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Experimental Study of the Convergence of Two-Point
Cross-Correlation Toward the Green's Function

Pierre Gouedard^a, Philippe Roux^a, Michel Campillo^a, Arie Verdel^b and Xander Campman^b

^aLGIT - CNRS - Université Joseph Fourier, Maison des Géosciences, 1381 rue de la Piscine, BP 53, 38041
Grenoble, France

^bShell International Exploration and Production B.V., Kessler Park 1, 2288 Rijswijk, Netherlands

Cross-correlation of seismic noise recorded at two points yields the Green's Function (GF) between the two points when seismic noise is spatially and temporally diffuse. Seismic events yield the same result (1) when direct waves are cross-correlated from sources that are azimuthally distributed or (2) when coda waves are cross-correlated whatever the source distribution. In this work, the question of convergence toward the GF is investigated with real data. From a high-resolution survey with dense arrays of geophones and sources, we select different sets of sources and time windows to compute the cross-correlation between two receivers. We compare correlations derivative with the actual GF, and show the influence of source locations and scattering on the GF reconstruction. For direct waves, sources located in the endfire lobes of the receiver pair have an essential contribution. With sources located outside the endfire lobes, the GF can nevertheless be retrieved using coda waves.