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## Experimental study for the CO<sub>2</sub> geological storage in Green-Tuff Region in Japan

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The Green-Tuff region in Japan is regarded as a suitable candidate of CO<sub>2</sub> geological storage. In Japan, the Green-Tuff rock is widely distributed in the region from the Sea of Japan side to the western Hokkaido. The Green-Tuff rocks have high permeability and porosity and contain relatively high cation abundances of K, Mg and Fe that govern acid neutralization potential of rock and formation of stable carbonate minerals (geochemical trapping of CO<sub>2</sub>). In addition, it is very unlikely that the large scale implementation of CO<sub>2</sub> geological storage causes social problems such as water resource pollution because almost all the aquifers in the Green-Tuff region are saline aquifers and are of no economical value.

We selected the Tugawa formation as a potential site of CO<sub>2</sub> geological storage in the Green-Tuff region and collected the Green-Tuff rock samples from the Hukutori Green-Tuff sub-formation corresponding to the upper part of the Tugawa formation. We examined physical and chemical properties of the rocks and conducted CO<sub>2</sub>-water-rock (Green-Tuff rock) interaction experiments to predict the long-term behavior of injected CO<sub>2</sub>. In our presentation, we evaluate the long-term CO<sub>2</sub> fixation by the dissolution rate of the Green-Tuff rock and discuss a CO<sub>2</sub> storage capacity in the Green-Tuff region.

Keywords: CCS, CO<sub>2</sub> geological storage, water-rock interaction, Green-Tuff