

Three dimensional structures of the Latest Pleistocene to Holocene incised-valley fill in the Nobi plain, Central Japan

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With the high sediment flux from the Central Alpine region, remarkable incised-valley fill has deposited under the Nobi plain since the LGM. Detailed geological data analysis using GIS was done to clarify the three dimensional forms and structures of each sedimentary unit. 510 logs are selected from over 6000 existing logs, to form the spatially uniform 1km-grid three dimensional surfaces interpolated by GIS for each sedimentary unit. Definitions and characteristics of each unit are based on the analysis of three cores, obtained from the plain.

Basement of the valley fills consists of unit BG and the Upper Quaternary Atsuta Formation (AT). AT forms the broad buried marine terrace under the south eastern part of the plain. Unit BG is the fluvial gravel bed which cuts the upper part of Unit AT. The upper surface of Unit BG is dissected by shallow valleys (about 10m deep, and several kilometers wide). These valleys probably had been formed during the period of LGM. Unit LS, which mainly consists of river channel deposits and flood sediments, fills the incised valleys. The upper boundary of LS is relatively smooth and tilting toward the Yoro active fault which forms the western boundary of the plain. Unit MM covering the unit LS, is the prodelta mud. The basement surface of the unit MM was originally seem to be horizontal, and had been tilted repeatedly associated with faulting events during the deposition of MM. Unit US covering the unit MM is the deltafront deposit whose thicker part shows belt-like distribution pattern. The belts correspond to the depression of the basement of unit US, indicating the main axis of the delta progradation or the main river course. The upper surface of unit US is slightly tilting toward the Yoro fault, especially in the northern part of the plain. This means that unit US has been affected by the several faulting events during the progradation. Unit TM/TS is the fluvial deposit covering the unit US, and filling the accommodation spaces on the slightly tilted upper surface of unit US. Unit SS is the sand and mud complex covering unit BG. Unit SS deposited in the surrounding area without Unit MM, where unit LS, US, and TS/TM are indistinguishable. Unit SS thus should have deposited simultaneously with these units LS, MM, US and TM/TS.