



High-resolution analysis of Holocene sequence using borehole database and the relationship between depositional environment and groundwater hydrology: a case study at the Tsurumi river lowland in Kanagawa Prefecture, Japan

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Creating detailed geological database involved in geological structure, geological model based on it, are required in earthquake disaster prevention, urban development, and environment preservation. Many borehole log data have been collected by each local government as geological information data base in Japan. On the other hand, handling of many databases is inconvenient when analyzing the geological subsurface extensively across the city because the data format is different in each local government. In this study, we constructed borehole database to integrate the borehole data of Yokohama City and Kawasaki City, Kanagawa Prefecture by using the AIST "borehole data processing system". Some geological cross-sections were created and analyzed in detail by applying the method of "Shazam stratigraphy" (Masuda et al, 2013) to the Holocene sequence using this database. Study area is the Tsurumi river lowland formed by Tama River and Tsurumi River at Yokohama City and Kawasaki City. In results of this study, the Holocene geological cross-sections indicating transgression and regression cycle was showed in more high resolution than previous studies. In the Holocene sequence of the Tsurumi river lowland, buried valleys eroded the formation of the Middle Pleistocene Sagami group are filled by basal gravel bed (LST) and the alternation of sand and silt (TST). Marine clay (TST) containing shell fragments and sand (HST) is deposited in the upper and uppermost layer of the Holocene sequence. Massive sands are distributed in the marine clay layer at the altitude -30m to -10m. Silt sediments containing shell fragments and organic matter dominate behind of the sand deposits. These are interpreted as barrier deposits formed during the transgression from previous studies (Matsubara, 2011). The Holocene geological cross-section in the Tsurumi river lowland could be corresponded to the cross-section in the Osaka Plain. The result of this study will be used to groundwater model as hydrogeological units to because massive sand deposits such as barrier deposits might be related to groundwater behavior.