

Experimental study of quantifying CO₂ mass with joint inversion of resistivity and wave velocity

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In EU countries, while CO₂ emission trades are executed and being in earnest, the quantitative evaluation of storage volume for CO₂ sequestration has become with one of important topics as well as detection of migration behaviors. In many of the CO₂ injection sites, Seismic monitoring is becoming the main stream of the monitoring methods. But from the previous studies of Nagaoka, it is shown that seismic data is insufficient to estimate the saturation of CO₂. Although, the result of seismic survey shows high validity to visualize the migration behavior of injected CO₂. At the same time, resistivity is also known as effective tool for CO₂ monitoring which can detect CO₂. For resistivity, quantitative evaluation methods are studied and validity of resistivity is shown. In the previous researches these two methods were considered each by each. In this study, we conducted a joint measurement of resistivity and elastic wave in Laboratory scale experiment. From the experimental result, we considered the relation of resistivity and elastic wave to combine the result for CO₂ monitoring. From the result we suggest the need of joint inversion method of resistivity and seismic for CO₂ sequestration monitoring.