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Title of the Theme Lecture
Characterization of loess deposits relevant to seismic landslides, liquefaction and seismic subsidence

Abstract

Loess is a kind of special soil with porous structure and weak cohesion, which widely deposits in China with an area of 640,000 km². Especially, it deposits in the Loess Plateau in China with an area of 440,000 km² and a thickness ranging from tens meters to more than 500 meters, where is a region with the biggest thickness and the most complicated topography of loess deposit in the globe. On the other hand, the Loess Plateau is a strong earthquake-prone region, where 20 events of Ms=7.0-7.9 and 7 events of Ms ≥8.0 occurred in history. These earthquakes killed more than 1.4 million people in the region. The field investigation shown that a large scale of landslides, liquefaction and seismic subsidence should be responsible for so large casualties. In this paper, the authors characterized loess deposits relevant to seismic landslides, liquefaction and seismic subsidence with its stratum age, topography, microstructure, gradation, physical parameters and dynamic parameters.

Bio

Lanmin Wang is director of the Key Lab of Loess Earthquake Engineering, China Earthquake Administration (CEA) and professor of Lanzhou Institute of Seismology, CEA, in China. He is a member of Technical Committee of Earthquake Geotechnical Engineering and its Problems (TC203), ISSMGE. He is a standing member of China Seismological Society, China Geophysical Society, and China Society on Soil Mechanics and Geotechnical Engineering. He was director of Lanzhou Institute of Seismology and Earthquake Administration of Gansu Province, China Earthquake Administration, from 2004 to 2017. He received his Ph.D. in geotechnical engineering from the Institute of Engineering Mechanics, China Earthquake Administration, in 2000. He studied as a visiting scholar at the Technical University of Berlin (Germany) and University of Memphis (USA) in 1997, as a visiting professor at the Chuo University (Japan) in 2002, and as a senior research fellow in the Kennedy School of Government at Harvard University (USA) in 2012. His research interests include soil dynamics and geotechnical earthquake engineering, especially seismic landslides, liquefaction and subsidence of loess sites. He has authored 4 books and more than 100 papers. He has been awarded many honors, including the National Scientific and Technological Progress Award of China in 2002, 6 Provincial and Ministry's Scientific and Technological Progress Awards from 1998 to 2016, and the honor of “The National Outstanding Scientists in Earthquake Science and Technology ” in 2007 and 2017.