

# Optional Excursion Program

ICL Sendai Meeting  
Japan Landslide Society

## Land devastation and the recover by two massive earthquakes in Miyagi Pref. Japan

The earthquakes hit the area. One is the 2008 Iwate-Miyagi Inland Earthquake (M. 7.2) at mountain side and the other is the 2011 Northeastern Japan Great Earthquake (M. 9.0). At the moment of 2008 event, the massive, typical, various and more than 3000 landslides occurred on the area of earthquake source fault. A series of disasters by shock wave, landslides, and the tsunami occurred by the event of 2011. After that, the area started the reconstructing processes. The excursion program like to introduce the facts at the places. Explain the countermeasure plan and the activities. And ask the useful idea for future society and the nature.

### Outline of the program

Title the excursion: Land devastation and the recover by two massive earthquakes in Miyagi Pref. Japan

Date: March 9 (Monday) and 10 (Tuesday), 2015

Fee of registration: 40,000 JPY (400 US\$). It including three night accommodation, tour transportation (by bus and by boat), light meals at the field, and document. Breakfast and dinner is excluding the fee.

Draft schedule of trip: Outline of the field trip area are shown in Figure 1.

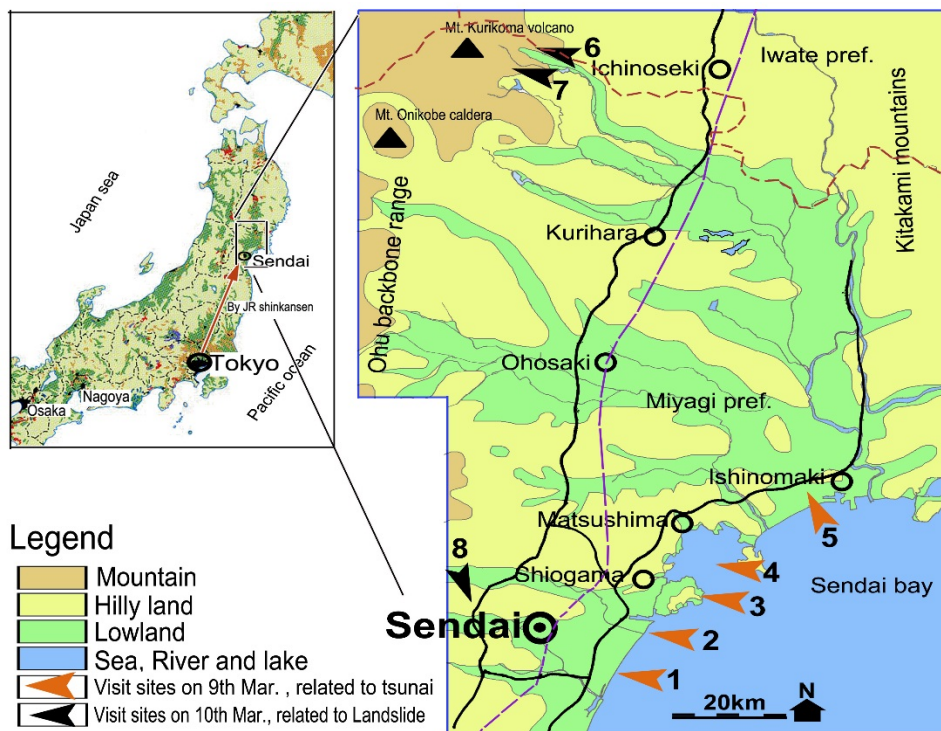


Figure 1. Outline of landform and locations of the field visit area  
No.1 to 8 is the locality of excursion stopping sites.

## The brief introductions the visit sites.

1. **ARAHAMA** coastal village: The village established about 300yrs ago. Before the tsunami comes, 1000 houses, 2700 population and one elementary school there. Tsunami hit there as the 10 meter to 4 meter in height. 50% of the houses outflowed. Many residents evacuated to the school. The recovering plan is now discussing.
2. **GAMOU** river mouth village in Sendai (Figure 2): The area located just left bank of Nanakita River. The huge number of houses (2000 of the 2700 houses), fish ponds and concrete embankment destroyed. This area the tidal flat ecosystem is also devastated. Now the ecosystems is recovering but the others not able to recover now.

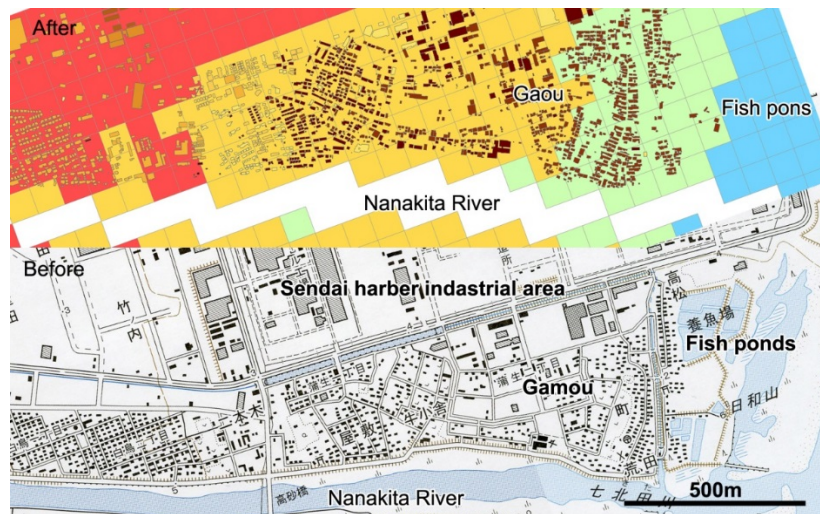


Figure 2. Tsunami damage data at Gamou area, Sendai. Above: After the tsunami comes. Color grids are tsunami inundation from 8m (blue) to 1m (red). Outflow building to inundation houses are also mentioned by color by destruction type.

3. **SHICHIGAHAMA** town (Figure 3): The town located at the entrance of Matsushima bay. The evacuation system such as route identification, mapping and training has been carried from several years earlier the event. The system successfully carried. The recovering plan is also nearly completing.



Figure 3. Tsunami damage at Doshoji temporal evaluation site. Local people survived by the secondary evacuation.

4. **URATO** island, Matsushima: Four small islands as the people lives are distributed at the entrance of Matsushima Bay. The huge number of surface landslide concentrated and the tsunami also hit there. We will visit there by boat.
5. **ISHINOMAKI** down town area (Figure 4): The area is the most widely devastated area. The human loss reach to 2600. The recovering process started now. We will able to look the large devastated area from the higher location.



Figure 4. Ishinomaki city is one of the most severe damaged area. Several thousand houses outflow by huge tsunami and the litter accumulate at the foot slope of upland.

6. **KOMANO-YU** onsen site (Figure 5): The famous hot spring (onsen) has been located at the right side foot slope of large gorge. At the moment of 2008 island earthquake, the large landslide happened at the left side slope and the body developed the landslide dam. 5 minutes after the huge debris flow came from 4km upper reaches of the gorge. The debris hit the Onsen and building buried by debris. 6 person dead by the disaster.
7. **ARATOZAWA and HIYASHIZAWA** landslide area: Aratozawa landslide (Figure 7) is famous massive landslide as the catastrophic destruction one. The huge landslide scarp and landslide body remains now. The counter measure by Japan Forestry Agency conducted and now the main works shifted to monitoring job. Hiyashizawa area is also widely devastated area (Figure 6). The area mostly carried many sorts of counter measure because of the necessity for human life keeping.



Figure 5. Komanoyu Hot spring was buried by the debris flow. (Left photo)

Figure 6. Hiyashizawa landslide area ( above).



Figure 7. Overview of the Aratozawa landslide area.

8. **ORITATE** residential area (Figure 8): Landslide damages occurred at the time of 2011 Northeastern Japan Great Earthquake. The residential area is consist of the land deformed area. That is cut and fill area. The filling materials moved at the occasion of the earthquake. This is the example of small landslide at the residential area.



Figure 8. Oritate residential area is only a sample of small landslide disasters triggered by the giant earthquake. Left is a slightly large landslide. Right is the surface landslide. The number of destroyed habitats was amount to 5000 sites in Sendai area.

9<sup>th</sup> March: Start 9:00 A.M. at JR Sendai Station. Finish 5:00 P.M. at JR Sendai Station.

Visiting places and activities: Tsunami disaster areas such as Arahama and the surroundings at along the Sendai coast. Shichigahama town office and the relations for interview the facts of local disaster, the evacuation and the recovering activities. Take lunch at Shiogama port building. Visit Matsushima bay islets by boat as the surface landslides concentrating area and experience the result of oyster aqua culture recovery.

10<sup>th</sup> March: Start 9:00 A.M. at JR Sendai Station. Finish 5:00 P.M. at JR Sendai Station.

Visiting places and activities: Landslide disaster areas by 2008 inland earthquake such as Aratozawa massive landslide, Hiyashizawa landslide area. Interview the stuffs of Japan Forestry Agency and Local government. Visit the landslide area at residential area in Sendai city.

Accommodation: The organizer will reserve the alternative hotel for purchased person.

**Coordinator and contact person:**

Toyohiko MIYAGI (Prof. of Tohoku-Gakuin University, Sendai, Japan)

e-mail: [miyagi@mail.tohoku-gakuin.ac.jp](mailto:miyagi@mail.tohoku-gakuin.ac.jp)

(How to send the excursion expense: Not fixed)