Japan Geoscience Union Meeting 2012
(May 20-25 2012 at Makuhari, Chiba, Japan)

HQR22-01 Room:101A Time:May 24 15:30-15:45

The Alluvium and its basal topography between the Arakawa-Menuma Lowland and the Nakagawa-Watarase Lowland, Japan

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We first compare developments of the latest Pleistocene-Holocene incised valley fill (the Alluvium) and its basal topography in the Arakawa-Menuma Lowland and the Nakagawa-Watarase Lowland, the Central Kanto Plain. Then, we discuss how global sea-level change, local tectonics, and fluvial sediment supply influence developments of them and degree of Holocene transgression.

In the study area, the basal topography beneath the Alluvium is classified into three types; buried incised valleys, buried fluvial terrace surfaces, and buried abrasion platforms. The incised valleys and buried terrace surfaces were formed under the influence of sea-level drop in the Last Glacial. Their longitudinal profiles and slopes in the Arakawa-Menuma Lowland are roughly similar to those in the Nakagawa-Watarase Lowland. By contrast, deformation of incised valley near the concealed Fukaya fault is evident in the border region between the Arakawa Lowland and the Menuma Lowland (Ishihara *et al*, 2011a), while the longitudinal profile of the incised valley in the Nakagawa-Watarase Lowland continues smoothly. Buried terrace surfaces develop clearly in the Arakawa Lowland, hanging wall zone of the Fukaya fault, whereas they are not clear in the Menuma Lowland, footwall zone of the Fukaya fault. In the Nakagawa-Watarase Lowland, where broadly located footwall side of the Fukaya fault and the center of subsidence persisting throughout the Quaternary (Kaizuka, *et al*.,1977), buried terrace surfaces distributed fragmently. This is suggested that local tectonics, as well as sea-level change, have influenced the formation of basal topography.

The buried abrasion platforms were formed during the Holocene transgression (Kaizuka *et al*.,1977). Their distribution in the Nakagawa-Watarase Lowland is extensive (Matsuda, 1974) because inner bay environment continued longer than the Arakawa-Menuma Lowland and surrounding uplands consist of weakly consolidated Pleistocene sediments. The Musashino Upland, western side of the Arakawa-Menuma Lowland, composes gravels indicated that the upland was resistant to abrasive action. In addition, several tributaries of the Arakawa River which have flowed between the Musashino Upland may have prevented expansion of inner bay along the Musashino Upland.

Developments of the Alluviums in the Arakawa-Menuma Lowland are totally similar to those in the Nakagawa-Watarase Lowland. In both lowlands, it is indicated that Holocene transgression influence fluvial sedimentary succession in inland where no marine sediment is deposited. By contrast, totally grain size of the Alluvium tends to be larger in the Arakawa-Menuma Lowland than in the Nakagawa-Watarase Lowland. Additionally, onset of regression in the Arakawa-Menuma Lowland was in ca. 8 ka (Ishihara *et al*, 2011b), 1 ka earlier than in the Nakagawa-Watarase Lowland (6.5-7 ka). These differences in above lowlands are attributed to differences of fluvial sediment supply. Especially, it is indicated that large tributaries influence the sediment supply.

References

Ishihara *et al*. (2011a) The Quaternary Reaearch (Japan), 50, 113-128 (in Japanese, with English abstract).
Ishihara *et al*. (2011b) Geomorphology, doi:10.1016/j.geomorph.2011.08.022.
Kaizuka (1987) Journal of Geography (Japan), 94, 51-68 (in Japanese, with English abstract).
Kaizuka *et al*. (1977) Quaternary Reaearch, 8, 32-50.
Matsuda(1974) Geog.rep.Tokyo Metrop.Univ., 9, 1-36.

Keywords: Alluvium, Basal topography, Sea-level change, Marine transgression, Fukaya fault, Fluvial sediment supply

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HQR22-02 Room:101A Time:May 24 15:45-16:00

Subsurface structure around Wakayama plain

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In Wakayama Plain, Pliocene to Quaternary sediment and terrace sediment are deposited. These are covered with Holocene deposit at the lower plain and around Osaka bay area. There are less information of surface structure. The Geo-database Information Committee of Kansai Area has developed a geotechnical database for the Kansai area. The geo-database was developed with a focus on the urban area because of its social and economic importance. Data of more than 40,000 boreholes were collected and digitized (Fig.3). Essentially, the data consist of information on soil classification, N values, and some data from soil tests. However, sedimentary facies and N-values (one of the indices that indicate soil property from the viewpoint of soil engineering) are regarded as important indices of subdivision and continuity of a formation. Since the geo-database includes results of soil investigation such as physical properties and mechanical properties of soil, it is easy to compare the data of this geo-database with data of the sedimental environment and soil properties.

In this committee, we study about Wakayama plain and correct the borehole data for two years. All cores boring were carried out at the Wakagawa area. The sedimentary environment indicates two marine layers.

Keywords: Wakayama Plain, borehole, database, sedimentary environment, alluvium

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Subsurface geologic structure of the Fukuoka Plain near the Kego Fault based on borehole database

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The Kego Fault is a 50km-long north-west trending left-lateral slip active fault in north Kyushu, Japan. The southeast part is traced in the Fukuoka plain. We formed the shallow-level subsurface geologic model of the Fukuoka Pain based on the borehole database in order to reveal subsidence of the plain and the sedimentation affected by active faulting of the Kego Fault.

Keywords: borehole data, subsurface geologic model, Kego Fault, Fukuoka Plain, Quaternary

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HQR22-04 Room:101A Time:May 24 16:15-16:30

Formation of subsurface layer and examination of the generating depth of liquefaction at the Hinode area,Itako city

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Serious Liquefaction phenomena happened on Hinode, Itako,Ibaraki Pref., middle to downstream region of the Tone River,at the 2011 off the Pacific coast of Tohoku Earthquake. Those damaged area were on reclaimed land by dredge. The stratum of the damaged area consists of the sedimentof lowlandsandthe dredgesandy sediment asa result of the drilling survey.Judging from the faciesof sedimentand grain size composition, liquefaction is presumed to have occurred in the lower part of dredge sandy sediment.

Keywords: The 2011 off the Pacific coast of Tohoku Earthquake, Liquefaction, Dredging sand layer, Itako

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HQR22-05 Room:101A Time:May 24 16:30-16:45

Liquefied layers and their deformation structure identified in all core samples.

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Sedimentological investigations were carried out to all core samples acquired from the sites where liquefaction widely took place or ground failure occurred caused by the 2011 East Japan Earthquake. According to the usual core analysis procedure, all cores were first split into two halves along the core axis and photographed. The surface of one half of core was delaminated using polyurethane resin. Magnetic susceptibility was measured for the standard 7-cm3 plastic cubes which were pressed into and retrieved from a half core at 2.5-cm or 5-cm intervals. A number of 10-mm thick, 60-mm wide, and 25-cm long plate samples were also removed from the cores for taking the soft X-ray photographs. Grain size distributions were determined by combining traditional sieving data with those obtained using a laser diffraction particle size analyzer.

We first conducted above core analysis for a total of 7 boring cores sampled at Kokai River, Ibaraki Prefecture, where levee were partly failure by the earthquake. Sand dykes were caught in cores, and also liquefied layers were identified having characteristic deformation structure. Clay blocks were frequently included in the liquefied layers. The core analysis highlighted the usefulness of it for the investigation of liquefaction and also showed the potential false estimation of liquefaction by means of conventional FL method based on non-core drilling data and N-values of Standard Penetration Testing.

Keywords: East Japan Earthquake, liquefaction, all core boring, deformed structure