Seismic reflection survey in the Southern part of Sendai Plain

Shinsuke Okada1, Toshifumi Imaizumi1, Kyoko Kagohara2, Tomoo Echigo3, Shigeru Toda4, Matsubara Yoshikazu5, atsushi Miwa6, Yasutaka Ikeda6, Takahiro Miyauchi7, Daisuke Ishimura7

1International Research Institute of Disaster Science, 2Yamaguchi University, 3Geo-Research Institute, 4Department of Earth Sciences, Faculty of Education, Aichi University of Education, 5OYO Corporation, 6Department of Earth and Planetary Science, Graduate School of Science, University of Tokyo, 7Department of Earth Sciences, Graduate School of Science, Chiba University

Stress filed of Northeast Japan arc was drastically changed due to the 2011 Off the Pacific Coast of Tohoku Earthquake. Inland earthquakes were triggered by this drastic stress filed change. Our survey area is located on a junction Nagamachi-Rifu fault and Futaba fault, and active fault have never been distinguished clearly. In this study, we suggested concealed active fault beneath southern part of Sendai Plain, which is analyzed by air photo, 1m-DEM, and 2-DEM.

To reveal the subsurface structure of concealed active fault beneath the Sendai Plain, we carried out seismic reflection survey from January to February 2013. Seismic line has a length of 5.3 km and started from Takenohana Watari town to western edge of Watari bridge via Ookuma-jinguuji. The source used in this survey was a Enviro Vib (IVI Inc.). Sweep length was 16 sec and sweep frequency range beginning at 10 Hz up to 100 Hz. The receiver was GS-20DX (natural frequency, 10 Hz; Geospace Inc.). The source and receiver spacing was 10m, with 192 ch geophones used for each recording. We selected the Geode (Geometrics) for the recording system and its sampling rate is 1 msec.

We thank Abe-haru construction company for their assistance with this seismic survey. The help of Watari town office and Sendai civil engineering office in the preparation of this survey is gratefully acknowledged. We also thank to students of Tohoku University for their assistance in our survey.

Keywords: seismic reflection survey, Nagamachi-Rifu fault, Futaba fault, concealed fault, Watari town