

The Alluvium and its basal topography in the Arakawa Lowland and the Menuma Lowland, central Japan

Takeshi Ishihara^{1*}, Toshihiko Sugai¹, Shoichi Hachinohe²

¹Natural Environmental Studies, KFS, UT, ²Cen.Envi.Sci.Saitama

In the coastal alluvial Lowland in the Kanto Plain, it has been revealed stratigraphy and sedimentation system of the Latest Peistocene-Holocene incised valley fills (the Alluvium) and development of basal topography beneath alluvium in response to relative sea level changes. In contrast, few studies have been done in inland alluvial lowlands where marine transgression did not reach during the Holocene. This study clarified sedimentary environments of the Alluvium and formation of its basal topography in the Arakawa Lowland and the Menuma Lowland in Central Kanto Plain, Japan, based on facies analysis of boring core sediments and more than 1,500 columnar section data. The basal topography is classified into buried terraces surfaces I ~ III, corresponded to the Tachikawa terrace surface group, and a buried valley (IV) descending order. I ~ III surfaces are distributed in the middle and upper part of the Arakawa Lowland, while their distribution are unclearly in the Menuma Lowland. IV surface continues from the Arakawa Lowland to the Menuma Lowland. It is suggested that the paleo Tone River and the paleo Ara River flew together in the Arakawa and the Menuma Lowland when IV surface was formed. I ~ IV surfaces continue to basal topography downstream, indicating that they were formed by fluvial incision during base level lowering associated with the sea-level fall in the Last Glacial. The Fukaya Fault, an active reverse fault, lies concealed around the boundary between the Arakawa Lowland and the Menuma Lowland. It is suggested that buried surfaces were deformed by the Fukaya Fault. The Alluvium was divided into G_{1u}, S_{1l1}, S_{1l2}, S_{1m}, and S_{1u} in ascending order. G_{1u}, which is correlated with basal gravel (BG) downstream, deposits at the bottom of IV surface around the LGM. From the latest Pleistocene to the earlier Holocene, G_{1u} was covered by finer sediments (S_{1l1} and S_{1l2}) associated with sea level rising. Shoreline invaded the most landward during 9500 ~ 7400 cal BP, and finer sediments S_{1l2} deposited up to the fringe of the Kumagaya fan, locating in the Menuma Lowland. It is indicated that the fan has been reduced at that time. Before the period of the highstand of sea level (since 7400 cal BP), progradation started at ca. 7800 cal BP in the middle part of the Arakawa Lowland. Tributaries from the Kanto Mountain such as the Iruma River joined and supplied much sediment to the middle part of the Arakawa Lowland, thus progradation probably began earlier. In the upper part of the Arakawa Lowland and the Menuma Lowland, S_{1m} began to deposit since ca. 6700 cal BP, and the Kumagaya fan started to prograde. After ca. 4100 cal BP, fine sediments (S_{1u}) have deposited in the Arakawa Lowland, indicating that the Tone River has shifted its course to the Nakagawa Lowland and coarser sediments have not been supplied into the Arakawa Lowland.

Keywords: the Arakawa Lowland, the Menuma Lowland, the Alluvium, basal topography, the Tone River, the Fukaya fault