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T3.3-P03. An Approach for Seismic Detection with Model-Based Array Waveform Correlators

Empirically-derived waveform correlators often are exquisitely sensitive detectors and robust event classifiers when applied to search for highly-repetitive events. Their usefulness is limited, however, by the absence of training events in many regions. An ability to extend waveform correlation techniques to aseismic regions would be highly desirable and motivates a search for model-based methods. As three-dimensional earth models become more detailed through ambient noise and adjoint tomography, the prospects for model-based signal processing improve, albeit slowly. This study examines how more detailed models might be used to drive array correlation detection, considering overlays of stochastic heterogeneity to account for model uncertainty. The introduction of stochastic medium models leads to a subspace representation for the signal to be detected. An efficient means for generating the subspace representation from a stochastic model is discussed.

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