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Site characteristics of KMA seismic stations determined by ambient noise analysis

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To understand the site characteristics of Korea Meteorological Administration (KMA) seismic statoins, we analyzed the thickness of soil layers by using ambient noise data. We used seismic array and single-station data to test frequency-wavenumber (F-K) and horizontal-to-vertical (H/V) spectral ratio methods, respectively, by comparing those results with borehole data available. The results demonstrated that the H/V spectral ratio method is more effective for estimating the thickness of soil layers at seismic stations. In the case of 31 stations among the 49 KMA seismic stations investigated, no resonance frequency was observed, indicating that the seismic stations are situated nearly on basement rock. And many of stations with resonance frequency showed the thickness of the soil layer shallower than 10m. It seems that, in general, KMA seismic stations on land constructed on basement rock and the thickness of the soil layer increases with proximity to the coastiline. Thses results indicated that although a certain degree of variation exists, the observation conditions at the KMA seismic stations are relatively free from significant noise contamination caused by the site amplification effects of unconsolidated subsurface layer.