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Pore Pressure Monitoring in a Chalk gas Reservoir Using Surface-wave Velocity Variations

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Summary

Measurements of pore pressure variations contain important information for the production of hydrocarbon reservoirs. Here, we couple surface-wave velocity changes directly to pore pressure change using sensitivity kernels. Using these kernels for realistic pore pressure changes in the Harlingen chalk gas reservoir, we modelled yearly Rayleigh-wave velocity changes. The velocity variations appear sufficiently large to be detectable on a yearly basis using passive image interferometry. This implies that, for specific formations, field-wide pore pressure monitoring is feasible with continuous seismic noise recordings at the surface.