

# Tephrostratigraphy of drilled core C9010E off the Boso Peninsula: as a preliminary report

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We investigate the history of volcanic activities in north Izu Islands, and try to establish the high-resolution tephrochronology (Aoki *et al.*, 2019). Today, we present a part of the result of tephra correlations intervening in the sediment core off the Boso Peninsula, on the basis of the geologic, petrographic and geochemical characters of tephra samples collected at the reference sites on land. The sedimentary core C9010E was drilled at the site (34°33.46'N, 139°53.38'E, water depth: 2027.25 m) of about 40 km south of Boso Peninsula by the D/V *Chikyū* in 2009. The length of all core is 190.38 m. We collected 314 samples for tephra analysis from this core, including 161 tephra samples described (Tsuchiya *et al.*, 2009). The major-element chemistry of volcanic glass shards in the fraction of 63-125  $\mu\text{m}$  for all samples have been determined by EPMA of the Center for Advanced Marine Core Research, Kochi University.

Firstly, all samples were checked roughly, and some fine glassy samples which might be correlated to widespread marker tephtras were picked up and analyzed. As a result, correlatives for Aso-4 (87.1 ka; Aoki, 2008) at the depth 149.08 mbsf, On-Pm1 (95.7 ka; Aoki *et al.*, 2008) at 158.244 mbsf, and Aso-ABCD at 25 cm below On-Pm1 were found, respectively. Secondly, it is summarized the result of analysis for 28 samples (No.1~28) from the top of core to approximately 30 mbsf. Ten samples consist of mainly scoria clasts. Another 20 samples are rich in felsic volcanic glass shards, and including plagioclase, quartz (including beta-quartz), orthopyroxene, hornblende, cummingtonite, and occasionally biotite. The content of  $\text{SiO}_2$  in felsic volcanic glass shards is 77.9-78.8 wt% generally, and it is so much. Except No.18 (16.722-16.772 mbsf), the contents of  $\text{FeO}^*$  (0.59-0.74 wt%) and  $\text{CaO}$  (0.34-0.70 wt%) in felsic volcanic glass shards are remarkably low, on the other hand, the contents of  $\text{Na}_2\text{O}$  (4.12-4.25 wt%) and  $\text{K}_2\text{O}$  (3.45-4.15 wt%) are relatively high. These characters of major-element composition are resembled to them of felsic tephtras provided from Niijima and Kozushima during late Quaternary. Furthermore, we tried to correlate each tephra bed in the core C9010C to each eruptive event based on the major-element composition. The probabilities that No.1 (1.15-1.17 mbsf) as the highest layer correlates to Niijima Mukaiyama tephra (AD886), and No.2 (1.63-1.66 mbsf) correlates to Kozushima Tenjyosan tephra (AD838) are high. No.8 (9.36-9.48 mbsf), No.12 and No.13 (14.32-14.65 mbsf), and No.14, No.15 and No.16 (No.14.65-15.54 mbsf) will correlate to the eruptive events of Miyatsukayama SW, Shikinejima, and Miyatsukayama on the Niijima main island, respectively (Kobayashi *et al.*, 2019a). The petrographic and geochemical characters of No.19 and No.20 (19.90-19.00 mbsf), No.21 (19.31-19.34 mbsf), and No.28 (29.49-30.66 mbsf) are resemble to the events of Akasakimine on Niijima main island. There are hemipelagic ooze of 11 m thick, including several scoria layers, between No.19 and No.28. Kobayashi *et al.* (2019a) report Akasakimine events are several eruptions at ca.15-20 ka, therefore it would make sense for the time interval of 11 m-thick sediment between No.19 and No.28. Above-mentioned correlatives to tephtras provided from Niijima island consists of felsic volcanic glass shards mainly, only a small amount of scoria grains is included. No.18 (16.72-16.78 mbsf) is sorted glassy tephra mainly, with gray to beige fine bubbled pumices, which maximum diameter is 7 mm. There are almost volcanic glass shards including a small amount of plagioclase, quartz and orthopyroxene, not scoria grains and lithic fragments in the fraction of 63-250  $\mu\text{m}$ . The content of  $\text{SiO}_2$  is 78.8 wt%,  $\text{FeO}^*$  is 1.24 wt%,  $\text{CaO}$  is 1.25 wt%,  $\text{Na}_2\text{O}$  is 4.76 wt%, and  $\text{K}_2\text{O}$  is 1.22 wt%. We consider that No.18 would be correlated to tephra provided from the submarine volcano Oomurodashi at 13.4 ka (Hamuro *et al.*, 1983; Saito and Miyairi, 2008; Tani *et al.*,

2017).

Keywords: CK09-03, C9010E, late Quaternary, Nijjima, Kozushima, Oomurodashi