# Crustal structure of Thailand from receiver function and ambient noise tomography studies

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Thailand located in inner shelf of Eurasia plate. Tectonic evolution and crustal structure knowledge in Thailand is relatively poor. Major tectonic provinces of Thailand can be divided into 2 terranes, Indochina (IC) in east and Shan-Thai (ST) in west. In this study, 40 seismometers of Thailand Meteorological Department (TMD) and 4 of Mahidol University were used for data analysis. Two seismological methods, receiver function (RF) and ambient noise tomography (ANT), were applied to the data. For receiver function, we obtain total number of 1684 RFs. The crustal thickness and Poisson's ratio of Thailand were measured from the stacking amplitude of predicted arrival time. In average, Poisson's ration of crust in Thailand is lower than global average indicate more felsic composition in crust. Crustal thickness of Thailand is ranging from 31 –42 km with increasing trend from west to east across ST to IC. In comparison, crust of IC is thicker and have higher Poisson's ratio than ST. From ANT, cross-correlation function were calculated from three components seismogram of 4 years long data set. Rayleigh and Love wave group velocity dispersion were measured using frequency time analysis (FTAN) scheme. Due to data quality and station geometry observed period of dispersion curve are in between 6-24 second. Two dimensional tomographic inversion was used to construct the travel time tomography of group velocity at each frequency. Results of ANT clearly show that shallow crust of IC have lower velocity than ST. The lower velocity value may be refer to thick clastic rock deposited in uppermost crust of IC. Combining with a result from receiver function, lower crust of IC should have high mafic composition. Isostatic model suggest that dominated tectonic process in present day of ST is crustal thickening by the stacking of upper crust, while IC is thinning by the erosion.

Keywords: Receiver function, Ambient Noise , Mafic lower crust, Poisson's ratio

 