

Upper Pleistocene to Holocene geomorphic changes in the Osaka Intra-arc Basin, Japan: GIS analysis of borehole data

ITO, Yuka^{1*}, OGUCHI, Takashi¹, Fujio Masuda²

¹The University of Tokyo, ²Doshisha University

Development of the late Quaternary depositional sequences in the Osaka Intra-arc Basin were reconstructed based on analysis of subsurface geology and geomorphology using a borehole database and GIS. The results indicate some significant geoscientific phenomena that occurred during the Upper Pleistocene to Holocene: 1) formation of alluvial fans and river terraces during regression from the marine isotope stage (MIS) 5 to MIS 2; 2) formation of ravinement surfaces by wave and tidal erosion during transgression from MIS 2 to MIS 1; 3) formation of barriers and wave-cliffs during the maximum high-stand of MIS 1; and 4) progradation of fans, deltas and strand plains during the latest Holocene. The obtained insights include: 1) expansion phases of fans; 2) different styles of geomorphological development under the influence of clastic sediment supply in relation to incised-valley formation between MIS 3 and MIS 2; and 3) importance of geomorphological changes forming ravinement wave surfaces and seabed during transgressions with different rates of sea-level rise.

Keywords: borehole data, ravinement surface, terrace, Upper Pleistocene to Holocene