**COMMON MID-POINT CROSS-CORRELATION GATHERS OF LONG MASW ARRAY TO IDENTIFY LATERAL HETEROGENEITY OF UNCONSOLIDATED SEDIMENTS**

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Eighteen earthquake monitoring stations were characterised in terms of shear wave velocity (VS). The stations are situated on recent, unconsolidated sediments. Because of the presence of numerous infilled channels, the shallow subsurface in the study area is heterogeneous. The techniques to determine VS included from Multichannel Analysis of Surface Waves (MASW), microtremor array method, cross-hole tomography and Seismic Cone Penetration Tests (SCPT) with varying source offsets. MASW data was shot along a 200 m long array with 2.0m geophone spacing. The dispersion analysis of the MASW data was done in two ways, making use of the different source locations. The first method focuses on getting the highest resolution dispersion map for the whole line. For this, the geophones were sorted according to their source-receiver offset to obtain a virtual denser sampled record. The second method focuses on determining multiple (lower resolution) dispersion maps along the array to detect heterogeneity within the array. In this method, the influence of the source-receiver offset is removed by correlating the recordings from different receivers, for subsequent sources, and stacking these correlations over the sources. Next, virtual records along the array are generated using different correlation pairs. The dispersion behaviour of the virtual records is determined using the Common Mid-Point cross-correlation approach (CMPcc) of Hayashi & Suzuki (2004). For each station, 72 CMPcc gathers are generated along the geophone array, which were automatically inverted to VS profiles using a genetic algorithm. The obtained dispersion maps show significant variation along the array, for some of the stations. The VS profiles obtained by the inversion of these dispersion maps show variations that are consistent with the SCPT data set.