Japan Geoscience Union Meeting 2010
(May 23-28 2010 at Makuhari, Chiba, Japan)

HSC015-P03 Room: Convention Hall Time: May 23 17:15-18:45

Building and validating of the 'Fill Vulnerability Scoring System'

Takayuki Nakano[1*], Mamoru Koarai[1]

[1]GSI of Japan

A number of local governments have started an investigation of movement calculation in large residential fill area following 'Guideline of investigation of movement calculation in large residential fill area' by MLIT published in 2007. However, the method to judge ground vulnerability (movement probability) of each fill area, which is necessary to select and rank residential fill area investigated in detail from many residential fill area detected former investigation, do not establish sufficiently.
We prototyped the 'Fill Vulnerability Scoring System' that is scoring semi-automatically fill vulnerability using new and old DEM to break the above mentioned problem in 2008. This prototypical system consists of three models, for example, the scoring method written on the guideline (guideline scoring method) and statistical terrain information regression model (statistical lateral resistance model). As these models were calibrated only Hanshin area (in Hyogo Pre.) dataset, we improved that to calibrate adding Sendai area (Miyagi Pre.), Nagaoka area (Niigata Pre.) and Kashiwazaki area (Niigata Pre.) dataset. Finally, we built three systems that are scoring vulnerability of fill statistically from terrain information using the guideline scoring method, statistical lateral resistance model and simple three-dimensional stability analysis model.

Keywords: fill vulnerability scoring system, large residential fill area, guideline scoring method, statistical terrain information regression model, simple 3-D stability analysis model