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HRE031-16

Room:303

Time:May 24 12:30-12:45

Experimental study for CO₂ migration monitoring to estimate P-wave traveltimes and amplitudes by drainage and imbibition

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We conducted laboratory experiments to examine the change of P-wave travel times and amplitudes, which correspond to decreasing water saturation during drainage and increasing saturation during imbibition, using Tako sandstone. Travel times increased and amplitudes decreased abruptly during drainage and the change of travel times appeared a little faster than amplitudes. During imbibition, travel times and amplitudes changed gradually. Travel times reached to constant values a little faster than amplitudes.

We reviewed time-lapse seismic tomography datasets before and after CO₂ injection same as drainage, and 5 years post injection in progress like imbibition at Nagaoka pilot site. These results indicate that the change of parameters were consistent with the laboratory experiments in drainage, although the imbibition was not recognized. It is useful to examine both travel times and amplitudes in the next measurement because of prediction for slight and gradual change parameters during imbibition.