

## Shallow topography of occurring liquefaction sites in Urayasu city, Chiba prefecture

WAKAYAMA, Hiroki<sup>1\*</sup>, SUGAI, Toshihiko<sup>1</sup>

<sup>1</sup>Environmental Studies, KFS, UT

Liquefaction deteriorates seismic disasters because it tends to occur at lowlands where lots of people live and infrastructure concentrates. The research of liquefaction was started from 1964, when occurred Great Alaskan Earthquake and Niigata Earthquake, and it was revealed where liquefaction tends to occur, based on topography, geology and microtopography. The previous studies found out that high groundwater level, loose sand deposited and strong earthquake are main conditions for liquefaction. Landfill areas satisfy these conditions. In fact, liquefaction occurred landfill is but all landfill is not occurred.

The objectives of study are quantitative assessment of liquefaction risk. To this end, we focused on the sedimentary structure of the subsurface and visualized of shallow topography to find out the character of liquefaction sites.

Study area is Urayasu city, Chiba prefecture. Urayasu city was occurred liquefaction in The 2011 off the Pacific coast of Tohoku Earthquake. Landfill is the highest probability of liquefaction in the earthquake, so it is necessary to find out the shallow topography of liquefaction sites in landfill.

To clear up shallow topography, I subject to extract of (1) groundwater level (2) thickness of landfill (3) thickness of sand layer and make out bathymetric images and three-dimensional images. To visualize the groundwater level, it was found to be not straight line. And it was found that liquefaction has occurred in a location close to the surface of groundwater levels.

And also to visualize the landfill and the sand layer, it was found that the meandering shape of the surface and groundwater level is different.

To consider the overlapping liquefaction sites and groundwater level, groundwater level has lowered in places where liquefaction has occurred. It has been reaffirmed that the height of the groundwater level is defining of the occurrence of liquefaction.

Keywords: earthquake, liquefaction, shallow topography