

Reflection Green's Functions Extracted from Ambient Seismic Noise and Signal for IMS Seismic Station Site Crustal Reflector Characterization

Seismic interferometry is applied to extract reflection Green's Functions (GFs) at PDAR, Pinedale, Wyoming, USA. The possibility of extracting crustal reflector structure beneath each station of this well-calibrated IMS primary seismic array is assessed, and the resulting GFs are interpreted using existing geophysical information, including borehole data. Here we address two issues identified in previous studies: 1) difficulty in phase identification, and 2) high frequency loss by extracting GFs from stacks of two years of continuous waveform autocorrelations. First, to address challenges related to phase identification, we use synthetic waveform modelling, an F-statistic detector and Cepstral analysis. Second, to address high frequency loss, extraction of reflections with higher frequency content (and thus, improved resolution) was found to be possible when applying the same method to several days of high teleseismic activity, as opposed to two years of continuous data. We investigate these observations using synthetic waveforms.

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