

Bridge Asynchronous Seismic Observations with Ambient Noise Three-station Interferometry

Shane Zhang, Michael H. Ritzwoller

Department of Physics, University of Colorado Boulder

Classical seismic ambient noise two-station interferometry extracts information (largely) between two stations. Three-station interferometry considers three stations at a time, where two two-station interferograms are correlated or convolved (depending on the location of the common station). Interferometry and stacking over common stations accentuate coherent signals through two stations which can be asynchronous. We apply three-station interferometry for surface tomography across amphibious seismic arrays in Cascadia and Alaska, which is reasonably consistent with tomograms from two-station interferometry and earthquake measurements. The new paths from three-station interferometry promises improvement in the resolution and uncertainty of tomography, especially for azimuthal anisotropy observations from complementary azimuths.

