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# Seismic tomography in the lab–interferometry in a porous, scattering medium under pressure

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Our laboratory experiments and numerical simulations aim at determining the accuracy and reliability of seismic interferometry as an imaging and monitoring tool. In our analogue experiments, seismic waves are transmitted, via transducers, into rock samples under pressure, or are generated as the samples crack along a fault. We record the resulting signal at a number of receivers over the sample, and analyze those data via seismic inteferometry. Our samples include porous, scattering rocks, both dry and fluid-saturated, isotropic and anisotropic. The experimental apparatus we utilize allows to reproduce pressure and temperature conditions found in the Earth's crust. We so evaluate the role of isotropic and/or anisotropic cracking and fluid saturation (depending, in turn, on the fluid's viscosity) on wave propagation and, specifically, on the system's impulse response (Green's function). Whether the Green's function is correctly reconstructed by interferometry is in itself a signficant theoretical question that we also address. Numerical (spectral-element via SPECFEM) modeling allows to disentangle the role of various parameters who affect Green's function reconstructuon, e.g. source distribution which is particularly hard to control in analogue experiments.