



United Nations  
Educational, Scientific and  
Cultural Organization



# Platform on Water and Disaster -Community-

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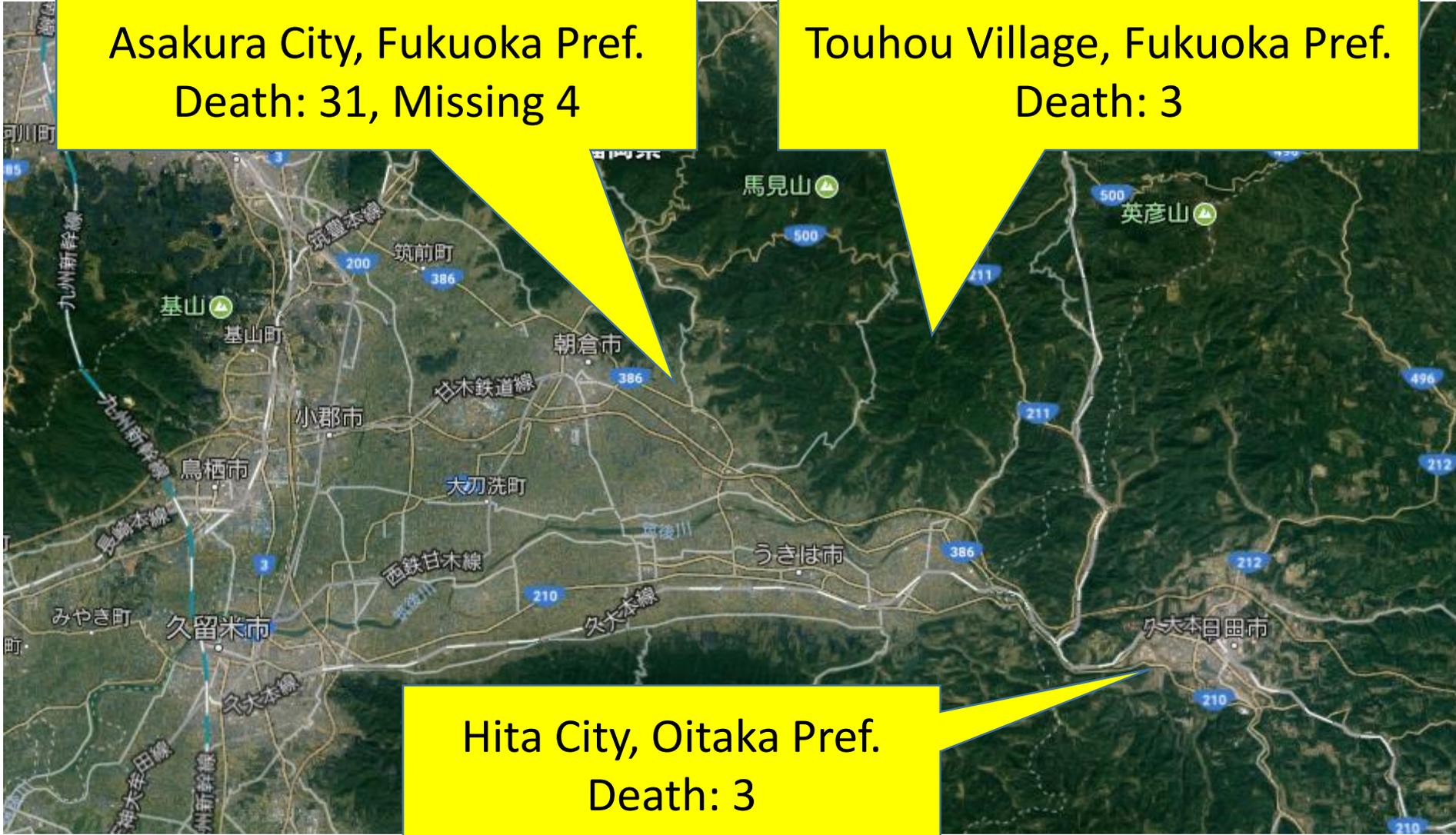
Miho OHARA (International Centre for Water Hazard and  
Risk Management (ICHARM),  
Public Works Research Institute (PWRI), Japan

# 41 Victims due to Severe Rainfall at Northern Kyusyu, 2017

Asakura City, Fukuoka Pref.  
Death: 31, Missing 4

Touhou Village, Fukuoka Pref.  
Death: 3

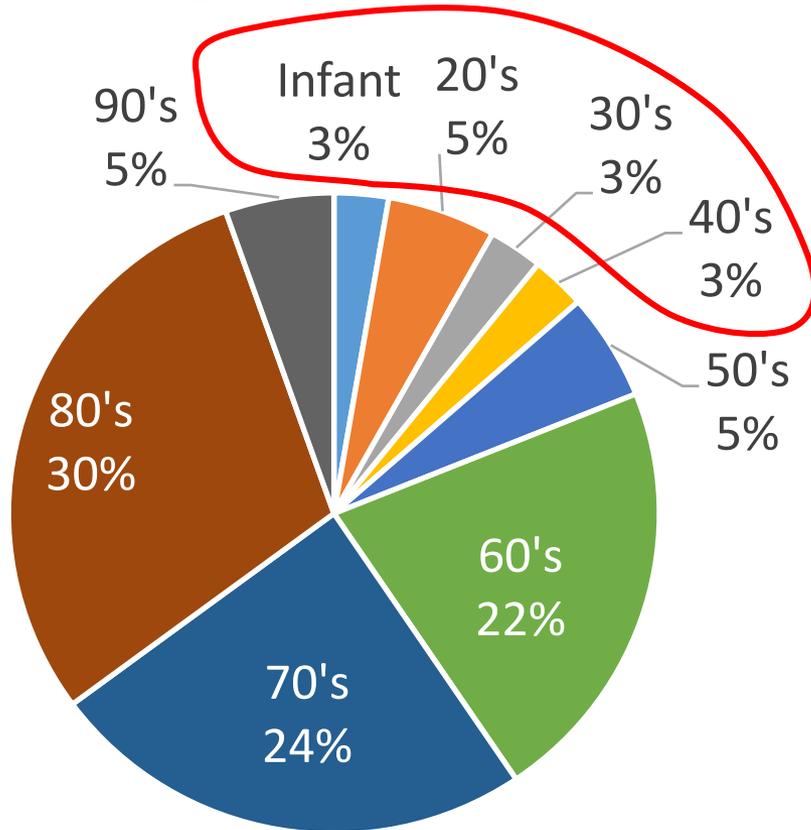
Hita City, Oitaka Pref.  
Death: 3



# 37 Victims due to Severe Rainfall at Northern Kyusyu, 2017

## Age of Victims

Staying or supporting elder people

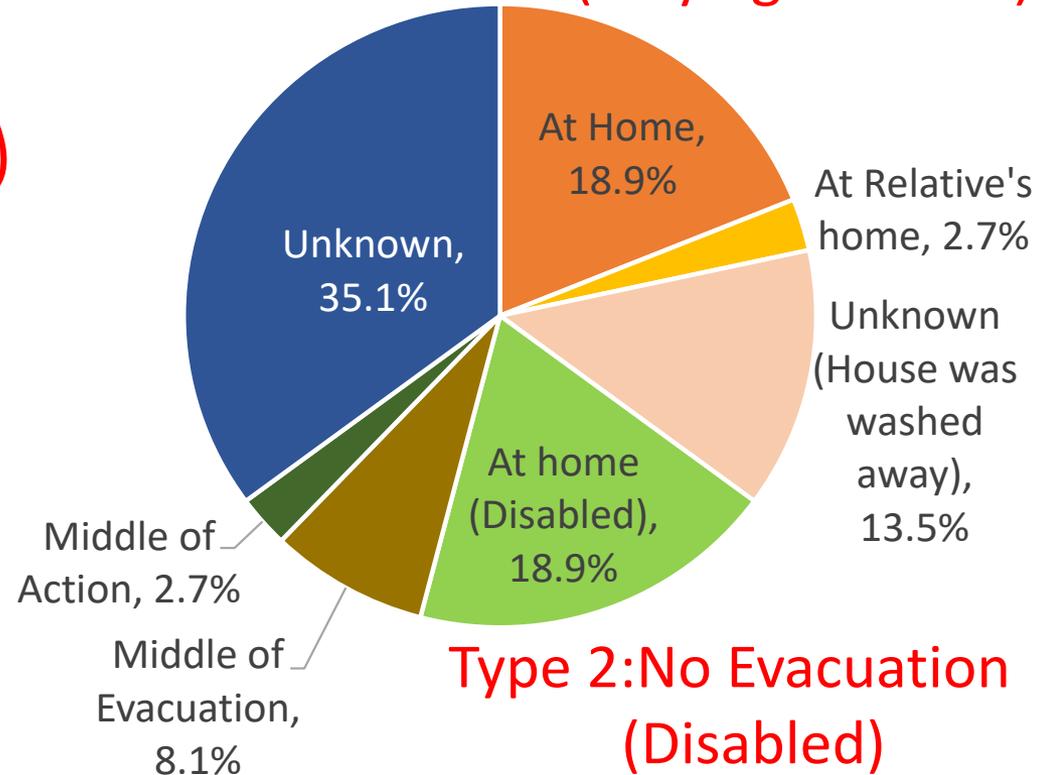


81%: Over 60 years old

## Causes of Death

(Analysis from witnessing)

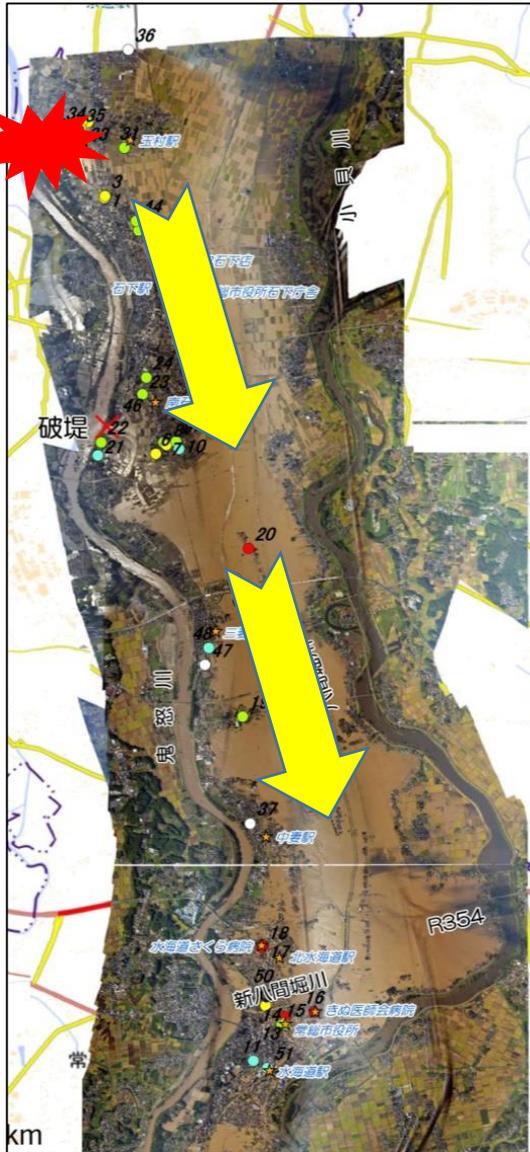
Type 1: No Evacuation  
(Staying at home)



Type 2: No Evacuation  
(Disabled)

Type 3: In Action (Outside)

# Kinu River Flood in Joso City (Sep, 2015)



- Dyke Breach at 12:50 on Sep 10, 2015
- Total Inundated area: 40km<sup>2</sup> (1/3 of Joso City)
- Death:2 (Total population: 61,483)

# Kinu River Flood in Joso City (Sep, 2015)

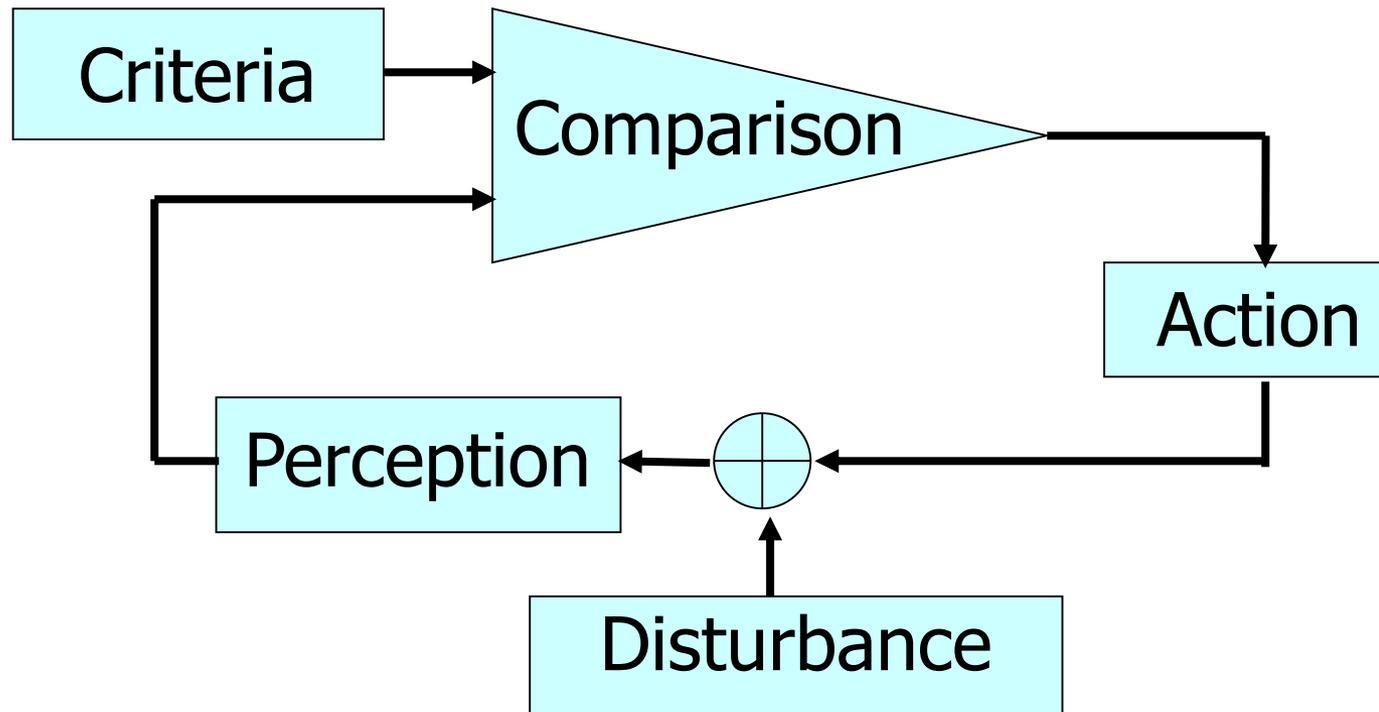
More than 4,200 people were rescued.  
Among them, **1,339 people were rescued  
by HELICOPTER.**



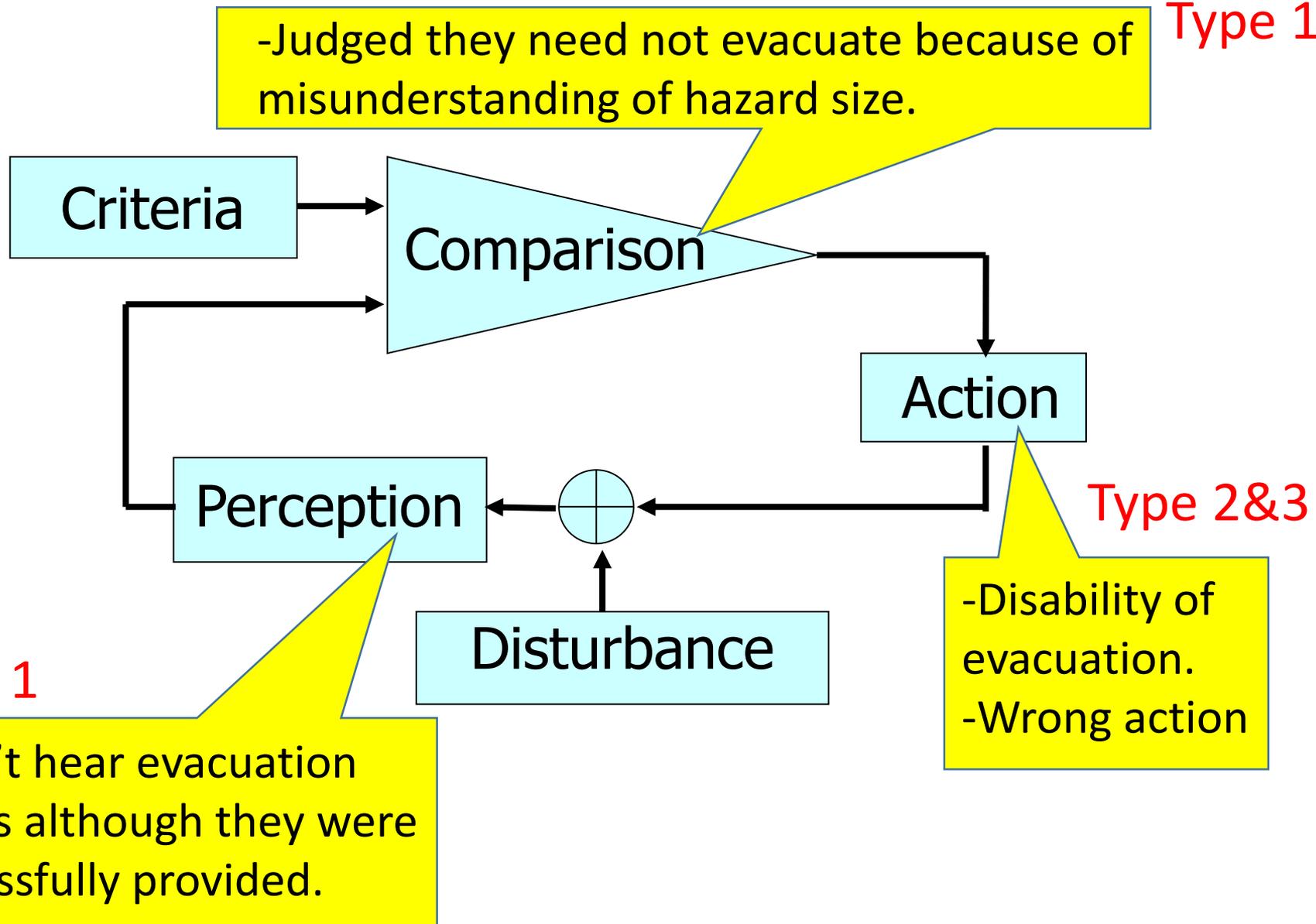
Why didn't people evacuate??

# Human Behavior Model

By Atsushi Tanaka



# Why people didn't evacuate in Northern Kyusyu

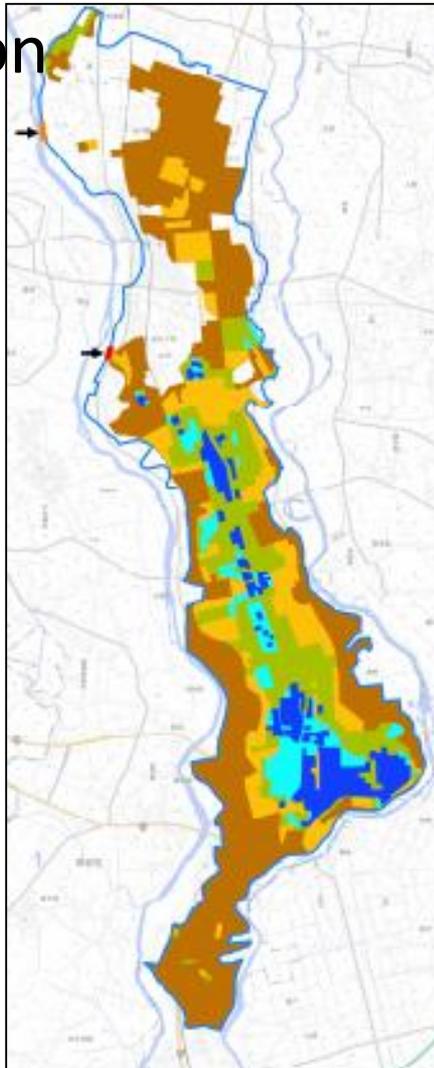


# Kinu River Flood in Joso City (Sep, 2015)

## Flood Control Act:

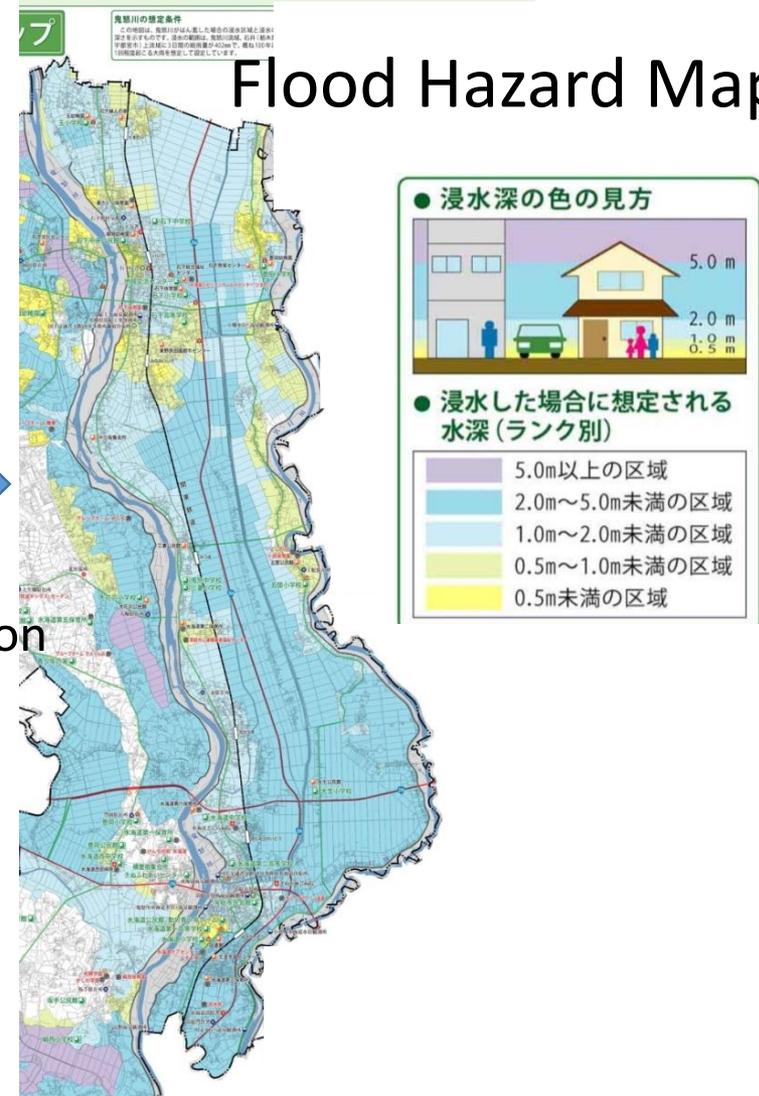
Governors of prefectures must publish flood hazard map and announce expected water level to local governments.

Inundation Area



Actual inundation almost corresponds to anticipated risk area.

Flood Hazard Map



# Why people didn't evacuate in Joso City

-60% have never seen Hazard Map.  
(Yamada, 2016)

-Judged they need not evacuate  
because of overconfidence in  
structural measures.

Criteria

Comparison

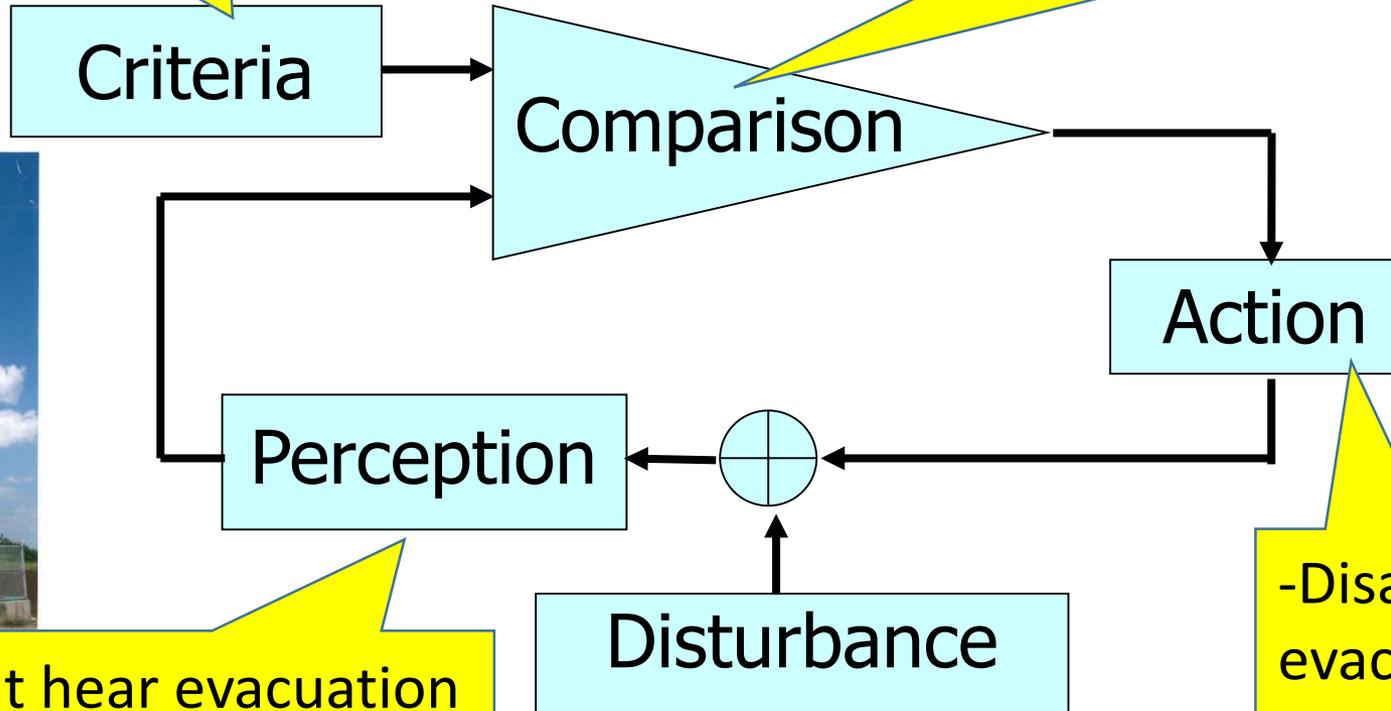
Action

Perception

Disturbance

-Disability of  
evacuation.  
-Wrong action

-Didn't hear evacuation  
orders although there  
were loudspeakers.

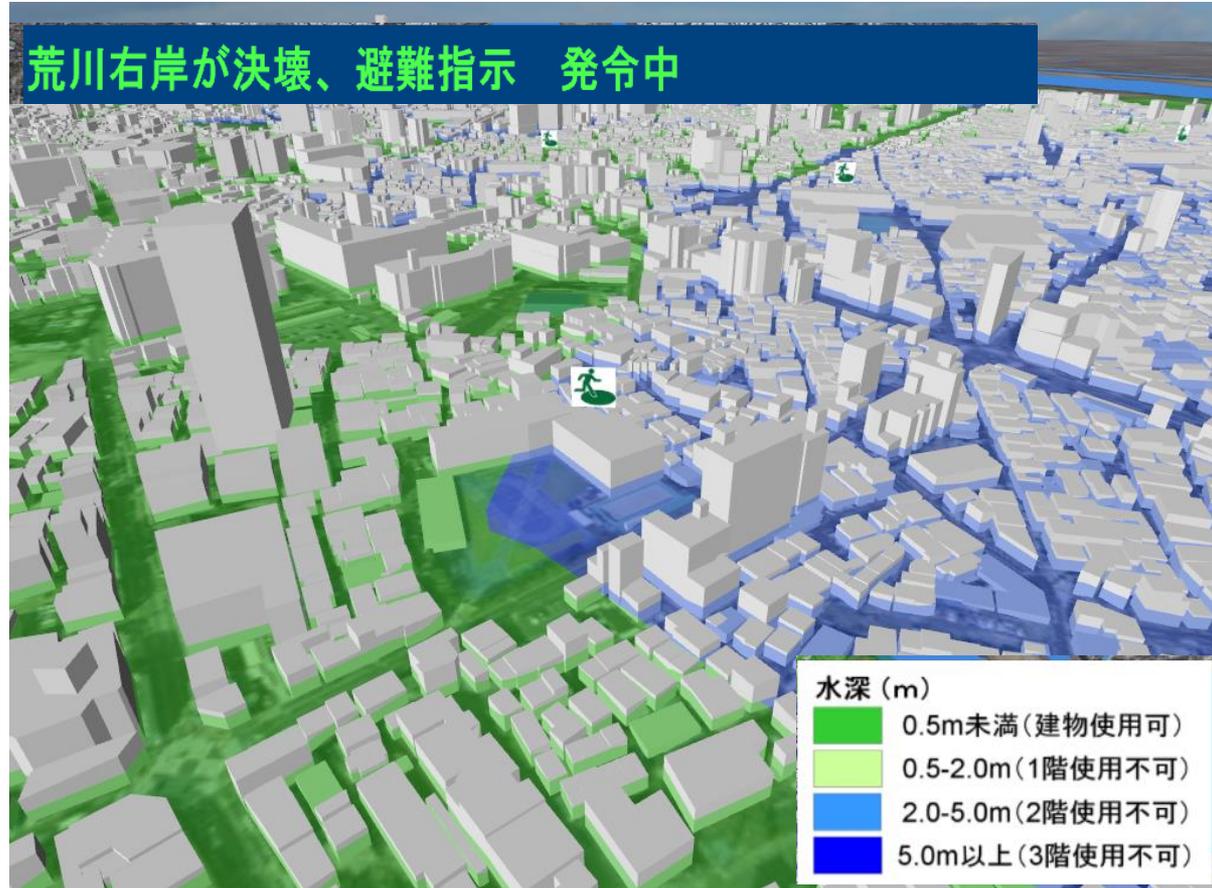
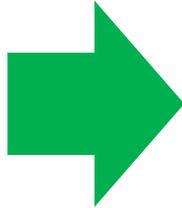
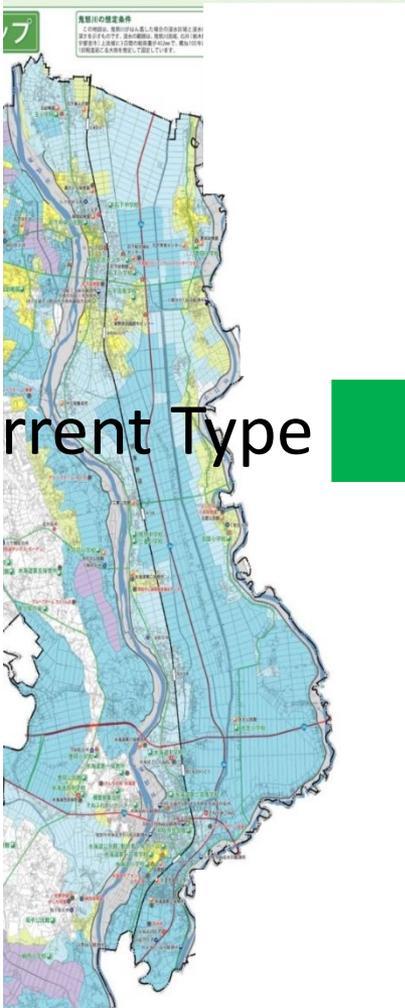


# Necessity of More Effective Tool for Disaster Imagination

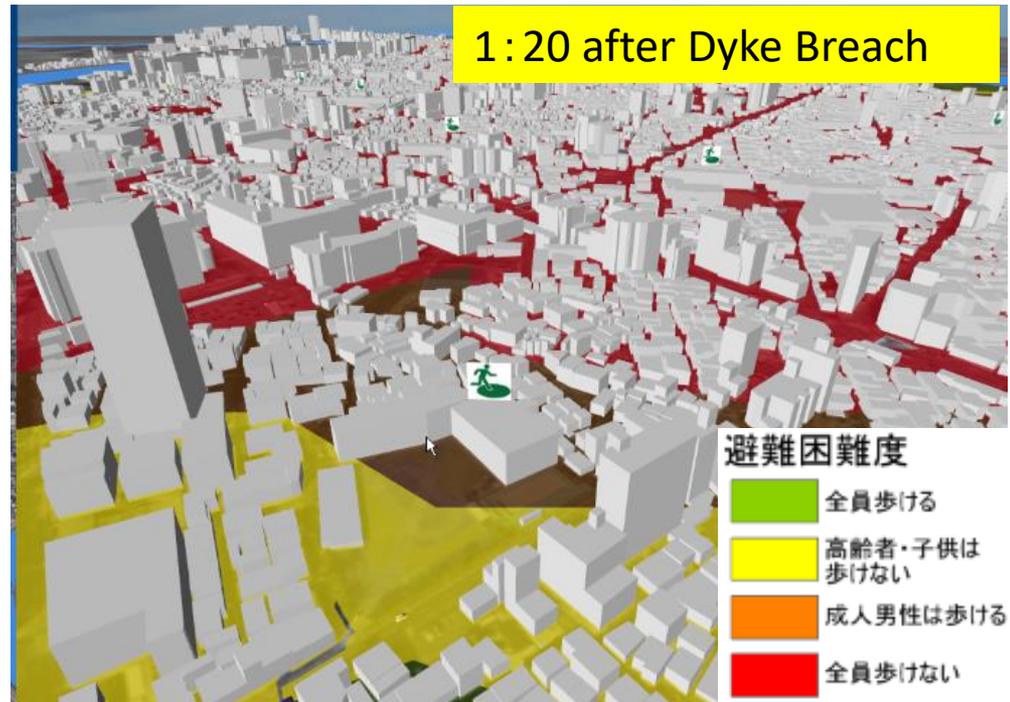
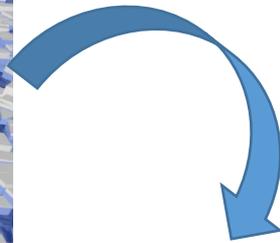
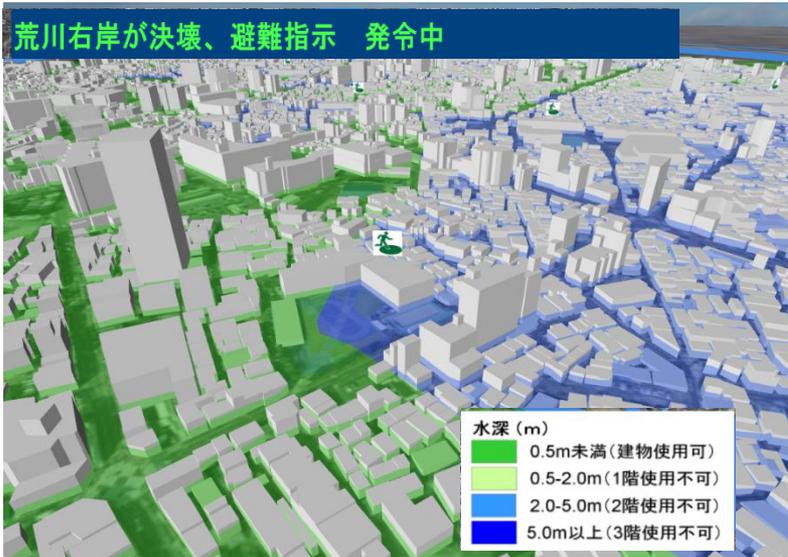
2D Static Hazard Map

3D Dynamic Hazard Map

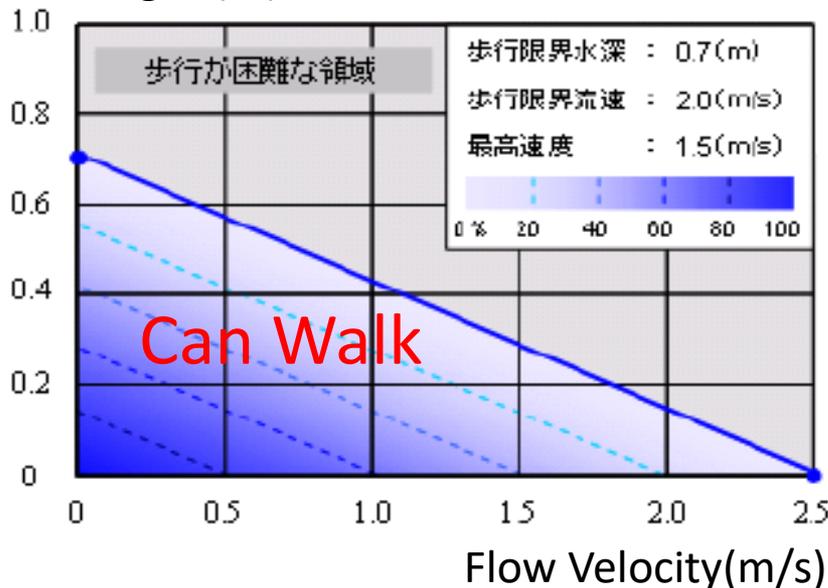
Current Type



# From Hazard information to Risk Information



Height (m)



Evacuation Difficulty Index

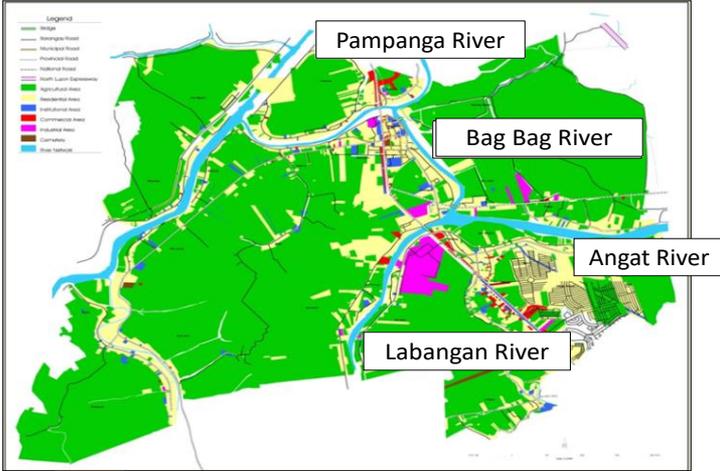
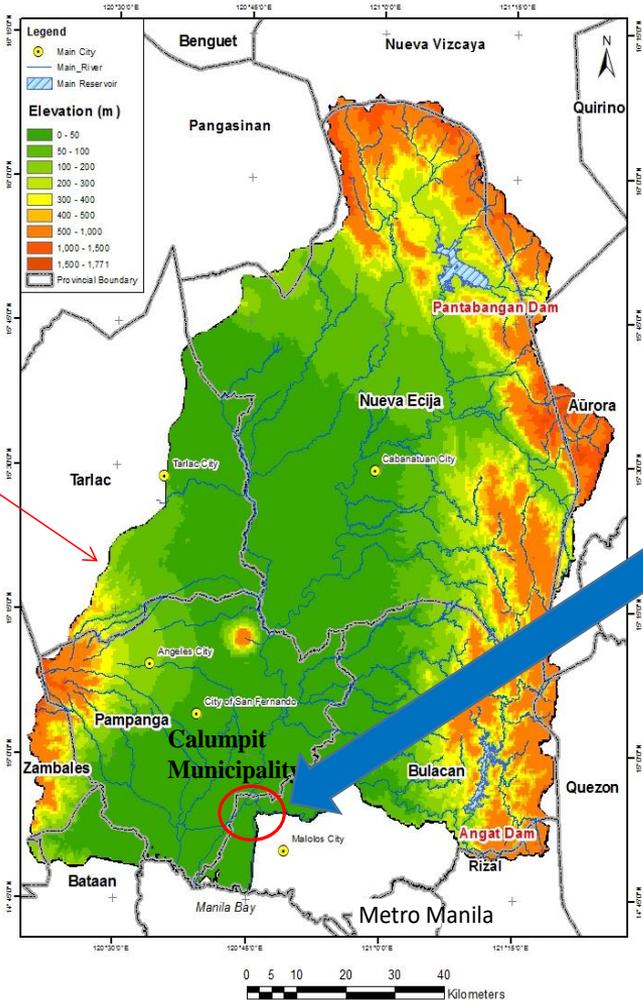
# Risk Assessment Activity in the Philippines

## Pampanga River Basin:

Catchment Area: 10,434 km<sup>2</sup>  
 River Length: 260 km

## Calumpit Municipality:

Population: 112,007  
 Households: 22,402  
 Area: 5,625 ha



## 2011 Typhoon Pedring



Source: OCD-3/PRFFWC

# Why people didn't evacuate in Calumpit

-No evidence-based hazard map & risk assessment

-Accustomed to annual floods but **not prepared for big events.**  
-Need to understand **difference between ordinary and extreme events.**

Criteria

Comparison

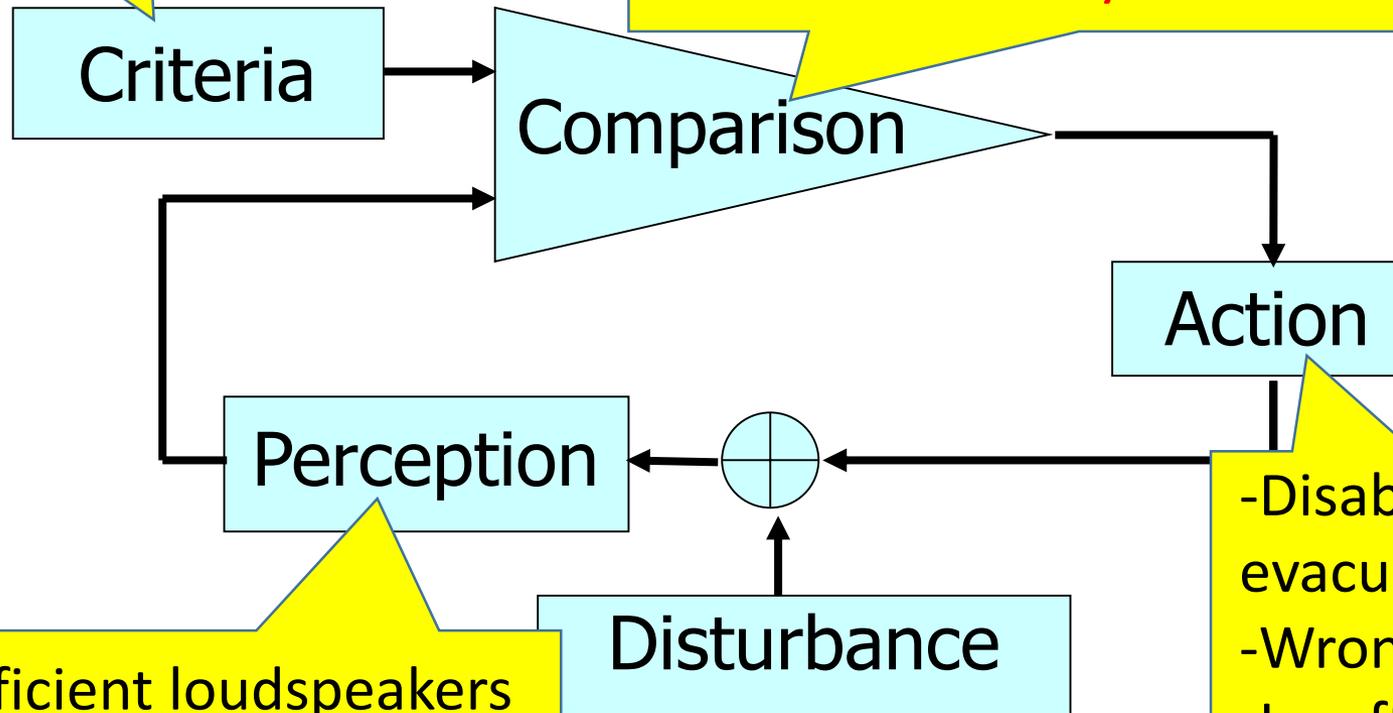
Action

Perception

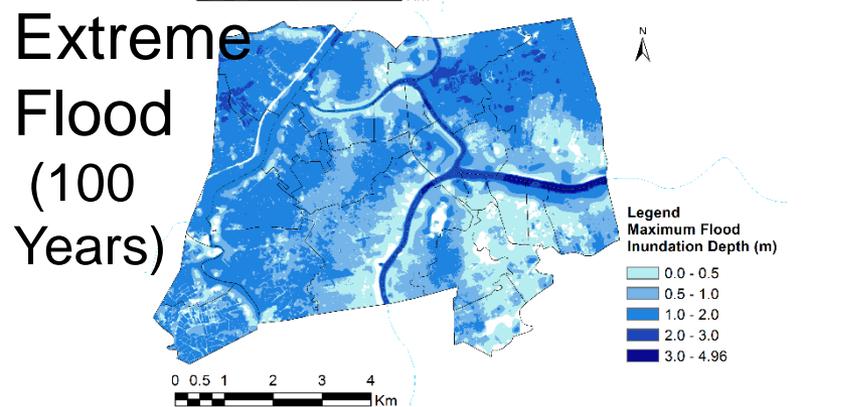
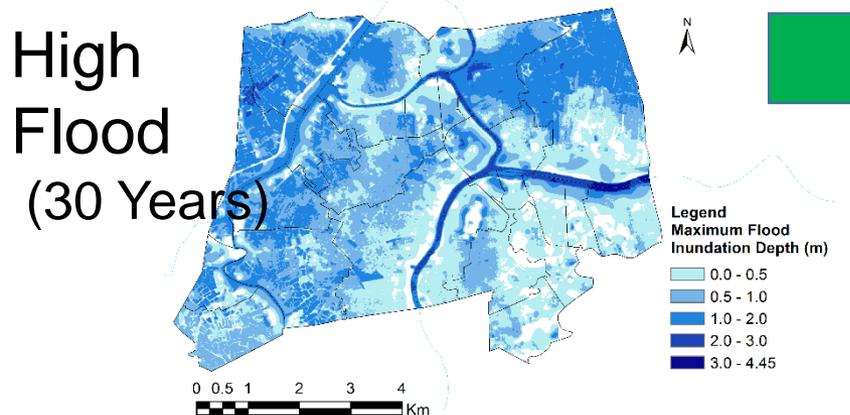
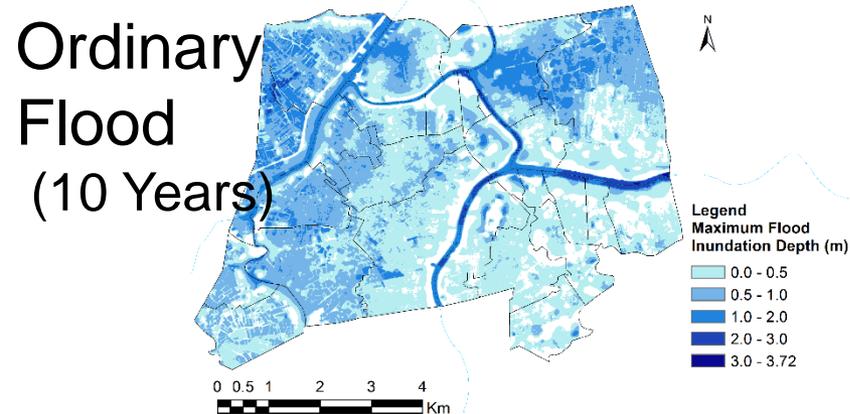
Disturbance

-Disability of evacuation  
-Wrong action  
-Insufficient evacuation space

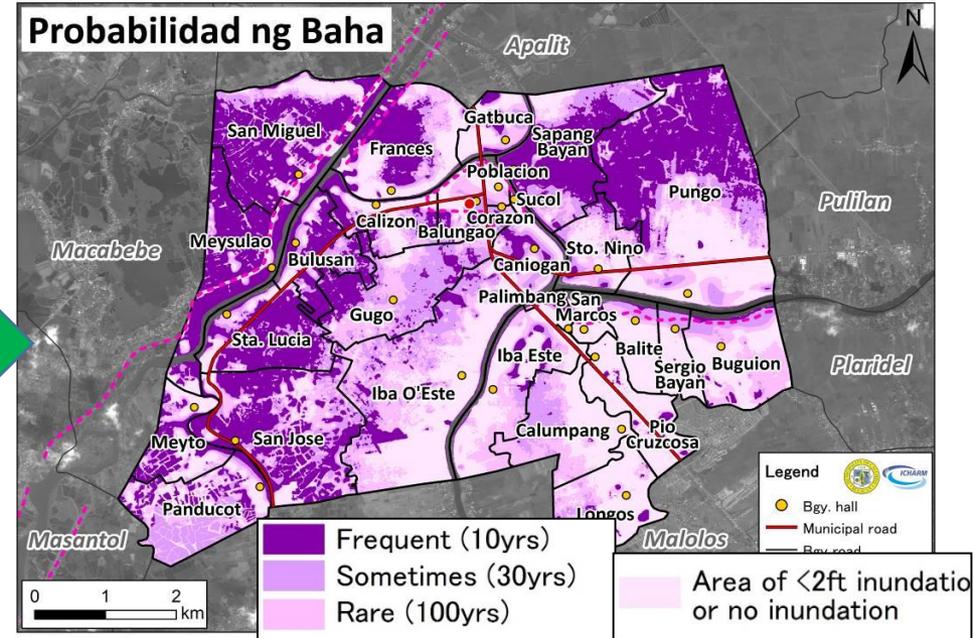
-Insufficient loudspeakers for providing evacuation information



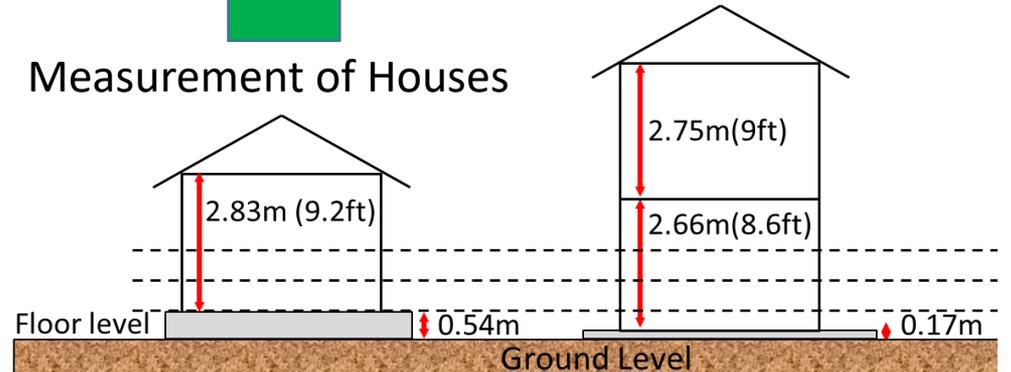
# Risk Assessment Activity in the Philippines



## Probability Map of Inundation above First Floor Level



### Measurement of Houses



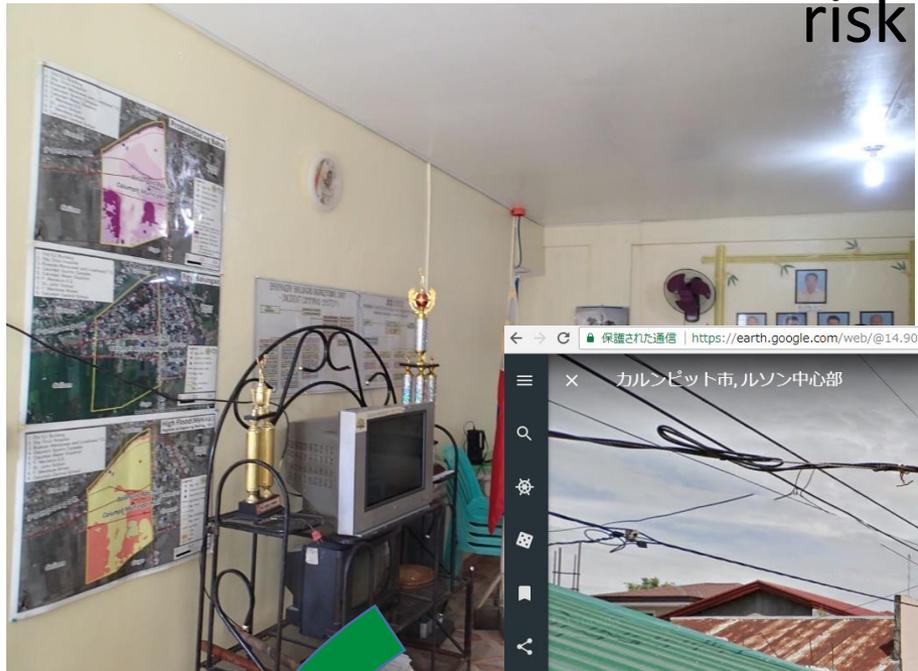
# Sharing risk assessment results with people

## Community Workshop

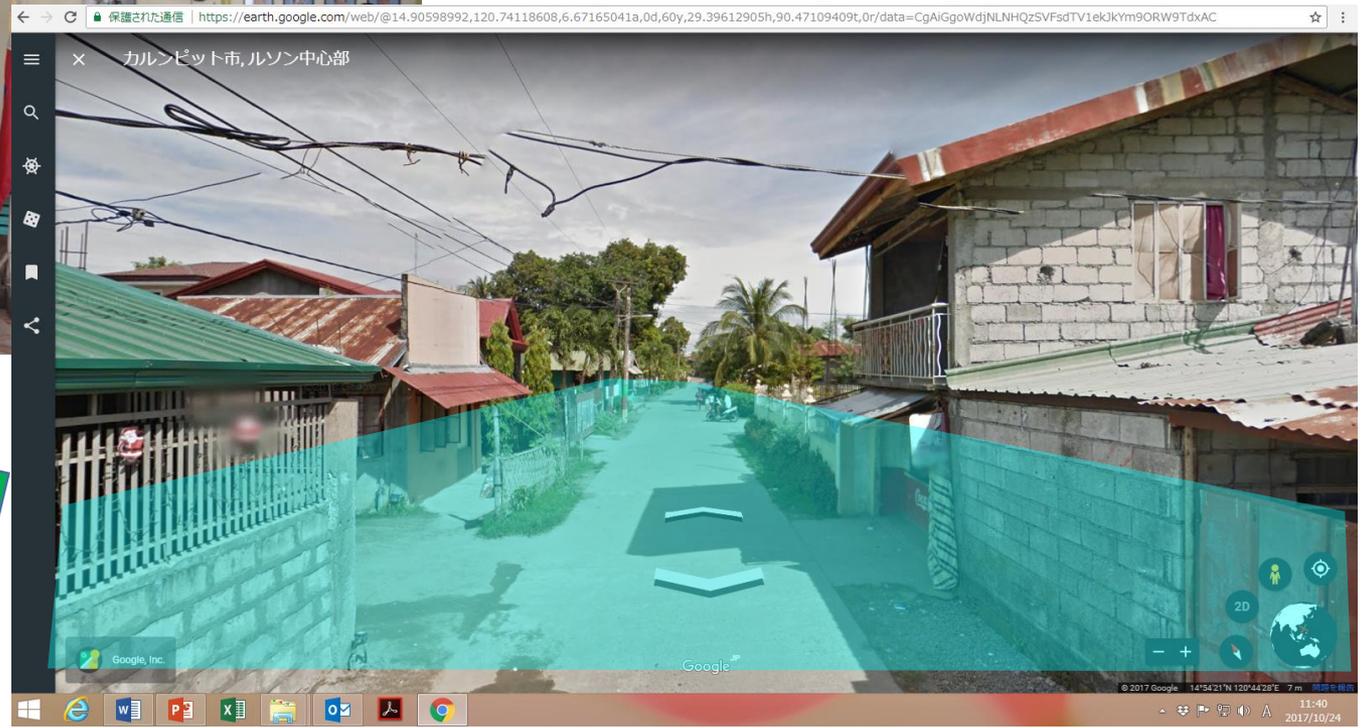


# Next Step: Information platform for understanding risk

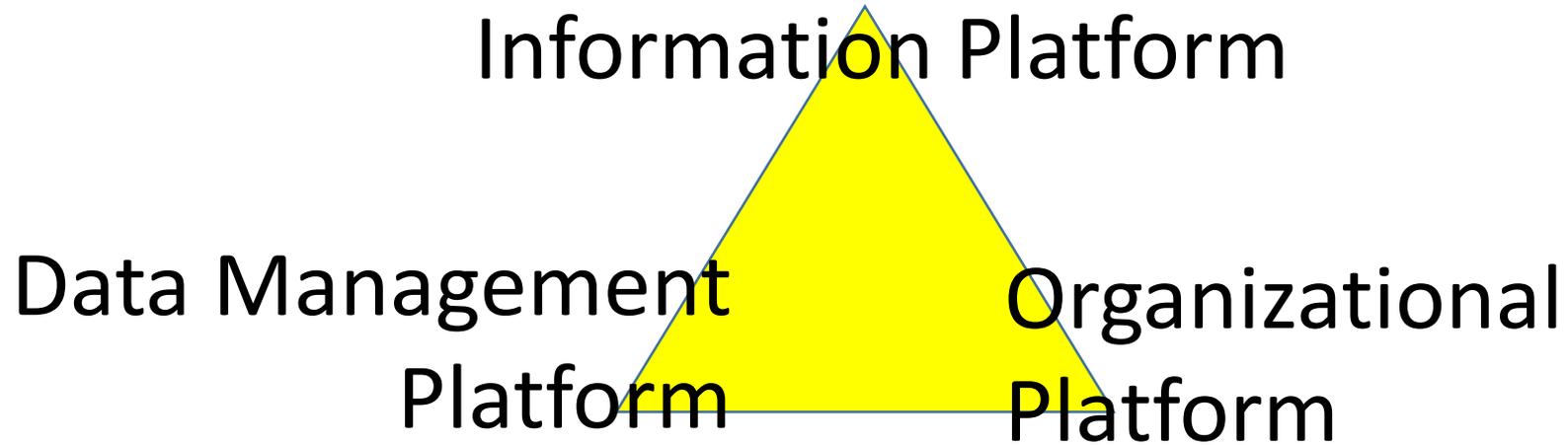
From Paper to **ICT Tool** which can provide more realistic risk information at their locations



Visualization using Google Earth Street View



# Information & Data & Organizational Platform



Platform on Water-related Disasters

