HOLOCENE ABANDONED CHANEL-LEVEE SYSTEM ON THE SONGHONG (RED RIVER) DELTA, NORTHERN VIETNAM

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ABSTRACT

Morphologically, the Song Hong (Red River) delta, Vietnam, is divided into fluvial-, wave- and tide-dominated areas according to the dominant process. Doubled sediment discharge in the last 4000 years due to human activities in mountainous areas of the river's drainage basin has greatly affected the delta. During the middle to late Holocene, the delta prograded seaward in the southeastern wave-dominated area at rapid rates of 4–24 m/y. Natural levees up to 10 km wide also developed in the western fluvial-dominated area. These natural levees are distributed along the Song Hong and Day rivers at 5–10 m above the present sea level, and they also form meandering belts along abandoned river channels and scroll bar deposits. Neolithic and Bronze Age archeological sites are also distributed widely on the floodplains of the delta, indicating that people migrated from mountainous to floodplain areas.

The Day River diverges from the Song Hong 20 km northwest of Hanoi city. Although the natural levees along the two rivers are similar in size, at present the Day River has an annual water discharge of only 1/50 to 1/60 that of the Song Hong, and the riverbed has become elevated to the same level as the natural levees, indicating that they are no longer active. The morphology of the Day River indicates that the present river is flowing in abandoned channels of the former Song Hong. In this study, we classified the landforms of the Day River system by using aerial photos, radiocarbon ages from floodplain and levee deposits, and the distribution of archeological sites, and calculated the sediment volume of the natural levee system, in order to understand the abandoned river system and the fluvial dynamics of the Song Hong during the middle to late Holocene.