

Sedimentological characteristics of the Ome Formation exposed on the western margin of Musasino Upland, central Japan

*Takako UTSUGAWA¹, Masaaki Shirai², Hiroka Kato², Sayuri Kato³

1. Department of Geography, Risscho University, 2. Department of Geography, Tokyo Metropolitan University, 3. Hamura City

The Ome Formation defined on the middle 20th century has not been understood enough due to various facies of the formation reported by previous studies and destruction of the outcrops by urbanization. We examined sedimentological characteristics of the Ome Formation distributed in Ome and Hamura cities, Tokyo, central Japan.

Musashino Upland, a large alluvial fan located in the southwestern part of Kanto Plain were formed by the Tama River (ca. 100-20 ka). Along the Tama River, multiple fluvial terraces have formed since the last interglacial (e.g., Ueki and Sakai, 2007). Juen (1964) reported a sandy conglomerate being distinguishable from the upper terrace deposits and the lower Onita (Kasumi) Formation in Kazusa Group, exposed at the terrace cliff along the Tama River. Based on the boring core investigation, it was revealed that the similar sediments have been buried under the western part of Musashino Upland (e.g., Yamazaki, 1978).

A surviving outcrop of the Ome Formation, 20 m thick clast-supported sandy conglomerate has exposed at the terrace cliff located around the boundary between Ome and Hamura cities. The formation is mainly composed by cobbles (5-20 cm in diameter). Boulders (20-40 cm in diameter) make channel-like structures in the basal part of the formation. Microscopic observation revealed that shale fragments were abundant as much as sandstone fragments. Sandstone gravels were the major component followed by chert and shale gravels derived from the Kanto Mountains (accretionary complex). Weathered granitoid gravels were also a few included.

The ratio of chert gravel in the Ome Formation shows downward increase. Chert gravel abundance of the basal Ome Formation is almost equal to one of the Onita Formation, it may imply that hard and durable chert gravels composing the Onita Formation had been reworked and included in the basal Ome Formation. The averaged imbrication of gravels of the Ome Formation indicated NNW direction. It means that the palaeocurrent was similar with the present Tama River current.

Ueki and Sakai (2007) hypothecated that Ome Formation is an aggregation of multiple channel deposits during several interglacial-glacial periods. Based on the sedimentological characteristics of Ome Formation as described above and the established boring core information, we also estimated the distribution of Ome Formation buried around the western part of Hamura City.

Acknowledgement

A part of this study is supported by Municipal history compilation office in Hamura-city (2014-2018).

References

- Ueki, T. and Sakai, A. 2007. *Geology of Ome District*. Quadrangle Series, 1:50,000, Geological Survey of Japan, AIST. (in Japanese with English abstract)
- Juen, S. 1964. *Geog. Rev. Japan* 37: 272-273. (in Japanese)
- Municipal history compilation office in Hamura-city. 2019. *The book of materials –Nature– in Hamura-city*

. (in Japanese)

Yamazaki, H. 1978. *The Quaternary Research* 16: 231-246. (in Japanese with English abstract)

Keywords: Ome Formation, Tama River, imbrication, gravel, buried valley, Musashino Upland