

Geomorphic condition of the liquefaction sites in the northern part of Miyagi prefecture during the Tohoku earthquake

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Mapping of liquefaction sites such as the occurrence of sand boiling and structural damage in the northern part of Miyagi Prefecture during the 2011 off the Pacific coast of Tohoku Earthquake were conducted based on the field survey and Google Earth images interpretation. The results of GIS analysis indicated that many liquefaction sites were located on the former river channel and natural levee (point-bar) along the Naruse River, Eai River, Hasama River and Kitakami River. However, liquefaction sites in the study area were more sparsely than the Tone River lowland. There were many ponds and marsh in the study area before 1930 as well as Tone River lowland. These ponds and marsh were buried by insufficient compaction deposit of dredged soils, and a large number of liquefaction occurred in these reclaimed land in the Tone River lowland. On the other hand, these ponds and marsh were drained off, and then transformed to the rice field in the study area. Thus, it seems that the artificial ground consist of loose sandy soils in the study area are less than the Tone River lowland.

Many sewage manholes were uplifted in the study area. These sites were located on flood plain (backmarsh) and natural levee. The amount of uplift displacement of a sewage manhole located on the clayey site was larger than the sandy sites. In particular, several sewage manholes located on the peaty site were uplifted more than 50 cm.

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