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Emergence of body waves from cross-correlation of short period seismic noise

Piero Poli, Michel Campillo, Helle Pedersen, and Polenet/lapnet Working Group
University Joseph Fourier Grenoble, ISTerre-CNRS, France (polip@ujf-grenoble.fr)

Noise correlation technique is now widely used to imaging the Earth's interior using the estimated surfaces waves Green's function (ESWGF) to measure group and phase velocity of both Rayleigh and Love waves. The presence of noise sources close to the Earth's surface justifies the predominance of surface waves into noise wavefield and so in the estimated Green's function.
Recently has been shown the possibility to exctract not only the ESWGF, but also estimated body waves Green's function (EBWGF). This is possible where the effect of scattering of short periods seismic signals is low, as in shield (Zhan et alii, 2010) area or in presence of really close stations pairs (Roux et alii, 2005).
Using data from Polenet/Lapnet Array situated in northern Fennoscandian region, we illustrate that is possible to retrieve a complex wavefields by analyzing 3-component data. From our analysis emerge the presence of the complete ESWGF, composed by Love and Rayleigh waves, but also the presence of a series of high velocity signals, that can be attribuited to the S and P waves. We particular contextualized the presence of direct P waves and moho reflected (and multiple reflected) S waves.