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Application of Horizontal-to-Vertical (H/V) Fourier spectral ratio for analysis of site effect on rock (Class B) sites in Taiwan

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The frequency-dependent amplification for rock (Class B) sites was studied using earthquake ground-motion database collected in Taiwan during implementation of the Taiwan Strong Motion Instrumentation Program. The database used includes several hundred records from earthquakes of ML 4.8 - 7.3 occurred in 1993-2004. The characteristics of amplification were evaluated using the well-known technique of horizontal-to-vertical Fourier spectral ratio (H/V) of the S-wave phase (Lermo and Chavez-Garcia 1993). The study allows us to analyze peculiarities of rock sites amplification in Northern and Eastern Taiwan and to compare the amplification with similar data obtained recently for other regions. It was suggested to divide the Class-B site amplification into four types based on frequency of maximum amplification and the shape of amplification function. Analysis of the H/V ratios can allow recognizing unusual effects in site amplification, such as influence of nearby building. The applicability of the technique was also checked for a few stiff and soft soil sites (Classes D and E).