

## Application of X-ray computed tomography to the three-dimensional structure analysis of liquefied core samples

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Geo-samples often have complex internal structure. Thus, a three-dimensional imaging method is needed to analyze such samples. X-ray computed tomography (CT) is one of the most promising tools to meet the purpose (e.g., Nakashima et al., 2011). We applied medical X-ray CT apparatus to the core samples obtained from the sites liquefied by the 2011 Great East Japan Earthquake. The obtained three-dimensional CT images clearly show the complex structure of the sand dykes (Fig. 1) and strata deformation. Although X-ray CT technique has disadvantage that the apparatus is expensive and high performance computers are needed, it is advantageous in terms of the non-destructivity, quickness, three-dimensionality, and spatial resolution as compared with the conventional soft X-ray radiography of slab samples.

Ref:

Nakashima et al. (2011) Water Air & Soil Pollution, 214, 681-698. <http://dx.doi.org/10.1007/s11270-010-0473-2>

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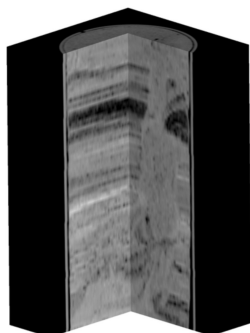


Fig. 1. Example of a three-dimensional CT image of a liquefied core. The diameter of the core is about 64 mm. A sand dyke penetrates the horizontal bedding throughout the image.