

## **Retrieving surface waves from ambient seismic noise using multidimensional deconvolution**

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Retrieving virtual-source surface waves from ambient seismic noise observations by crosscorrelation relies on the assumption that the noise field is equipartitioned. Deviations from equipartition reduce the accuracy of the retrieved waves and can introduce artifacts. A point-spread function (PSF), derived from the ambient noise itself, quantifies the virtual sources spatial and temporal smearing. Multidimensional deconvolution (MDD) of the retrieved surface waves by the PSF has been shown to improve the accuracy of the retrieved waves. We test MDD on data recorded during the Batholiths experiment, a passive deployment of broadband seismic sensors in British Columbia, Canada. The array consists of two approximately linear receiver lines, the north and south lines. Using four months of recordings, we retrieve the fundamental-mode Rayleigh wave and compare average phase velocity across the south line to the traditional noise correlation method. For MDD, we use only ambient noise time windows that are dominated by waves that traverse the north line before the south line. MDD results reduce artifacts in the surface-wave estimate, while phase velocities estimated from the traditional crosscorrelation method deteriorate if we use the same time windows used in the MDD.