SOIL DYNAMIC CHARACTERISTICS IN THE CARACAS VALLEY USING MICROTREMOR MEASUREMENTS

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From seismic refraction investigations realized after the 1967 Caracas earthquake, a map of the sedimentary thickness for the central valley of Caracas was derived, which indicates sedimentary thickness of up to 300 m (Los Palos Grandes area). The studies revealed a strong relationship between the occurrence of damage and the sedimentary thickness in the Los Palos Grandes area as well as to local soil conditions in the Caraballeda area at the coast (Litoral Central). Nevertheless, no analysis of the dynamic response of the soils has been realized then.First microtremor measurements (about 80 sites in a 500 m grid) were realized in 1994 and 1997. A clear relationship was derived between the thickness of the sedimentary layers and the predominant period of the soils, which is longer than 1 s for the thick sediment sites and about 0.2 s for the rock sites. Complementary measurements were realized in 1999 in order to cover the whole sedimentary valley (total of about 300 sites). Additionally, microtremor array measurements were realized at 3 sites in order to confirm the S-wave structure of the sedimentary infill. The evaluation of the ground characteristics (including soil classification and ground shaking characteristics) and the main characteristics of Caracas city (buildings, lifelines, population, etc.) form part of an integrated study, which aims to give a zonation for the seismic risk assessment, disaster reduction and recommendations for the local government