

# Holocene geomorphic development of the Kinu river system constrained by the dissected river valleys formed after MIS 5.

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## 1. Introduction

Kinugawa Lowland located in the northern part of the Kanto Plain is a relatively stable area of structural movement and is characterized by fluvial terraces of different ages after MIS 10 at around the same altitude (Kaizuka 1957; Suzuki and Koike, 2000).

Unlike the eastern and central parts of the Kanto Plain, there are few studies of this region and the paleo shoreline in the last interglacial period in this area has not been clarified yet (Sugai et al. 2013). In addition, the relation between the distribution of dissection valleys and landform development are hardly understood in the northern area of the plain.

Coupling geologic column data and terrain analysis using GIS in the Kinugawa Lowland, we discuss fluvial processes and river valley development associated with river course changes and eustatic sea level changes since MIS 5.

## 2. Method

Erosion Depth distribution Map (EDM) was made based on the difference between Summit Level Map and 10m DEM(GSI) by Arc GIS (ESRI).

Thickness of Holocene valley-fill deposits was measured based on the interpretation of borehole data. Sinuosity of dissecting valleys and river course were measured by using GSI map.

## 3. Result and discussion

EDM shows that the Nisire River valley (Valley B) is deeper than the present Kinu River valley (Valley A). In contrast the thickness of Holocene deposits in Valley A was thicker than that in Valley B. Sinuosity of Valley A and B were almost the same, which implies that both Valley A and B were originated from the paleo Kinu river channel A and B running on the present Takaragi river terrace area probably in MIS 4 as active and unstable channels on a large alluvial fan surface (proto-Takaragi surface). And then, the channel A started incising to form deep valley accompanied with BG (basal gravel layer) corresponding to a decline in sea level in MIS 3 to 2 i.e. Valley A. Finally valley A has been filled with thick fluvial deposits because of abundant sediment supply from the upstream of the Kinu river system. On the other hand, the channel B became a misfit river to form a shallow valley and then gradually buried the valley during the Holocene because of the luck of the upstream of the Kinu river.

Keywords: Kinu River, Takaragi Terrace, Dissection Valley, Summit level map