

Reexamination of the eruptive age of Late Pleistocene widespread DKP tephra by using MD01-2421 core collected off the Kashima-Pacific coast, Japan

\*Takehiko Suzuki<sup>1</sup>, Kaori Aoki<sup>2</sup>, Tadashi Maruyama<sup>3</sup>, Masaru Saitou<sup>4</sup>

1.Faculty of Urban Environmental Sciences, Tokyo Metropolitan University, 2.Rissho University, 3.Institute of Earthquake and Volcano Geology, National Institute of Advanced Industrial Science and Technology, 4.DIA CONSULTANTS CO., Ltd.

DKP tephra derived from the Daisen volcano, west Japan, is one of the most important Late Pleistocene widespread tephras because it covers a broad area including Central Japan, North Kanto and South Tohoku where inland fluvial terraces formed in the Last Glacial Period are well developed. It also plays an important role as a useful key bed for evaluating paleo-climate changes and crustal movement and so on in this period. However, the age of DKP is highly controversial since the end of 1970s, that is, 45–47 ka (Machida and Arai, 1979), ca. 50 ka (Takemoto, 1991), 50–52 ka (Nakamura et al., 1992), >55 ka (Machida and Arai, 2003), 49–53 ka (Yamamoto and Hasebe, 2014), 55–66 ka (Suzuki et al., 2016). In order to determine the reliable eruptive age of DKP, we examined MD01-2421 core collected off the Kashima-Pacific coast, Japan.

Hakone-Tokyo Tephra (Hk-TP) is crucial tephra for determination of the eruptive age of DKP because it is positioning immediately above DKP. However, characteristic properties for the identification of DKP in volcanic soil deposits just above Hk-TP are insufficient, and the age of Hk-TP have been estimated to be older (e.g.  $66.0 \pm 5.5$  ka: Aoki et al., 2008) than previous studies.

In this study, we detected fine white pumice clasts (0.2 mm in diameter) with characteristic properties similar to those of DKP at a depth of 2018.20–2020.45 cm (93.45 cm above Hk-TP). Refractive indices of volcanic glass shards is 1.508–1.514, and major element composition (wt.%; mean and standard deviation for 15 measurements) in those is SiO<sub>2</sub>: 73.57 (0.34), Al<sub>2</sub>O<sub>3</sub>: 14.74 (0.14), FeO: 1.90 (0.12), CaO: 2.12 (0.05), K<sub>2</sub>O: 2.55 (0.09), Na<sub>2</sub>O: 4.13 (0.34). These features are quite similar to those of well preserve DKP tephras in terrestrial sediments collected in Toyama and Fukushima Prefectures. Stratigraphic position where these pumice clasts were detected is dated at  $60.08 \pm 5.68$  ka (MIS 4.0–4.22) due to oxygen isotope stratigraphies shown by Oba et al. (2006) and Martinson et al. (1987).

Keywords: Widespread tephra, Late Pleistocene, DKP, marine tephra