

Stratigraphic and sedimentologic analysis on the GS-HTF core of the "Chuseki-so" drilled at Futomi, Tobetsu, Hokkaido

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A boring core was drilled at Futomi, Tobetsu to elucidate a stratigraphy and sedimentary system of the "Chuseki-so" (the latest Pleistocene to Holocene incised-valley fills) in the Ishikari Plain, Hokkaido, northern Japan. The site is located slightly landward of the Momijiyama sand dune preserved along a shoreline at the end of Holocene transgression. The collected GS-HTF core consists of unconsolidated sediments of 60 m long. Although we drilled further five meters the bottom of the borehole, the well did not reach the base of the "Chuseki-so".

Identified stratigraphic units of the core are as follows, in ascending order; Unit A: gravelly fluvial deposits (60.0-53.0 m in depth), Unit B: sandy fluvial channel and floodplain deposits (53.0-21.3 m), Unit C: prodelta (central basin) to delta front deposits (21.3-5.0 m), and Unit D: delta plain (floodplain) deposits (5.0-1.0 m). Surficial part of 0-1.0 m in depth is an artificial soil. The Unit A consists of granular to cobbly beds containing clasts of sandstone, mudstone, greenstones, chert, etc. Plant fragments from intercalated sand bed at 55 m in depth show a C-14 age of 11,070 yBP (conventional age). The Unit B consists of interbeds of sand/mud showing fining- and coarsening-upward successions. Scattered or horizontally concentrated plant fragments abundantly occur in the unit, and they provide C-14 ages of 9,950-8,090 yBP. The Unit C consists of highly bioturbated mud to muddy sand. Pale green mud constituting a lower half of the unit yields abundant marine diatom. The mud coarsens up to muddy sand at 14 m in depth, and poorly sorted sand occur at around 13 m in depth. The sand gradually fines upward, then coarsens up again at 8-5 m in depth. Articulated and disarticulated bivalve fossils (*Potamocorbula*) occur at 13-11 m in depth indicating brackish intertidal/subtidal environments. The shell and plant fragments in the upper part of the unit provide C-14 ages of 7,760-6,070 yBP. The Unit D consists of sand, mud, and peat layers. Plant fragments in the lower part of the unit (4 m depth) provide C-14 age of 5,600 yBP.

The facies and stratigraphy of the core GS-HTF have features listed below compared with a previous core GS-HTB drilled at a landward site 4 km apart; (1) thick (12 m+) gravelly fluvial deposits of the Unit A, (2) well-developed fining-upward successions in the Unit B with thick cross-bedded sands, (3) prodelta (central basin) mud of the Unit C directly overlies fluvial sand/mud of the Unit B, and (4) relatively thin (6 m) prodelta mud overlain by bioturbated muddy sand.

The features 1 and 2 show a situation of aggrading fluvial channel confined in a narrow valley, which is probably affected by tectonically induced surface uplift (Hirose et al., 2009). The feature 3 suggests a barrier estuary developed in a middle part of the Ishikari incised-valley system during Holocene transgression, since the system has been faced to a wave-dominated, microtidal coast of Japan Sea. As a result the lowstand incised-valley was rapidly drowned, and the fluvial deposits were overlain by the prodelta (central basin) mud without intercalations of tidal or tide-influenced fluvial deposits. The muddy sand of the Unit C (feature 4) suggests derivation of sand from seaward by wave and/or flood-tidal processes at the early stage of Holocene highstand.

database for the Chuseki-so in the Ishikari Lowland. Abstract of the 116th annual meeting of the Geological Society of Japan.

Kawakami, G., Komatsubara, J., Nishina, K., Kimura, K., Hirose, W., Ohtsu, S., Takashimizu, Y. and Oka, T. (2009) Stratigraphic and sedimentologic analysis on the GS-HTB core drilled at Kawashimo, Tobetsu, Hokkaido. Abstracts, Japan Geoscience Union Meeting (CD-ROM), Q146-P001.

Keywords: Hokkaido, Ishikari Plain, Chuseki-so, boring core, stratigraphy, sedimentary system