



Estimation of ground motion amplification of the alluvial deposits in the Nile delta, Egypt

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Egypt is one of the few regions of the world where evidence of historical earthquake activity has been documented during the past 4800 years. On October 12, 1992, a moderated earthquake of $M = 5.9$ occurred south Cairo and caused disaster (about 561 people killed, 12192 injuries and the damage in buildings were widespread in the Nile Delta area).

The acceleration data of the August 24, 2002 earthquake $M = 4.7$, were observed at four sites, show the relative amplification between the alluvial deposit and limestone. The site effect parameters are estimated based on lithological data of wells with depths range from 20 to 100 meters. The study indicates that the ground motion amplification varies from site to site in the Nile Delta area was useful to produce contour maps of the site effect and frequency of maximum site effect in the area. This study presents also new information about the subsurface fault structure based on gravity analysis, which demonstrates that a basin structure occupies the Nile Delta area.

The future plan of the preset paper includes a) study of characteristics of the surface waves created by the basin structure (i.e., the frequency) due to the local and regional earthquake activity; further investigation of the alluvial deposits amplification to earthquake ground motion using different array-distribution of accelerographs in the area to obtain a detailed map of the site effect, and also predication of the ground motion parameters based on actual earthquake records. Such studies are very important for seismic hazard assessment and microzonation.

Key words; Earthquake ground motion, site effect