

## Sedimentological approaches for CO<sub>2</sub> geological modeling

\*Kazuma Toda<sup>1</sup>, Yoshinori Yamanouchi<sup>1</sup>, Mizue Nishimura<sup>1</sup>

1. Japan Petroleum Exploration Co., Ltd.

Carbon Dioxide(CO<sub>2</sub>) Capture and Storage (CCS) is a key technology to reduce CO<sub>2</sub> emission and needed to be widely deployed in the world as early as possible. Geological models for CCS projects are mainly constructed to evaluate CO<sub>2</sub> storage potential. Moreover, those models are the basis for reservoir simulations, risk assessment for the safety injection, and monitoring the stored CO<sub>2</sub> behavior. The methodology to construct geological model was developed and has mainly been applied to oil and gas industries, using subsurface data such as seismic, well log, and core data. However, it is very common that the data is limited in both quality and quantity for the CCS reservoirs because they are often shallower than the targets of major interest in the industries and by-passed. This results in geological models with high subsurface uncertainties. To overcome this, sedimentological approaches were taken into the geological modeling workflow in this study. Characteristics of the reservoir, such as geometry, thickness, continuity, porosity and permeability rely on primary depositional environments and depositional systems. If we are able to extract the sedimentological information from limited low quality data and construct the framework of primary depositional systems, it's possible to characterize the reservoir. As the results, geological models based on such a sedimentological framework are expected to minimize subsurface uncertainty.

Keywords: geological CO<sub>2</sub> storage, geological modeling, sedimentological analysis