

Safety Engineering and Uncertainty of Earthquake

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What I gained through activities during the program

1. My Presentation, Poster Session

In 2nd day, February 22th, I gave a presentation about my study at ITU campus. After the presentation, I got some precious from professors and students in a poster session. So I summarized them below.

In Japan, there are many earthquakes which are thought to perhaps occur in future. Each prefectural governments selects some earthquake scenarios in order to make a regional seismic disaster prevention plan. The selection of scenarios is based on a discussion of experts. But their way of the selection is not clear and quantitative.

In my study, the quantitative way of selecting scenarios based on their occurrence probabilities and impacts (losses) is proposed. From comments I got in the poster session, I think one of the biggest problem is a deficiency of record about earthquake activities. We must make a decision considering not only uncertainty of earthquake activities defined by a model, but also uncertainty of the model itself. This is the subject for all studies about earthquake engineering, I think.

2. Symposium

In 3rd day, I attended a symposium. I was very excited to hear lectures about studies conducted in Turkey. Especially, the study about vibration characteristics of Aya Sofia is very interesting. In Japan, all people who major in architecture know Aya Sofia due to its beauty and revolutionary structural design.

3. Field Work

We visited an undersea tunnel in 4th day, and AFAD Disaster Management Center in 5th day. Both are very important structures for Istanbul or Turkey, so special seismic counter measures are conducted for them. For example, the center have enough resources to survive several days without exterior help. I was very excited because I'm interested in how Turkish engineers consider uncertainties of earthquake activities. In Japan, especially after 2011 Tohoku earthquake, it

matters how we should consider scenarios beyond design, I think.

I went to the company ERSEL which make machines (ball mill, etc.) in 4th day, too. I saw a mixing machine grinding like a human hip. I was surprised to hear that due to the move and an isolation rubber, a vibration of the machine didn't travel to a floor.

In other days, we went sightseeing. Turkish students kindly guided us, so I enjoyed Istanbul very much. On the other hand, I experienced a traffic jam when we took the bus. I learned firsthand the importance of the undersea tunnel.

Due to everyone of Turkey, I was able to have a precious experience.

I really appreciate their kindness.



An undersea tunnel under construction

Suggestion for improvement / any other comments

1. If Japanese students have given some idea about the plan of this trip before departure, conductors would have been able to use the opinions as reference.
2. I think work with Turkish students (like a group discussion) is good experience for us.