

A Comparison of Azimuthal Seismic Techniques

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Summary

Azimuthal seismic techniques such as azimuthal velocities, azimuthal AVO and shear wave splitting are currently used to extract anisotropic information from surface seismic to improve imaging and fracture characterization.

Although these three techniques generate similar products of the intensity and the direction of the anisotropy, they each have different characteristics. The purpose of this paper is to review the theoretical and practical differences between the three methods in order to provide insight for interpretation. The theoretical bases of linear slip theory, parameterized in terms of normal and tangential weaknesses, are introduced to review the unique sensitivities and similarities of the alternative techniques. Particular attention will be paid to resolution and the degree of reliability of each method. The correlation between azimuthal attributes and well data will be used to illustrate the conclusions.

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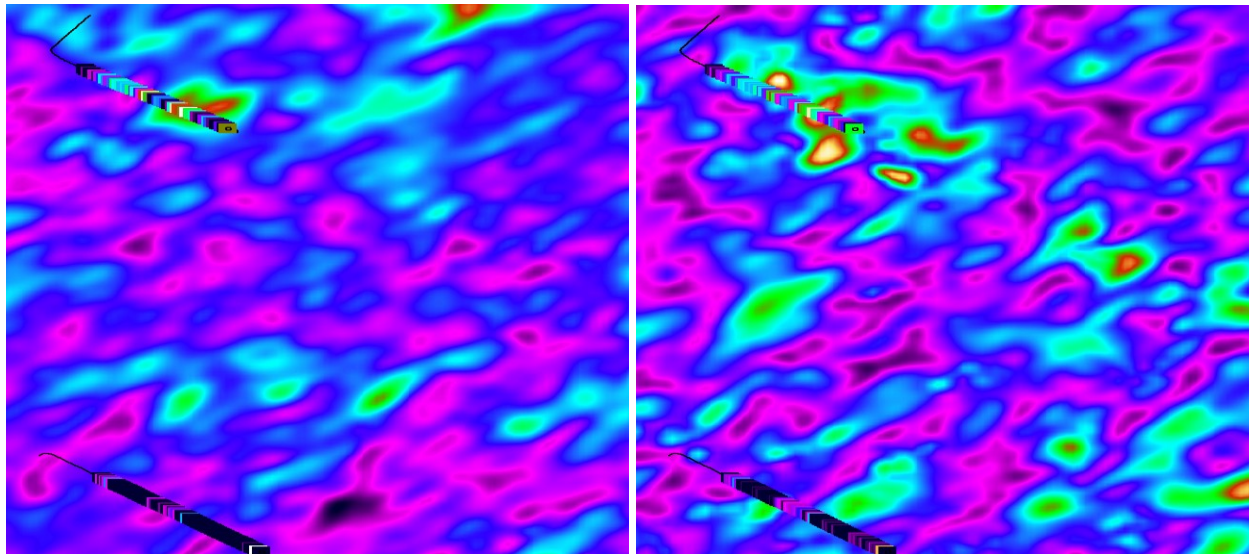


Figure1: Visual comparison between azimuthal AVO crack density attribute (left) and azimuthal velocity magnitude attribute (right). Two horizontal wells are shown colored by FMI fracture counts.