

What's new and exciting in seismic inversion?

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SUMMARY

Consider an oil and gas exploration team that has been successfully using seismic attributes such as gradient & intercept or fluid & lithology indicators. Why might this team want to switch from those tried-and-true seismic attributes to seismic inversion? And which type of seismic inversion should they use? We now have access to azimuthal inversion, facies inversion, Bayesian probabilistic inversion and full waveform acoustic and (emerging) full waveform elastic inversion. The evolution and pace of seismic inversion technologies is exciting but present some difficult choices to the uninitiated interpreter. This talk aims to give seismic interpreters an overview of these 'new' technologies and how they compare. Topics covered will include: the advantages and challenges of azimuthal AVO inversion in Australia's high stress environment, Bayesian (probabilistic) inversion and how inverting for facies improves it, synergies and challenges of combining new broad-band / long cable seismic acquisition with AVO inversion, and full waveform seismic inversion – can it replace AVO inversion? A minimum of equations will be shown – and only then to as a guide to illustrate what the different inversion techniques are doing.