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Advances in seismic surface wave analysis and integration with body waves data

Near surface keynote paper

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SUMMARY

In the last decade the analysis of surface wave dispersion has become a standardly applied technique in near surface seismic exploration. The method has evolved from the local estimation of 1D VS profiles, based on the inversion of surface wave fundamental mode, to more sophisticated approaches that can provide reliable velocity models in complex geological settings presenting 2D/3D velocity distributions, with the inversion including higher modes and other guided waves. To retrieve comprehensive velocity models, surface wave and body wave data can be extracted from the same seismic records and inverted jointly, imposing structural and petrophysical constraints and overcoming the inherent limitations of both body and surface wave techniques. More recent developments of surface wave methods are aimed at adapting tomographic techniques used in earthquake seismology to small scale exploration data.