Artificial Clipping: Suppressing the strong impulsive noises using records obtained simultaneously at two points, for SPAC method

Toshiaki Yokoi[1]; Koichi Hayashi[2]; Kunio Aoike[3]

[1] IISEE,BRI,Japan; [2] OYO; [3] Oyo Corporation

The incoherent noises due to traffic etc. give undesirable influence on the result of analysis for microtremor array measurement (SPAC method). It is, however, sometimes inevitable to set the seismographs on the sidewalks of heavily trafficked roads in case of observation in urban area crowded with buildings and houses. Impulsive incoherent noises that have relatively big power-spectra are observed in these cases. As these cover the target frequency range of analysis, they can not clear out, e. g., by frequency filter.

It is expected that their power can be suppressed by clipping artificially the records bigger than a threshold level because their power are concentrated in the pulse in the time domain. This artificial clipping causes the generation of artificial incoherent noises that is undesirable too. These, however, can be suppressed by using Alternative Complex Coherence Function (another presentation in this JPGU meeting), because these are weak incoherent noises.

In presentation, a case study for the artificial clipping technique using field data of microtremor obtained in Tsukuba city. Three cases are tested. Depending on the distance from heavily trafficked roads and traffic condition, the results are scattered.

These cases imply that the correction by the artificial clipping can work under certain condition that, however, should be discovered by more studies in future.