The earthquake that struck Mexico on September 19, 1985 caused severe damage in Mexico City, even though the city is located 400km from the epicenter. The main reason for this is that the city is located on a basin filled with very soft sediments. Distribution of these soft sediments has been delineated by drillings and microtremor measurements.

A small number of attempts have been made to image the S-wave velocity structure of the basin using downhole seismic loggings.

In order to delineate S-wave velocity structure of the basin down to depth of approximately 200m, Geoscientists Without Borders (GSWB) performed three-component micro-tremor measurements and microtremor array measurements.

The investigation site was determined in downtown, Mexico City. The three-component microtremor measurements were performed at more than 10 sites and the microtremor array measurements were performed at 6 sites on a 30km length survey line that crossed the basin with a west-southwest to east-northeast direction.

Figure 1 shows the investigation sites on the dominant period map obtained through the three component microtremor measurements and strong ground motion observations presented by Lermo and Chavez-Garcia. The microtremor array measurements used 25 to 650m equilateral triangular arrays.
The parameters used were layer thickness and S-wave velocity. A Genetic algorithm was dispersion curves was compared.

Initial models were created by a phase velocities almost agree with observed data at both simple wavelength transformation in which wavelength sites. In the H/V spectra, theoretical and observed peak calculated from phase velocity and frequency is divided by frequencies are almost identical. The absolute value of three and plotted at depth.

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