

**Initiation of the Mekong River delta at 8 ka:
evidence from the sedimentary succession in
the Cambodian lowland**

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Modern deltas are understood to have initiated around 7.59 ka in response to the deceleration of sea-level rise. This episode of delta initiation is closely related to the last deglacial meltwater events and eustatic sea-level rises. The initial stage of the Mekong River delta, one of the world's largest deltas, is well recorded in Cambodian lowland sediments. This paper integrates analyses of sedimentary facies, diatom assemblages, and radiocarbon dates for three drill cores from the lowland to demonstrate Holocene sedimentary evolution in relation to sea-level changes. The cores are characterized by a tripartite succession: (1) aggrading flood plain to natural levee and tidalfluvial channel during the postglacial sea-level rise (108.4 ka); (2) aggrading to prograding tidal flats and mangrove forests around and after the maximum flooding of the sea (8.46.3 ka); and (3) a prograding fluvial system on the delta plain (6.3 ka to the present). The maximum flooding of the sea occurred at 8.0 ± 0.1 ka, when tidal flats penetrated up to 2050 km southeast of Phnom Penh after a period of rapid sea-level rise that started immediately before 8.4 ka. The delta progradation then initiated as a result of the sea-level stillstand at around 87.5 ka. Another rapid sea-level rise at 7.57 ka allowed thick mangrove peat to be widely deposited in the Cambodian lowland, and the peat accumulation endured until 6.3 ka. Since 6.3 ka, a fluvial system has characterized the delta plain, and the fluvial sediment discharge has contributed to rapid delta progradation. The uppermost part of the sedimentary succession, composed of flood-plain to natural-levee sediments, reveals a

sudden increase in sediment accumulation over the past 6001000 years. This increase might reflect an increase in the sediment yield due to human activities in the upper to middle reaches of the Mekong, as with other Asian rivers.

What environmental parameter has controlled early human settlement and salt production in the north-eastern Mekong Delta around 3 kyr BP?

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In the north-eastern Mekong Delta, an increasing number of archaeological sites are discovered recently that document a very early phase of human settlement around 3 cal kyr BP. Already during this time, the settlers seem to have produced or refined edible salt in large and professional scale, which represents as well the first sort of industrial activity in SE Asia at all. It is, however, not clear which environmental or economical parameter has led them chosen the particular and laterally well defined localities for their activity.

First geomorphological investigations show that the settlers have not chosen elevated areas such as old sand ridges or levees, and, thus, protection against seasonal flooding was not an aspect. Clay material as base for the massive production of oven ceramics is available all over the delta and the producers seem not to have paid attention to a specific sort of soil material. Therefore, the availability of salt is suggested of being the major controlling parameter. According to the geological situation, only sea salt is a possible candidate.

The archaeological sites are nowadays found 100 km or more apart from the modern coasts. Taking into account that the generally understood progradation of the Mekong Delta has led to a stepward extent of the delta seawards, the distance to the former coastline at times of settlement was surely shorter than today. However, existing reconstructions do not place this palaeo-coastline into a reasonable vicinity of the sites.