



Imaging the Jakarta Basin with Seismic Ambient Noise

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Jakarta, the capital of Indonesia, is one of the most populous cities in the world with a population over 28 million including the metro area. In July 2012, 8 short period and broadband seismic stations were deployed progressively to record seismic noise at 36 different locations in Jakarta for a duration of 31 days. The recorded seismic noise is then cross-correlated between the simultaneously operated stations for retrieving the inter-station Green's functions. The traveltimes of Rayleigh wave Green's functions measured at different periods are later inverted with nonlinear tomography. The results mark the presence of a very low velocity body due to the alluvial deposits, which cover most of the Jakarta area.

In October 2013, we deployed 52 broadband stations across Jakarta with a typical station spacing of 2 km for a duration of 4 months. We divide the city to 3 sectors, which each area was covered by a dense deployment each subsequent month. The recorded noise is used in high-resolution 2D Bayesian tomography to map the 2D seismic velocity model of the city. The resulting models will be used in estimating the seismic amplification and other seismic hazards of the city.