

Group Discussion

# Geohazards



# Group discussion

From 3:30-5:40, 13 participants

- Short presentations by researchers from Malaysia, China, UK, Taiwan, and Japan
- Discussion
  - What is the current situation of geohazards in the world
  - What are the issues to be solved
  - What we must do
  - What we can do

# Presenters

- **Prof. Komoo**, Ibrahim (Director, Southeast Asian Disaster Prevention Research Institute, University of Kebangsaan, **Malaysia**)
- **Prof. Petley**, Dave (Director, Institute of Hazard, Risk and Resilience, and Wilson Professor of Hazard and Risk in the Department of Geography Durham University, **UK**)
- **Prof. Huang**, Runqiu (Vice President, Chengdu University of Technology. State Key Laboratory of Geo-hazard Prevention and Geo-environment Protection, **China**)
- **Prof. Kamai**, Toshitaka (**DPRI-KU**)
- **Prof. Chigira**, Masahiro (**DPRI-KU**)

# Recent geohazards

## Induced by

- 2009 Wenchuan earthquake
- 2009 Typhoon Molakot, Taiwan
- 2011 Tohoku earthquake
- 2011 Typhoon 12

# Geohazards by

- 2009 **Wenchuan** earthquake
  - Numerous numbers of **landslides**
  - 35 **major landslide dams**, threatening downstream area.
  - Number of landslides by rainfall was doubled in the next year
    - 2915 people killed by landslides in the next year.
- 2009 **Typhoon Morakot**
  - Many **landslides**, one of which **extinguished a village** with more than 400 casualties

# Geohazards by

- 2011 **Tohoku** earthquake
  - **Landslides of valley-filling** materials, causing severe damage to residential houses
  - **Landslides of natural slopes were very limited – probably due to dry season**
  - **Liquefaction** in residential areas
- 2011 **Typhoon 12**
  - More than 10 deep-seated **catastrophic landslides**
  - **Landslide dams**
  - Fatalities: 55/93 by landslides

# We recognized that

- The numbers of fatalities by landslides are concentrated in Asian countries.
- They are closely related to rainfall --> geohazards would be strongly affected by global climate change.
- Many of fatalities by earthquakes and rainstorms are actually by induced-landslides, which is hidden behind.
  - 2010 Christchurch earthquake, 2011 Tohoku earthquake induced huge damages because of ground conditions.
  - Fatalities by typhoons Morakot and #12 were mainly by landslides.
- Residential areas are expanding into landslide susceptible areas without enough awareness and knowledge on landslides, particularly in developing countries.
  - Landslide fatalities is related to the number of journal papers

# We recognized that we need

- Basic understanding of landslides
  - Mechanisms of widespread earthquake-induced landslides
  - Major factors to induce catastrophic landslides
  - Time-dependent phenomena: slow-moving to rapid-moving?
  - Effects of rainfall before or after an big earthquake
- Multidisciplinary study on landslides
  - geology, rock mechanics, hydrology, geomorphology, geophysics



# We must contribute to communities via

- Hazard mapping based on scientific understanding of geohazards
  - Landslides on natural slopes
  - Susceptibility against artificial construction
  - Liquefaction
- Alarming system
  - Landslides by rainfall
- Capacity building
  - Awareness of landslides
  - Open-access journals
    - Expensive journals are not available in developing countries
  - Information transmission
- Networking, particularly in Asia



Thank you for your attention

From Geohazard group

00:00:13