

## Liquefied layers and their deformation structure identified in all core samples.

INAZAKI, Tomio<sup>1\*</sup>

<sup>1</sup>PWRI, Geology and Geotechnical Engineering RG

Sedimentological investigations were carried out to all core samples acquired from the sites where liquefaction widely took place or ground failure occurred caused by the 2011 East Japan Earthquake. According to the usual core analysis procedure, all cores were first split into two halves along the core axis and photographed. The surface of one half of core was delaminated using polyurethane resin. Magnetic susceptibility was measured for the standard 7-cm<sup>3</sup> plastic cubes which were pressed into and retrieved from a half core at 2.5-cm or 5-cm intervals. A number of 10-mm thick, 60-mm wide, and 25-cm long plate samples were also removed from the cores for taking the soft X-ray photographs. Grain size distributions were determined by combining traditional sieving data with those obtained using a laser diffraction particle size analyzer.

We first conducted above core analysis for a total of 7 boring cores sampled at Kokai River, Ibaraki Prefecture, where levee were partly failure by the earthquake. Sand dykes were caught in cores, and also liquefied layers were identified having characteristic deformation structure. Clay blocks were frequently included in the liquefied layers. The core analysis highlighted the usefulness of it for the investigation of liquefaction and also showed the potential false estimation of liquefaction by means of conventional FL method based on non-core drilling data and N-values of Standard Penetration Testing.

Keywords: East Japan Earthquake, liquefaction, all core boring, deformed structure