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Paleoshorelines since MIS11 Reconstructed from the Distribution of Marine Deposits and Marine Terraces in Kanto Plain

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Marine deposits in Pleistocene are distributed as some marine terraces at the foot of mountains and hills in the western and northern part of Kanto plain as tectonically uplifted areas. In contrast, stratigraphy of the Middle to Upper Pleistocene in the interior of plain is known little mainly because it is buried below the Holocene.

The authors analyzed two sediment cores drilled in the north-western part of the Kanto plain, as the standard stratification since the Middle Pleistocene based on glacio-eustatic changes. Many geologic columns in the central part of the Kanto plain were collected and correlated with the stratigraphy of the two cores. Marine deposits of MIS11 and MIS9 are traceable over the wide areas of the central part of the plain, while the distribution of those of MIS7 and MIS5 is limited. The authors tried to reconstruct paleo-shoreline during the period of the maximum transgression from the distribution of both marine deposits and marine terraces since the Middle Pleistocene in Kanto plain. In MIS11, the sea reached most distant area from the present shoreline during the last 400 ka. It is cleared that the shorelines in MIS11 and MIS9 were spread all over the Kanto plain. In MIS5, the transgression was smaller than MIS11 and MIS9 and was larger than MIS7. In MIS1, the paleoshoreline run along the fluvial valleys formed in the last glacial period.

This study is the first to reconstruct the locations of paleoshorelines during past interglacials since MIS11 based on the distribution of marine deposits and marine terraces across Kanto plain including the interior of plain. The character of the distribution of sea and the long-term transition is compatibly explainable by a combination of (1) glacio-eustatic sea-level changes and (2) basin-wide uplift since MIS11. In contrast, based on the assumption of (2), it is certain that the sea reached most distant area in MIS11 and MIS5 in Kanto plain. This is consistent with recent studies in tectonically stable areas.

Keywords: Kanto plain, Middle Pleistocene, sea-level change, drilling core