Depositional stratigraphy based on XRF, tephras and particle size analysis of core drilled in the central part of the Kanto plain, Sakai town, Ibaraki prefectural and Kuki city, Saitama prefecture (preliminary report)

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In the Kanto plain, a large frame of the topography has been formed by glacial sea level fluctuations and the Kanto basin movement caused by plate subduction. From the southwest part of Ibaraki prefecture to the eastern part of Saitama prefecture, it is the center of the basin movement and the sediments of the last interglacial period are buried underground. In this study, the distribution depth of marine stratification was investigated using the boring core excavated by the Tone River Upstream River Office at Sakai town in the southwestern end of Ibaraki Prefecture and Kurihashikita, Kuki city in Saitama Prefecture (S12 Core and KHN Core). Observation of layer phases and laser diffraction type particle size analysis, sulfur analysis using WD-XRF, and compositional analysis of volcanic glass of tephra using SEM-EDS were carried out. The S12 core, whose hole top elevation is 12.19m, consists of from deeper part, a silt layer containing a lot of shell fragments (unit 1a, b), a dark gray upper coarsening sand layer (unit 2), a slightly organic silt layer (unit 3), coarse sand mixed with scoria (unit 4) severely color-changing silt (unit 5) and loam layer containing a lot of volcanic ash (unit 6). With reference to the results of sulfur analysis using XRF, we can reconstruct topographical change as follows. it is conceivable that on the upper part of the silt layer (Unit 1) containing sea shells which are seafloor sediments, as the influence of rivers increased at the end of the maritime, delta sand (unit 2) accumulated, and sedimentary sand (Unit 4) accumulated at the stage of regression. In the silt layer containing the shellfish, it is thought that the value of sulfur increased with the upward fine granulation as the sea was at the stage of transgression. At the depths of 20 to 26 m and in the latter half of 29 m the value of sulfur became small, so there is a possibility that it was located in a brackish water area such as an estuary and lagoon at that time. Five layers containing no-weathering white pumice with a diameter of a few mm were observed at depths of 27.5 m - 28.5 m (under above-mentioned Unit1) of the KHN core, whose hole top elevation was 15.5m, named KHN 1 - KHN 5 from the shallow one. KHN 1 and KHN 2 were included in cross lamina, and KHN 3, KHN 4, and KHN 5 were in a single layer. As a result of the principal component analysis of the volcanic glass, KHN 1, KHN 2, KHN 3 may not be a single tephra but may have been deposited secondarily. KHN 4 and KHN 5 are in good agreement with the results of principal component analysis of Tanashita pyroclastic flow of Akagi Volcano, which is considered to be comparable to this. The Tanashita pyroclastic flow (Arai, 1962; Moriya, 1968, Takemoto, 1998) is compared with the Akagi Mizunuma 8 descent pumice (Yamamoto, 2016) and the descent period is supposed to be the first period of MIS 5e (Yamamoto, 2016). Therefore, Unit 1 is considered to be the bay mud layer of Paleo-Tokyo Bay deposited at the stage of transgression in MIS 5e.

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