Abstract
Seismic microzonation involves generation of seismic hazard maps for site amplification, liquefaction and landslide susceptibility with respect to ground motion characteristics on the engineering bedrock outcrop estimated based on a regional probabilistic seismic hazard study compatible with the scale of the microzonation. A grid system may be implemented dividing the investigation area into cells according to the availability of geological, geophysical and geotechnical data. Site characterizations are performed utilizing all available borings and other relevant information by defining representative and realistic soil profiles for each cell with soil stratifications and shear wave velocities extending down to the engineering bedrock. A site-specific response analysis starts with the probabilistic estimation of regional seismicity and earthquake source characteristics, soil stratification, engineering properties of encountered soil layers in the soil profiles. Thus, 1D site response analyses need to be conducted to evaluate probabilistic site-specific earthquake ground motion characteristics on the ground surface for each representative soil profile using a set of hazard compatible acceleration time histories. Definition of uniform hazard acceleration response spectrum, on the ground surface is the primary component for microzonation as well as for the assessment of seismic vulnerabilities in urban environments. Recently, an extensive site investigation study was carried out on the European side of Istanbul as the first phase of the large-scale microzonation project for the Istanbul Metropolitan Municipality. A general review will be presented based on the previous studies conducted by the author and his co-workers in comparison to major observations and methodologies to demonstrate the applicability of microzonation for hazard mitigation.

Bio
He received his Ph.D. in Geotechnical Engineering from Northwestern University, USA in 1977. He was promoted to full Professorship in 1988 in Istanbul Technical University. He moved to Kandilli Observatory and Earthquake Research Institute of Bogaziçi University in 2002. Since March 2012, he is professor in the Engineering School of Ozyegin University and Chairman of Civil Engineering Department.
He has been the Secretary General of European Association for Earthquake Engineering during 1994-2014 and President during 2014-2018. He is the Editor in Chief of the Bulletin of Earthquake Engineering and the book series on “Geotechnical, Geological and Earthquake Engineering” by Springer since 2002.
His main areas of interest are microzonation methodologies, earthquake scenarios, effects of geotechnical factors on earthquake damage, cyclic behaviour of clays and sands, liquefaction, variability of strong ground motion characteristics. He published about 250 articles in conference proceedings, journals, books and as technical reports in English and Turkish. He was the recipient of the Third Ord.Prof.Dr. Hamdi Peynircioglu Lecture Award in 1988, given by the Turkish National Committee on Soil Mechanics and Foundation Engineering, the Third Prof.Dr.Rifat Yarar Lecture award in 2015, given by Chamber of Turkish Civil Engineers and Earthquake Engineering Committee of Turkish Earthquake Foundation and he was the 15th Prof. Nonveiller Lecturer elected by the Croatian Geotechnical Society.