Brown, S., Hagin, P., and G. Bussod (2007) "AVO Monitoring of CO_2 Sequestration: A Benchtop Modeling Study" The Leading Edge, Soc. Exploration Geophysicists, 26-12, 1576-1583.

Abstract

Standard geophysical methods for monitoring CO_2 injection have severe limitations in many cases. In particular, while the presence or absence of CO_2 can be monitored during an injection, it is difficult to quantify changes in CO_2 saturation in most reservoirs. We hypothesize that amplitude variation with offset (AVO) attributes may be able to provide more sensitive discriminators for CO_2 presence. We propose a workflow useful for the prediction of the AVO response to a CO_2 flood under arbitrary fluid saturation and pressure conditions. Using this workflow, we combine laboratory and numerical experiments to upscale and predict the effects of small-scale heterogeneities on AVO response at the seismic scale. This exercise demonstrates the ability of AVO to not only determine the presence or absence of CO_2, but also to track changes in CO_2 saturation over time.

Contact NER for more information.