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Sophistication of the cloud type microtremor observation system

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We have been seeking an efficient way to maximize the potential of the microtremor methods for shallow surveys. It is considered
that a practical approach has been gained in the observation by the development of portable seismometers (Senna, 2006, 2012) and by the finding of the full usability of the data obtainable by a miniature array (radius less than 1m), optionally together
with a small irregular-shaped array (radius less than 10 m) consisting of three seismometers (Cho et al., 2013a).
As an efficient way to infer an S-wave velocity structure, we consider that a classical, simple profiling method (SPM), where a dispersion curve is directly converted into an S-wave velocity structure (e.g., Heukelom and Foster, 1960), is a good scheme from a view point of simplicity, thus, the balance between the efforts and the information to be extracted. It is true, however, that
we frequently like to increase to resolution. Facing this dilemma, we suggested a simple tool H/V depth conversion (Cho et al., 2013). We found that the use of an H/V depth conversion followed by a simplified inversion method (SIM) of Pelekis and Athanasopoulos (2011) can in fact increase the resolutions (e.g., Senna et al., 2013; Yoshida et al., 2013).
The current challenge is to further promote the efficiency in the data processing procedure. A visual reading of analysis results, which we take at the current time, is time consuming to deal with a vast mount of microtremor data, now obtainable by a streamlined observational procedure. The reproducibility and biases depending on analyst constitute other kinds of problem of visual reading.

Keywords: microtremor, miniture array, cloud system, underground structure model, S-wave vlocity