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Floodplain evolution in lower reach of the Stung Sen River, central Cambodia

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The Stung Sen River which has the largest drainage basin in the Tonle Sap water system flows in an arc at central Cambodia region. At 230 km upstream from the Lake Tonle Sap, the river flows across a 7-km-wide floodplain and water level of the river changes 7 m annually because of two distinct seasons driven by monsoon. This research considers floodplain evolution of the Stung Sen River based on characteristics of the drilled cores in the floodplain and outcrops along the river in dry season, and ¹⁴C datings.

The channel of lower river is about 6-7 m depth and 70-100 m width with a rectangular cross section, which forms prominent meander scrolls along the channel. Although abandoned channels are well developed along the channel, natural levees are poorly formed and ground elevation decreases toward the channel. In addition, the floodplain is surrounded by uplands, so that flood water in monsoon season easily flows into floodplain and becomes remarkably wet especially along the channel. In floodplain, channel deposits of gravel to medium sand and back marsh deposits of silt to clay are accumulated at least 10 m on the basement of floodplain deposits. The channel deposits become thicker as it approaches to the channel, and the particle size becomes larger. ¹⁴C ages of channel deposits are comparatively new along the channel. In meander belt, which is composed of the channel, meander scrolls and abandoned channels, channel shifts and change of the deposits are prominent in particular, and that probably occurs in several decades order. ¹⁴C ages of back marsh deposits suggest to have been accumulated during last 35000 years by the accumulation rate of 0.1 -0.6 mm/yr with occasional channel deposits. This may suggest that the depositional pattern in the edge of floodplain has not drastically changed since the latest Pleistocene. Moreover, the oxidative-reductive reddish patches of the deposits which are highly recognized near the channel show the situation that the groundwater level alternates by monsoon.

Keywords: Stung Sen River, meander, boring core, ¹⁴C age, Cambodia