[JJ] Evening Poster | H (Human Geosciences) | H-QR Quaternary research

[H-QR04]Quaternary, Diachronic dynamics of human-environment interactions

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Humans have attained their specific development by indigenous cultures and evolved through environmental adaptation. The session raises issues of human-environmental interactions, views from diverse changes of climate, ocean, land and biota having made striking influence on humans. It welcomes various fields from human-environment change and their chronometric dating among Quaternary disciplines.

[HQR04-P09]Characteristics of last 13 ka accumulation curves of incised valley fill related to relative sea level change in the southern Ashigara Plain, central Japan

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Ashigara Plain is an alluvial plain located in the lower Sakawa River and surrounded by Mt. Hakone, Ashigara Mountains, and Oiso Hills. The Kozu-Matsuda Fault Zone is located at eastern margin of this plain, which lifts Oiso Hills relatively. Sakawa river transports coarse grained materials from a foot of Mt. Fuji and Tanzawa Mountains throughout coastal area, resulting to form coarse-grained delta. Although general classification of alluvium sequence, Chuseki-so, was suggested by Yamazaki (1994), early to middle Holocene part is not enough clarified yet due to a lack of chronological data. Thus, we obtained five new core sample in southern part of Ashigara Plain to investigate early to middle Holocene sediments and reconstruct accumulation curves based on radiocarbon ages and tephra layers.

Based on fluctuation of accumulation rate, we divided early to middle Holocene into 3 stages (Stage 1 to 3) roughly. In addition, Stage 2 is subdivided into 3 substages (Stage 2A to C) according to differences of grain size and sedimentary environments.

Stage 1 (13 to 11 ka): This stage is characterized by much smaller accumulation rate, estimated to be ~4.3 mm/yr, than the Stage 2. During this stage, fine-grained deposits (non-marine humic mud to fine sand) were dominant and covered the Base Gravel layer. Because this period is corresponding to the Younger Dryas (11.5-12.8 ka), slower sea-level rising affected depositional process of Sakawa River.

Stage 2 (11 to 7 ka): In this stage, accumulation curves are parallel to relative sea-level curves in Japan (Tanabe et al. 2012) and accumulation rate is estimated to be ~11.7 mm/yr, which is the maximum after ca. 13 ka. This suggest that accommodation generated by sea-level rise were filled immediately by large sediment supply. After gravelly river sediments deposited in ca. 11-10.5 ka (Stage 2A), fine-grained deposits (lower non-marine humic mud and fine sand, and upper marine sandy mud) were dominant in ca. 10.5-8 ka (Stage 2B). In addition, Stage 2C (8-7 ka) is characterized by alternation of freshwater marsh

and tidal flats environments inferred from diatom fossil assemblages.
Stage 3 (after 7 ka): This stage is characterized by quite smaller accumulation rate (~1.2-3.5 mm/yr). This indicates that increasing volume of accommodation became much less than before because of stable sea-level.

Accumulation curves of Ashigara Plain, especially in stage 2, is quite similar to the lower Tenryu River coarse-grained delta (Hori et al. 2017). Both of two plains is characterized by large sediment supply and steep slope of incised valley. Therefore, their higher accumulation rates in 11-7 ka was probably caused by small increasing volume of accommodation generated by sea-level rise and large amount of supplied sediments. In addition, dominance of fine-grained sediments (Stage 2B) is also common among them. Because sediment supply had presumably been stable during Stage 2, it is suggested that this grain size change was caused by depositional process related to sea-level rise, i.e., autoretreat (Muto 2001).

References

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*English translation from the original written in Japanese.