Hualien Earthquake, 6 Feb 2017

Purpose: Information
Submitted by: Chinese Taipei
Hualien Earthquake
on Feb 06, 2017

Chinese Taipei

13th APEC Emergency Preparedness Working Group Meeting
Numbers and facts related to the Hualien Earthquake

- **Date of strike**
  - At **23:50 on February 06, 2018**

- **Magnitude**
  - **6.0**
  - 90+ foreshocks and 300+ aftershocks

- **Intensity**
  - Max. value “7” (> 400 gal)

- **Casualties**
  - **17 dies** and 283 injured

- **Damages**
  - 4 buildings collapsed
  - Ground transportation
  - Public services

Photographed by National Land Surveying and Mapping Center
Geo-profile near the hypocenter and earthquake mechanism

Focal depth: 10 km
Magnitude: 6.0
Ground displacements after the quake measured by using DInSAR data

- East-West ground displacement

- Eastward
- Westward

- Vertical ground displacement

  - Uplift
  - Settlement

Satellite Image Sources
Sentinel-1A 20180203/Sentinel-1B 20180209
Sentinel-1A 20180205/Sentinel-1B 20180211
Distributions of fore- and after-shocks
Till 02/07 07:50 am

Distribution of quake
97 pre-shocks (2/4~6 23:50)
115 after-shocks (till 2/7 07:50)
Historical Events of Earthquake Swarm

- 1951.10.22: ML 7.3
- 1951.11.25: ML 7.3
- 2012.06.16: 96 earthquakes
- 2015.09.16: 32 earthquakes
- 2015.10.16: 18 earthquakes
- 2016.04.27~05.03: ML 6.0 Main shock
Damaged sites distributed along the Milung Fault

- Green Cloud Gate Building
- Platinum Twin-Star Buildings
- Chiang Kai-shek Bridge
- Marshal Hotel
- Hualien Airport
- Chihsingtan Beach Bridge
Collapsed buildings

02/07 00:36
Platinum Twin-Star Buildings
Source: Facebook

02/07 00:06
Green Cloud Gate Building
Source: Facebook
Damaged building

02/07 00:50 Far-eastern Building
Source: Facebook

Damaged site

02/07 00:31 Marshal Hotel
Source: Facebook

Collapsed site
Damaged bridges

Crack and buckling on deck
02/07 00:11 Chihsingtan Beach Bridge
Source: Facebook

Buckling on deck
02/07 00:42 Hualien Bridge
Source: Facebook
Rock fallings along Highway #8

Near Changchun Temple

Dam site in Taroko Creek
Findings and lessons learned

• **Private-owned-for-public buildings** could be hot spots to focus on checking seismic capacity
  – Hotels, malls, theaters, hospitals, banks....

• **Structures with open space, but without sufficient shear walls**
  – Ex. Weak story because of the 1st floor garage

• **Information preparedness to conduct screening and highlighting disaster hotspots**
  – An **automatic system generating reports** after earthquakes to help decision makers in the emergency operation room

• **Early warning system to alert citizen for up-coming hits**
  – Disaster alerts sent through the Cell Broadcasting Service to mobile phone
Thanks for your attention