



Location of microseismic events using joint data from surface and monitoring well receivers. Synthetic test.

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Proper locating of microseismic activity is important in hydraulic fracture treatment in oil and gas reservoirs, and this subject is being studied intensively. We try to contribute to these studies with a synthetic test that compares the feasibility of such locating using receivers in one monitoring well and surface receivers, as compared with the use of surface receivers only. In the tests, we use a 1D velocity model, composed of homogeneous layers, and the location is sought for by a grid search. For our synthetic sources, receivers and velocity model configuration, we can conclude, if we take in consideration the probable unsufficient knowledge of the velocity model, that the use of the surface and well data can improve significantly the accuracy of estimation of microseismic events depth if a two step inversion is used, where the surface data are used for the estimation of epicenters and the well data for estimation of depths.