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EARTHQUAKE AND TSUNAMI DISASTER MITIGATION IN THE MARMARA REGION AND DISASTER EDUCATION IN TURKEY

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Since 1939, devastating earthquakes with magnitude greater than seven ruptured North Anatolian Fault (NAF) westward, starting from 1939 Erzincan (Ms=7.9) at the eastern Turkey and including the latest 1999 Izmit-Golcuk (Ms=7.4) and the Duzce (Ms=7.2) earthquakes in the eastern Marmara region. On the other hand, the west of the Marmara Sea an Mw7.4 earthquake ruptured the NAF's Ganos segment in 1912. The only un-ruptured segments of the NAF in the last century are within the Marmara Sea, and are identified as a "seismic gap". Therefore, The Marmara Sea should be focused on because of a seismic gap in the NAF (Figure 1) and through the proposed multidisciplinary research uncertainty in magnitude, epicenter, recurrence, fault segmentation, and their cross effects should be identified and characterized.

Japan and Turkey can share our own experiences during past damaging earthquakes and we can prepare for future large earthquakes in cooperation with each other.

Our goals of this project are as follows,

1- To develop disaster mitigation policy and strategies based on multidisciplinary research activities.

2- To provide decision makers with newly found knowledge for its implementation to the current regulations.

3- To organize disaster education programs in order to increase disaster awareness in Turkey.

4- To contribute the evaluation of active fault studies in Japan.

This project is composed of four research groups (Figure 2).

The first is "Earthquake Source Model research" group. Long-term OBS observation, Electromagnetic observation, Seafloor extensometer observation and Trench survey studies will be conducted in order to identify the detailed seismic zone, fault geometry, 3D Velocity structure and reliable crustal deformation in the Marmara Sea.

The second is "Tsunami prediction based on earthquake cycle simulation research" group. In this group earthquake and tsunami occurrence scenarios will be proposed based on especially the research Group 1's outputs and current knowledge on NAF's seismic activities. The outputs will be used for the simulation of strong ground motion, developing of advanced hazard maps and a tsunami early warning system.

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The third is “Seismic characterization and damage prediction research” group. This group focuses on modelling of 3D velocity structure, theoretical prediction of ground motion and evaluation of existing structures in the selected urban areas using research outputs of the other groups. Also there will be an attempted of making an urban area model for Istanbul using available data for this area, and to execute earthquake hazard and disaster simulation for various scenarios of a possible earthquake. Improved hazard maps and visual materials for disaster education are expected.

The fourth is “Disaster education using research result visuals from each research” group In group four, effective use of media in the dissemination of disaster information will be examined and disaster management planning through regional disaster prevention community will be encouraged. as well as, using the research visuals a disaster prevention education program will be conducted through media, web, local communities and schools.

In this project, we will integrate these research results for disaster mitigation in The Marmara region and disaster education in Turkey.

We will have a presentation of the details of SATREPS Japan-Turkey joint research project.

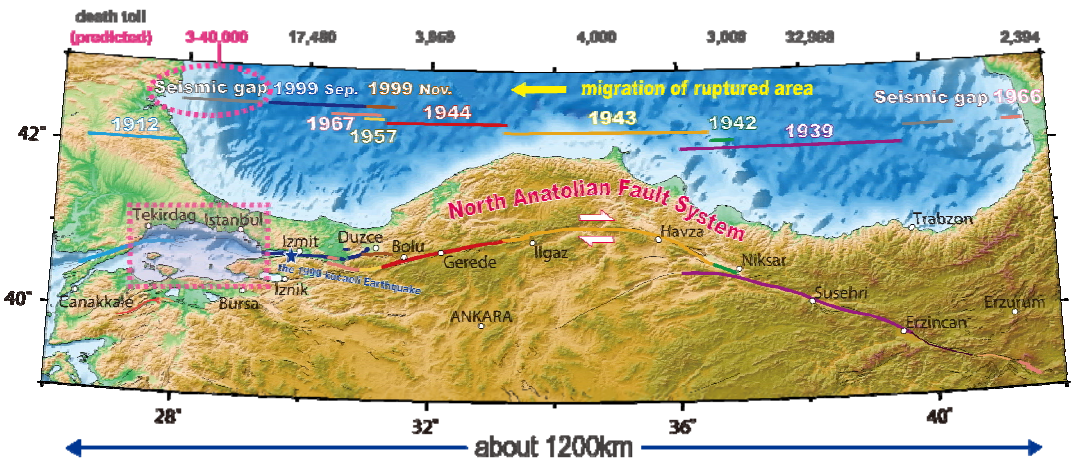

Figure 1. Measure seismic activities on the North Anatolian Fault

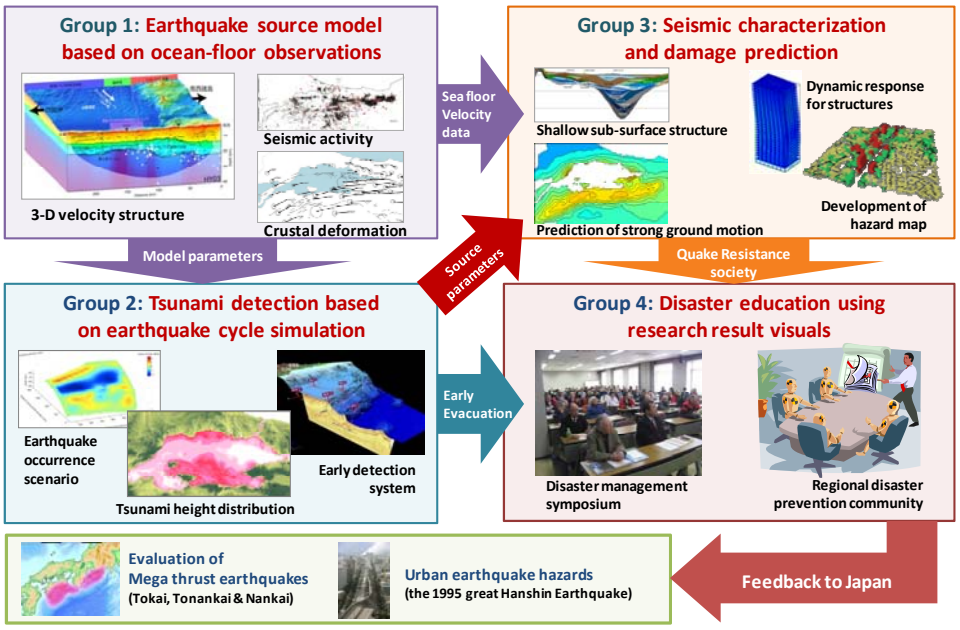

Figure 2. Outline of research projects