SEMINARI INGEO – ERASMUS STAFF MOBILITY

UNIVERSITÀ DEGLI STUDI "G. D'ANNUNZIO" – CHIETI PESCARA

Introduction to liquefaction and post-liquefaction effects

Prof. Müge Akin

30 Novembre 2022 – ore 15.00

Aula del Consiglio, Dipartimento INGEO (1° piano, Pescara)

Short CV

Dr. Müge Akın received her B.Sc. (1997) and M.Sc. (2001) in Geological Engineering from Ankara University and PhD. in Geological Engineering from Middle East Technical University (METU) (2009). On her studies in METU, she focused on the seismic microzonation of urban areas and dynamic soil characterization. As a Fulbright Visiting Scholar, she has a chance to make collaboration with Prof. Dr. Steven L. Kramer in the University of Washington (Seattle-USA) who is a worldwide well-known expert in Geotechnical Earthquake Engineering. In METU and University of Washington, she studied interdisciplinary (Civil Engineering and Geological-Geotechnical Engineering) topics for her PhD study. Her PhD has been awarded by a couple of prizes (2009 Erguvanlı Engineering Geology Prize by Turkish IAEG for the best PhD dissertation in Engineering Geology and METU Mustafa Parlar Foundation Prize for the best PhD dissertation in 2009-2010). She has co-authored numerous conference papers and SCI journals. Her research areas are Engineering geology/Geotechnical engineering- Seismic microzonation, Soil mechanics, Geotechnical earthquake engineering, Site investigation, Site response and Soil amplification, Liquefaction, Seismic hazard analyses, Rocfall hazards, Numerical modeling, Ground improvement techniques, Geographical Information System (GIS)-3-D modeling, Digitizing, Multi-Criteria Decision Analyses.

Abstract
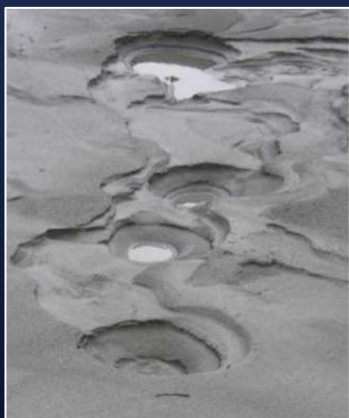
Liquefaction of saturated soils has been the cause of most geotechnical hazards during earthquakes. Development of excess pore pressures in saturated soils when subjected to cyclic loading has been related to the cause of liquefaction, which can be simply described as the transformation of stable soil structure into an unstable liquid stage. Liquefaction is one of the critical problems in the field of Geotechnical Engineering. Estimation of the liquefaction potential of soils is often based on Standard Penetration Test (SPT). The SPT is the most widely used in-situ test throughout the world for subsurface geotechnical investigations. Liquefaction Potential Index (LPI) and Liquefaction Severity Index (LSI) are employed as a tool to assess liquefaction potential. Besides, the study of Mapping of Liquefaction Potential Zonation is a preliminary study and mapping still requires finer analysis by adding more data. Therefore, liquefaction events and its possible post-effects will be evaluated within this content.

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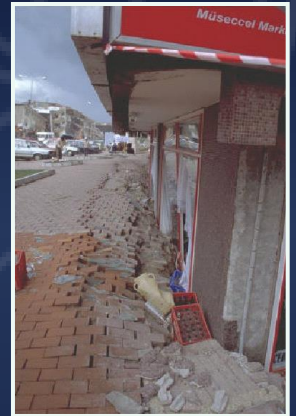
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UNIVERSITÀ DEGLI STUDI "G. D'ANNUNZIO" – CHIETI PESCARA

Liquefaction case studies from Turkey

Prof. Müge Akin

1 Dicembre 2022 – ore 14.00

Aula del Consiglio, Dipartimento INGEO (1° piano, Pescara)

Abstract

Liquefaction potential analyses and detailed liquefaction potential maps are of great importance, especially for the regions susceptible to liquefaction. Since these studies may reduce the risks due to liquefaction in these areas, they may reduce or prevent damage that will occur during a possible earthquake. Besides, numerous sand boils and lateral spreading cracks were recorded for some areas after destructive earthquakes such as Kocaeli earthquake that caused liquefaction cases in Adapazarı. Similar examples related to post-liquified areas will be presented within this content as case studies from Turkey. Some of the important studies will also be shared including liquefaction based microzonation maps. The importance of liquefaction-related events will also be assessed with different examples.

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