

## CAN BROAD-BAND EARTHQUAKE SITE RESPONSES BE PREDICTED BY THE AMBIENT NOISE SPECTRAL RATIOS? INSIGHT FROM NUMERICAL EXPERIMENTS

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Perron et al. (2018) reported that standard spectral ratios computed from seismic noise measurements (SSRn) or from earthquake recordings (SSRe) could be very similar for couples of stations sharing similar site conditions. They propose that such similarity can be exploited efficiently, in the so-called hybrid SSR approach, to extrapolate spatially the amplification function measured from earthquakes at a single site. In order to better understand the discrepancies, or similarities between SSRn and SSRe, we simulate numerically the 3D response of a canonical basin (having elliptical shape and 1D structure with depth) to noise and earthquake sources for frequencies up to 10 times that of the fundamental resonance of the basin. We compare the SSR produced by different sets of noise sources and evidence the shadow effect, hypothesized by Perron et al. (2018) to explain the discrepancies between SSRn and SSRe when the reference is chosen outside of the basin. We further evaluate the hybrid SSR approach for several stations located in the basin at different distances from the edges.

