

# Preliminary analysis of amplified ground motion in Bangkok basin using HVSR curve from recent moderate to large earthquakes

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## ABSTRACT

The Bangkok Basin has been known from non-instrumental observations of the local population to be subject to ground motion amplification due to the deep alluvial sediments and basin geometry. The purpose of this study is to analyze a limited amount of seismic data to confirm that basin effects are significant in the Bangkok Basin. The paper contributes to the evaluation of basin effects by quantifying those effect albeit at very low ground motions. With this purpose, we analyze ground motion records from seismic stations located within the Bangkok alluvial basin from 2007 to 2021. Recorded peak horizontal ground acceleration (PGA) for seismic stations inside the basin always exceeded 1 gal during eight earthquakes with Mw greater than 5.5. These recorded ground motion shook high-rise buildings in Bangkok even though their epicentral distance exceeded 600 km. Of these, two were intraslab events and six were shallow crustal earthquakes. Based on comparisons among those stations located outside the Bangkok basin, we observed the capability of alluvial deposits in Bangkok basin to amplify ground motion records about 3 times. We observed that there is a unique site amplification effect between 0.3 and 0.1 Hz due to local surface waves and the other moderate amplifications between 2 and 0.5 Hz due to a soft layer similar to other deep alluvial basins in other metropolitan .

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