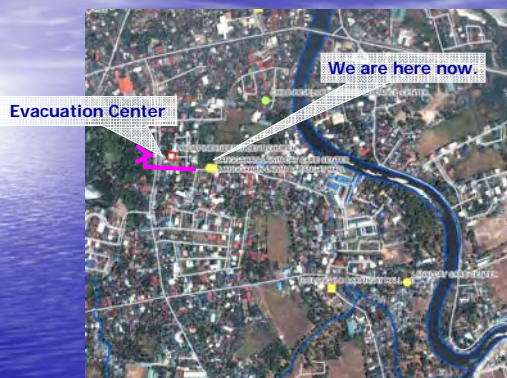
Discussion result of Map Exercise (Manggahan-Lawin)

Q: What can you we do by ourselves for early evacuation?

- Staying in-tune for the weather news on the radio or TV and monitoring announcements from the MDCC and PDCC.
- Announcements using megaphones and/or mobile phones.

- Preparations for evacuation as usual
- Checking the things that might be obstacles during flood in advance
- Early evacuation system of Barangay
- Understanding of Flood Hazard Map

Evacuation Center (Manggahan-Lawin)



Discussion result of Map Exercise (Gahak)

Q: What do you pay attention to during evacuation?

- Those who are in flood prone areas,
- The weather condition and the possibility of having accidents along the way (e.g. stepping into drainage system which are under construction),
- The availability of drinking water, food, clothes, etc. in evacuation center
- Families
- The inundation depth (getting higher or not)
- Household things that might get wet

- Where is the dangerous point?
 - Creeks
 - Road-side drainages
 - Manholes
 - Electric facilities
- Where is the low ground level along evacuation route?
- Can your elderly or children evacuate?

Discussion result of Map Exercise (Gahak)

Q: What makes your evacuation difficult?

- Areas with high inundation,
- Strong current (most of group members are living near the river), and
- Lack of (1) supplies, (2) places to evacuate, and (3) coordination with officials.

- Late evacuation (strong current, deep water depth)
- Heavy rain
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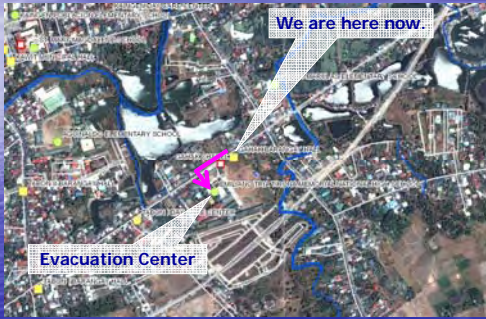
Discussion result of Map Exercise (Gahak)

Q: What can you we do by ourselves for early evacuation?

- Any weather disturbance and rising flood water/river should be monitored.
- Watching news
- Volunteer to give whatever help can be offered to the community.
- Coordination with Barangay officials
- Storing supplies (food, clothes, etc.)

- Preparations for evacuation as usual
- Checking the things that might be obstacles during flood in advance
- Early evacuation system of Barangay
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Evacuation Center (Gahak)

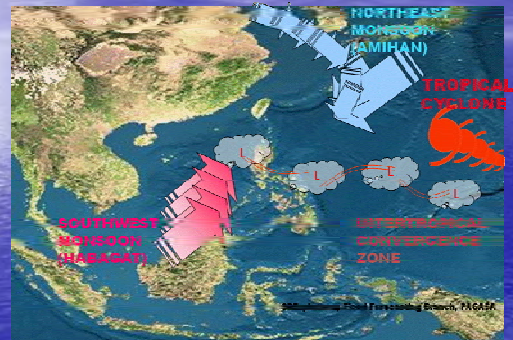


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Flood Mechanism in Cavite

November 2008
JICA Study Team

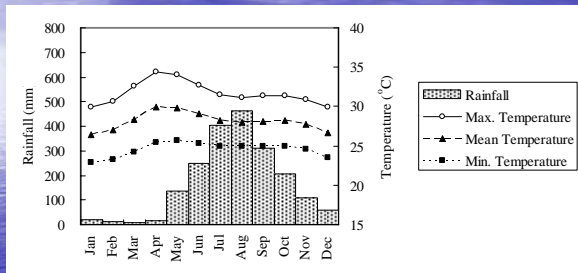
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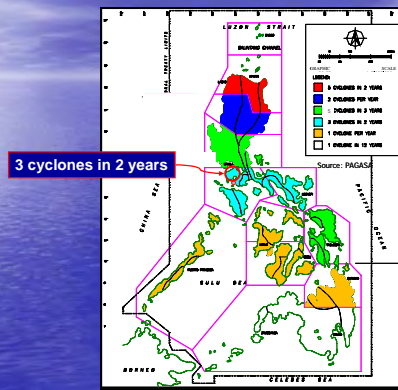
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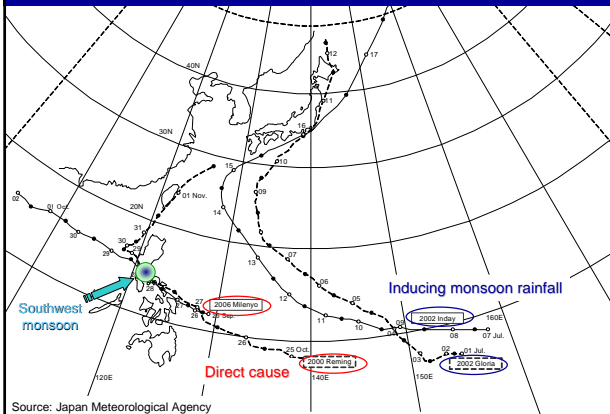
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Typhoons in the study area



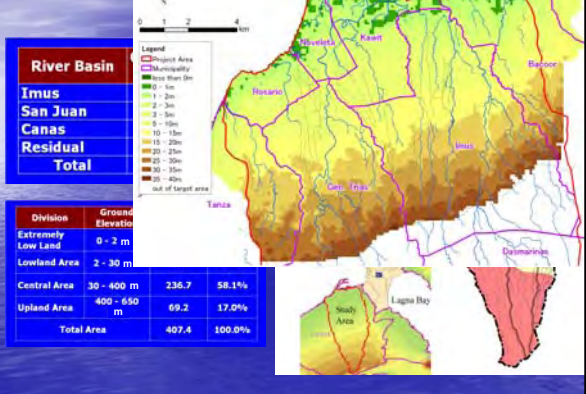
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Tracks of major typhoons in 2000s



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The Study Area



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Clogging of Debris under Bridge Flooding in Residential Area Flood Overflow from River Channel

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Tidal Flood in Kawit

Inland Flood by Storm Rainfall

