

Discovery of the Iizuna-Nishiyama Tephra in the Konan Terrace of the Kanto Plain, Central Japan

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The Konan terrace of alluvial-fan origin is distributed in the Arakawa right side shore in the northwestern Kanto Plain (Kaizuka and Matsuda, 1982; Ohya et al., 1996). Horiguchi(1986) recognized the On-Pm1 tephra in the Kanto-Loam bed which covered a fluvial gravel bed on the Konan terrace, and correlated the Konan terrace with the Shimosueyoshi terrace formed at MIS5e. This study presents the correlation between a pumice layer detected from the Konan terrace and the Iizuna-Nishiyama tephra (Iz-NY) based on the similarity of the rock-description character and the chemical composition of cummingtonite.

The Konan terrace deposits at the Wakenashi point in the Kawamoto town are composed of a gravel bed (thickness: 5m+), a gravel-mixing tuffaceous clay layer (60cm), a tuffaceous clay layer (2.4m), a loam layer (70cm), and humic soil (30cm) in ascending order. The examined tephra layer (5cm) is intercalated in the lowermost part of the tuffaceous clay layer. This tephra is characterized by very coarse- to coarse-grained yellowish-white pumice, and consists of quartz, plagioclase, cummingtonite, and iron minerals in mineral composition. Refractive index of the cummingtonite ranges 1.663-1.670 (mode:1.666), and the EPMA reveals the Mg value of 63.3.

The Iz-NY tephra in the type area (Hayatsu and Arai, 1982) shows the following features.

Mineral composition: quartz, plagioclase, cummingtonite, hornblende and iron minerals.

Refractive indices of cummingtonite: range 1.662-1.669 and mode 1.666-1.667

Mg value from chemical composition by EPMA: 62.8-63.6

The Iz-NY tephra reported from the Sugadaira of Nagano Prefecture (Suzuki, 1996), shows the following features.

Mineral composition: quartz, plagioclase, cummingtonite, hornblende and iron minerals.

Refractive indices of cummingtonite: range 1.663-1.668 and mode 1.666

Mg value from chemical composition by EPMA: 63.6

These tephrae of three points can be correlated with each other on the basis of the refractive index, and the chemical composition of cummingtonite, though have the difference in mineral composition. The Iz-NY tephra would be widespread in the Kanto Plain because Sugadaira and the Konan terrace are situated southeast of the Iizuna volcano. The age of the Iz-NY tephra is presumed to be MIS6-7 based on the stratigraphic relationship with other marker tephrae such as Ata-Th and Iz-KTa. The formation age of the Konan surface, therefore, might be older than that of the Shimosueyoshi surface according to the stratigraphic position of the Iz-NY tephra.

References

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