Liquefaction risk evaluation using relative height data of natural levee

*Mamoru Koarai[1], Kouta Uchiyama[1], Takayuki Nakano[2]

1. Earth Science course, College of Science, Ibaraki University, 2. Geospatial Information Authority of Japan

The liquefaction risk evaluation of the natural levee has been divided in two by a border of relative height 5m in the liquefaction evaluation standard of Nakano et.al. (2015).But it is necessary to reconsider evaluation division, because almost no natural levee with over 5m relative height exists in the Naka River low land and the Tone River downstream.
In this study, land condition map, 5m grid DEM and liquefaction occurrence area by The 2011 off the Pacific coast of Tohoku Earthquake in downstream of the Tone River were overlaid by GIS. The relative height of natural levee was calculated from an elevation of the natural levee liquefaction generated and an elevation of other neighbor landform such as back marsh, coastal plain and delta.
After the liquefaction occurrence rate of the natural levee was calculated every relative height difference of the 0.5m unit, the liquefaction occurrence rate decreased suddenly between 1.5 m-2.5 m of relative height or the liquefaction occurrence rate gradually decreased over 1.5 m-2.5m of relative height. It is appropriate to establish a border of relative elevation of a natural levee by 2m or 3m.

Keywords: liquefaction hazard map, natural levee, relative height

