

COOPERATIVE INVERSION: A REVIEW

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Cooperative inversion is increasingly recognized as having the potential to significantly improve subsurface imaging for a range of parameters. However, there is no doubt success or failure is also highly dependent on a good knowledge of the underlying site specific geological and petrophysical relationships. Combinations of structural or textural seismic attributes can be used with geostatistical clustering methods to provide a framework able to carry inversion of lower resolution EM or potential field data to much higher resolution. Cross gradient type methods use direction of change of petrophysical parameters as a lever to push inversion towards an improved outcome. But again, the outcome is highly dependent on the presumption that the direction of change of petrophysical parameters like velocity and electrical conductivity are somehow linked. We need some way to build relationships between petrophysical parameters which could come in the form of new multiscale, multiparameter measurements made during drilling. We will; (i) examine theoretical possibilities, (ii) give examples of practical successes and failures, and (iii) consider the future of cooperative inversion.