Japan Geoscience Union Meeting 2014
(28 April - 02 May 2014 at Pacifico YOKOHAMA, Kanagawa, Japan)

HGM02-02 Room:422 Time:April 30 14:30-14:45

Visualization of liquefied layers using GPR in Watarase flood plain, central Kanto

SETO, Masayuki[1*] ; ICHIKAWA, Minami[2] ; KITAZAWA, Toshiyuki[2] ; NAKAMURA, Yosuke[1] ; TAMURA, Toshikazu[2]

[1]Fukushima University, [2]Rissho University

At the Watarase flood plain, central Kanto, there were many cracks and sand mounds caused by liquefaction in 11, Mar 2011. Various liquefaction models have been proposed based on a profile observation of the old liquefaction and experiment. This study tried visualization of liquefied underground layers. We carried out boring investigations and GPR explorations in Watarase flood plain. Core samples show typical lower river deposits. There was loosely-deposited sandy layer near the groundwater level which was 2m deep. We traced liquefied layers using GPR (Ground Penetrating Rader) which can display the reflection profile about 5m deep with frequency of 250 MHz. By the comparison of core records with GPR images, we confirmed that GPR image is applicable to the distinction of sand, sandy clay and clay layers. Moreover, we found sharply shaped reflection patterns in sandy layers near 200cm deep. Width and height of the pattern is 0.5-2.5m and 0.2-0.95m respectively. Interval of sharp-shaped reflection patterns are 1-20m. The interval is related between the GPR survey line and the location of deformed layer. We considered that these sharp shaped reflection patterns were shown liquefied sandy layers. GPR is thus available for the visualization of the invisible liquefied layers.

Keywords: GPR, Liquifaction, 3.11 Mega quake