微動アレー観測に基づいたボゴタ（コロンビア）盆地における速度構造モデルの構築
Estimation of Bogota (Colombia) basin velocity model from microtremors array measurements for strong motion simulations

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Bogota a megacity with almost 8 million inhabitants is prone to a significant earthquake hazard due to nearby active faults as well as subduction megathrust earthquakes. The city has been severely affected by many historical earthquakes in the last 500 years, reaching MM intensities of 8 or more in Bogota. The city is also located at a large lacustrine basin composed of extremely soft soils which may strongly amplify the ground shaking from earthquakes. The basin extends aproximately 40 km from North to South, is bounded by the Andes range to the East and South, and sharply deepens towards the West of Bogota. The city has been the subject of multiple microzonations studies which have contributed to gain a good knowledge on the geotechnical zonation of the city and tectonic setting of the region. In order to construct a detailed velocity model of the basin we conducted 68 small to medium size microtremors arrays measurements (radius from 60 cm to 50 m) at 26 sites within the city, and two large arrays measurements at the central part of the basin (radius of 500 m and 1000 m). We calculated dispersion curves and inferred velocity profiles at all the sites. Our velocity profiles for the shallower sediments are characterized by a wide variability in Vs30 whose values range from 80 ~ 150 m/s in the northern and central part of the basin, and 120 ~390 m/s in the southern part. Our velocity models reached values of Vs=2000 m/s at a 2 km depth at the central part of the basin, but previous models suggest that the basin depth may largely increase further west. Our preliminar results indicate a sharp boundary in shallow S wave velocities between very soft sediments North of the basin and harder sediments to the South. This striking difference appears to have a strong correlation with the very large water content of the shallower soils (clays and silts) to the North as compared to the small water content of soils (gravels and sands) to the South. Our initial results indicate the need of denser microtremors measurements within the city by including large arrays that allow to characterize in detail the geometry of the basin depth.

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